REPORTER
Version 11.0

Oasys Ltd
The Software house of Arup

For help and support from OASYS Ltd please contact:

UK

Arup Group Ltd
The Arup Campus
Blythe Gate
Blythe Valley Park
Solihull
West Midlands
B90 8AE
United Kingdom
Tel: +44 (0) 121 213 3399
Fax: +44 (0) 121 213 3302
Email: dyna.support@arup.com
Web: www.oasys-software.com/dyna

China

Arup
39/F-41/F
Huai Hai Plaza
Huai Hai Road (M)
Shanghai
China 200031
Tel: +86 21 3118 8875
Fax: +86 21 3118 8882
Email: china.support@arup.com
Web: www.oasys-software.com/dyna/cn

India

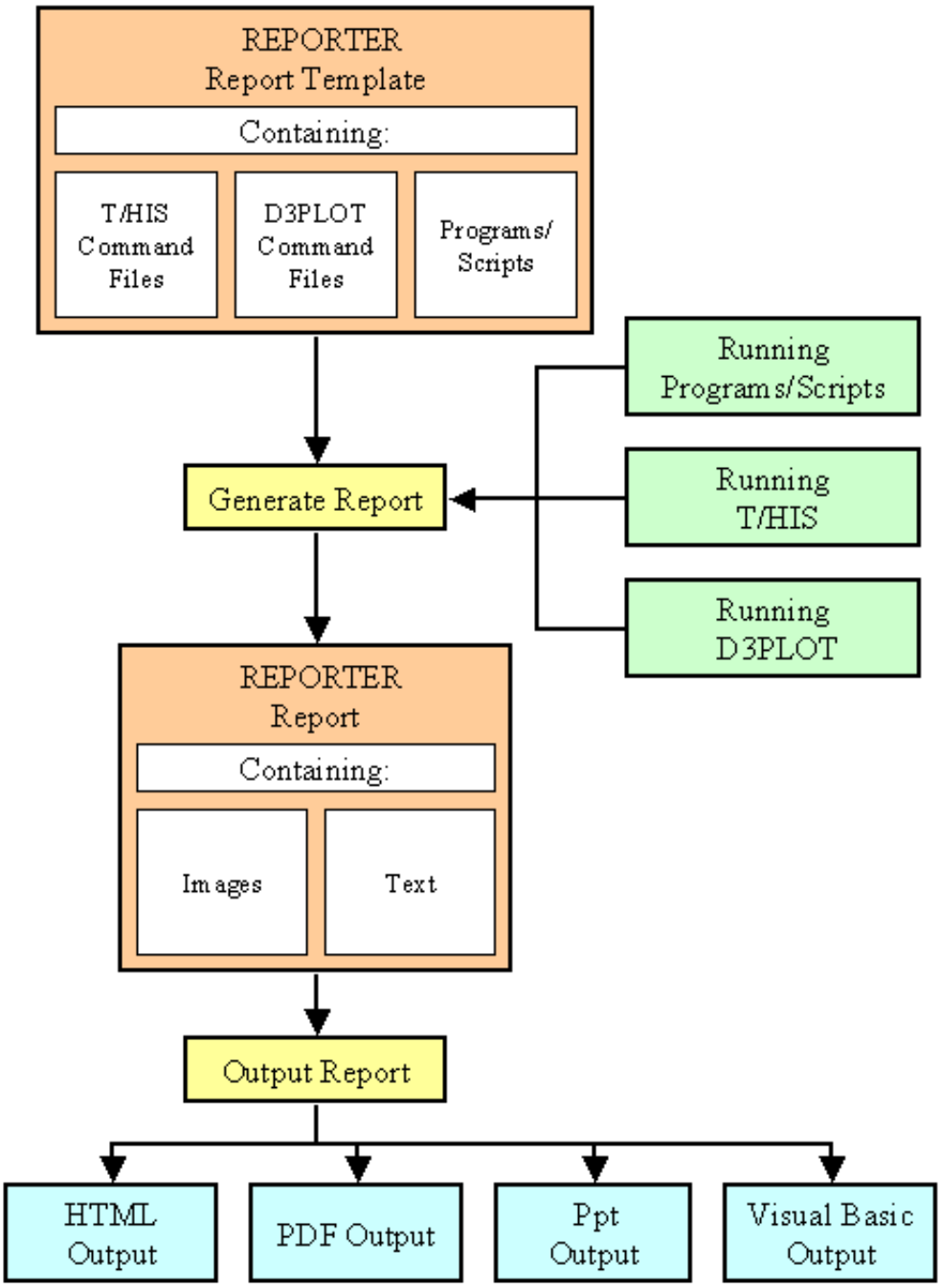
Arup
Plot 39, Ananth Info Park
Opp. Oracle Campus
HiTec City
Madhapur Phase II
Hyderabad 500081
India
Tel: +91 40 4436 9797/98
Email: india.support@arup.com
Web: www.oasys-software.com/dyna

or contact your local Oasys Ltd distributor

Preamble

Introduction

REPORTER is a tool to automate the post processing of LS-DYNA models. It allows you to create a standard template for a report. With command files and scripts it links with D3PLOT, PRIMER, and T/HIS, and other programs to create the necessary images and graphs when you come to generate an actual report from this template. It can also be run in batch mode so that when a model has finished being analyzed a report can be automatically generated according to a pre-built template.



Development Status

This manual documents the fifth release of REPORTER (11.0 with Oasys Ltd LS-DYNA Environment 11.0). The code is still being developed.

Systems supported

REPORTER is available for Win32 and Linux (32 and 64 bit)

Revision History

Version 11.0

- When writing PowerPoint files REPORTER now correctly writes animated gifs.
  Fixes enhancement 17601.
- REPORTER could crash if you created a table that used a library program for a cell and you saved the output of the program to a variable. This has been fixed.
  Fixes bug 21346.
- The library program which reported the LS-DYNA version and revision from the otf file did not work correctly for new (R7) LS-DYNA output because there is now a new 'SVN Version' line in the otf file. Additionally the version and revision were expected to be to be a single 'word'. This has been fixed.
  Fixes bug 21243.
- Outlines were not written for Oasys or File Image type objects to PowerPoints. Now added.
  Fixes bug 21242
- REPORTER would hang when reading a template file if one of the page titles in the file contained an ampersand (&). This was because the ampersand was not escaped properly when writing the template. This has been fixed.
  Fixes bug 21235
- You can now specify an outline border for file image objects.
  Fixes enhancement 18206
- REPORTER can now use D3PLOT to generate multiple images in one session. The second and subsequent images are automatically created as image file objects linked to the d3plot object.
  Fixes enhancements 7777 and 13034
- A JavaScript can now be run for D3PLOT and PRIMER objects.
  Fixes enhancement 15550
- When capturing an image from D3PLOT, REPORTER now automatically shows the images.
  Fixes enhancements 7779 and 10668.
- A new PRIMER object has been added.
  Fixes enhancements 8095 and 16530
- REPORTER can now write PowerPoint pptx files directly.
  Fixes enhancement 11858
- REPORTER can now combine multiple reports into a single pptx/pdf/html.
  Fixes enhancements 7712, 8956, 9020 and 10742
- REPORTER could think that a script had changed when cancelling from the editor if the script was created on windows but edited on unix.
  Fixes bug 7769
- When writing a pdf file jpeg images are now written as jpegs rather than pngs as they can be much smaller.
  Fixes enhancement 17920
- Added the ability to see the item generation order.
  Fixes enhancement 18489

Version 10.2

- REPORTER did not automatically change LS-DYNA filenames from h3hsp to %DEFAULT_JOB%.otf (and visa-versa) when importing a library page. This has been fixed.
  Fixes bug 19200
- REPORTER could crash when writing a pdf file that had overflow pages in an auto-table if there was an error when the report was generated. This has been fixed.
  Fixes bug 19197
- The "cropping" button was the default focus in the D3Plot object edit menu (i.e. was applied when hitting enter) rather than the "OK" button. This has been fixed.
  Fixes bug 19113
- REPORTER was not able to create and import image files which were not JPEG when generating a D3Plot captured object. This has been fixed.
  Fixes bug 18403
- REPORTER could crash if the user added a page to the reporter_library/pages area which contained certain

REPORTER items. This has been fixed.
Fixes bug 18432

Version 10.1

- If the page layout is changed from landscape to portrait or visa versa any items that are off the page are automatically moved to stay on the page
  Fixes bug 14307
- If multiple conditional formatting conditions were set for a table, autotable, textbox or file object background, then REPORTER would display the last condition matched rather than the first one. This has been corrected.
  Fixes bug 17794

Version 10.0

- Added the -loghtml command line options to allow the log file to be saved as html instead of plain text.
- Added a Templates tab to preferences to allow the user to change whether existing files should be overwritten when generating images for multiple pages in T/HIS. This is saved as a property of each template
- Added the -iconise and -oasys_batch command line options
- Checkbox for turning on/off error checking during generation when an error was found was not working correctly.
  Fixes bug 15143
- Added the ability to set the format of a variable on the variable edit panel.
  Closes enhancement 8819.
- Fixed problem with rounding errors on spinbox input values on edit panels.
  Fixes bug 15548.
- When resizing/moving a table object, the relative width/height of the columns/rows is now maintained.
  Closes enhancement 15546.
- Added a new library script for reading variables from a CSV file.
  Closes enhancement 15476.
- The "P" key can now be used to swap between design view and presentation view.
  Closes enhancement 9333.
- "Fit page" is now the default zoom level when opening a file.
  Closes enhancement 13863.
- Added the ability to use the control key plus the mouse scroll wheel to zoom in and out of the page.
  Closes enhancement 15516.
- Added the ability to distribute selected items evenly horizontally or vertically either to the page or within the currently selected items.
  Closes enhancement 15509.
- Added the ability to align items to the top/bottom/left/right of the the page.
  Closes enhancement 9300.
- You can now specify an outline border for Oasys Ltd. image objects.
  Closes enhancement 15503.
- The escape key can now be used to deselect any selected objects. It is still used to quit out of fullscreen mode.
  Closes enhancement 15530.
- The total number of pages in the document is now displayed at the top of the window.
  Closes enhancement 15513.
- Added preferences to allow the user to specify the format of the default DATE and TIME variables.
  Closes enhancement 15529.
- Modified the default variable DATE so that it just shows the date rather than the date and time. A new default variable TIME has been added
  Closes enhancement 15453.
- The maximum number of pixels you can crop off an image edge has been increased from 1000 to 10000.
  Closes enhancement 15451.
- Textboxes were not copied when duplicating a page. This has been fixed.
  Fixes bug 15441.
- Added the ability to write the output of a library program to a variable.
  Closes enhancement 9031.
- Added the ability to align multiple objects together. Option are left, centre, right, top, middle or bottom.
  Closes enhancement 9300.
- Added the ability to select multiple objects on a page. Multiple objects can be dragged, cut/copied/pasted, saved/imported, generated, resized etc.
  Closes enhancements 8980, 9106, 9300.
- Added the ability to format a variable. For example if a number, how many decimal places.
  Closes enhancement 13867.
- The text on the status bar could get overwritten during generation of items. Now fixed.
  Fixes bug 14230.
- Setting the background colour of various object types via conditional formatting has been added.
  Closes enhancement 9026.
- It is now possible to set the background colour of cells in tables.
  Closes enhancement 15319.

- A note object has been added for adding notes to the design view of a report.
  Closes enhancement 13825 .

Version 9.4.2

- " Hyperlinks for HTML files are now converted to relative links.
  Fixes bug 16138.
- If you inserted a normal program into a template by selecting the program tool and dragging an area Reporter would think that the object was a library program, not a 'normal' program.
  Fixes bug 15133.

Version 9.4

- Reporter could crash when accessing variables after using the JavaScript method Template.GetVariableValue() with a variable name that did not exist in the template.
  Fixes bug 14347.
- If a job file was selected before doing a capture for a T/HIS object REPORTER would not try to substitute DEFAULT_DIR (and other variables) in the filename. Now fixed.
  Fixes bug 14329.
- If you modified an items outline, fill or text colour or modified its line thickness or style this did not flag the template as requiring a save. This has now been fixed.
  Additionally templates which require saving are now marked with a * in the window title.
  Fixes bug 13960.
- Exiting from REPORTER using File->close and using the top right window close button now gives the same error message and options to save any modified templates. Previously the messages were different and this caused confusion to some users.
  Fixes bug 13430.
- D3PLOT objects with multiple filenames would not work if one (or more) of the filenames contained spaces. This was due to a bug in D3PLOT. Now fixed.
  Fixes bug 12409.
- When writing PowerPoint output blank table cells were given the default font size by PowerPoint. As this is very large it caused the table row to be larger.
  Fixes bug 13874.
- User defined script directories can now be defined by using the library_directory preference. This allows users to add their own library scripts if REPORTER is installed in a read only location.
  Closes enhancement 13503.
- If a library program is added it is now possible to set the font, size, style and justification in the menu.
  Additionally if you edit an existing library program this menu is now used instead of the 'normal' program menu.
- When generating a report more feedback is now given in the status bar so you know what REPORTER is doing (e.g. running a D3PLOT object in background).
  Closes enhancement 13888.
- Report generation can now be stopped at any point by a new 'Stop' button in the status bar.
  Closes enhancements 10708 and 11271.
- D3PLOT and T/HIS can now be run from REPORTER without any windows being mapped by either giving the -batch command line option to REPORTER or by setting the batch mode checkbox in File->Program locations.
  Additionally REPORTER can be minimised during report generation so you can use other programs.
  Closes enhancement 10709.
- HTML output has been improved for tables. Previously cell heights could be too high on Internet Explorer and additionally text that was too big for a cell was not cropped.
  Fixes bug 13846.
- Once a 'Capture' has been done for D3PLOT or FAST-TCF objects the 'Capture' button is changed to say 'Update capture' as it was not clear that pressing the button again would allow you to change the existing capture rather than starting again from scratch.
  Closes enhancement 13757.
- PowerPoint output could sometimes only be done once for each Reporter session.
  Now fixed.
  Fixes bug 13873.
- Page ranges set by the user in the printer dialog were ignored and the whole report was printed. Now fixed.
  Fixes bug 13887.
- The Hyperlink dock box was not mapped correctly when a hyperlink was clicked. A similar problem occurred with the 'master page' dock box.
  Fixes bug 13827.
- Clicking on a hyperlink that referred to a non-existant report could crash Reporter.
  Fixes bug 13836.
- PDF output for table cells was not cropped if it was too large for the cell.
  Fixes bug 13883.
- If you edited an existing FAST-TCF object that used variables somewhere in the script and you pressed capture to change the script REPORTER prompted you to try to replace text with variables in the new script but no replacements were done. Now been fixed.
  Fixes bug 13833.

- Image cropping has been added for Image, ImageFile, D3PLOT and Fast-tcf objects.
  Closes enhancement 12854.
- Text wrapping, border style, border colour and background colour have been added to the textfile object.
  Closes enhancement 8631.
- A new text colour button has been added to the Style toolbox to change the colour of text (previously the outline colour button changed the colour of text). This was necessary as the new textbox objects have fill colour, border colour and text colour.
- A new textbox object has been added to Reporter.
  Closes enhancements 9107, 7800 and 3881.

Version 9.3.1

- Visual basic output did not work on windows for text file items that had more than one line of text. Now fixed.
  Fixes bug 13165.
- Images for advanced objects in HTML output were scaled incorrectly. Now fixed.
  Fixes bug 13159.
- Reporter now shows files with extension .pptx as well as extension .ppt when writing PowerPoint files.
- Writing text objects to a PowerPoint file did not work correctly with PowerPoint 2007 (the text was written with a single letter on each line). Additionally:
  - File objects had a black background if a visual basic macro from Reporter was read into PowerPoint 2007.
  - Justification of text objects was not correct if a visual basic macro from Reporter was read into PowerPoint 2007.
  - Tables had the wrong border and background colours in PowerPoint 2007.
  - The colour of some lines could be incorrect in PowerPoint 2007.

  Now fixed.
  Fixes bugs 13022 and 13138.
- Output from writing text objects to a Powerpoint file and to a visual basic macro could be inconsistent. The textboxes produced when writing a PowerPoint file directly were not resized to fit the text, and textboxes produced from a visual basic macro would have different margins to those produced when writing a PowerPoint file directly. This is now fixed.
- Reporter would not play a d3plot command file with 'button click' data correctly. The button click data would be stripped from the command file and the commands treated as dialogue commands. Now fixed.
  Fixes bug 13027.
- In an automatically generated table column text entries containing variables would not generate correctly (the variable would be replaced by a blank string) if the variable name was in lower case. Now fixed.
  Fixes bug 12995.
- On some platforms when generating a report, a warning message from T/HIS and D3PLOT could be passed to REPORTER in two or more chunks (it should be passed to reporter as a single string). REPORTER would mistakenly think that the second and subsequent chunks were error messages and try to alert the user that an error occured. This has now been fixed.
  Fixes bug 12738.
- If a library object failed to generate properly (e.g. if the otf filename was incorrect) then the next time that Reporter generated the report you could get 'Cannot get File data in File destructor' errors. This has been fixed.
  Fixes bug 12629.
- When writing tables to powerpoint directly or writing a visual basic macro, the colour and width of table borders was ignored. Now fixed.
  Fixes bug 12733.
- The -maximise command line option and maximise oa_pref option did not work correctly on some screens. This has now been fixed.
  Fixes bug 12941.
- The hostname library script would fail if the hostname of the machine contained a hyphen (-).
  Fixes bug 12413.
- When drawing a polygon with the image.Polygon() function you could not define the line colour as 'none' (it always gave a black outline). This has now been fixed.
  Fixes bug 9585.
- If you edited a normal table after generating program data in any of the cells the program output was lost during the edit. This has now been fixed.
  Fixes bug 12348.
- If you saved output to html (or vba, pdf) and the file existed you were asked twice if you wanted to overwrite it.
  Fixes bug 12428.
- Variable expressions were not correctly evaluated when used in text. Instead of the variable value being evaluated the entire string was evaluated which could sometimes mean that the expression could not be evaluated correctly. This has now been fixed.
  Fixes bug 12347.
- Powerpoint output was incorrect for several object types:
  - Bold, italic and underlined text was shown as normal text.
  - Arrowheads were not drawn on arrows.
  - Rectangles and ovals without fill were still drawn with fill.
  - Dashed and dotted lines were drawn as solid lines.
  - Autotable cells could have the wrong font style and justification.

This has now been fixed.
Fixes bug 12433.

Version 9.3 (October 2008)

- When doing conditional formatting the default font for each condition is now the same as the existing font before you asked for conditions (so for example you have to change only the colour). Previously the defult font was always 10pt Courier. Closes enhancement 11906.
- If you double click on a variable in the Edit variable menu it now edits the variable. Closes enhancement 11904.
- In design mode, programs that use library scripts now have %REPORTER_HOME%/reporter_library/scripts removed from the beginning of the text that is shown on the object so it is easier to see what the program is. Fixes bug 7701.
- A library script has been added to read a reporter variables file. Closes enhancement 11902.
- Printing did not work for autotable objects. This has now been fixed. Fixes bug 11848
- The library directory for Reporter has been renamed to 'reporter_library'. Existing scripts which use 'library' will be modified when Reporter reads the file.
- In the menu that is mapped when the user right clicks on an object, Edit and Delete were next to each other. Occasionally people pressed Delete by mistake. A space has been added to the menu either side of the Delete button to make it harder to delete the object by accident. Fixes bug 11332.
- When the dyna filetype preference was changed in Reporter it did not change the filetypes for any existing objects in the template.
  Additionally, when opening a template, if the preference was set to the Oasys Ltd. filetypes, Reporter would silently change any 'd3hsp', 'd3thdt' and 'd3plot' definitions to '%DEFAULT_JOB.otf', '%DEFAULT_JOB.thf' and '%DEFAULT_JOB.ptf' and there was no way to undo this change.
  Now if you change the preference interactively Reporter looks to see if any filenames need updating. If they do then it asks you if you want to change them.
  Similarly, if you read a template Reporter checks and asks you if you want to change them. However, this is not done if the batch option has been set.
  Fixes bugs 9782, 10613 and 11438.
- Library scripts which retrieve data from the end otf file have been made significantly quicker. Fixes bug 9479
- It is now possible to have D3PLOT and FAST-TCF objects that do not return images to REPORTER. Fixes bugs 9028 and 9108.
- A new 'Expression' variable type has been added that allows user to do simple maths with variables. e.g. (%THREE%+%ONE)*%THREE%/%TWO%. In fact it will evaluate the expression as a JavaScript expression so Math.sqrt(), Math.sin() etc are also available. Fixes bugs 9010, 9017 and 9111.
- After reading in a template, Reporter now shows the first page, not the last page. Fixes bug 9006.
- All dialog boxes in Reporter now have a maximise button to make them easier to resize if they need to be made bigger (e.g. if editing a FAST-TCF object). Fixes bug 8793
- Normal table objects have now been added to Reporter. Closes enhancements 7233, 7703 and 7704.
- Postscript output has been removed from Reporter for version 9.3. Use pdf output instead.
- Added File.Mkdir() method to create a directory.
- Added File.APPEND constant to enable appending to files.
- Library scripts in tables did not work if there was a space in the installation directory of Reporter. Additionally any variables that were used as arguments would not have been expanded correctly (they would get the value from the current template instead of the value from the reporter_variables file). Fixes bug 9451.
- Added pdf_image_downsample, pdf_image_downsample_resolution and pdf_image_downsample_threshold preferences to allow image downsampling when writing pdf files.
- Added use_file_vars preference to enable filenames returned from D3PLOT and T/HIS to be replaced with directory/file variables automatically if they match

Version 9.2.3 [Build 36] (21/11/2006)

- Reporter would create a corrupt pdf file if a page contained a zero size image. This has now been fixed. Fixes bug 9315
- If special characters like > and < were used in a condition name Reporter could not read the template file. Now fixed. Fixes bug 9220.
- Fixed problem with text in pdf files not printing properly on some printers. Fixes bugs 9134 and 9212.
- The output from a table can now be written to a CSV file during generation. Closes enhancement 9133.
- Reporter now gives the user the ability to stop report generation if an error occurs. Closes enhancement 9126.
- Some objects with a line colour and/or fill colour of none were not being rendered properly (black was used instead). This has now been fixed. Fixes bug 9081.
- Reporter would get the start in directory wrong for T/HIS and D3PLOT if there was a single jobfile that contained spaces. This could cause T/HIS to crash. This has now been fixed. Fixes bug 9038.
- Library scripts could not be used as table items (an error occured when they were run). This has now been fixed. Fixes bug 9024.
- It is now possible to generate a single page of a report. Closes enhancement 9011.
- Powerpoint could be left open after writing a powerpoint file. This would happen if the -exit command line argument was given after the -ppt argument. This has now been fixed. Additionally Powerpoint will now not be closed if there is an existing presentation open in Powerpoint. Fixes bug 8998.
- The extension orp was not automatically appended when exporting a page (if the filename has no extension). It is

now added if required. Additionally ps is added for postscript, pdf for Acrobat, htm for HTML (html on unix), bas for Visual basic macros, and ppt for Powerpoint. Fixes bug 8988.
- If a library page (e.g. checking page) was inserted into a template and the Oasys Ltd. filenaming scheme was used (file.thf instead of d3thdt etc.) the objects would not generate properly as they referred to d3thdt, d3hsp etc. This has now been fixed. Fixes bug 8954.
- Reporter is now more intelligent when pasting multiple copies of an item. Additionally the pasted item is now selected. Fixes bug 8861.
- On Solaris 10 it was possible what errors when generating T/HIS objects did not get logged properly. This meant that sometimes the user was not notified that an error occured. This has now been fixed. Fixes bug 8487.

Version 9.2.1 [Build 35] (26/7/2006)

- Switching between templates on HP unix machines caused Reporter to get stuck in a loop refreshing the screen until the mouse was moved out of the template. This has now been fixed
- Multiple spaces in arguments to external programs were simplified to a single space. This was incorrect and has now been fixed. Fixes bug 8857.
- Recapturing from T/HIS could fail if there were multiple models. This has now been fixed. Fixes bug 8842.
- When capturing from D3PLOT and T/HIS on Windows sometimes DEFAULT_DIR was not replaced in the filename. This occured if slashes (/ or \) did not match between the variable and filename. Now fixed. Additionally, now if DEFAULT_DIR does not match REPORTER will try to use other Directory variables to match. Fixes bugs 8314 and 8758.
- Compounded variables (i.e. variables that contained variables) did not expand correctly. Now fixed. Fixes bug 8669.
- Arguments to an external program which used variables that contained spaces would not be passed to the program correctly. Now fixed. Fixes bug 8666.
- Brackets (,),[,],{,} and slashes \,/ in arguments to an external program could cause Reporter to hang. Now fixed. Fixes bug 8665.
- Fixed bug that caused spurious pages to be created when a page was duplicated. Fixes bug 8716.

Version 9.2 [Build 34] (24/5/2006)

- Fixed bug that caused the current page number on a master page to be incorrect when printing. Fixes bug 8628.
- Fixed bug that caused corrupt pdf output if there were images on the master page. Fixes bug 8629.
- Fixed problems with missing output from running external programs
- Adding a new page while an object was selected would erroneously leave the selection handles drawn on the new page. Now fixed. Fixes bug 8530.
- Fix problem in javascript File class that caused errors in File destructor.
- Output from T/HIS and D3PLOT was not written to the logfile for Solaris 10. Now fixed.
- Errors and warnings from D3PLOT and T/HIS are now fed to REPORTER via stderr so they now correctly come through as errors and REPORTER is aware of them.
- The log window is now raised when it is mapped as previously it could get lost behind the main window.
- Hyperlink rectangle produced in pdf files for text objects with hyperlinks is now correct if the text object used variables. Fixes bug 8405.
- Objects that are not visible are now not selectable. Fixes bug 8404.

Version 9.2 Beta 4 [Build 33] (4/4/2006)

- Fix problem with centre justified text in HTML (it was not positioned correctly as the style was incorrect).
- Hyperlinks from objects other than tables containing variables now work correctly.
- Hyperlinks now open a report in presentation mode (this was broken in an earlier release).
- Output from program items with hyperlinks is now correctly written when writing a report.
- Cursor used when hovering over hyperlinks is now correct on Windows
- Replacing subsequent variables in table cell contents and hyperlinks would fail if the first variable in the text did not exist. This is now fixed.
- Fixed JavaScript compiling problems on SGI that caused crashes.

Version 9.2 Beta 3 [Build 30] (20/2/2006)

- Add unicode support for writing pdf files. Partially fixes enhancement 7799 (no ps support yet). Unicode characters can be used in text objects and table headers.
- Add ability for capturing from T/HIS to read a cvs file. As no jobfile is returned N/A is shown. Fixes bug 8151.
- D3Plot objects can now use multiple models and/or windows. When using capture new models can be opened. When you return to Reporter all of the models and windows are remembered. Fixes enhancement 7237.
- Object coordinates can now be specified by using 2 corners or by using a corner and width/height. This can be set by a preference. Fixes enhancement 7811.
- You can now search and replace strings in objects. Fixes enhancement 7820.
- Text items can now be vertically justified as well as horizontally. This should help line up output from text items and program items. Fixes enhancement 7812.
- D3PLOT and T/HIS are now passed the '-maximise' command line argument to ensure that they are full screen.

- The FAST-TCF and T/HIS tools are now combined into one tool as people found having two tools confusing. Fixes enhancement 7818.
- Reporter now has different cursors depending on which tool is used. Fixes enhancement 7817.
- Variables can now be given a type to help manage/distinguish them.
- File and directory variables can now be browsed for. Fixes dynatrack cases 7688 and 6857.
- You can now find and loop over all the warnings and errors written to the logfile.
- If an error occurs when generating Reporter now shows a dialog box to tell the use and gives the ability to show the error. Fixes bug 7771
- Added this changelog to the help menu in Reporter.
- Added ability to create, drag etc in presentation mode. Fixes dynatrack bug 7766.
- Added 'hand' tool to presentation view which allows you to follow hyperlinks etc.
- Added a 'write Report' option in the file menu to make saving as a report easier (previously you had to do SaveAs and change filetype). Fixes enhancement 7778.
- Reporter now remembers the directory from the last file you selected and uses that as the start directory for the next file selection. Fixes enhancement 7714.
- Added powerpoint size as a page size. Fixes enhancement 7709.
- Existing bitmaps are now deleted before generating advanced objects. This is to guard against picking up old data by mistake. Fixes enhancement 7772.
- Variables now have their own menu. Fixes enhancement 7819.
- Variables are now saved by default when generating. Fixes enhancement 7687.
- Now gives an error if a save did not work because a file or directory is write protected.
- Automatically replace job names with DEFAULT_DIR and DEFAULT_JOB when capturing. Can be turned off with a preference. Fixes enhancement 7657.
- A default size is now given to an object if the user doesn't drag when creating an object. This size can be set with an oa_pref option. Fixes enhancement 7696.
- CURRENT_PAGE variable now works correctly on a master page when writing pdf, vba and ppt. Fixes bug 7892
- Colour buttons now set correctly for WindowsXP style in Colour Dialog. Fixes bug 7647
- Added conditional formatting for textfile objects. Fixes bug 7606
- Shift and Ctrl keys now constrain lines, arrows, rectangles and ellipses when dragging. Fixes bug 7733
- version.js script bug fixed. Fixes bug 7695.
- The initial text properties are now set correctly for text file items. Fixes bugs 7647 and 7605.
- LSTC/OASYS Ltd. filenaming can now be set as a preference. Fixes bug 7692 and enhancement 7630
- Images are now embedded when saving as a report. Fixes bug 7660.
- Online manual now linked to Reporter from Help menu
- Reporter now prompts you to save a template before closing if any changes have been made
- Variables can now be used in condition values
- When the mouse enters the report you now get the keyboard focus
- -log= argument now works.
- bug fix 7774. Reporter now traps template files that don't exist on the command line and skips remaining arguments but does not skip -exit or -log= so it doesn't hang
- Change name to Reporter.
- Unicode support added for text object strings (no postscript or pdf support)
- The -generate command line option now always generates the report. Previously it only generated in design mode. This meant that if you opened a report you could not generate it (as it is opened in presentation mode)
- '\' characters in filenames etc are now converted to '/' characters on unix machines.
- Change logic for multiple models in T-HIS to that Presenter passes the directory of the first model as the -start_in argument.
- Added us-ncap.js library script to plot US-NCAP graph
- Added fontAngle and fontJustify properties to javascript Image class to give more control of text rendering

Version 9.2 [Build 21] (14/11/2005)

- Added maximise preference for Presenter
- Presenter now reads the start_in and vba_directory preferences
- Presenter now picks up variables from T-HIS correctly when there are multiple analyses
- In the variables dialog the whole row is now highlighted when you select a variable instead of just the first column.
- When adding a library program Presenter now checks to see if any compulsory arguments are missing.
- When a new file is created a new page is now automatically started.
- Added more error checking to data_file_from_variables.js script (bug fix 7635)
- Added LogPrint, LogWarning and LogError methods to global javascript object
- Added File->close option (was previously under Window->close but obviously people expect it to be under the file menu! (bug fix 7637)
- If you change drawing mode when in presentation mode you are now automatically taken back to design mode (bug fix 7636)
- If you right click on an object when in any drawing mode you will change to select mode, select the item and map the popup menu (bug fix 7634).
- Added ability to reorder pages (enhancement 7571)
- Variable values and descriptions are now escaped properly when saving so special characters can be used (&,<,> etc)

- When capturing a FAST-TCF script, if the job file is not empty it is read into T/HIS (previously it was only done if there was a script as well)
- When you edit a text item a crosshair is now shown at the point the text is justified to
- If you paste an item on the same page it is now offset from the original by the nudge distance so it is obvious to the user that a new item has been pasted. If you paste into a different page or template it will be placed in the original position
- Right clicking on the page when you do not have a selected item now gives you the option to paste an item at that location (if you have copied or cut an item previously)
- Table items can now be written directly to PowerPoint
- Table items can now be written to vba
- Add -ppt command line option to write powerpoint files
- Subroutines in visual basic macros written by Presenter are now automatically split if necessary to keep them below the 64k limit for VBA (previously there was one Subroutine per page)
- If a table with overflow pages is read from a report, the overflow pages are now correctly displayed. Previously you would have to regenerate or edit the table.
- Added support for multiple models for T-HIS and Fasttcf scripts
- PRESENTER_DEFAULT_DIR is now set to the user home directory instead of the temp directory when starting. Setting it to the temp directory caused lots of problems (e.g. the next time you start Presenter that directory probably won't exist!)
- New library script added to create D3Plot data files from csv file
- Bug fix. When dragging new items they were sometimes not drawn properly (Presenter thought that they were off the screen when they were not)
- Dragging a new item is now double buffered so you don't get flicker
- New library script added to create D3Plot data files from variables file
- Presenter now tries to preserve variables in FAST-TCF scripts when the user uses the capture feature to update the script.
- If user does not type extension when saving file '.opt' is now automatically added to the filename.
- Added Ctrl+V shortcut for Paste item
- Bug fix. When you save a template using SaveAs the template name is now updated after the save to the new name
- Bug fix. When a report was generated the template could lose the keyboard focus so PgUp, PgDown etc did not work properly.
- Bug fix. Presenter crashed when double clicking on page if in line, arrow mode etc
- Add ability to load and save fasttcf scripts from editing panel
- Added next page and previous page to Page menu
- Added window menu with window list, tile, cascade etc
- When a file is opened or a new file is created it now appears maximised instead of a window
- Fixed bugs in page setup dialog (not initialised properly for some page sizes and orientations)
- Fixed bugs when writing advanced item images to vba and ppt. They were not sized correctly
- Fixed bug that caused Presenter to crash on windows when paging up/down and selecting items
- Changed comments.js script so that newlines are added correctly.
- Revise and fix javascript destrructor and garbage collection problems
- Add javascript method Close to template object
- Add ability to include debug information in logfile from D3Plot and T/HIS
- Bug fix 7218. Printing advanced items positioned them incorrectly
- Add Star method to Image class
- Add ability to change linecap and linejoin styles in Image class
- Added Polygon, Polyline and Fill methods to Image class
- T/HIS is now called with display=X instead of display=batch so that FAST-TCF works correctly
- Bug fix 6841. When changing the visibility of items by using the checkboxes in the view menu the template did not update immediately. It now does.
- Bug fix 6948. Presenter could crash when inserting an image if it was close to the edge of the page. Now fixed.
- Bug fix 6950. If a keyword file/otf file did not have a title the scripts to return the title returned an empty string. Some people thought that the script was not working. If there is no title the scripts now return 'no title'
- Bug fix 6953. Scripts containing errors caused Presenter to crash on linux.
- Bug fix 6954. Insert Variable dialog box was being mapped with the 'Save variables' buttons from the File->variables dialog box. Now removed. Additionally, I have changed the dialog caption to something more sensible.
- Bug fix 6957. When duplicating a page image items did not get duplicated.
- Builds now automatically add the date compiled (which is shown in the help about dialog box)
- Bug fix. total_mass.js did not work. Now fixed.
- Add overflow pages for automatically generated tables which have too many rows to fit on one page (in the area allocated to the table) Currently works for drawing, printing, postscript, html and pdf
- Add direct PowerPoint output for windows version
- Write JavaScript API documentation
- Bug fix 6655. Scripts could run very slowly on Windows machines but very quickly on HP workstations. This was because the script i/o was written using the C++ standard library. It has been rewritten in C and is now significantly faster.
- The variable PRESENTER_DEFAULT_DIR is now initially set to the same value as PRESENTER_TEMP when creating a new template. This is so that if you capture from D3Plot or T/HIS the images you create are put in a sensible location until you change PRESENTER_DEFAULT_DIR to whatever value you want.

- FlexLM licensing has now been added to Presenter. The dll lmgr9a.dll must be given out and put in the same directory as the executable for windows.
- You can now change the script used in T/HIS when capturing. If you press 'Capture...' for a second time. T/HIS will replay the FAST-TCF script and you can then update as required an resave.
- Enhancement 6508. You can now edit the command file used in D3Plot when capturing. Additionally you can now change the settings that D3Plot creates. If you press 'Capture...' again D3Plot will now replay the settings and properties file and you can then update as required and resave.
- Bug fix 6688. Right clicking on an object when in presentation mode and anything other than select mode caused Presenter to crash. This has been fixed.
- Bug fix 6654. When capturing from D3Plot, if the image file was longer than 80 characters, Presenter would not correctly write the command file. This has now been fixed.
- Bug fix 6653. If a library javascript file was missing Presenter could crash. Presenter will now write an error to the logfile window
- Comment lines in oa_pref files are now correctly skipped
- Added this ChangeLog
- Initial internal releases of Reporter.

Version 9.0

Build	Date	Description
0 - 0.9		Initial internal releases of REPORTER
1.0	November 2003	First release

Text conventions used in this manual

Typefaces

Four different typfaces are used in this manual:

Manual Text	This typeface is used for text in this manual
`Computer type`	This one is used to show what the computer types.
`Operator type`	This is used to show what you must type
Button text	This is used for screen menu buttons and headings

1. Setting up and running REPORTER

1.1 Setting up REPORTER

1.1.1 Prerequisites

Oasys Ltd LS-DYNA Environment software

You should already have the standard Oasys Ltd LS-DYNA Environment software T/HIS (including FAST-TCF) and D3PLOT installed, and have flexlm licenses for the software.
The folders that the Oasys Ltd LS-DYNA Environment software is installed in must not have any special characters in folder names (e.g. &, !, ~, ’, "). Just use letters, numbers spaces and underscores for folder names.
e.g. the following example is invalid: C:\Program Files\Ove Arup & Partners\Oasys11
this is valid: C:\Program Files\Ove Arup\Oasys11

1.1.2 REPORTER installation - Win32

How to install REPORTER on windows.

Installing files

Double click on the Oasys Ltd LS-DYNA Environment setup file (.exe file) to run it. REPORTER should then install and be ready to run. The installation process should automatically associate .ort and .orr files with REPORTER so you can double click on them to read the files in REPORTER.For further details please see the instalation guide.

Flexlm and licensing

REPORTER uses Flexlm licensing. For REPORTER to run you must have a valid license for REPORTER or alternatively a license for D3PLOT, PRIMER or T/HIS.

Problems

If REPORTER does not run then check the following.
1. Do you have a license to run REPORTER? If not contact Oasys Ltd.
2. Do you have D3PLOT and T/HIS installed?
3. Do you have licenses for D3PLOT and T/HIS?

1.1.3 REPORTER installation - Linux

How to install REPORTER on Linux. This is only a brief guide

Installing files

Run the setup program that comes with Oasys Ltd LS-DYNA Environment11.0 . This will install REPORTER in the Oasys11directory. For further details please see the installation guide.

Flexlm and licensing

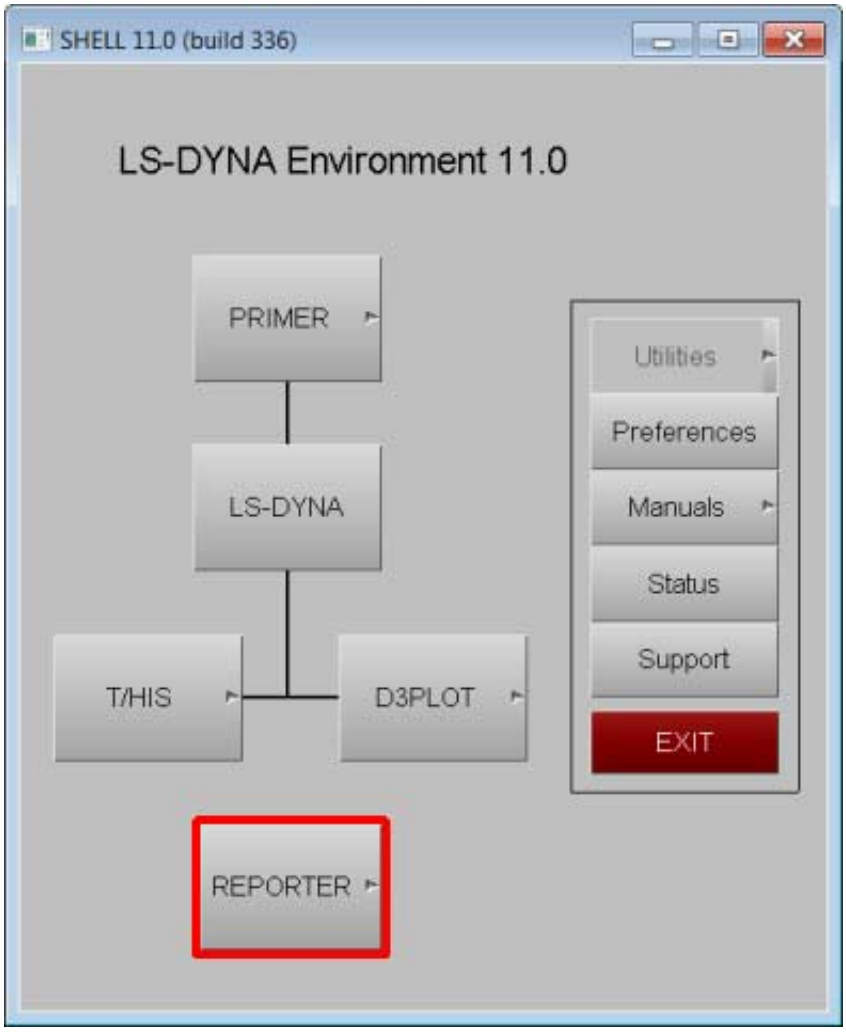
REPORTER uses Flexlm licensing. For REPORTER to run you must have a valid license for REPORTER or alternatively a license for D3PLOT, PRIMER or T/HIS.

Problems

If REPORTER does not run then check the following.
1. Do you have a license to run REPORTER? If not contact Oasys Ltd.
2. Do you have D3PLOT and T/HIS installed?
3. Do you have licenses for D3PLOT and T/HIS.

1.2 Running REPORTER

REPORTER is run by selecting the **REPORTER** button menu of the Oasys Ltd shell.



Alternatively, you can right click on the button to give starting options for REPORTER.

1.3. A 1 minute introduction to REPORTER

REPORTER is designed to help you post-process analyses automatically. The idea is that you create a template which contains the intructions or 'recipe' for how to process an analysis. When you run REPORTER on an analysis, it takes this template, applies it to the analysis and creates a report which you can save in HTML, pdf etc.

For example you may want to run a set of standard checks on an analysis after it has run to check that the analysis teminated normally, there was not too much added mass, the energy balance is OK etc. You would create a checking template in REPORTER and then this would be applied to each analysis you want to check.

A summary of the steps required to make a template is:
1. Start REPORTER. See Running REPORTER for more details.
2. Create a template. See Creating a new template for more details.
3. Create pages (and/or a master page) if required. See Inserting and editing pages for more details.
4. Add objects on to pages. These can be simple things such as lines, text etc or advanced things like D3PLOT or

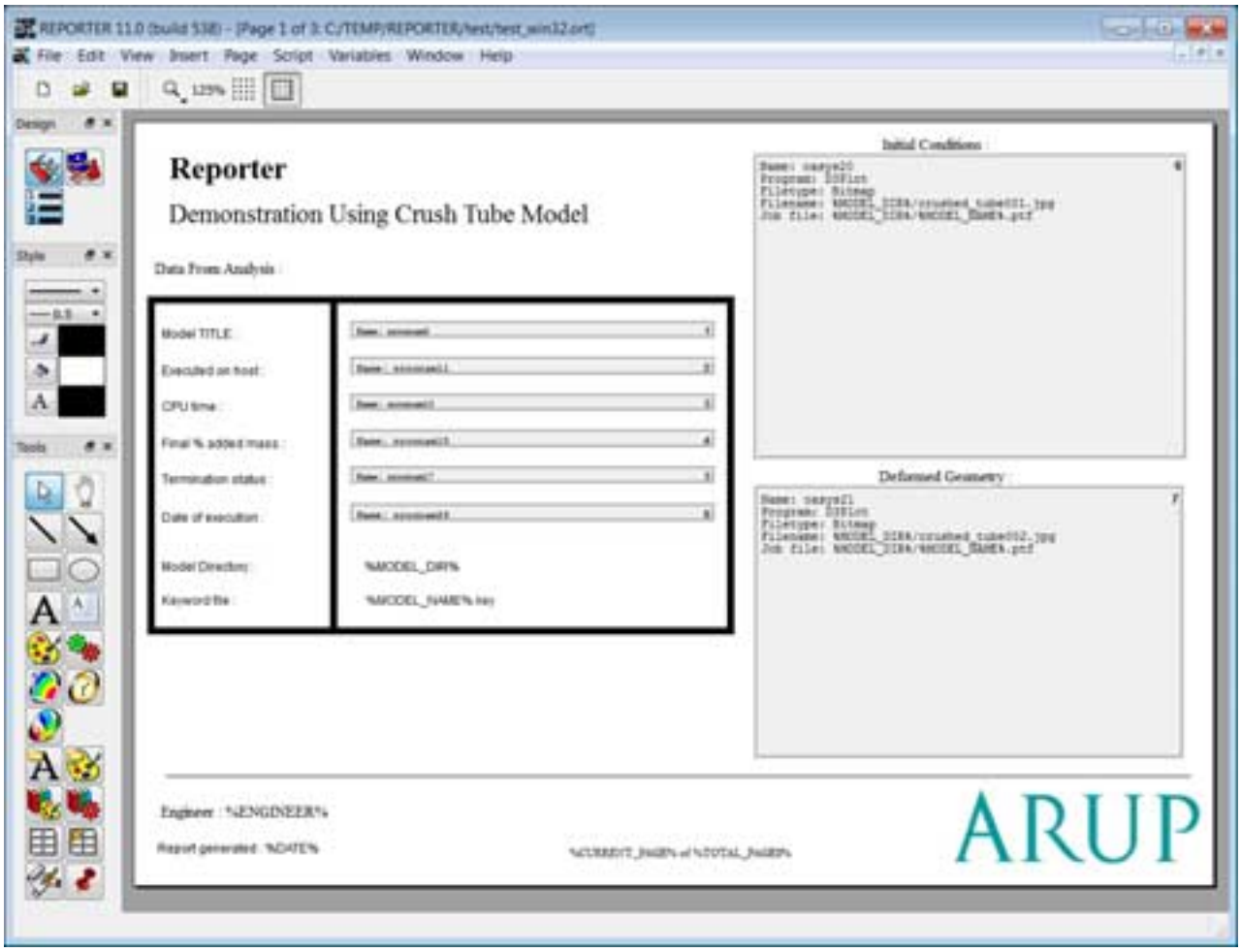
T/HIS objects. See Inserting and editing simple objects and Advanced objects for more details.
5. Use variables to make the template generic. See Working with Variables for more details.
6. Save the template. See Saving a template for more details.

Once you have created a template you can apply it to analyses as many times as you want.
1. Start REPORTER . See Running REPORTER for more details.
2. Open the template. See Opening a template for more details.
3. Set the current analysis variable(s). See User defined variables for more details.
4. Generate the report. See Generating reports for more details.
5. Create output such as report, HTML, pdf etc. See Outputting a generated report for more details.

2. Menu Layout

2.1 Basic menu layout

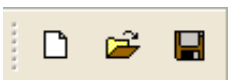
REPORTER runs with in a single window, owned by the window manager. A typical REPORTER session will look like this



Within this main window there are a number of sections

- "Menu Bar" Access to the main pull down menus.
- "File toolbar" toolbar for opening, saving, and creating report template.
- "View toolbar" toolbar for changing the view.
- "Design" toolbar to switch between the presentation and design view.
- "Style" toolbar to modify the line type, colour, etc of objects in the report.
- "Tools" toolbar for creating and editing shapes and advanced objects.
- "Main Report Area" Main working area.

File toolbar

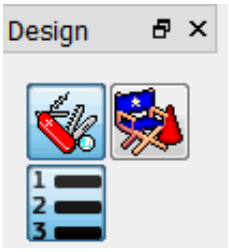


The file toolbar gives a quick way to create a new template, open a template or save a template. See chapter 3 for more details.

View toolbar

The view toolbar gives a quick way of zooming in and out of the template. This is the same as using the **Zoom** submenu from the **View** menu. There are also 2 buttons which control the grid and snap tools.

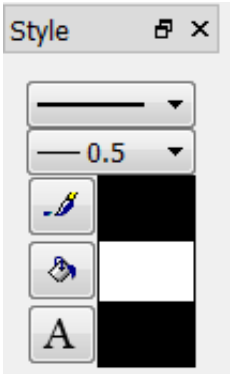
Design toolbar



The first two buttons on the design toolbar buttons allow you to swap between the "design" view (swiss army knife icon) and the "presentation" view (directors chair icon) . See chapter 7 for more details. By default the Design toolbar is docked on the left hand side. However you can drag it and make it a floating menu if you wish. The "p" keyboard shortcut can be used to toggle between "design" view and "presentation" view.

The third button (numbered list icon) allows you to turn on/off the generation order. See section 2.5.4 for more details.

Style toolbar



The style toolbar allows you to change the line width, line style, line colour, fill colour and text colour for shapes. See chapter 5 for more details. By default the Style toolbar is docked on the left hand side. However you can drag it and make it a floating menu if you wish.

Tools toolbar

The tools toolbar contains the various objects which you can place on the page. These may be simple objects such as lines, rectangles, text etc or more complicated objects such as a D3PLOT object or a library program. Hopefully the icons should be self explanatory but if you let the mouse hover over the button a brief text description will temporarily be shown over the button and a longer text description will be shown in the status bar. By default the Tools toolbar is docked on the left hand side. However you can drag it and make it a floating menu if you wish.

See chapters 5 and 6 for more details.

2.2 Mouse and keyboard usage for the screen-menu interface

Most screen-menu operations are driven with the left mouse button only, but there are exceptions:

- Text in the dialogue area and text boxes requires keyboard entry;
- Text strings saved in the cursor "cut" buffer may be "pasted" into dialogue areas and text boxes using the middle mouse button.

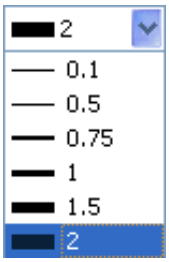
The primitive "widgets" in the menu interface are used as follows:

Buttons

Screen buttons are depressed by clicking on them. Some button remain set when they have been selected, these buttons will appear depressed.

Buttons may be set by REPORTER itself, for example the cursor arrow button on the right, to indicate that this option is in force. They may also be greyed out, to indicate that the option is not currently available (e.g. the hand button on the right).

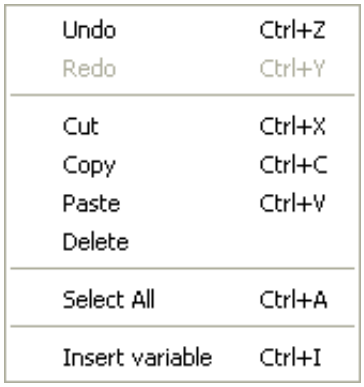
"Popup" window invocation: Some buttons when selected will invoke a "popup" window, from which a selection can be made. The popup is invoked by clicking on the triangle.



Text boxes

To enter text in a text box: first make it "live" by clicking on it then type in text into the screen that appears. You can use the left and right arrow keys for line editing within a box, text entry takes place after the current cursor position. The cursor is shown as a flashing vertical bar.

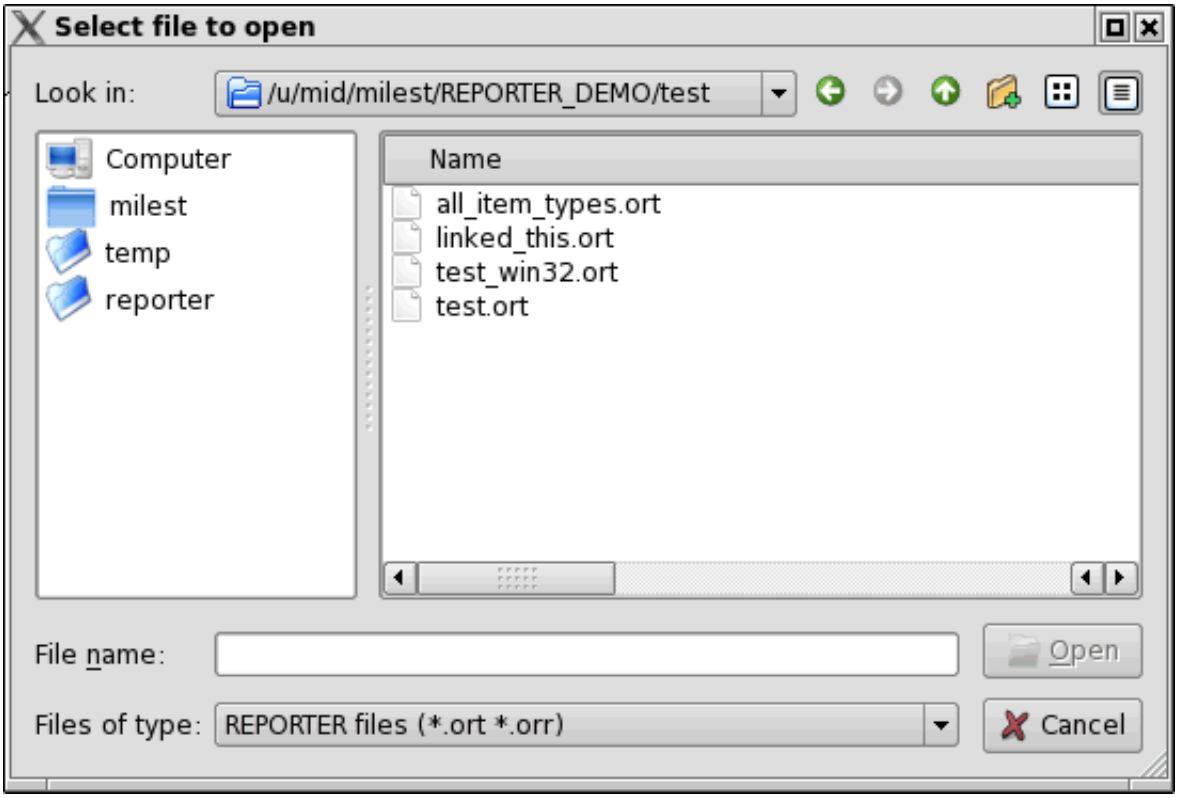
Right clicking the mouse button in a text box maps the menu on the right which allows you to copy and paste text from the clipboard and (where applicable) insert a variable (see chapter 8).



2.3 Using the "file filter" boxes.

Wherever REPORTER requires you to enter a filename you will be presented with a text box into which to type it. However, to the right of this text box you will also see a **?** button, which may be used to invoke a basic file filter box. The appearance of this is operating system dependent.

Basic UNIX file filter box



The files can be filtered according to file types by using the **File type** popup, in this case the pathname is **`/u/mid/milest/REPORTER_DEMO/test/`** and the pattern is `*.ort` (REPORTER template) and **`*.orr`** (REPORTER report).

The main window show a list of the directories within the present one and a list of files that match the filter selection. Files or directories can be selected by double-clicking on them.

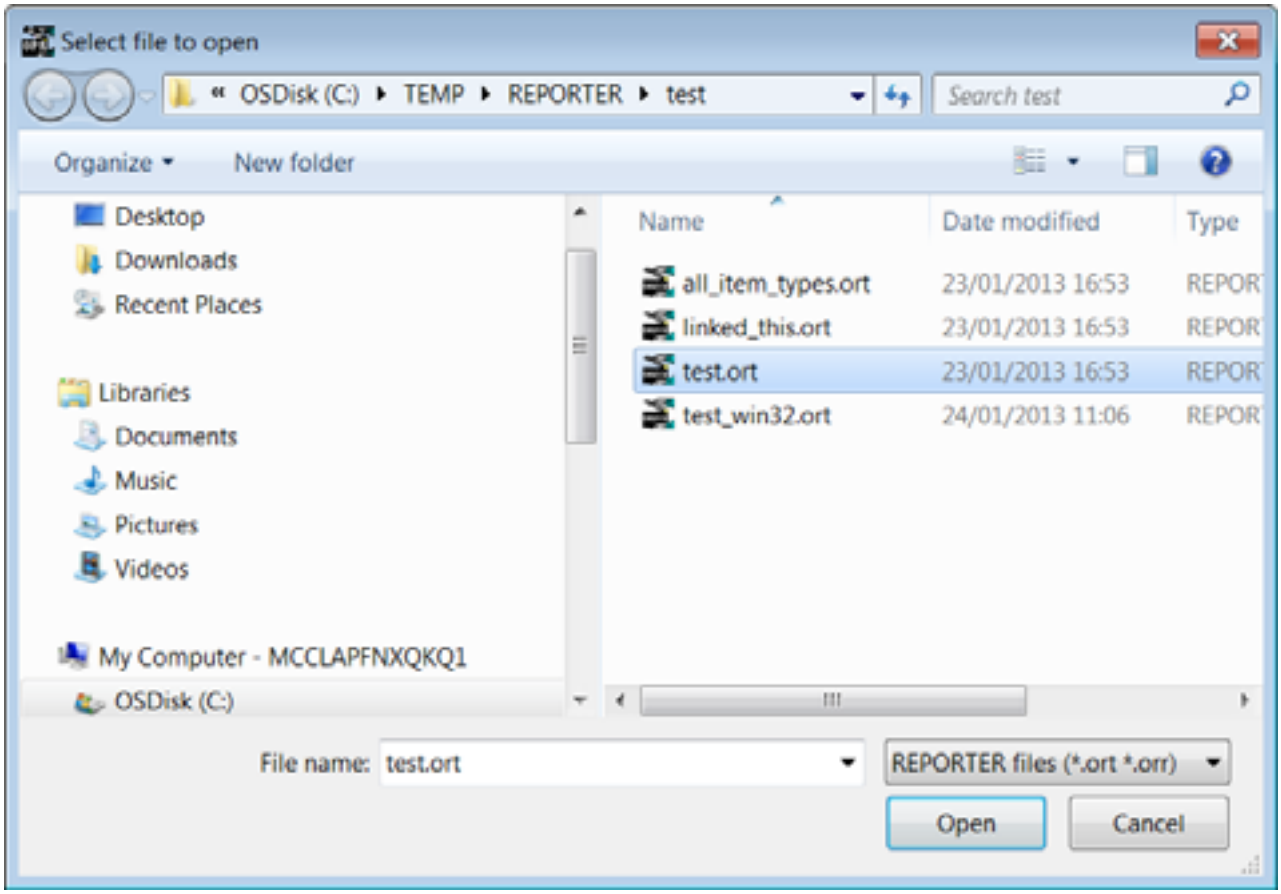
To go back up the directory tree you need to select the  button, or you can click on the **Look in** popup to select any of the parent directories.

The **File name** box shows the current selection.

The **Open** button closes the file filter box and opens the selected file

The **Cancel** button closes the file filter box without opening any files

Basic"Windows" file filter box



Double-click on the directory required, then on the filename you wish to open.

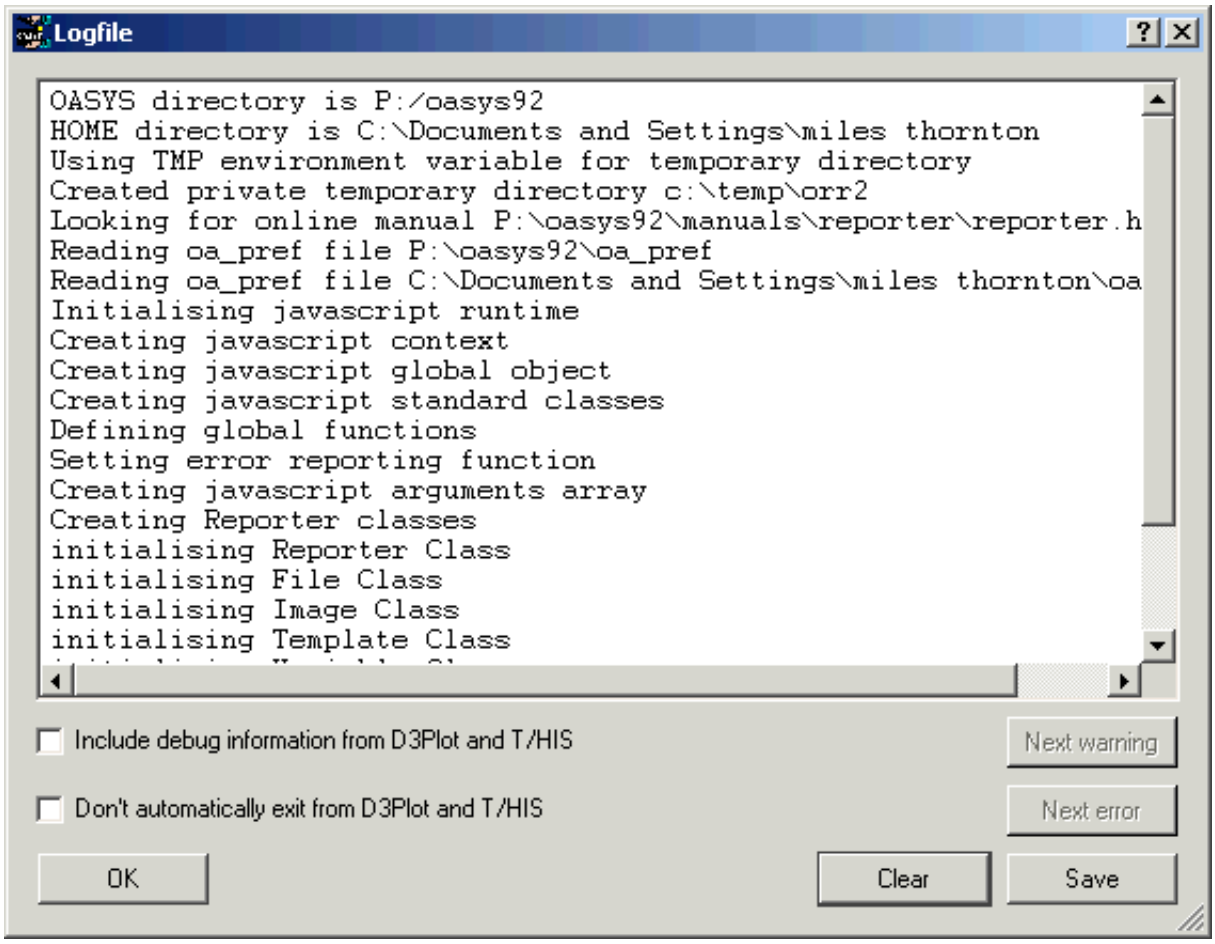
To open files that do not have the **`(*.orr)`** extension you will need to select **All files (*.*)** from the **Files of type** pull-down menu.

2.4 Log file

REPORTER creates a log file as it runs. This log file shows how REPORTER is trying to run programs, how it is creating images etc.

If any problems or warnings are generated they will be written to this log file. This can then be used to solve any problems.

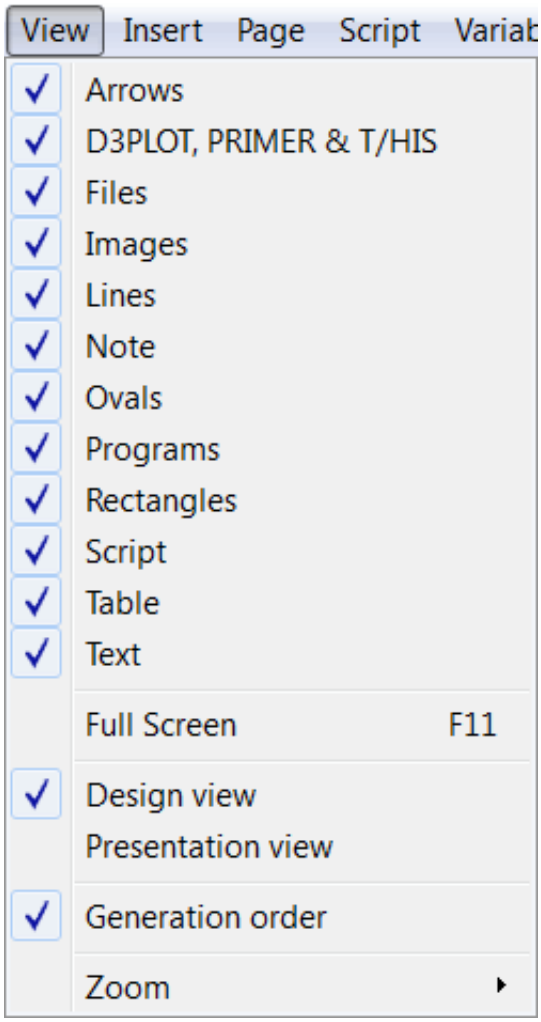
The logfile is accessible from **Logfile** in the **Help** menu. A typical log file window is shown below.



You can save the contents of the log to a file using the **Save** option. If warnings or errors have been given the **Next warning** and **Next error** buttons allow you to cycle through the warnings/errors.

2.5 View Controls

What is and isn't displayed on the screen and how far zoomed in or out the page is can be controlled from the **View** menu



2.5.1 Object display options

What of type of object are visible on screen can be controlled by selecting or deselecting the various buttons to the left of the relevant object in the **View** menu.

2.5.2 Full screen view

The **Full screen** option in the **View** menu will enlarge the "Main report area" of the REPORTER window to fill the whole of the screen. You can return to the normal REPORTER window by pressing the `ESC` key.

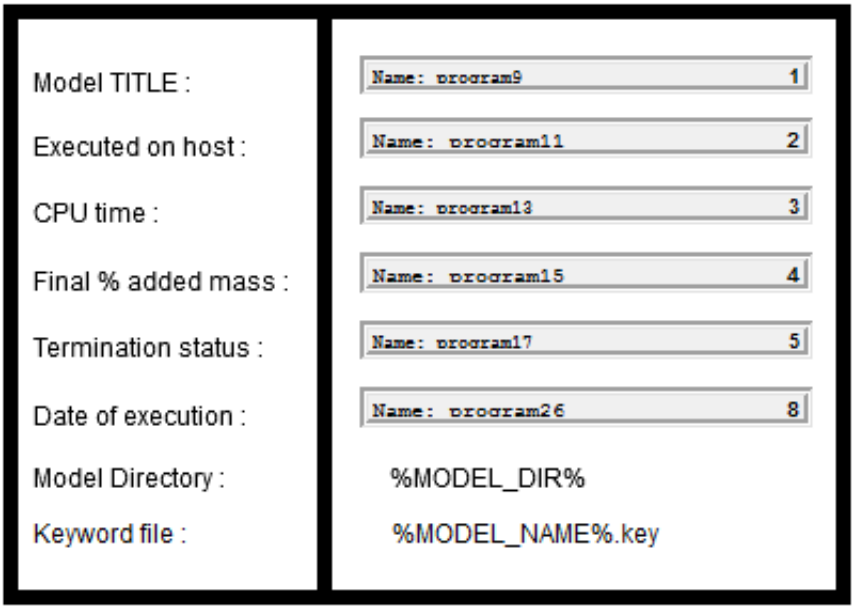
2.5.3 Design/Presentation view

The Design view and Presentation view checkboxes allow you to swap between design and presentation view. See chapter 7 for more details.

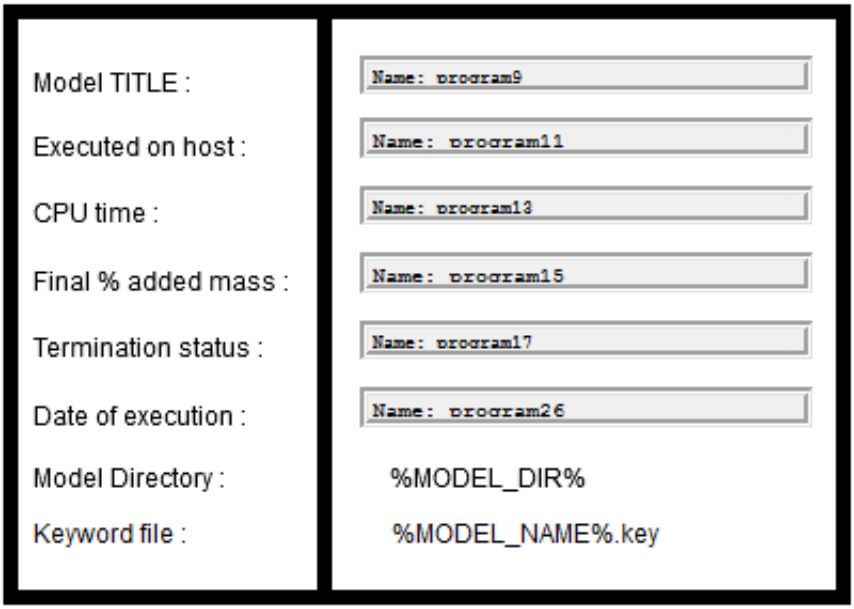
2.5.4 Generation order

The Generation order checkbox allows you to turn off whether the order that objects will be generated in is shown. The order is important if you are using variables to make sure that variables are not used before they are defined. To help with this REPORTER can show the order that the objects are generated in.

When the generation order button is turned on REPORTER shows a number next to each item that will be generated. The number is the order that the items will be generated on this page. In the image on the right you can see that the first 5 library programs in the table are generated one after another but the last one is generated later on (8th on the page). Showing the numbers helps to identify problems with objects being generated in the wrong order (e.g. perhaps the last library program should have been generated 6th on the page instead of 8th). See chapter 7 for more details on generation order.



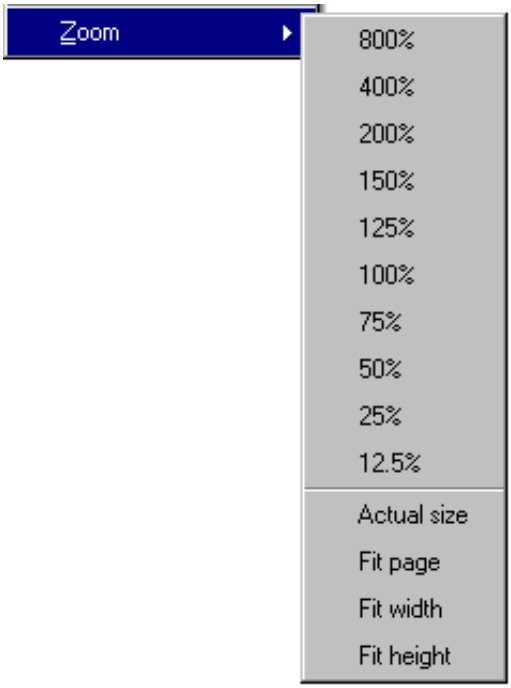
When the generation order button is turned off the numbers are not shown. The numbers are only shown in the design view. They are not shown in any output generated from REPORTER.



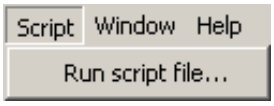
2.5.5 Zoom

Clicking on the **Zoom** option in the **View** menu will bring up the **Zoom** menu.

- **25% 150% etc** - will zoom in or out relative to the standardised size at 100%
- **fit page** - will scale the page so that it fits into the window
- **Actual size** - will resize the page to the actual size that the work is (100%)
- **fit width** - will scale the page so that the width of the page will fit the screen
- **fit height** - will scale the page so that the height of the page will fit the screen



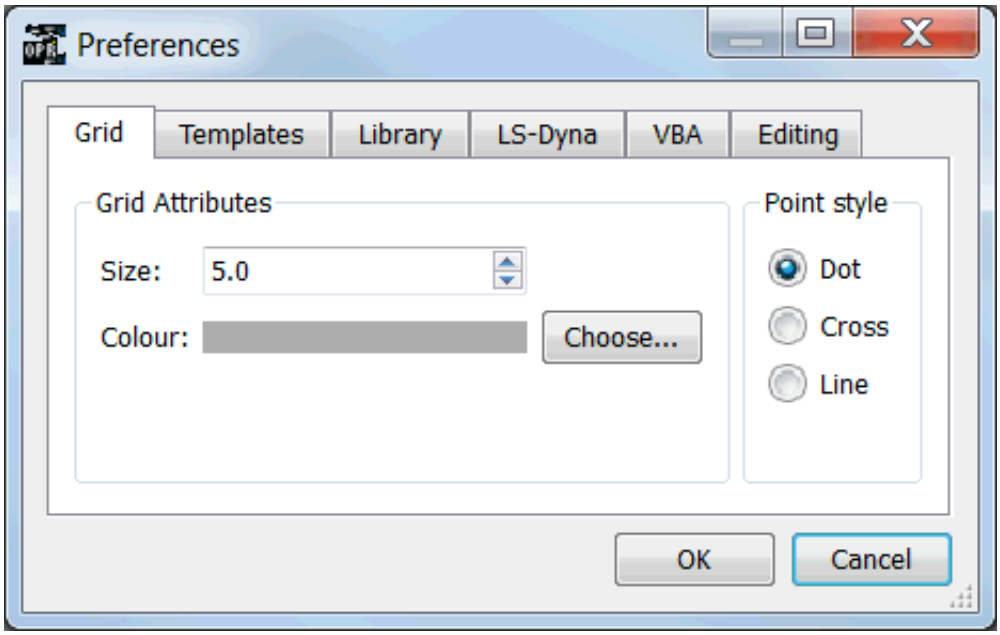
2.6 Running a script file



To run a javascript script in REPORTER use the **Script**->**Run script file...** function. This is equivalent to running a script from the command line or inserting a script object onto a page. For more details on scripting see the scripting chapter.

2.7 Preferences

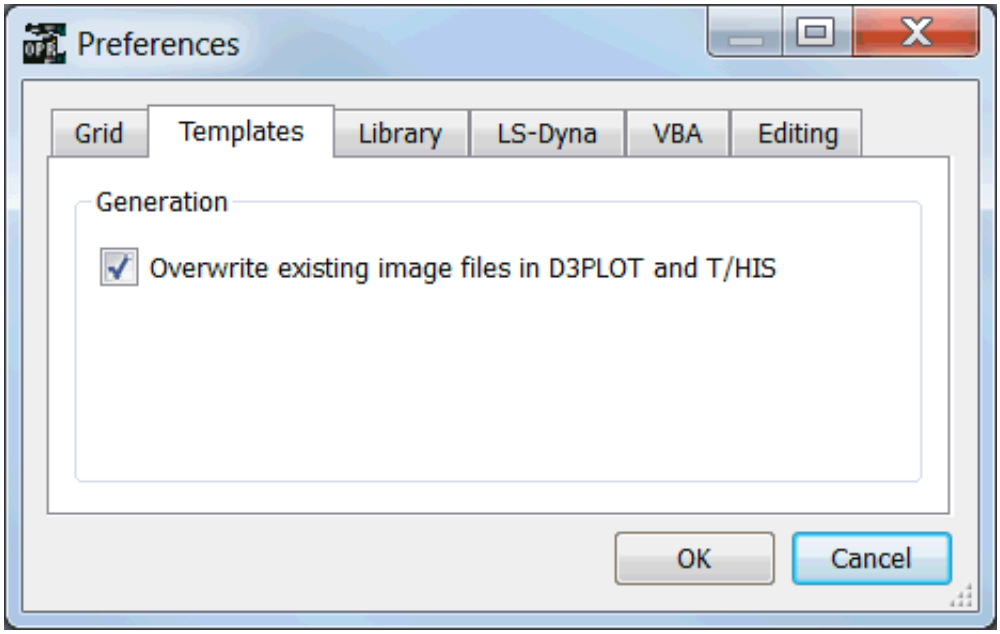
2.7.1 Preferences - Grid



The colour, style and size of the grid drawn on the page can be altered with these preferences. A grid can help you

layout objects on the page. Note that the grid size does not have to be the same as the snap size.

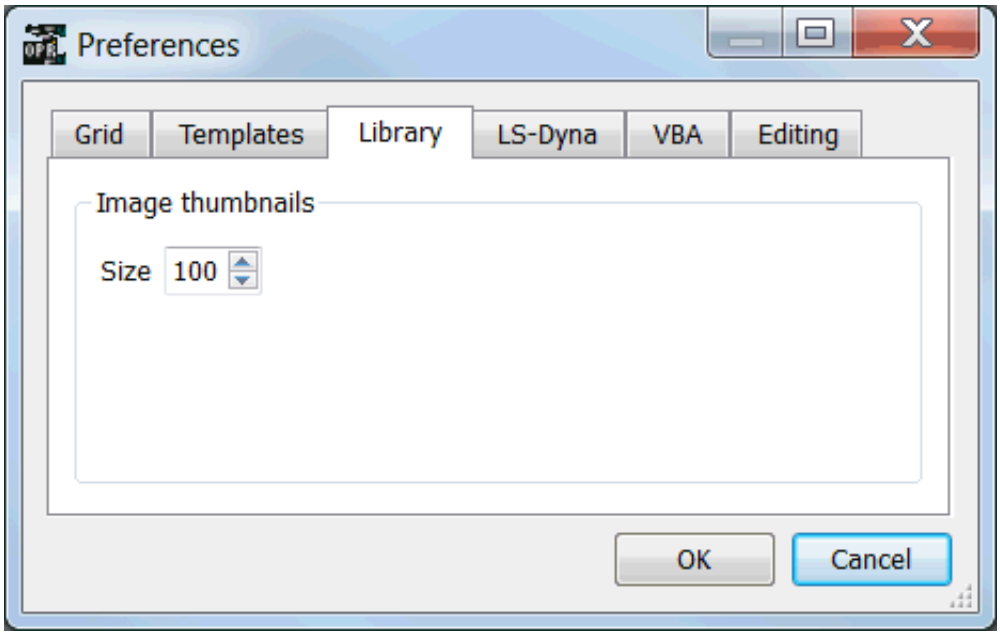
2.7.2 Preferences - Templates



When generating image files for D3PLOT and T/HIS this preference controls what do do if an image with the same name exists. By default (selected) REPORTER will overwrite the image. However, you many want to run the same template multiple times for different models in the same directory. With this unselected a new image will be created for each model.

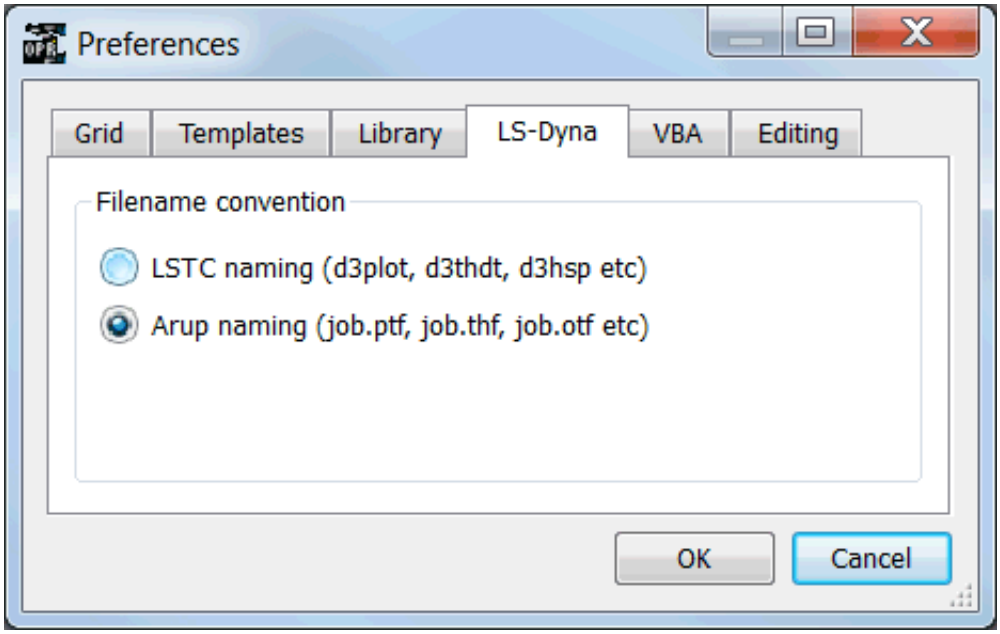
This preference is not a programme wide preference. It is actually stored with the template and read/written as a property so this must be set for each active template.

2.7.3 Preferences - Library



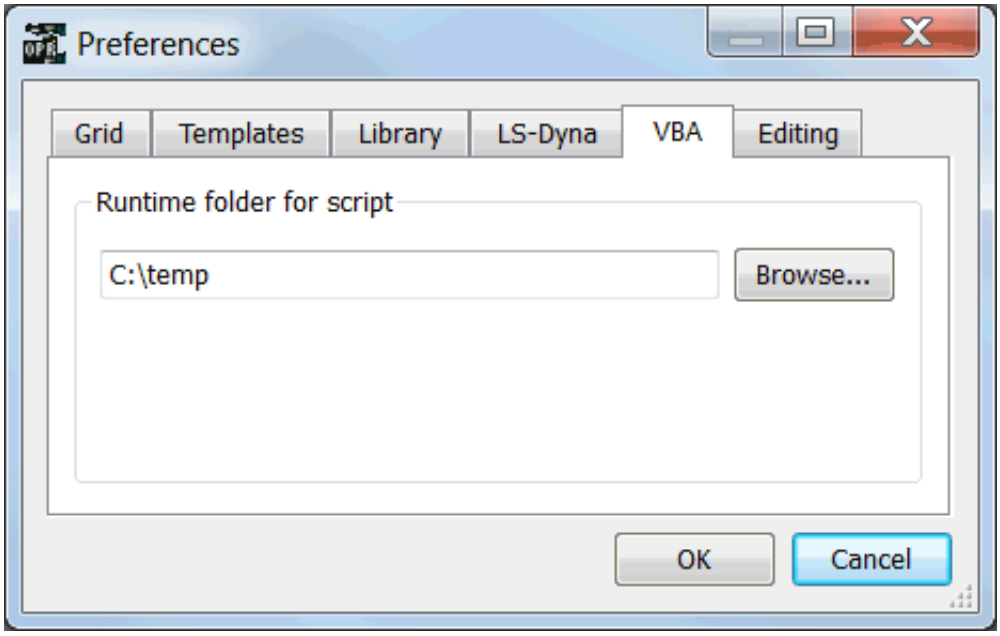
This preference controls the size of thumbnails that are drawn for library images.

2.7.4 Preferences - LS-DYNA



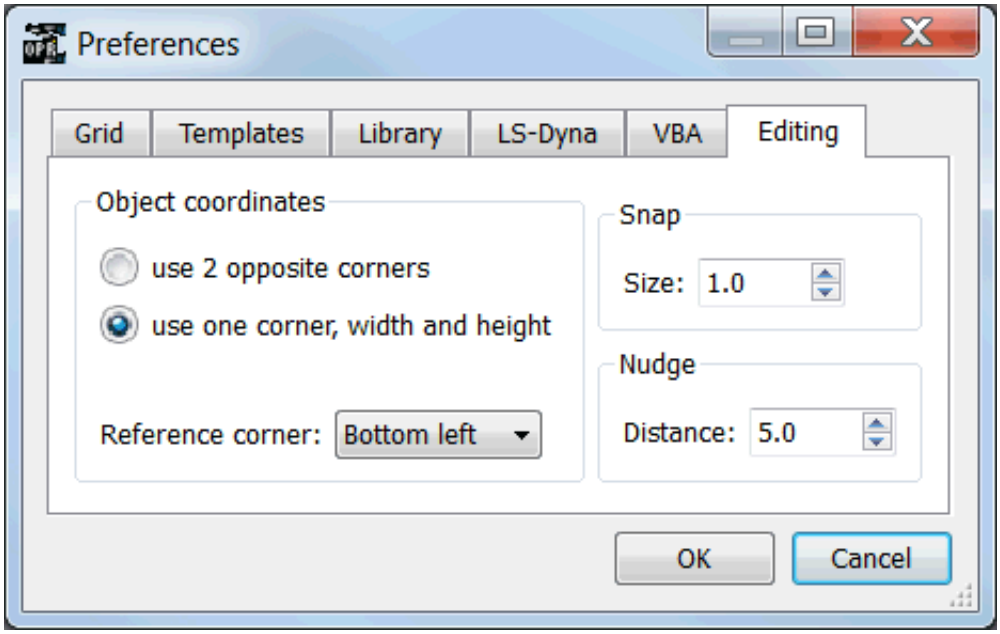
The filename convention preference determines how LS-DYNA filenames are referred to by REPORTER in library scripts etc. If you are using the Oasys Ltd SHELL then you should use Arup naming.

2.7.5 Preferences - VBA



When you write a VBA script from REPORTER you must give the directory that the script will be run from. This is because any images that are referred to must be included by an absolute filename so REPORTER needs to know where the images will be placed. This preference allows you to change the location.

2.7.6 Preferences - Editing



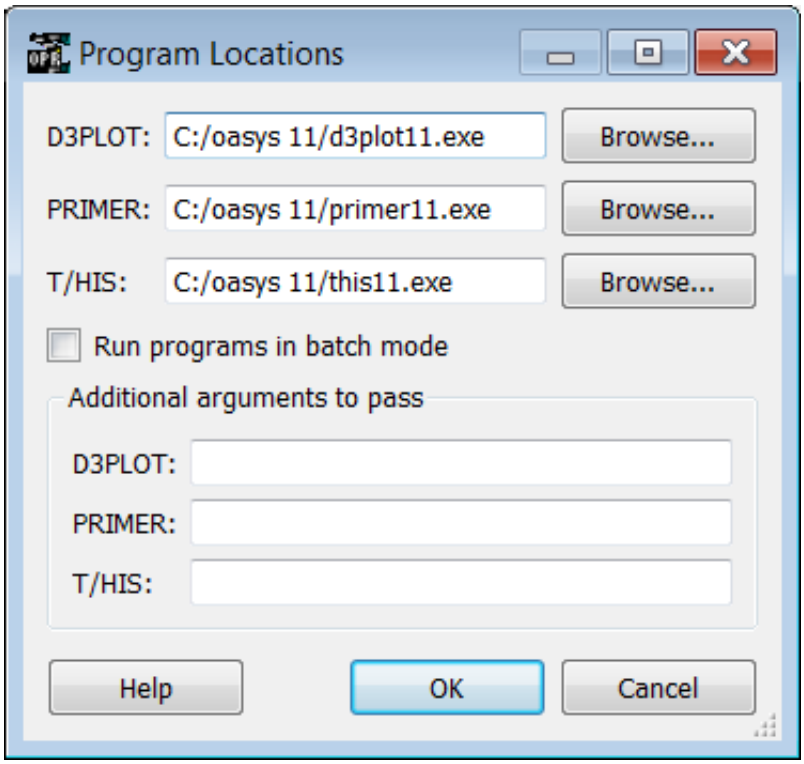
When creating or editing objects in REPORTER that occupy a rectangular area on the page the position and size of the object can be given by 2 different methods.

1. By giving the coordinates of 2 opposite corners of the rectangle.
2. By giving the coordinates of one corner and the width and height of the object. The default is to use the bottom left corner.

Snap will make object coordinates round to the snap size. e.g. in the image on the right snap is set to 1.0mm, so item coordinates will be rounded to the nearest mm. This can help layout objects on the page.

The nudge distance is the amount that a selected item will be moved when the arrow keys are used. Note that if you have snap active this may give unexpected results. For example if you have snap set to 1mm and nudge set to 0.5mm every time you nudge an item REPORTER will round the coordinates to the nearest mm (as snap is 1mm). If you want to move objects by less than the snap distance then turn snap off.

2.8 Program Locations (D3PLOT, PRIMER and T/HIS)



This option can be selected from the **File** menu. It is used to define the location of the D3PLOT, PRIMER and T/HIS software. This option is useful if you want to use the 64bit executables instead of the 32bit executables for D3PLOT, PRIMER and/or T/HIS. If you want to set this option permanently then you can use the oa_pref options:

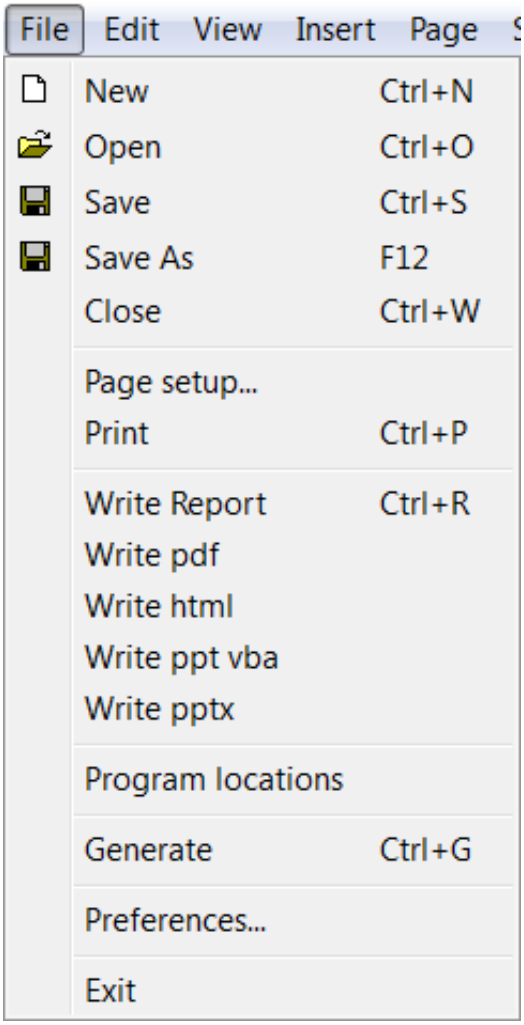
```
reporter*d3plot
reporter*primer
reporter*this
```

If REPORTER is started in batch mode with the `-batch` command line argument then on Windows D3PLOT, PRIMER and T/HIS will be run without any windows being shown. Setting the **Run programs in batch mode** checkbox will set this option when running REPORTER interactively.

It may occasionally be necessary to pass extra arguments to D3PLOT, PRIMER or T/HIS when generating a report. Extra arguments to pass can be given in the D3PLOT, PRIMER and T/HIS **Additional arguments to pass** textboxes.

3. Opening and closing templates and reports

Templates can be created, opened, or saved by either using the **File** menu or the **File Buttons**



3.1 Creating a new template

A new template can be created from either the **New file** option in the **File** menu or by using the **New file** button.

3.2 Reading an existing template or report

An existing report template can be opened from either the **Open file** option in the **File** menu or by using the **open file** button.

3.3 Saving a template

A template can be saved by choosing the **Save as** option in the **File** menu and then changing the file type to **template**.

3.4 Saving a report

A report can be saved by using the **Save as** option in the **File** menu and setting the file type to **report**. The difference between a report and a template is that a template is the instructions or recipe of how to construct the report. To actually create the report you have to generate it and then create some sort of output. This could mean running D3PLOT command files, programs, FAST-TCF scripts etc.

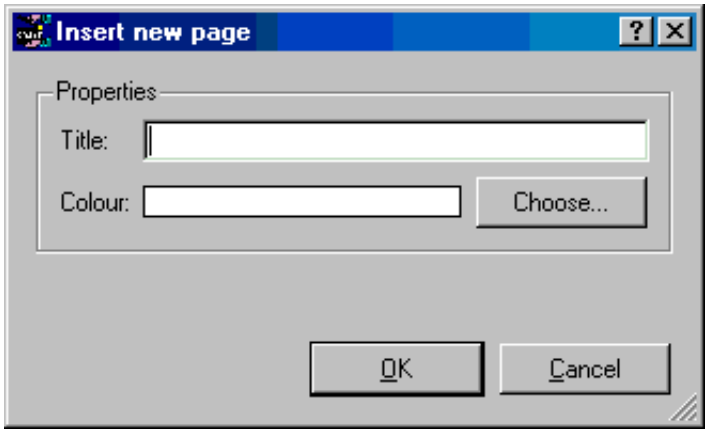
Alternatively, once the report has been created you can save the whole thing as a report. This saves the output of programs, command files etc. with the template so when you next read the file the results are already available (the report does not need to be regenerated).

4. Inserting and editing pages

A report is generally made up of a number of different pages. Only one page is shown on the screen at any one time. Moving through the pages of the report, adding, deleting, and reordering pages are all controlled form the **Page** menu.

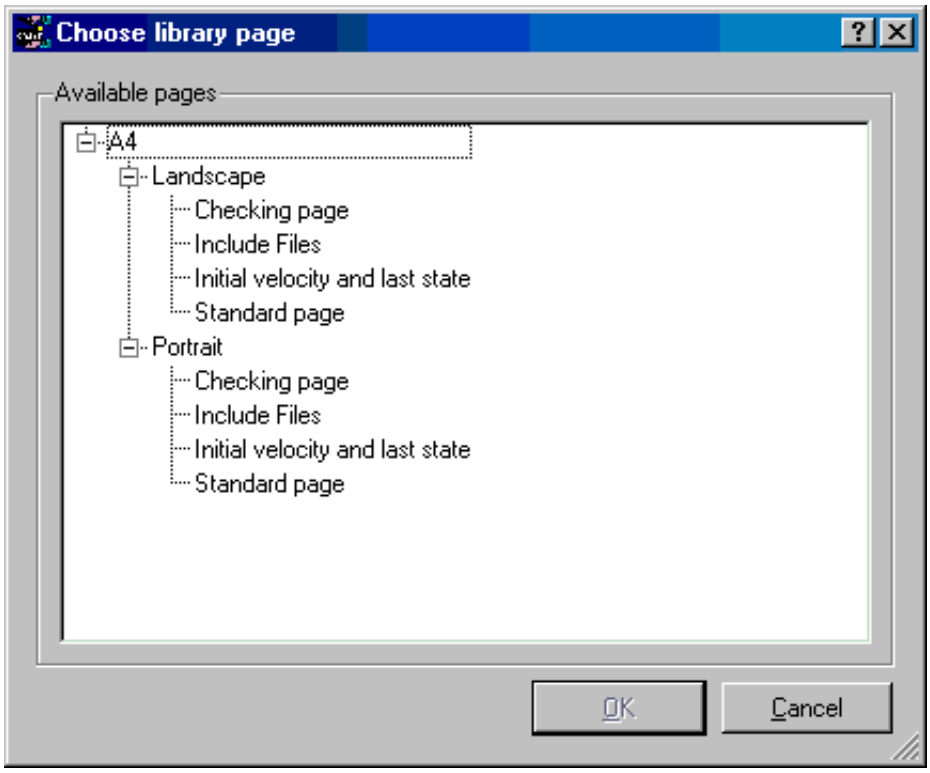
4.1 Adding a new page

A new page can be added by using the **New page** option in the **Page** menu. This will bring up a **Page layout** window from which you can give the new page a title,and set the background colour.



4.2 Adding a new page from the library

A new page can also be added by selecting an existing page layout from the library by using the **Insert from library** option in the **Page** menu. This will bring up a **Insert page from library** window from which you can select a page layout.



Highlight the page layout you want by clicking on it with the mouse and then clicking on then **OK** button to create the new page. The **Cancel** button will exit you from this window with out creating a new page. (See the library object appendix for more details on using the library).

4.3 Deleting pages

You can delete the present page you are working on by using the **Delete page** option in the **Page** menu, or you can delete all the pages in the report template by using the **Delete all** option in the **Page** menu. Both of these option will bring up a confirmation window in which you need to confirm the delete operation.

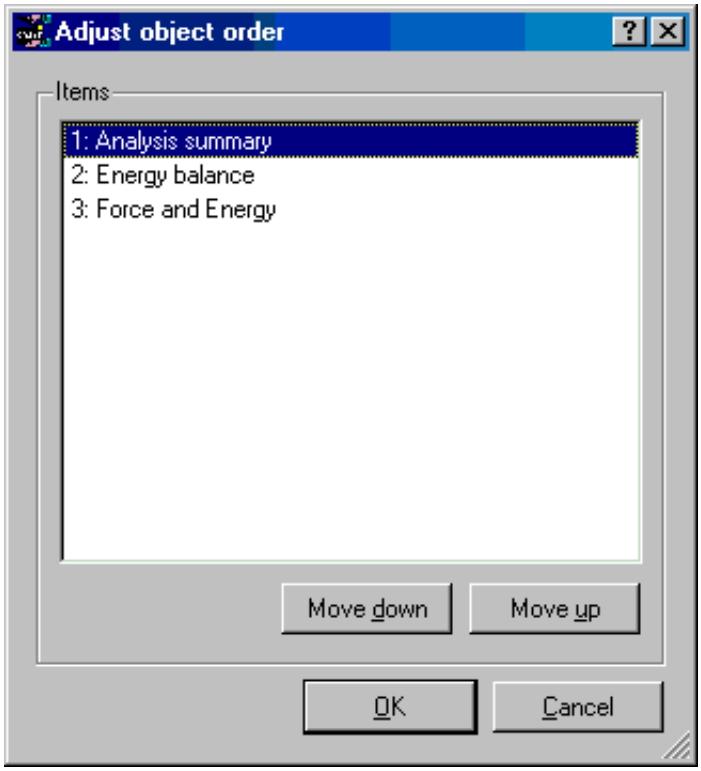
4.4 Duplicating pages

You can copy the current page by using the **Duplicate page** option in the **Page** menu. This will make a copy of the current page, and insert it after that page. The current page will also be changed to this newly created page.

4.5 Reordering pages

You can change the order of the pages in the report by using the **Reorder pages** option in the **Page** menu. This will bring up the reordering window.

The pages are listed by the page number and title. The page order can be modified by clicking on the page you want to move in the **Pages** box. This will highlight that page, which can then be moved by using the **Move up** and **Move down** buttons. Once finished the **OK** button will save the new order and exit the window. The **Cancel** button allow you to exit this window without making any changes to the page order.

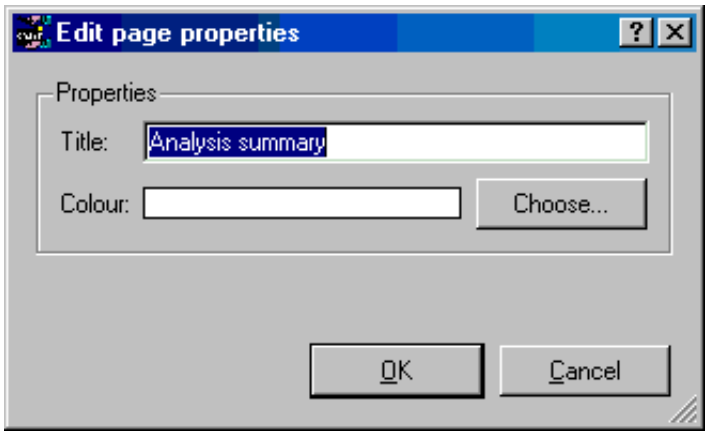


4.6 Changing the current page

You can change the current page you are working on by using the **Prev page** and **Next page** option in the **Page** menu to change the current working page to the previous or next page in the report. You can also move through the pages by using the `Page Up` and `Page Down` keys. If you have a mouse which has a wheel then the wheel can also be used to move through the pages.

4.7 Changing the page properties

You can change the title of the current page by using the **Properties** option in the **Page** menu. This will bring up an edit page properties window. The new page title is entered into the **Title** text box and the colour can be chaged by clicking on the **Choose** button. Clicking on the **OK** button will save the changes and exit this window. The **Cancel** button will exit this window with out making any changes to the page title



4.8 Inserting pages from file

You can insert all the pages from another template file into the current template by using the **Insert** option on the **Page** menu, and then selecting the required template file from the **File** window.

4.9 Importing and exporting pages

Individual pages can be exported from a template using the **Export page** option. These pages can then be used in the page library or can be imported into another template by using **Import page**. Individual pages should be saved with the extension `.orp` so REPORTER can find them.

4.10 Page masters

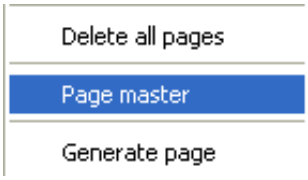
Page masters can be used to automatically add objects to every page in the report. For example you may want to have your project name written on the bottom right corner of every page in the report. You could do this by having a standard page and either use the page library or import it each time you want to create a new page. This will work, however if in the future you want to edit the project name, you would need to edit each page individually.
An alternative is to use page masters. A master page can be created and any objects that you put on that page will automatically appear on every page in the template.

4.10.1 Creating a page master

To create a new page master use **Page** ... **Page master**.

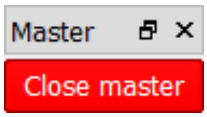
In this version of REPORTER only one page master can be created per REPORTER template.

A page master is a type of template used to keep each page looking the same (eg such as using a company logo)



The normal page creation window can then be used to create the page. A normal blank page is created on which you can place objects as required. An extra toolbar called **Master** appears (as seen below). By default this is docked at the bottom left below the Tools toolbar.

To close the master page and return to a normal page select **Close master** from the **Master** toolbar.

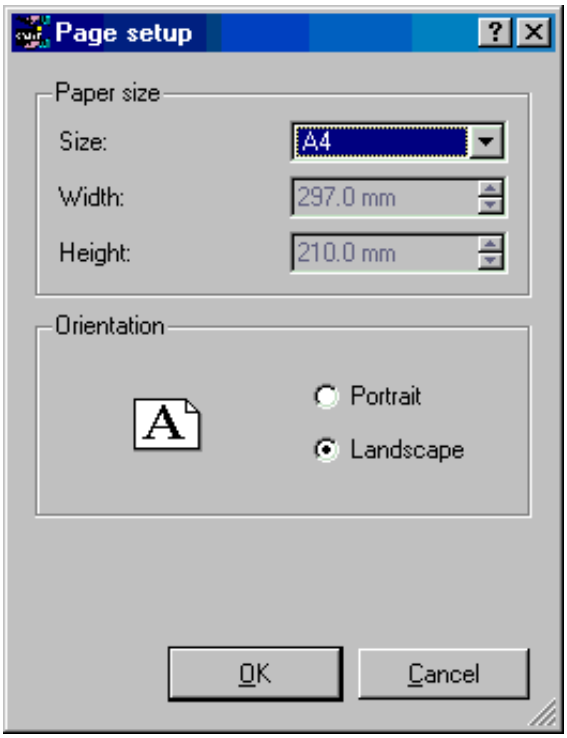


4.10.2 Changing a page master

To change the page master use **Page** ... **Page master** to get to the page master in use (only one page master per REPORTER template). Once you have finished editing the page you can close it and return to the normal pages.

4.11Page Setup

To set up the page settings choose the **Page setup** option from the **File** menu. This allows you to change the page size and orientation. If the page size and/or orienation is changed objects on existing pages are automatically moved to ensure that they are not outside the page boundaries.

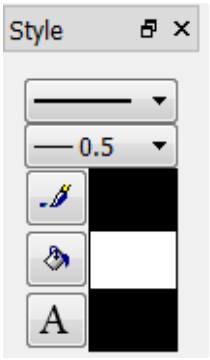


4.12 Generating a single page

Instead of generating the entire report you can generate a single page by using the **Generate page** option in the Page menu. However, note that if some of the objects on the page require data that would be generated on previous pages and those pages have not yet been generated the page generation will not work.

5. Inserting and editing simple objects

REPORTER allows you to create and edit a number of different shapes through the use of the various **Tools** and **Style** button options.



5.1 Using the Grid and Snap options

5.1.1 Grid

The grid option can be turned on by clicking on the **Grid** button. This will create a grid of dots on the screen with a pitch equal to the grid size, this is to help you in aligning objects in the report. These dots will not appear in the generated report. The size and attributes of the grid can be modified by using the **Grid** tab in the preferences.

5.1.2 Snap

The snap option can be turned on by clicking on the **Snap** button. This will create an invisible grid with a pitch equal to the snap grid size. When positioning and sizing object the point you select will not be the exact position of the mouse pointer but the nearest point on the snap grid.

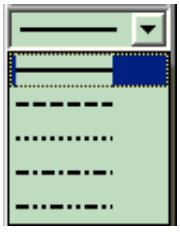
The size and attributes of the grid can be modified by using the **Editing** tab in the preferences.

5.2 Setting line style, thickness, colour, and fill colour

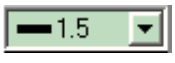
5.2.1 Line style

The line style can be set using the **Line style** button.

Clicking on this will bring up a **Line style** window from which the line style can be selected.

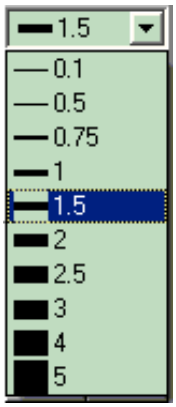


5.2.2 Line thickness

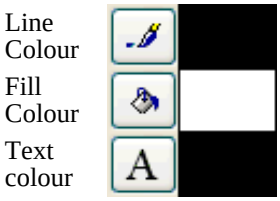


The line thickness can be set by either clicking on the **Line thickness** button or by entering the thickness into the text box next to the **Line thickness** button.

Clicking on the button will bring up a **Line thickness** window from which the line thickness can be selected.

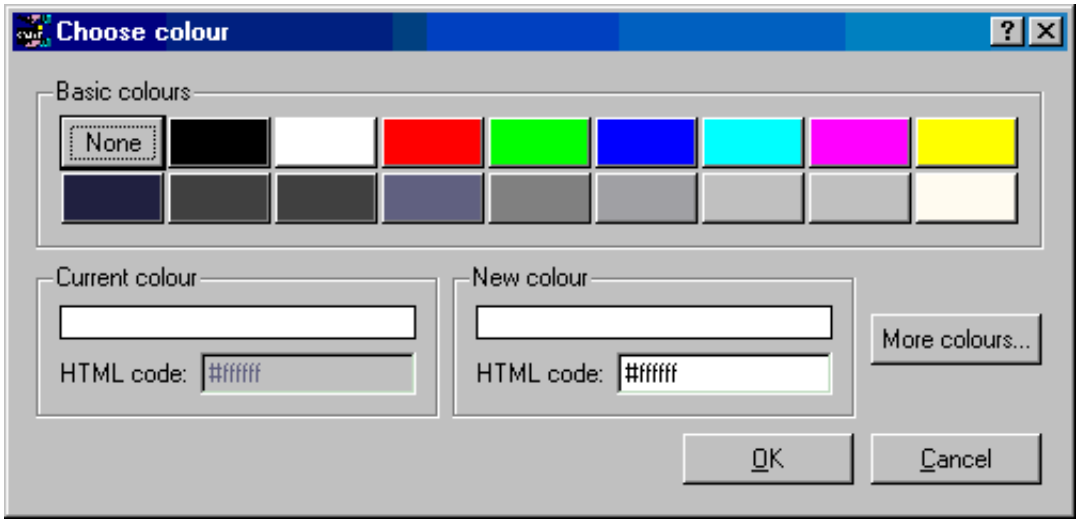


5.2.3 Fill, Line and Text Colour



The fill, line or text colour can be set using the **Fill colour** button the **Line colour** button or the **Text colour** button, the current colour is displayed to the right of the button:

Clicking on this will bring up the **Colour** window.
The new colour can be selected from those on display or by clicking on the **More colours** button a set of red, green, and blue sliders can be brought up which you can use to create you own new colour. For the Fill colour you can also select **no colour** which will give you a transparent Fill colour allowing object below to show through. The **Done** button will exit this window setting the fill or line colour to the new colour. The **Cancel** button will exit you without changing the colour.



5.3 Inserting basic shapes

5.3.1 Lines and arrows

You can create a line or arrow by using the **Line** and **Arrow** tools.

To create a line click and drag the mouse from the point you want the line to start from to the point you want the line to end at. It is the same procedure for creating an arrow with the arrow head appearing at the end point of the line. The line type, thickness, and colour will be set to the current settings.

5.3.2 Rectangles

You can create a box by using the **Rectangle** tool.
To create a box click and drag the mouse from one corner of the box to the other. If the `shift` key is held down while doing this a perfect square can be created.
If the `Ctrl` key is held down then the initial click position will be the centre of the rectangle instead of one corner. The

line type, line thickness, line colour, and shape fill colour will be set to the current settings.

5.3.3 Ellipses and circles

You can create a oval or circle by using the **Ellipse** tool.

To create an ellipse click and drag the mouse from one corner to the other of a rectangle into which the ellipse will be drawn. If the `shift` key is held down while doing this a perfect circle can be created. If the `Ctrl` key is held down then the initial click position will be the centre of the ellipse instead of one corner. The line type, line thickness, line colour, and shape fill colour will be set to the current settings.

5.3.4 Text

A single line of text can be added by using the **Text** tool.

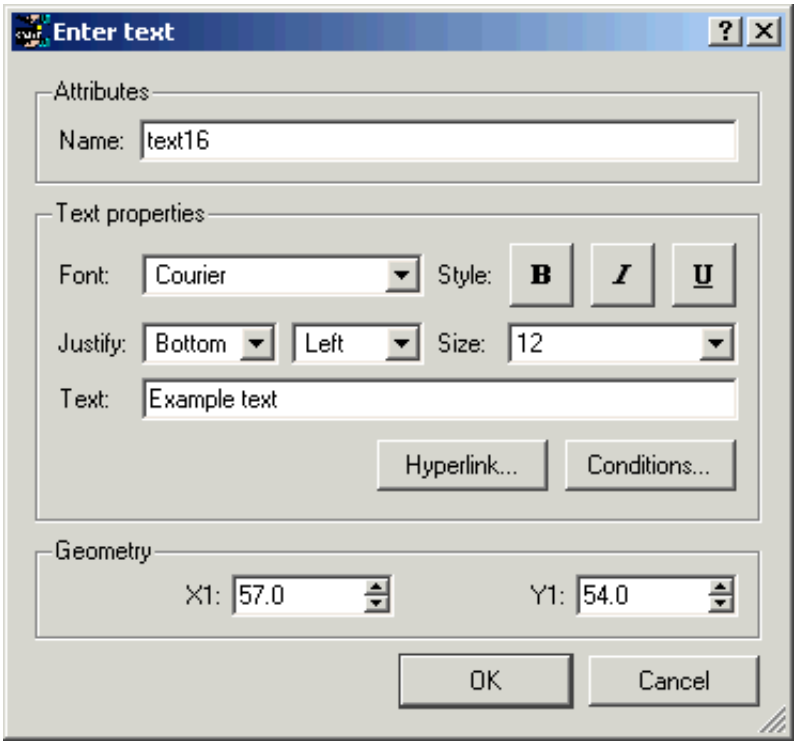
To add text click on the point you want the text to be, this will bring up a **Text** window.

Text can be added using the **Enter text** box. You can also enter variables in the text by right clicking in the text box or pressing **Ctrl+I** which will allow you to bring up an **Insert variables** window from which to select a variable.

The font, style, and size are set in the relevant boxes.

The horizontal and vertical justification of the text can be set independently to enable you to position the text how you want. Changing the vertical alignment can help when trying to align text with program items.

The text colour will be set to the current text colour setting. The **OK** button will exit this window and create the text. The **Cancel** button will exit this window without creating any new text. Also a **Hyperlink...** button (see section 9) allows the user to set the text up as hyperlink and the **Conditions...** button (see section 10) enables the user to apply conditional formatting to the text.



5.3.5 Textbox

Text inside a box (with multiple lines if necessary) can be added by using the **Textbox** tool.

To add a textbox click and drag the mouse from one corner of the textbox you want to create to the other. This will bring up a **Textbox** window.

Text can be added using the **Text** box. You can also enter variables in the text by right clicking in the text box or pressing **Ctrl+I** which will allow you to bring up an **Insert variables** window from which to select a variable.

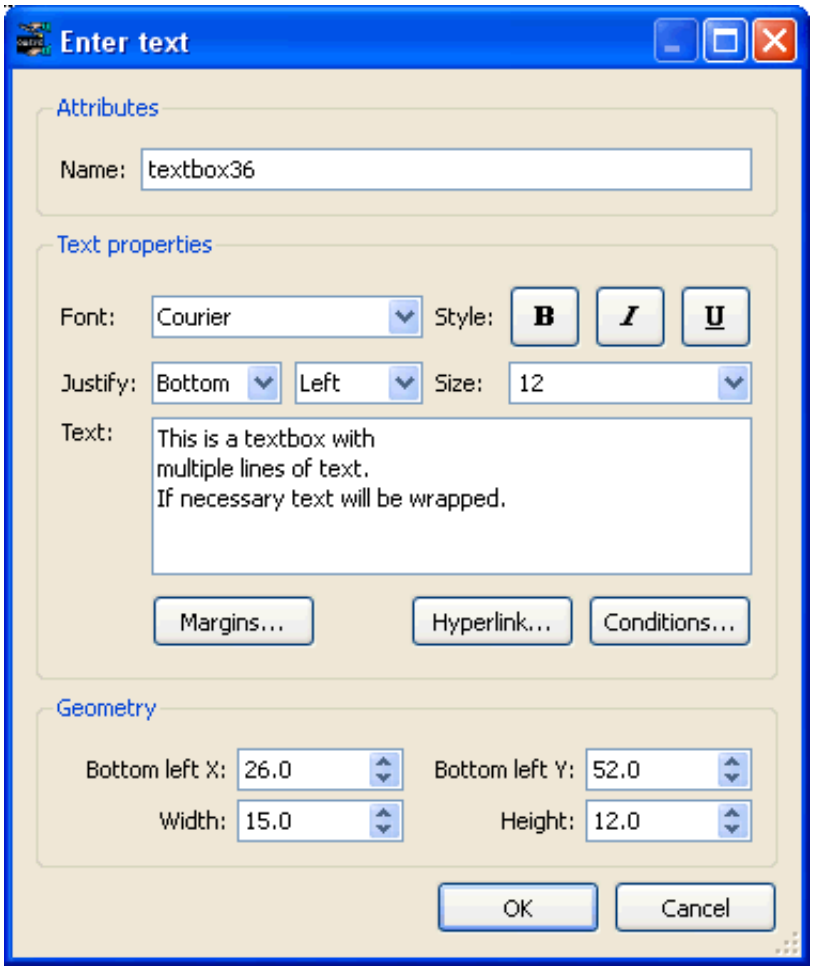
The font, style, and size are set in the relevant boxes.

The horizontal and vertical justification of the text can be set independently to enable you to position the text how you want.

The text colour will be set to the current line colour setting. The **OK** button will exit this window and create the text. The **Cancel** button will exit this window without creating any new text. Also a **Hyperlink...** button (see section 9) allows the user to set the text up as hyperlink and the **Conditions...** button (see section 10) enables the user to apply conditional formatting to the text.

The background and border colour for the textbox can be set using the fill and line colour buttons in the style toolbar. The border style can also be set with the line style and line thickness buttons in the sytle toolbar.

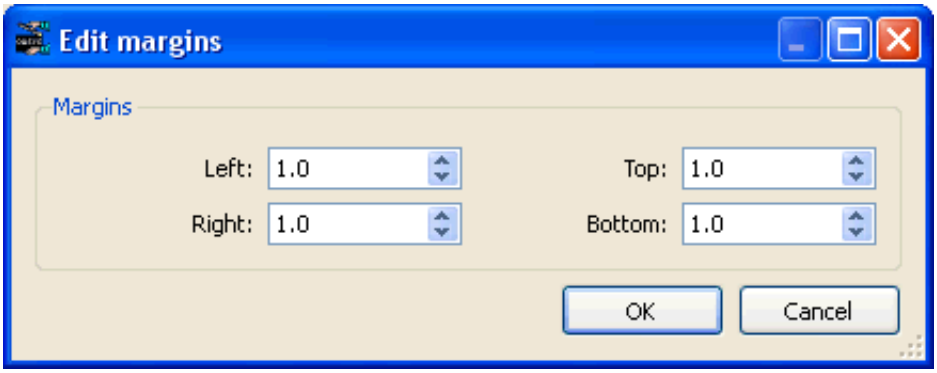
The margins for the textbox can be changed by using the **Margins...** button.



Margins

The Edit margins dialogue box allows you to change the margins around the text in a textbox.

The margins can be set independantly for the top, bottom, left and right sides of the textbox.

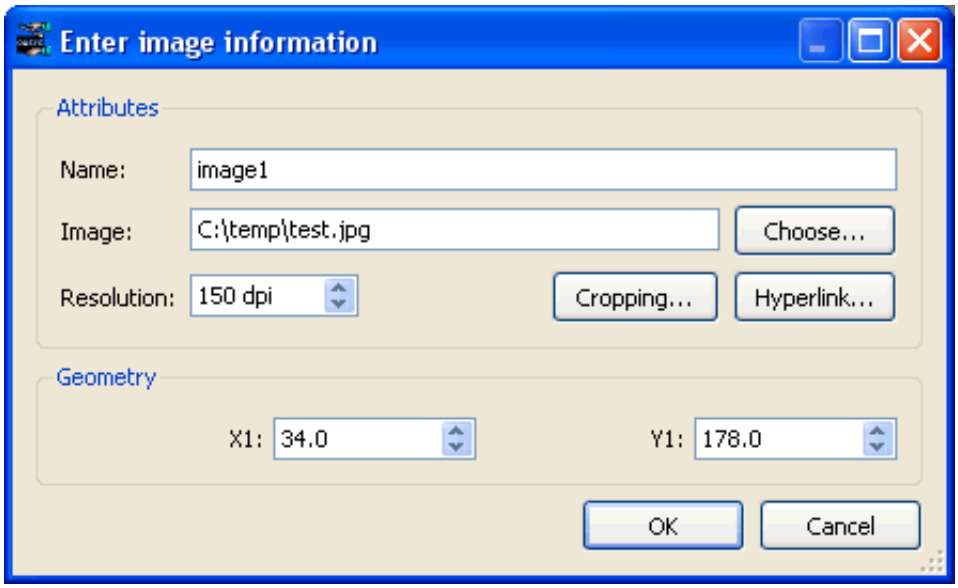


5.3.6 Images

Bitmap, GIF, and JPEG Image can be added by using the **Images** button

To add and image click on the point where you want the bottom left corner of the image to be, this will bring up a **Image** window.

Enter the image filename into the **Image** text box or click on the **Choose...** button to call up a **File** window from which to select the image file. You can also enter variables by right clicking in the text box which will allow you to bring up a **Insert variables** window from which to select a variable.



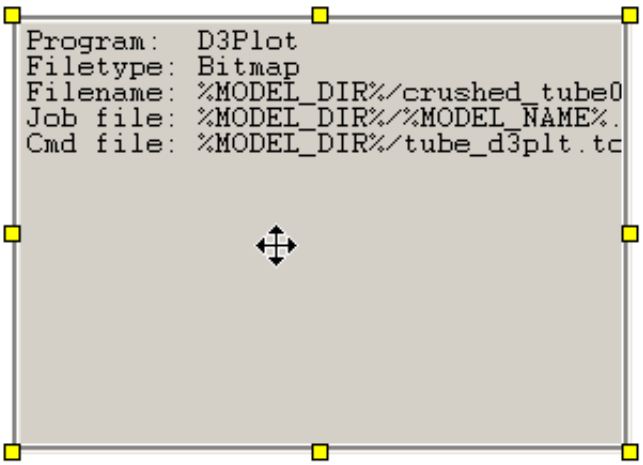
The **OK** button will close this window and add the image to the page.

The **Cancel** button will exit this window without adding an image.

The **Cropping...** button (see section 5.4.2 below) can be used to crop the image before showing it. Also the **Hyperlink...** button (see section 9) allows the user to set the image up as hyperlink.

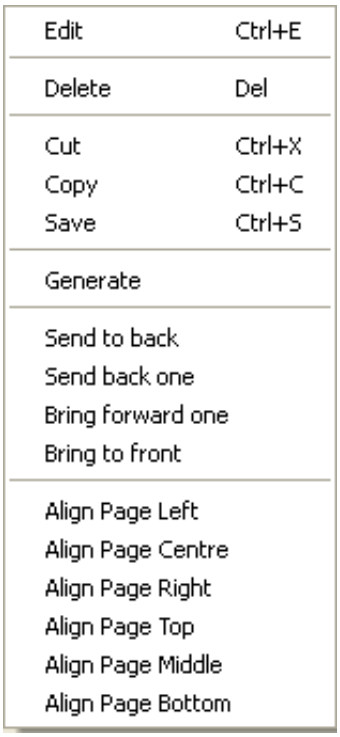
5.4 Editing shapes, image, and text objects

You can edit a existing shape, image, or piece of text by first clicking on the **Select** tool to select the editing tool and left clicking on the object. Multiple objects can be selected by holding down the SHIFT or CTRL keys when clicking on the objects, or by left click mouse dragging a selection box around multiple objects. The object(s) are then drawn with yellow boxes or "handles" which allow you to resize the object(s). Additionally the cursor changes to indicate that you can now move the object(s). If you click and drag when over the object(s) you can move them around the page. The cursor keys can also be used to "Nudge" the items around. If you move the mouse over one of the yellow "handles" you can resize the object(s). The cursor changes appropriately to indicate how the object(s) will be resized. The escape key can be used to deselect all currently selected objects.



You can also right click on an object regardless of the mode the cursor is in. If the object is not already selected, it is selected and then a popup menu is displayed.

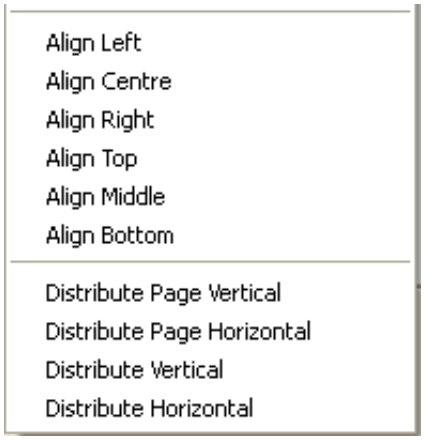
Right clicking when editing an object will bring up a small popup menu.



- **Edit** will bring up an **Edit** window for the object. The **Edit** window will vary depending on what type of object is being edited.
- **Delete** will delete the object(s). This can also be done by pressing the `Delete` key while editing the object(s).
- **Cut** will cut the object(s) from its current page/place and make them available to be pasted in another place.
- **Copy** will make a copy of the selected object(s) and keep them stored in the computers memory until they are pasted or another item is copied.
- **Save** will save a copy of the object(s). This can then be imported elsewhere using **Edit Import...**.
- **Generate** will perform any actions required to make the output for the object(s). See section 7 for more details.
- **Send to back** will send the selected item(s) behind all the rest of the items on the page.
- **Send back one** will send the selected item(s) behind the next item behind it.
- **Bring forward one** will bring the selected item(s) in front of the next item in front of it.
- **Bring to front** will bring the selected item(s) in front of all other items on the page.
- **Align Page Left** will align the selected item(s) horizontally with the left hand side of the page.
- **Align Page Centre** will centre the selected item(s) horizontally on the page.
- **Align Page Right** will align the selected item(s) horizontally with the right hand side of the page.
- **Align Page Top** will align the selected item(s) vertically with the top of the page.
- **Align Page Middle** will centre the selected item(s) vertically on the page.
- **Align Page Bottom** will align the selected item(s) vertically with the bottom of the page.

Also note that some of these options are also available through the **Edit** menu.

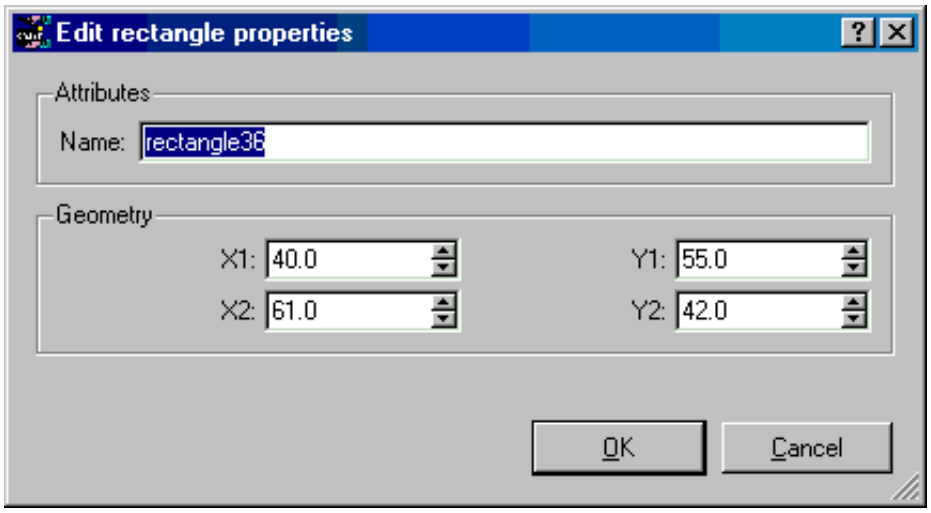
When multiple items are selected, you also get the following options on the popup menu



- **Align Left** will align the selected items horizontally with the left most selected item.
- **Align Centre** will centre the selected items horizontally with respect to the left most and right most selected items.
- **Align Right** will align the selected items horizontally with the right most selected item.
- **Align Top** will align the selected items vertically with the top most selected item.
- **Align Middle** will centre the selected items vertically with respect to the top most and bottom most selected items.
- **Align Bottom** will align the selected items vertically with the bottom most selected item.
- **Distribute Page Vertical** will evenly distribute the selected items vertically on the page.
- **Distribute Page Horizontal** will evenly distribute the selected items horizontally on the page.
- **Distribute Vertical** will evenly distribute the selected items vertically between the top most and bottom most selected items.
- **Distribute Horizontal** will evenly distribute the selected items horizontally between the left most and right most selected items.

5.4.1 Shapes

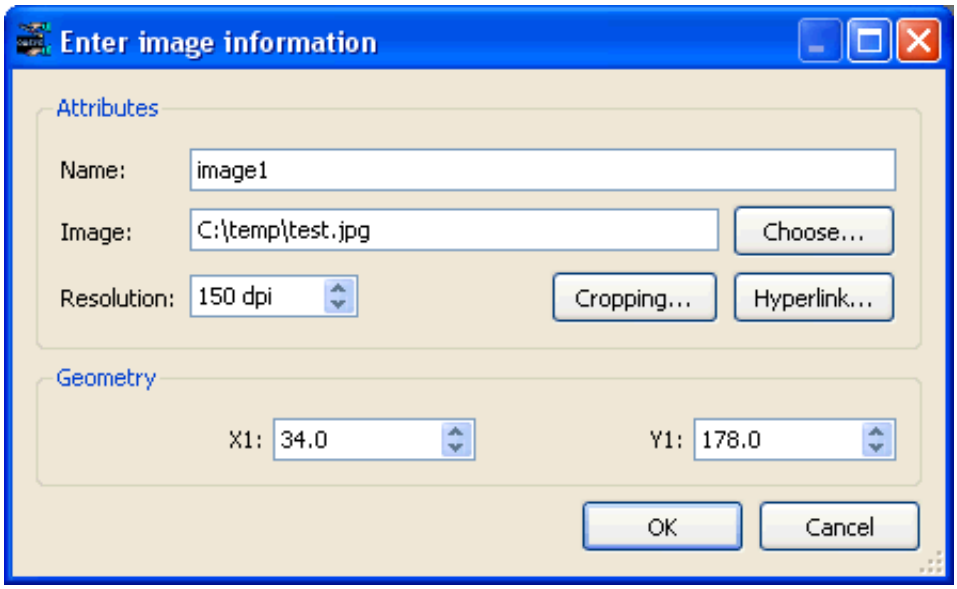
For shapes the window allows you to change the maximum and minimum coordinates of the shape.



The **OK** button will exit the window and update the shapes coordinates. The **Cancel** button will exit the window without making any changes to the shape.

5.4.2 Images

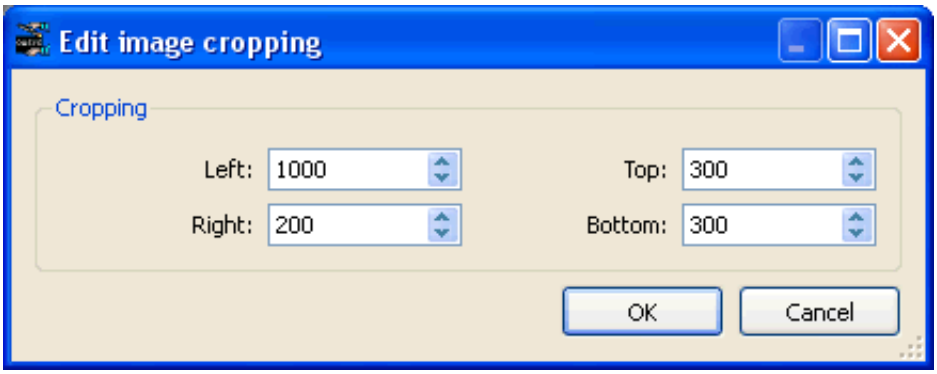
For images the window allows you to change the coordinates of the bottom left corner of the image, the image and the resolution.



The **OK** button will exit the window and update the image coordinates as well as the resolution to whatever is set. The **Cancel** button will exit the window without making any changes to the image. An image can also have a hyperlink. For more details see section 9.

Image cropping

The **Cropping...** button allows you to crop parts of the image before it is shown. Pressing the button maps the panel shown on the right. This allows you to input how many **pixels** will be cropped from the left, right, top and bottom of the image before showing it. Type the values or use the up and down arrows to set the values you require.

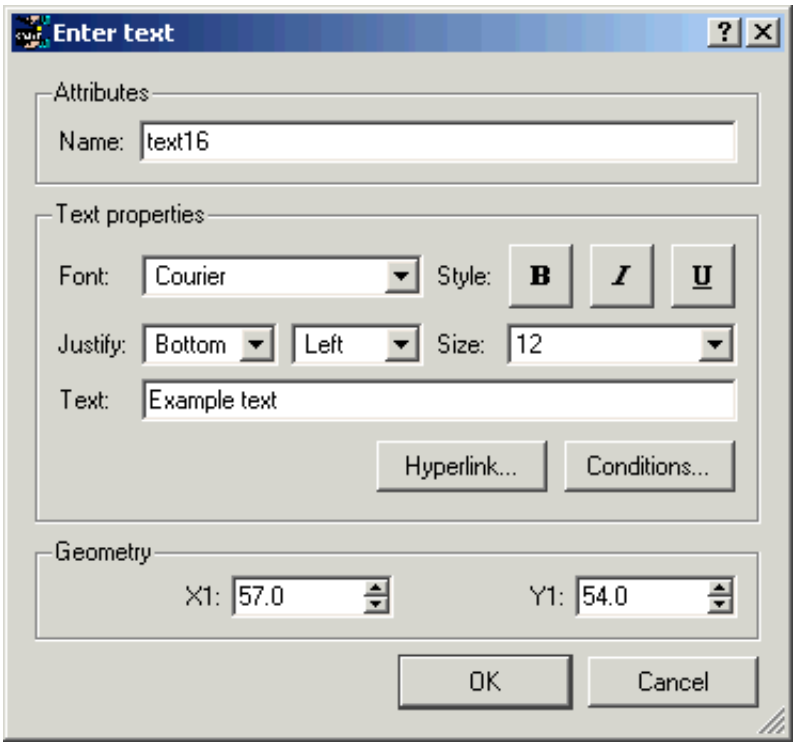


Pressing **OK** will update the cropping information for the image. Pressing **Cancel** will abort without changing the values.

5.4.3 Text

For text the window allows you to change the coordinates of the text, the text itself and the various text parameters (see Section 5.3.4 for more details).

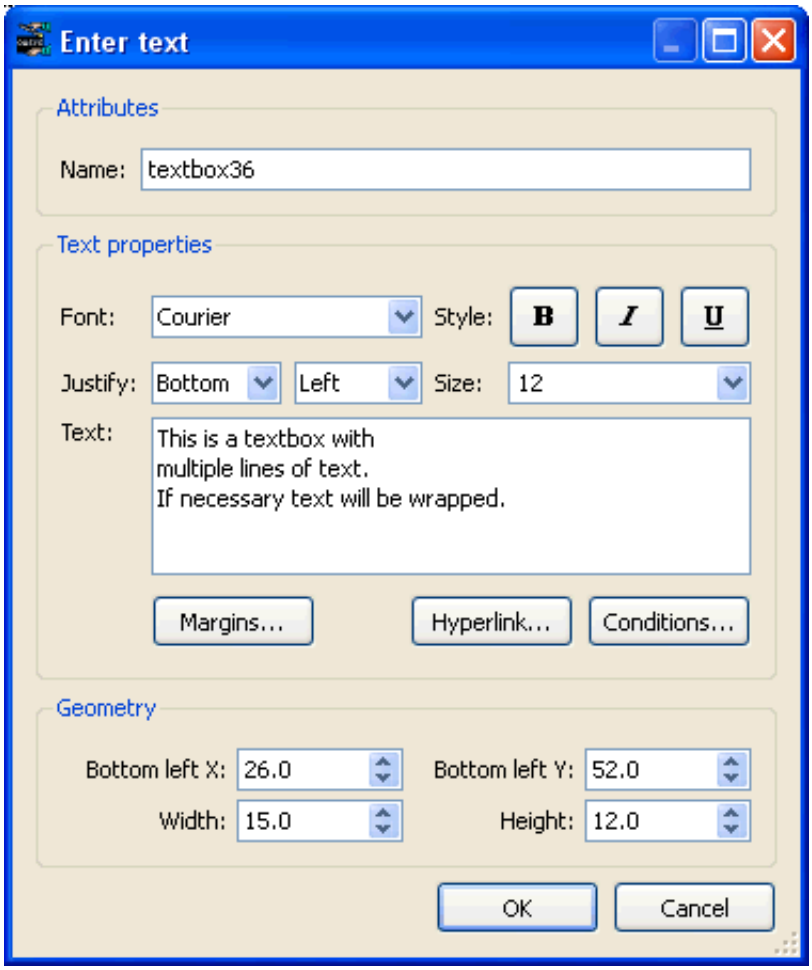
The **OK** button will exit the window and update the text. The **Cancel** button will exit the window without making any changes to the text.



5.4.4 Textbox

For textboxes the window allows you to change the coordinates of the textbox, the text itself and the various text parameters (see Section 5.3.5 for more details).

The **OK** button will exit the window and update the text. The **Cancel** button will exit the window without making any changes to the text.

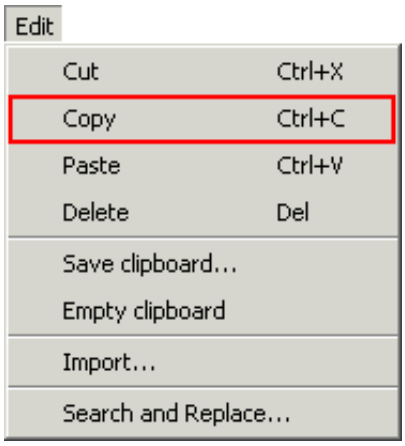


5.4.5 Changing colour and line styles

When you select an object the colour, line style and line thickness buttons are updated with the properties of the selected object. Changing any of these while and object is selected will change the property of the object.

5.5 Copying objects and using the clipboard

If you want to copy the object to another page, select the item and use the **Copy** option from the **Edit** menu. This copies the object onto the 'clipboard'.



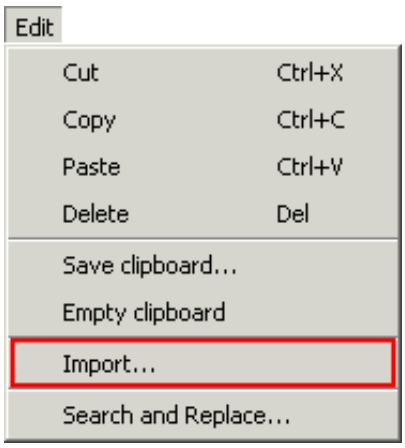
Once you have an object on the clipboard you can **Paste** it onto any page in the template (including the page that you copied the object from). If you paste the object back onto the same page the object will be offset slightly. If you paste the object onto a different page it will be placed in the same position on the page.

You can also right click on the page at any point and then select **Paste item here.** This will paste the item at the current cursor location.

Alternatively you can save the object to a file by using the **Save clipboard** function. Currently only a single object can be saved. Objects saved from REPORTER should be given the extension `.oro` (REPORTER Object).

Empty clipboard will remove any objects from the clipboard.

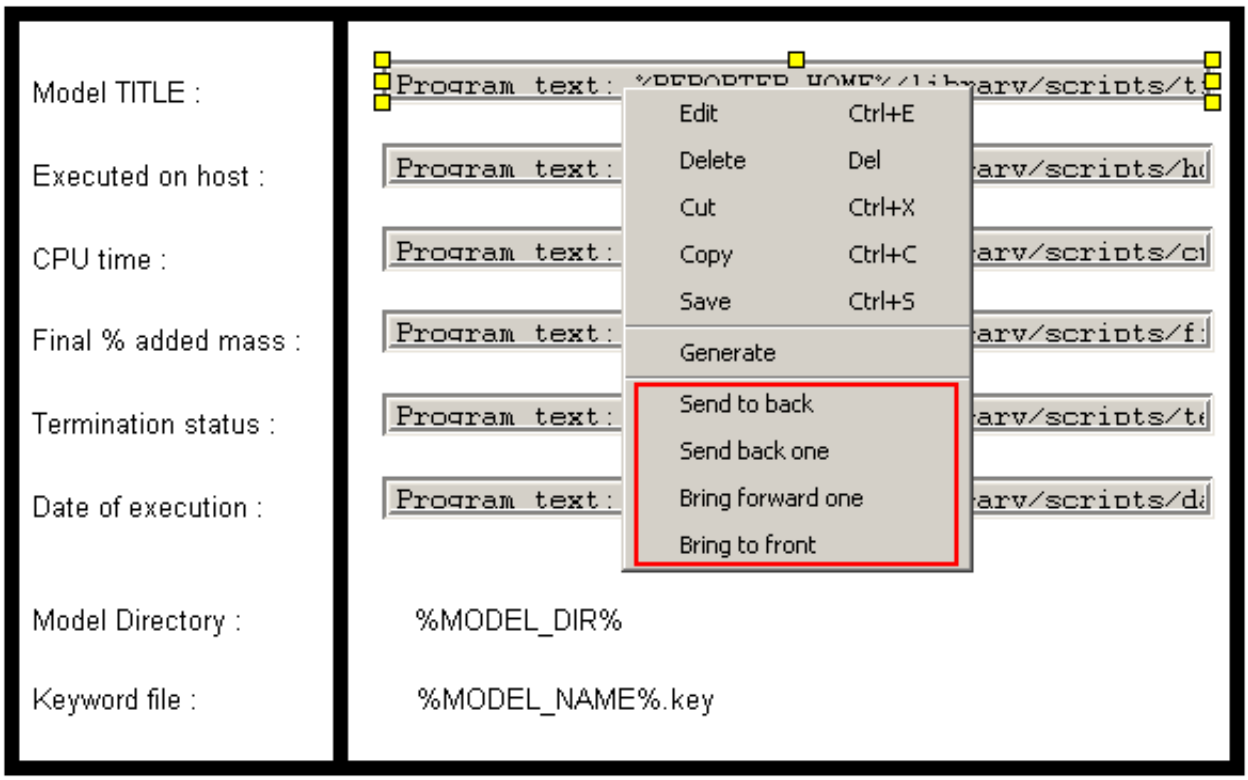
To import an object (that has previously been exported from the clipboard) use the **Import...** option in the **Edit** menu.



5.6 Reordering items on the page

The order in which items are drawn on the page can be changed by 2 different ways in REPORTER. The order is important as it determines the order in which scripts, programs etc will be run. For more details see section 7.1.

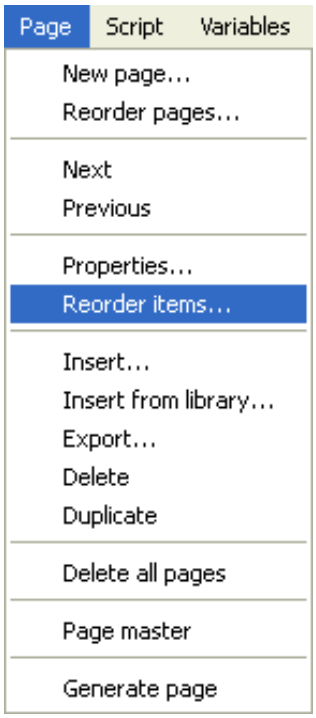
The first method can be used when editing objects. Once an item is selected you can right click with the mouse and use the ordering options in the popup to change the object.



One way of thinking about the object order is to think of a series of 'layers' or transparencies in a stack. Each 'layer' or transparency contains one object. The order in which the transparencies are stacked changes the order in which things are seen. This is exactly the same as layers in various photo editing software.

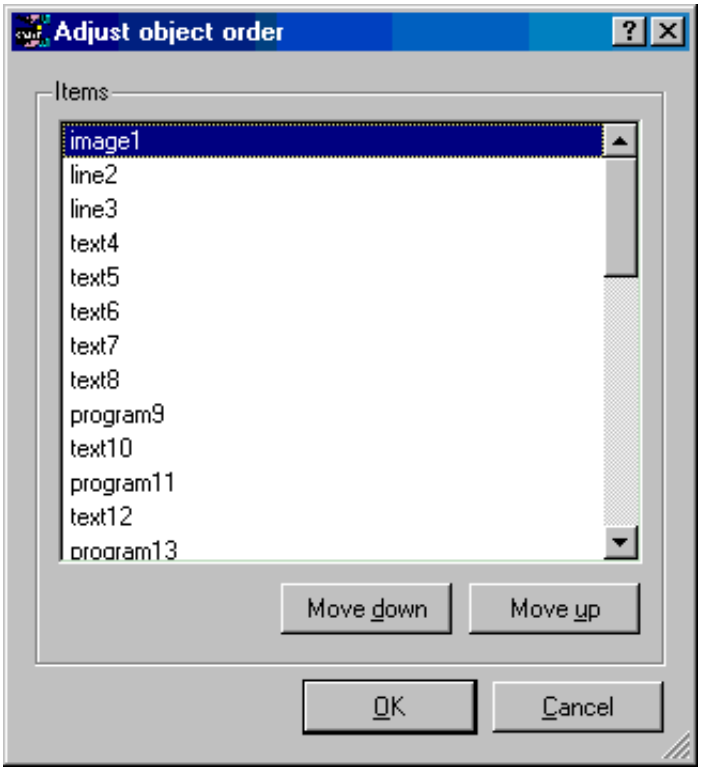
Send to back will make the object the first object drawn on the page (back layer)
Send back one will move the object back a layer
Bring forward one will move the object forward a layer
Bring to front will make the object the last object drawn on the page (top layer)

The second method is to use the **reorder items...** option in the **Page** menu. This brings up a window as shown below. The object stacking order is shown. Clicking on an entry highlights that entry with a green selection box.

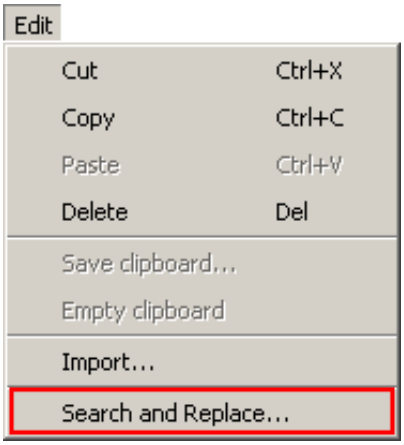


You can use the **Move up** and **Move down** options to change the stacking order of the selected item. Once the objects are in the order you want **OK** will update the page.

Cancel will abort the operation without making any changes.



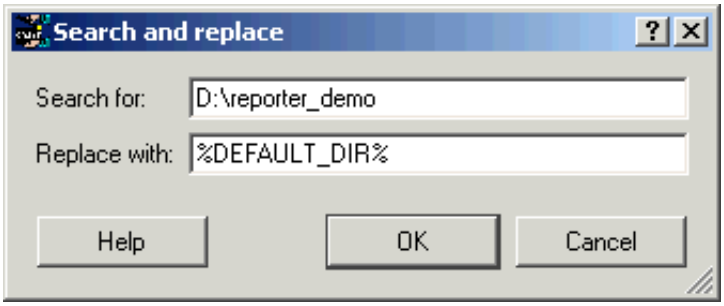
5.7 Search and replace



The search and replace function allows to to search for a text string (or variable) in all objects in the template and replace it with another string (or variable).

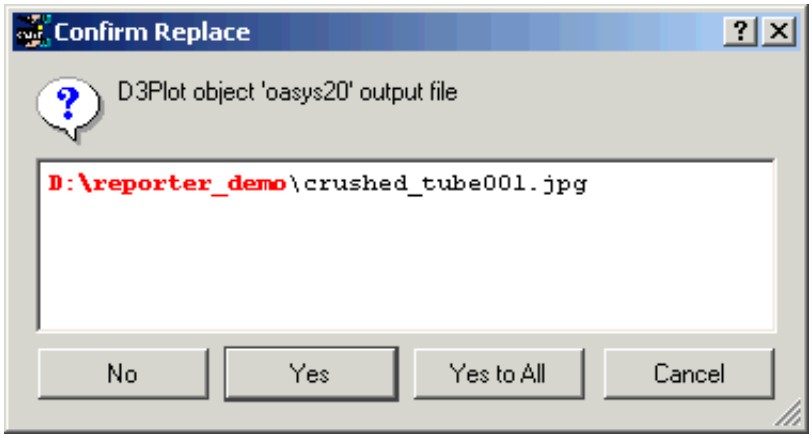
For example, you may make a template which contains D3PLOT objects that have the directories hard wired instead of using a variable for the directory. If you want to generalise the template you can use **Search and Replace...** to replace every instance of the directory name in the template with a variable.

Enter the search and replace strings in the dialog box. You can insert a variable if required by right clicking in the text box and selecting **Insert Variable**.



Each time REPORTER finds an instance of the string in an object in the template a confirmation dialog will be mapped giving you the option to replace or skip the string. The object will be selected on the screen so you can see which object you are replacing in and a brief text description wil be given for the object and field that you are looking at.

Cancel will abort the search and replace operation. Pressing **Yes** will do the replace, pressing **No** will skip this instance. If you want to just replace all instances without confirming each one in turn then press **Yes to All**.



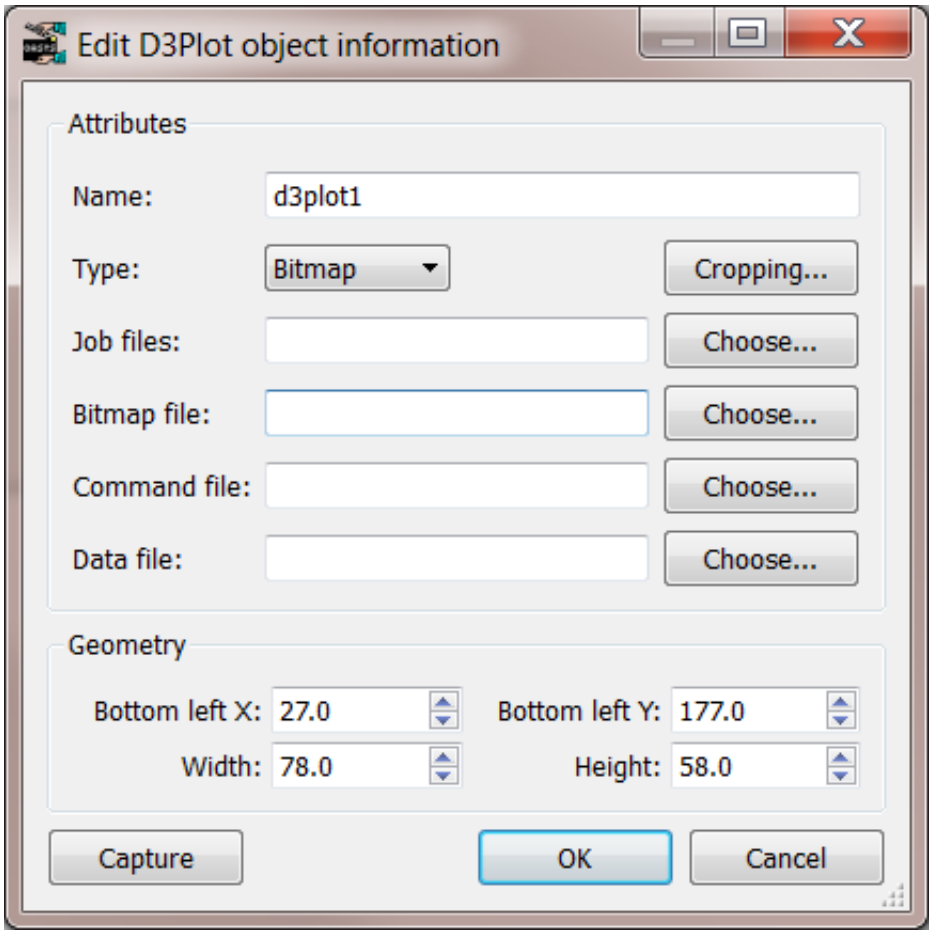
6. Advanced objects

6.1 D3PLOT objects

D3PLOT objects allow you to include output from D3PLOT in your template.

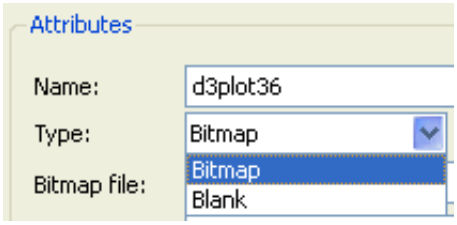
There are two different ways of using D3PLOT objects. The first (and by far the easiest) is to use the **Capture...** button to create the object. The second is to use an existing D3PLOT command file to create the output from D3PLOT.

If the Bitmap output type is chosen, the **Cropping...** button can be used to crop away parts of the image from the top, bottom, left and right before showing it. See section 5.4.2 for more details.



There are two different options for the type of output generated from D3PLOT.

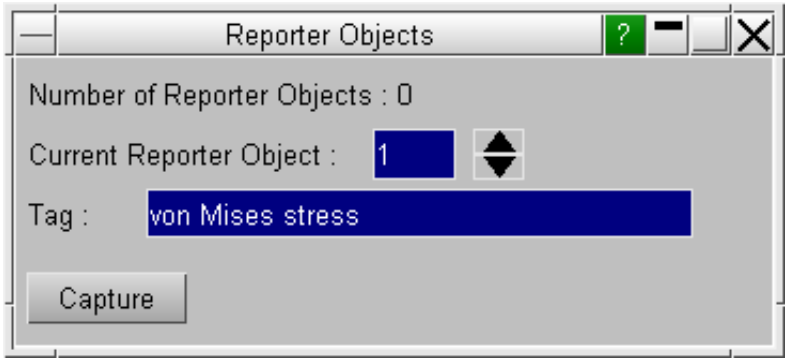
- **Bitmap** indicates that the output is a bitmap file.
- **Blank** indicates that the D3Plot object will not create any output on the page



6.1.1 Using Capture to create a D3PLOT object

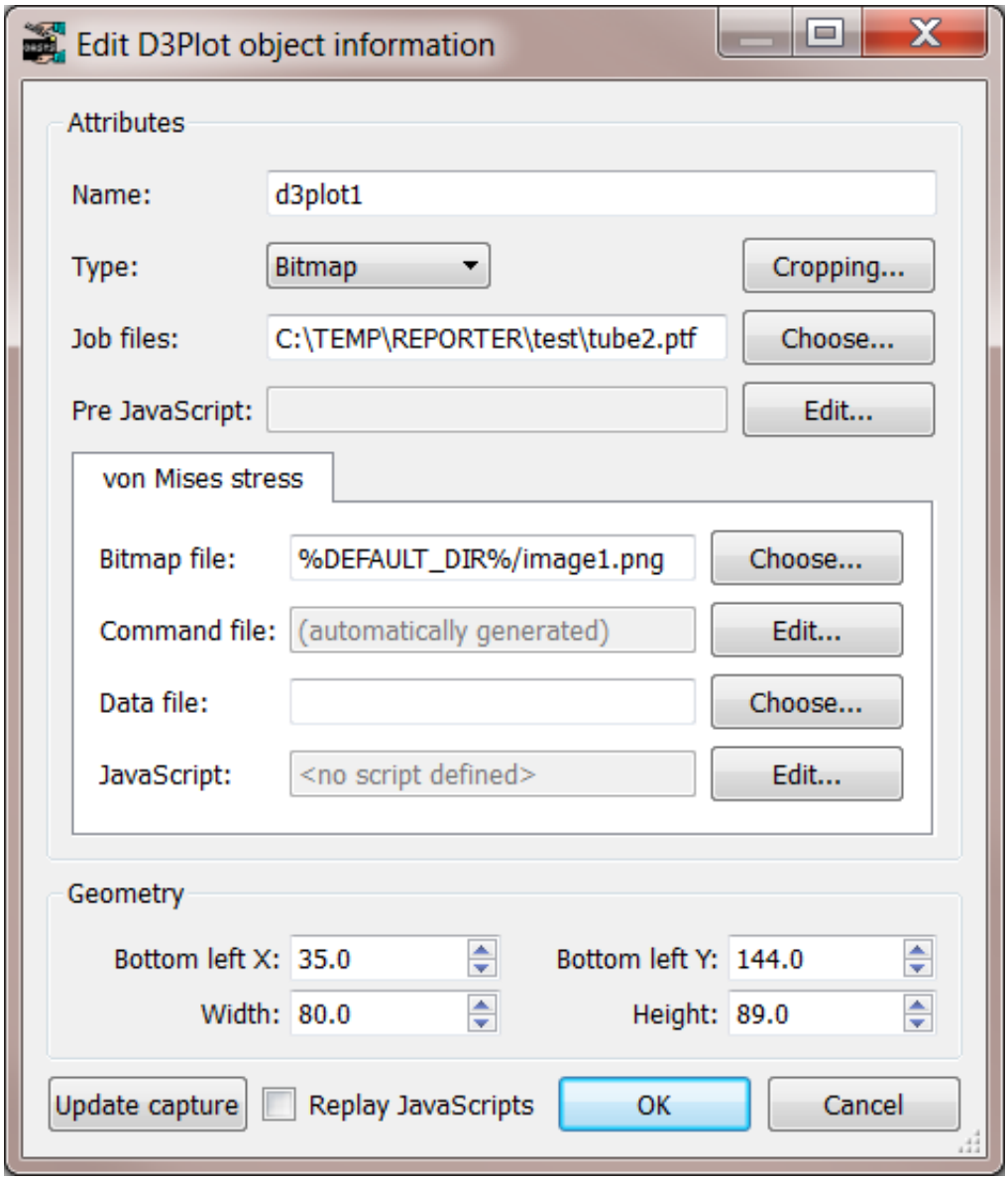
The easiest way to create a D3PLOT object is to use the **Capture...** command. If you press the button REPORTER starts D3PLOT for you. You can now open the model(s) and do whatever operations you want inside D3PLOT such as rotating, zooming, blanking, selecting the state, setting colours etc.

Once you are happy with the image you have in D3PLOT press the **Capture** button in the floating **Reporter Objects** menu. D3PLOT will automatically create a settings file, a properties file and a command file for the current image and return them to REPORTER.



These are embedded in the template so you do not have to worry about packaging them with your template file.

To return to REPORTER use the **File** menu and select **=> Reporter** (which replaces the normal Exit command).



When you get back to REPORTER the **Job files** textbox is filled in for you.

A tab is created in the menu with the **Tag** that you gave in D3PLOT. In the example here the tag is **von Mises stress**. REPORTERautmatically assigns a **Bitmap file** name for you. If required you can change this to whatever name you require. Note that the format if the file is given from the extension you give. By default D3PLOT will return a png image to REPORTER. If you wanted to create a jpeg image change the extension in the textbox to '.jpg'.

The Command file is greyed out as it has been automatically created by D3PLOT and does not need any editing.

However, if you wanted to add some extra dialogue commands to be done in D3PLOT when generating the object you can use the **Edit...** button next to the **Command File** textbox to add/edit them.

You can also specify two JavaScripts to run when generating the D3PLOT object; a **Pre JavaScript** and a 'normal' **JavaScript**. To explain why there are two possible JavaScripts we need to consider the order that D3PLOT uses when creating the image. It is:

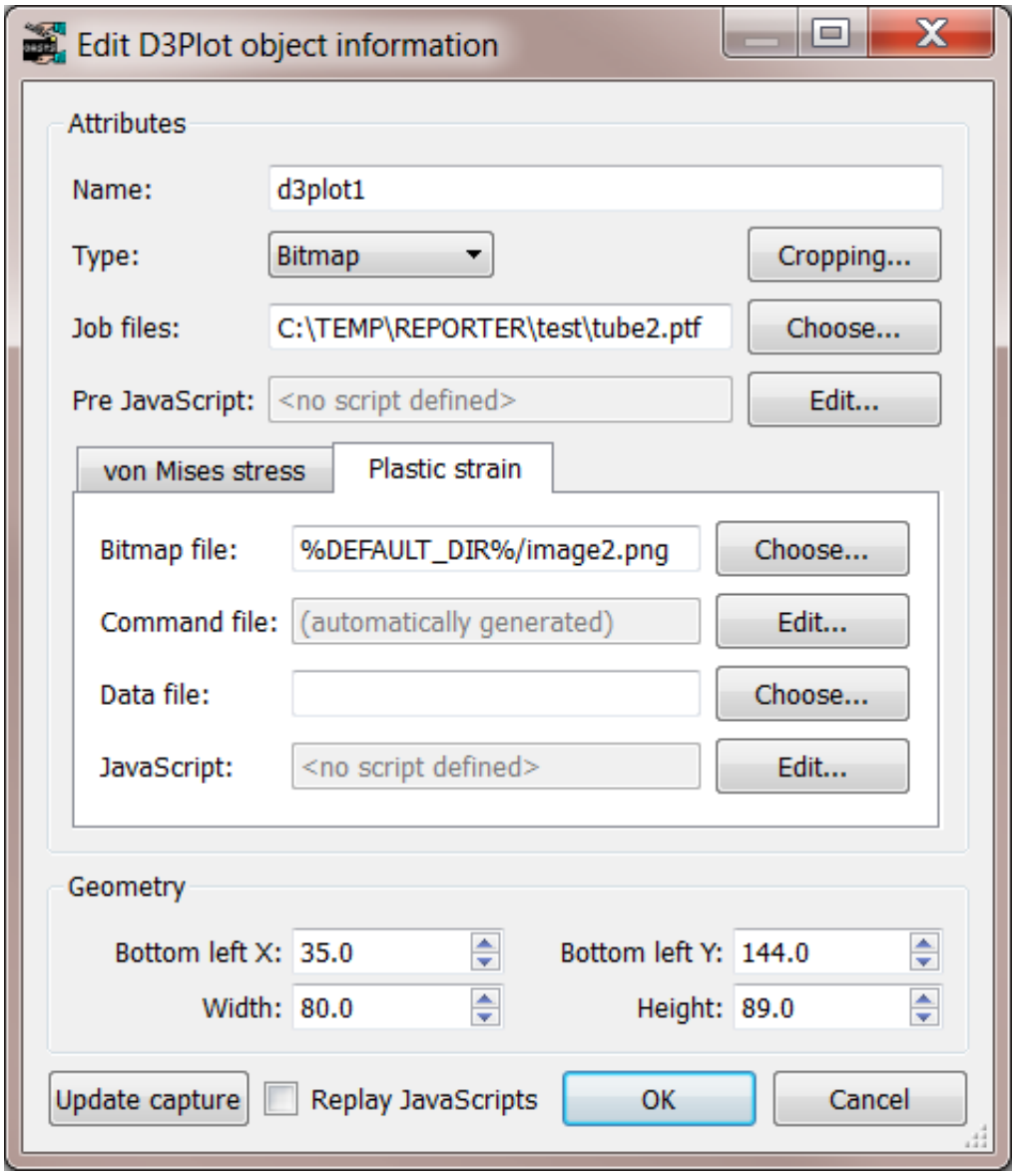
1. Read the ptf files
2. Run Pre JavaScript (if defined)
3. Read properties and settings files stored in REPORTER template
4. Run any extra Command file dialogue commands from REPORTER (if defined).
5. Run the 'normal' JavaScript (if defined)
6. Read external data file (if defined)

For virtually all cases the 'normal' JavaScript file in step 5 will do what you want. However if you use a JavaScript to create a user defined data component then this must be run before the properties and settings files are read (as that is where the data component for the plot is stored). In this case a **Pre JavaScript** has to be used.

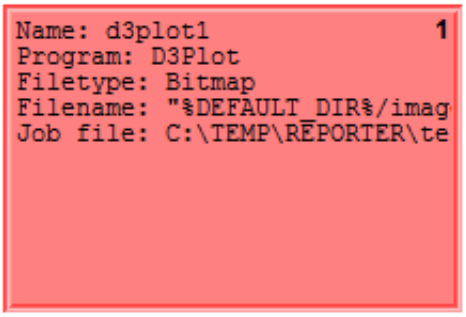
If you want to change the image you can press **Update capture** again at any time. D3PLOT will start again and restore the current attributes you have set. You can make any changes etc that you want by pressing **Update** in the **Reporter Objects** floating window and returning to REPORTER again. The old settings file and properties files will be overwritten.

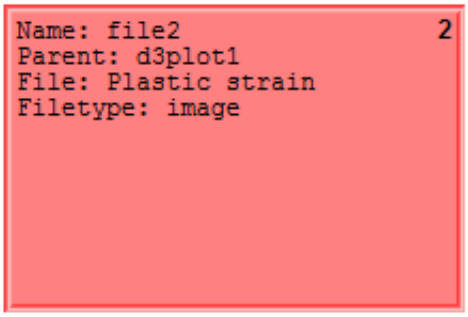
6.1.2 Creating multiple images from a single D3PLOT session

You are not limited to making a single image in D3PLOT. Using the **Reporter Objects** floating menu you can capture as many images as you want in a single D3PLOT session. A tab will be created in the **Edit D3Plot object** window for each image you capture. For example as well as making a von Mises stress image we may also want to make an image showing plastic strain.



Each image has its own properties and settings file and optionally extra command files and/or a JavaScript. In REPORTER an **Image file** is created for the second and subsequent images and these are linked to the 'parent' D3PLOT object.





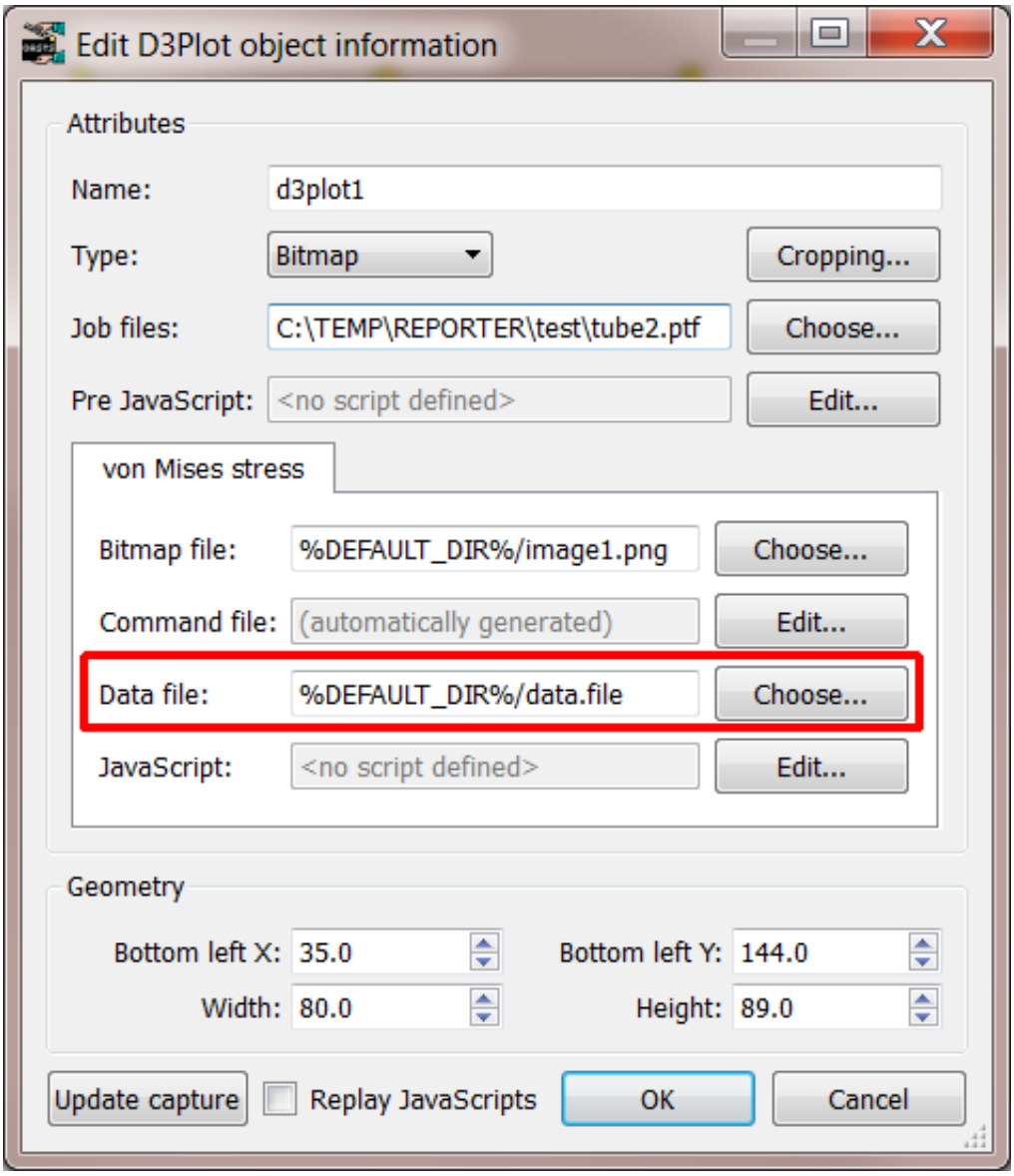
To help show which objects are linked together they are coloured differently to normal objects. The first group will be red, the second green, the third blue...

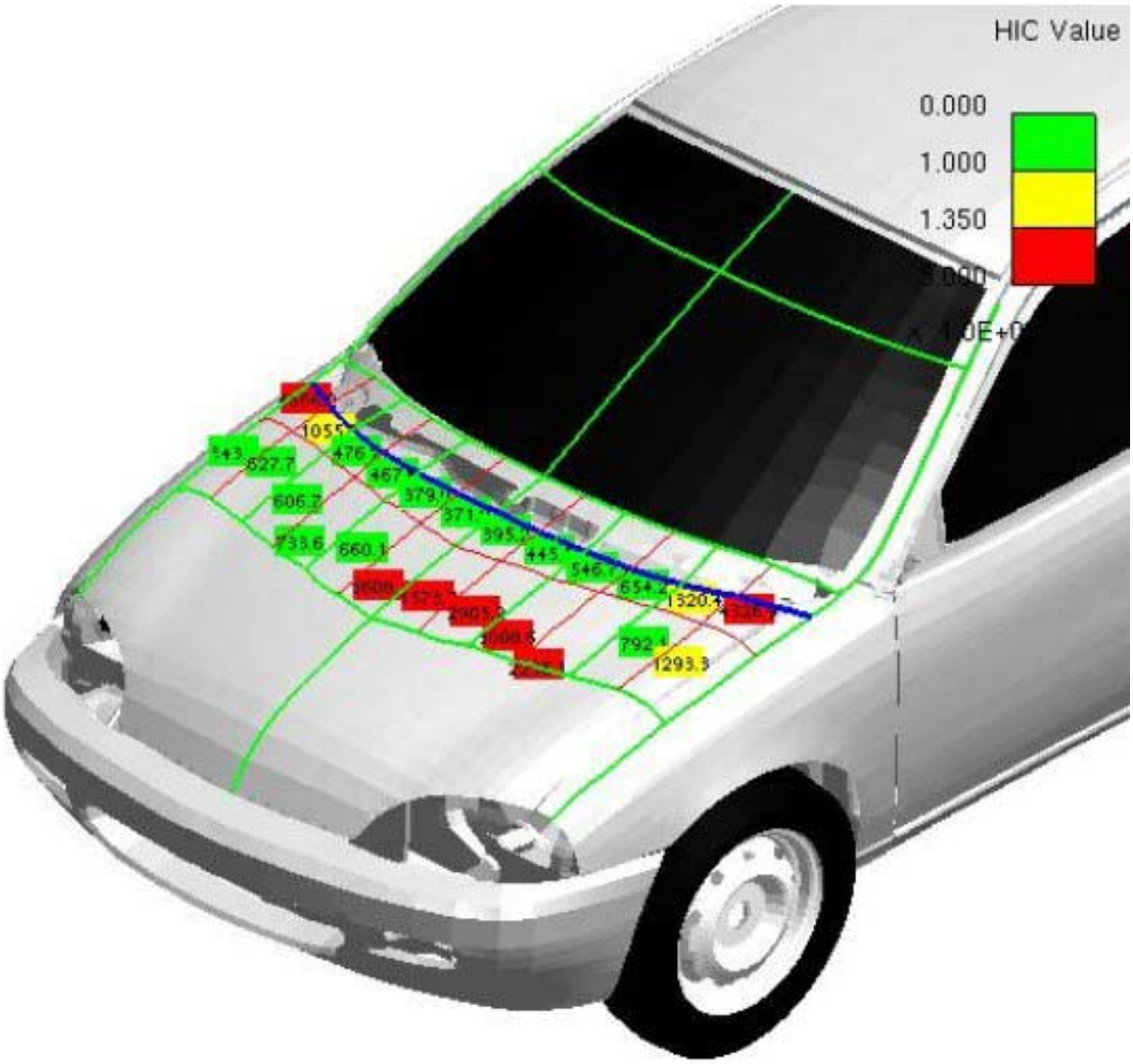
If you modify the 'parent' D3PLOT object the 'child' Image file objects will be added/updated/deleted as required.

6.1.3 Using datafiles to create ’blob’ plots

If a Data file is given then that is passed to D3PLOT to create an external data plot or ’blob’ plot. An example plot is shown below. In a data plot D3PLOT superimposes data values on the 3 dimensional shape. For example, below this is used to show HIC values for Euro-NCAP analyses at various positions on the bonnet.

The easiest way of creating a data file is to use the standard library program in REPORTER. See appendix B and the D3PLOT manual for more details.

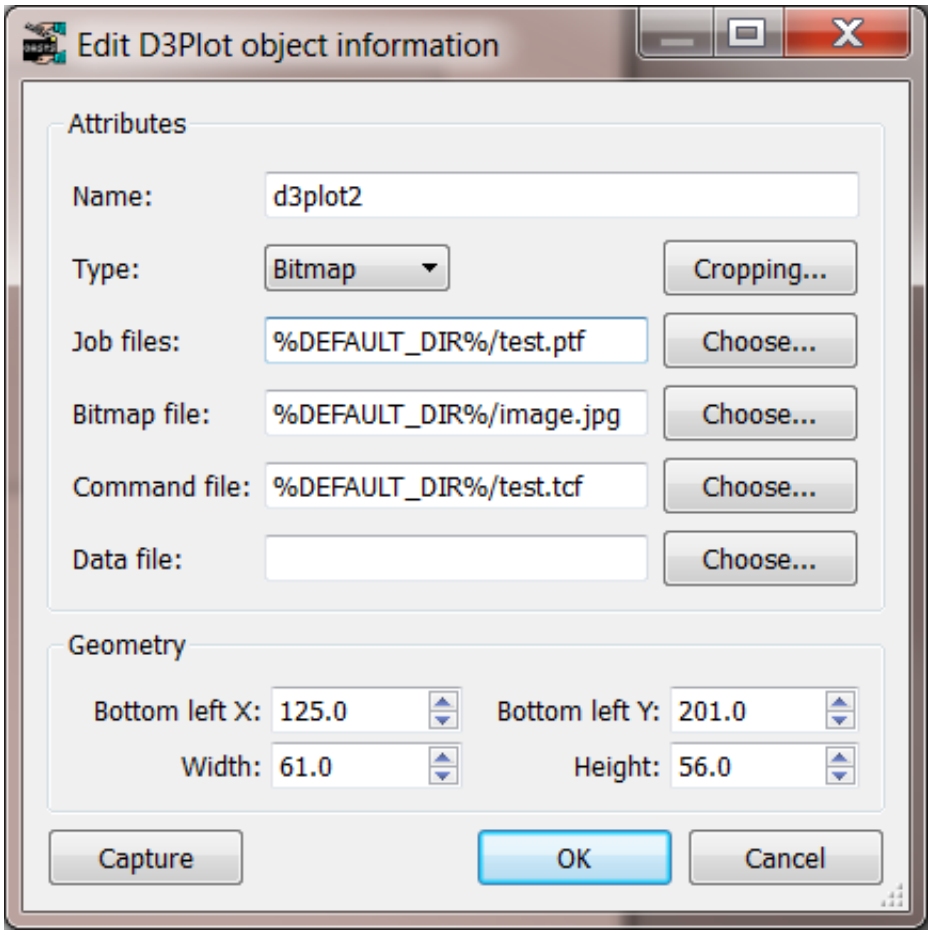



HIC Value
0.000
1.000
1.350
1055
827.7
606.2
660.1
1520.4
792.1
1293.3

6.1.4 Using a command file to create a D3PLOT object

The alternative method to create a D3PLOT object is to create a command file yourself in D3PLOT (which creates the image). In this case the **Image file** must correspond to the name of the image you create in the command file. GivCe the name of the **Command file** and the **Job file**.

This method is not recommended and is present only to keep old templates working. Use the Capture method instead.



6.1.4 Editing D3PLOT objects

The position and size of D3PLOT objects can be edited in exactly the same way as the simple shape objects. See section 5 for more details.

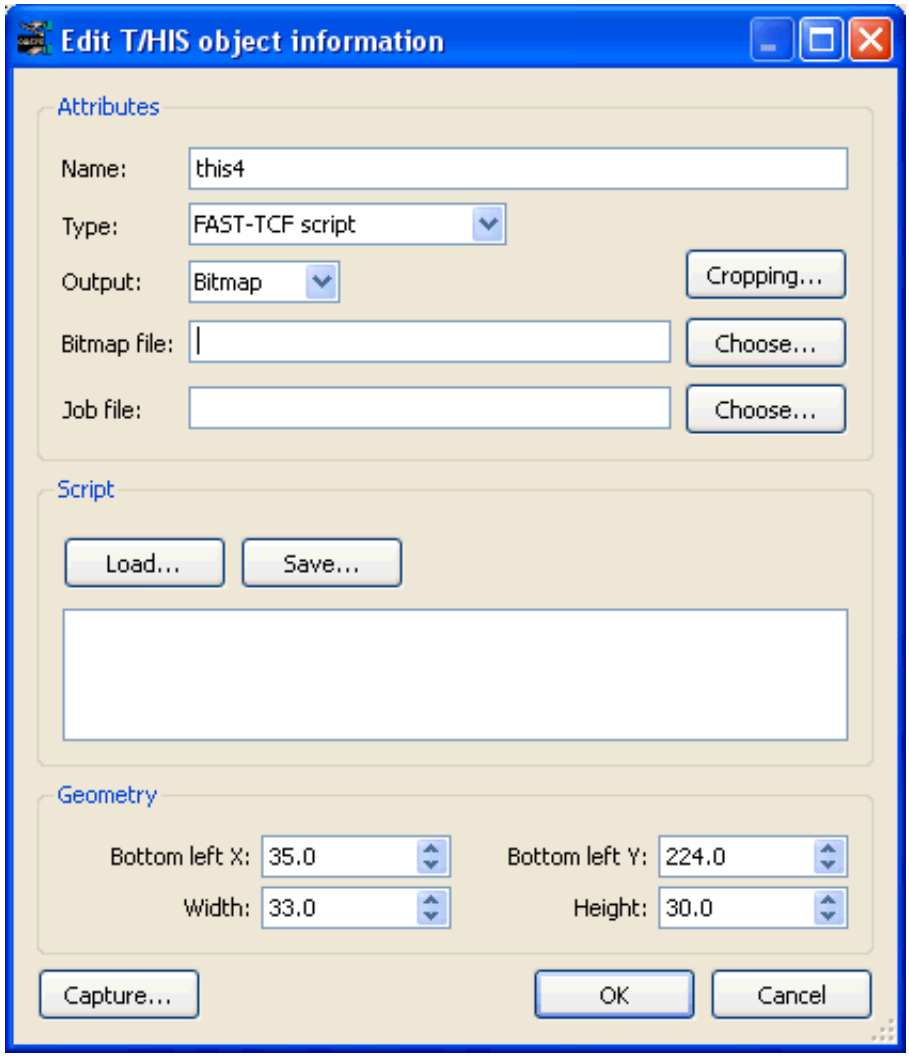
If you have created the D3PLOT object using the **Capture...** then the text on the button will change to **Update capture...** You can modify/update the existing captures if required. See section 6.1.1 for more details.

6.2 T/HIS objects

T/HIS objects allow you to include output from T/HIS in your template.

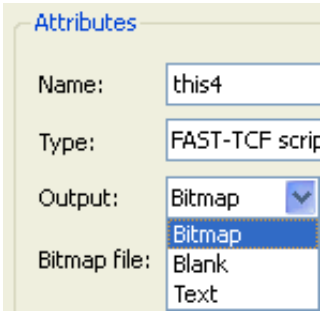
There are three different ways of using T/HIS objects. The first (and by far the easiest) is to use the **Capture...** button to create a FAST-TCF script for the object that T/HIS will run.
The second is to write your own FAST-TCF script.
The third is to use an existing T/HIS command file to create the output from T/HIS.

If the Bitmap output type is chosen, the **Cropping...** button can be used to crop away parts of the image from the top, bottom, left and right before showing it. See section 5.4.2 for more details.



There are three different options for the type of output generated from T/HIS.

- **Bitmap** indicates that the output is a bitmap file.
- **Blank** indicates that the T/HIS object will not create any output on the page
- **Text** indicates that the output is text. This is only valid for the **FAST-TCF script** type. This option would be used if you wanted the output from a FAST-TCF table or HIC command etc.



The **Postscript** option which was present in version 9.2 is no longer supported by REPORTER. It is only there to allow old (pre version 9.2 templates to be read in). You should not use this type. This has been removed in version 9.3.

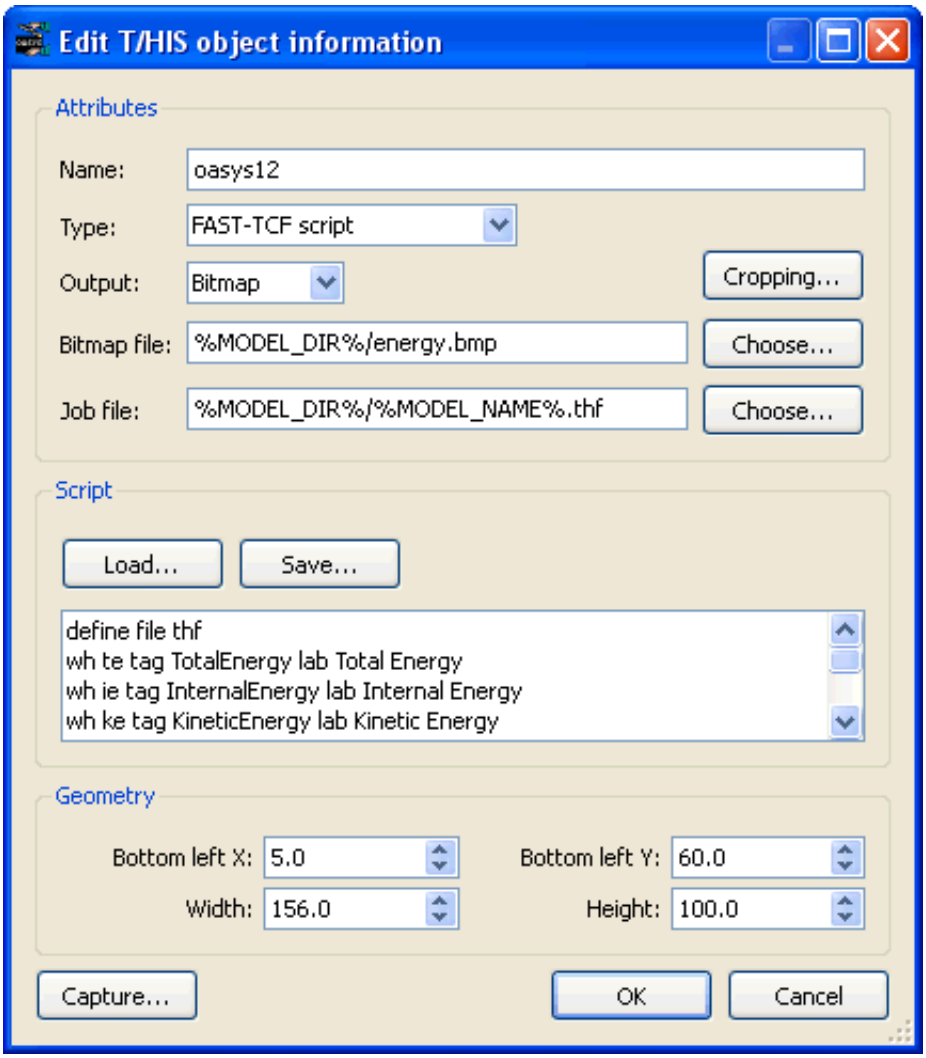
6.2.1 Using Capture to create a T/HIS object

The easiest way to create a T/HIS object is to use the **Capture...** command.
First make sure that the **Type** is set to **FAST-TCF script**.
If you press the **Capture...** button REPORTER starts T/HIS for you. You can now open the model(s) and do whatever operations you want inside T/HIS to get the cruves that you want on the screen. Once are happy with the graph you have in T/HIS press the **File** menu and select**Return to Reporter** (which replaces the normal Exit command).

T/HIS will automatically create a FAST-TCF script for the current graph and return it to REPORTER. This is embedded in the template so you do not have to worry about packaging it with your template file.

When you get back to REPORTER the **Image file** and **Job file** are filled in for you.

If you want to change the script you can press **Update c apture...** again at any time. T/HIS will start again and replay the script. You can make any changes etc that you want and return to REPORTER again. The old script will be overwritten.



6.2.2 Using your own FAST-TCF script to create a T/HIS object

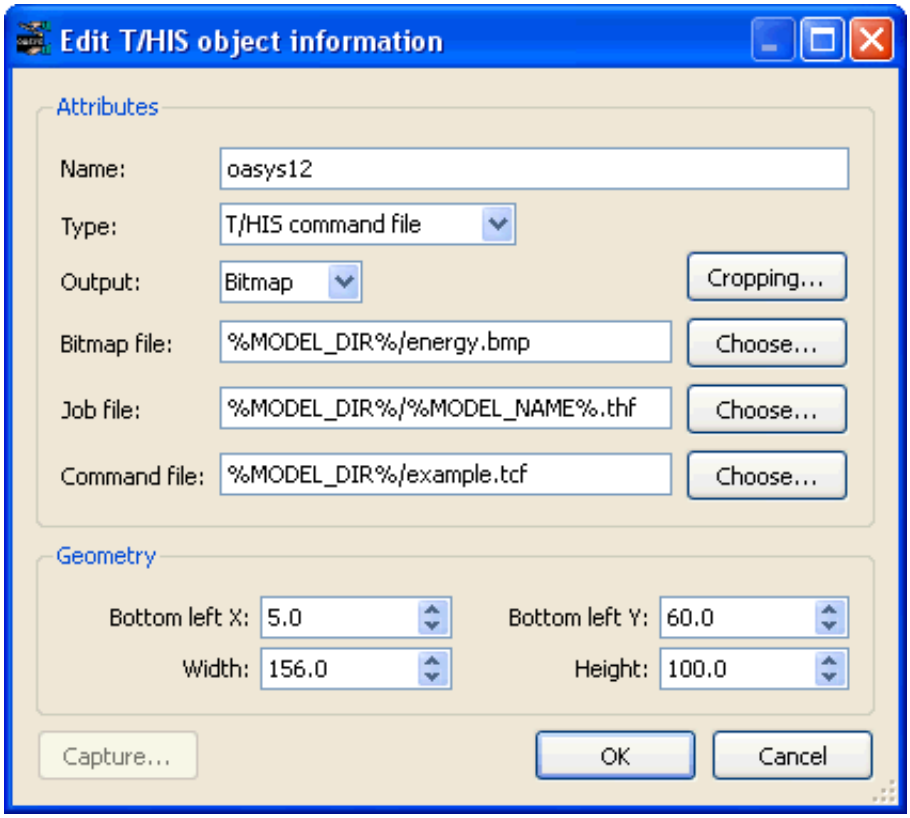
If you want to make your own FAST-TCF script in a T/HIS object then fill in the **Image file** and **Job file** yourself. You can load an existing FAST-TCF script by using the **Load...** button or type in the script. In this case the **Image file** must correspond to the name of the image you create in the script.

6.2.3 Using a command file to create a T/HIS object

The alternative method to create a T/HIS object is to create a command file yourself in T/HIS (which creates the image).

Make sure that **Type** is set to **T/HIS command file.**

In this case the **Image file** must correspond to the name of the image you create in the command file. Give the name of the **Command file** and the **Job file**.



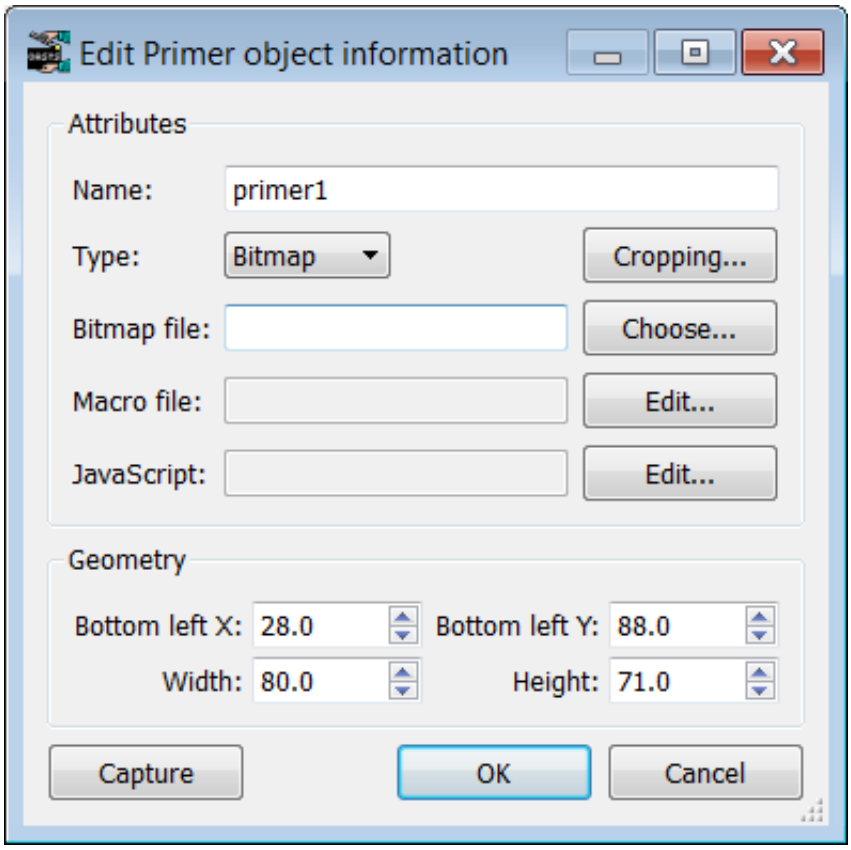
6.2.4 Editing T/HIS objects

T/HIS objects can be edited in exactly the same way as the simple shape objects. See section 5 for more details.

If you have created the T/HIS object using the **Capture...** then the text on the button will change to **Update capture...** You can modify/update the existing capture if required. See section 6.2.1 for more details.

6.3 PRIMER objects

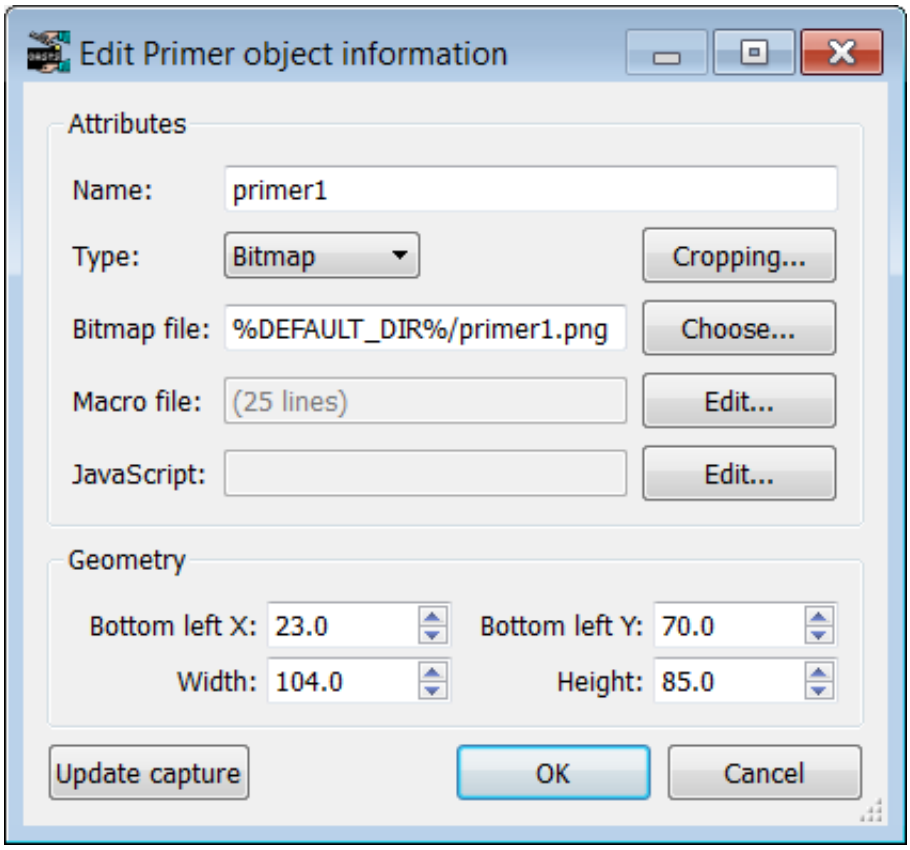
PRIMER objects allow you to include output from PRIMER in your template. To create one select the Primer tool from the **Tools toolbar** and click and drag a rectangle on the page. The **Edit Primer object information window** will then be shown.



If you want to create an image using PRIMER to put in the report (e.g. an image showing yield stress or element timestep) select **Bitmap** for the **Type**. In this case the **Cropping...** button can be used to crop away parts of the image from the top, bottom, left and right before showing it (see section 5.4.2 for more details). Alternatively if you do not want any output but just want to run Primer to create some other sort of output or run a JavaScript set the **Type** to **Blank**.

6.3.1 Using Capture to create a PRIMER object

To start PRIMER press the **Capture** button. PRIMER will then automatically record a macro containing all of the commands that you do. When you have finished do **File** and **=> Reporter** to return to REPORTER. The **Edit Primer object information window** will then be updated as shown below.



REPORTER will automatically give a name for the bitmap file but you can change it to whatever you want. If required you can edit the macro by using the **Edit...** button next to the **Macro file** textbox (which in the above image shows that it contains 25 lines). This is useful to replace any filenames with variables if required (right click with the mouse or press Ctrl+I in the macro to insert variables). The macro will be saved in the REPORTER template.

As well as using a macro a JavaScript can also be specified to run in PRIMER. The **Edit...** button next to the **JavaScript** textbox can be used to load and edit a JavaScript. The JavaScript will be saved in the REPORTER template.

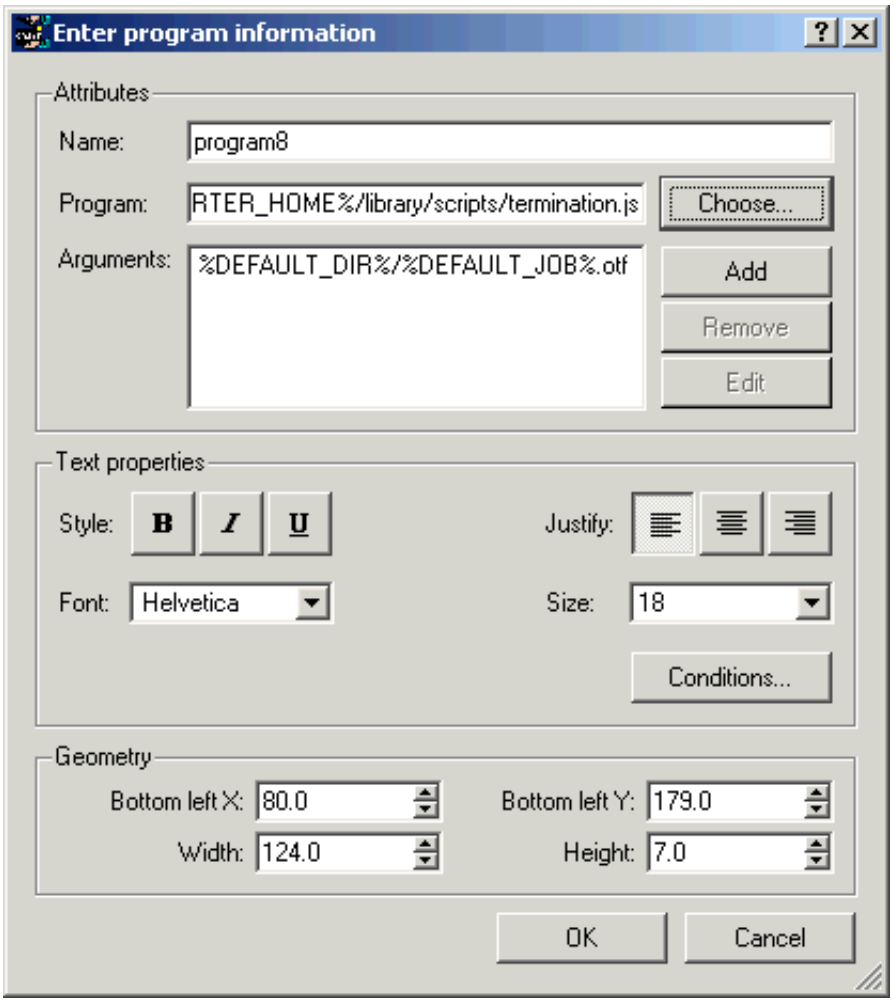
6.3.2 Editing PRIMER objects

PRIMER objects can be edited in exactly the same way as the simple shape objects. See section 5 for more details.

If you want to modify an existing capture you can use **Update capture**. PRIMER will restart and replay the macro you have recorded. Any new commands that you do will then get appended to the macro.

6.4 Program objects

6.4.1 Text output from a program



This option allow you to specify a program from which the text that would normally outputted to the standard output will be inserted into the report by REPORTER when the report is finally generated. The program can be written in anything you want: C, Fortran etc,a scripting language such as Perl or Python, a shell script on unix, a batch file on windows etc. All that matters is that output which would normally be directed to stdout is captured by REPORTER. For more details on writing programs for REPORTER please see Appendix E.

The filename of the program/script is entered in the **Program:** text box or clicking on the **Choose...** button will bring up a **File** window from which to select the program/script. You can also enter variables by right clicking in the text box which will allow you to bring up a **Insert variables**window from which to select a variable. The various text parameters such as font and size can also be set.

The text parameters such as font, justification, size etc can be set for the text that will be captured from the program.

If the program needs arguments then any number can be added by using the **Add** button.

The **Conditions...** button (see section 10) enables the user to apply conditional formatting to the text from the program.

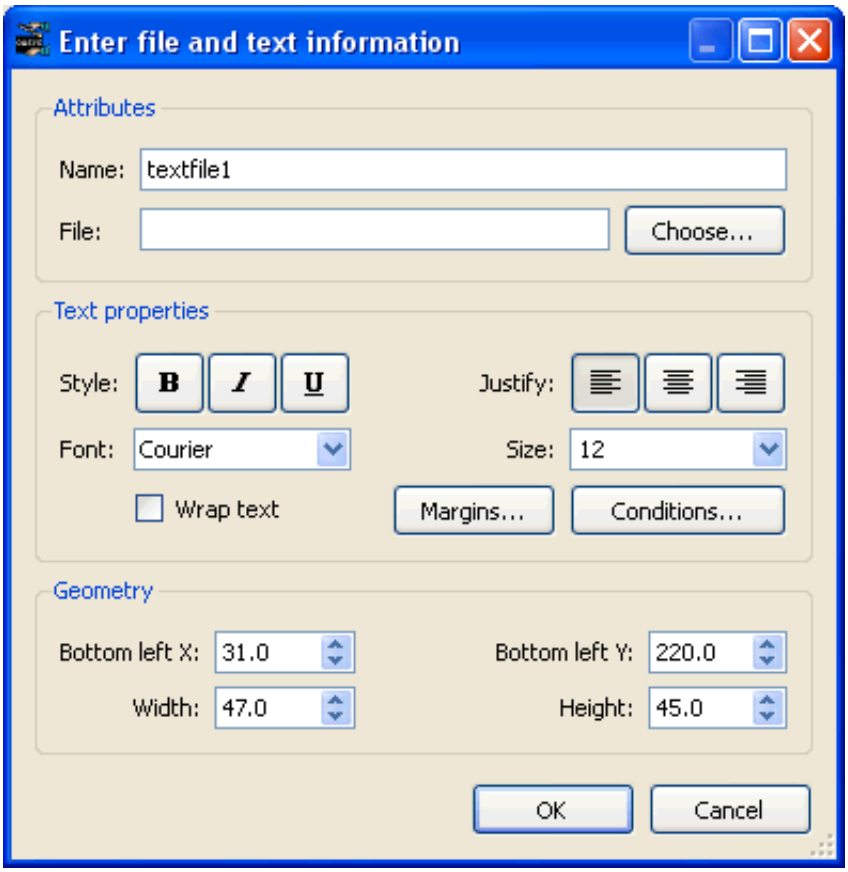
The **OK** button will exit this window and add the new program to the template. The **Cancel** button will exit this window without adding anything to the report

6.4.2 Editing program objects

Program objects can be edited in exactly the same way as the simple shape objects. See section 5 for more details.

6.5 File objects

6.5.1 Text files



To insert text from a file, select the **File Text** from the **Insert** menu.
The **Choose...** button allows the user to select the file by browsing the computer. The positioning and style of the text can be changed.
The **OK** button will exit this screen and create the object/save the changes made.
The **Cancel** button will exit this screen without creating the object/saving the changes.

The text parameters such as font, justification, size etc can be set for the text that will be read from the file.

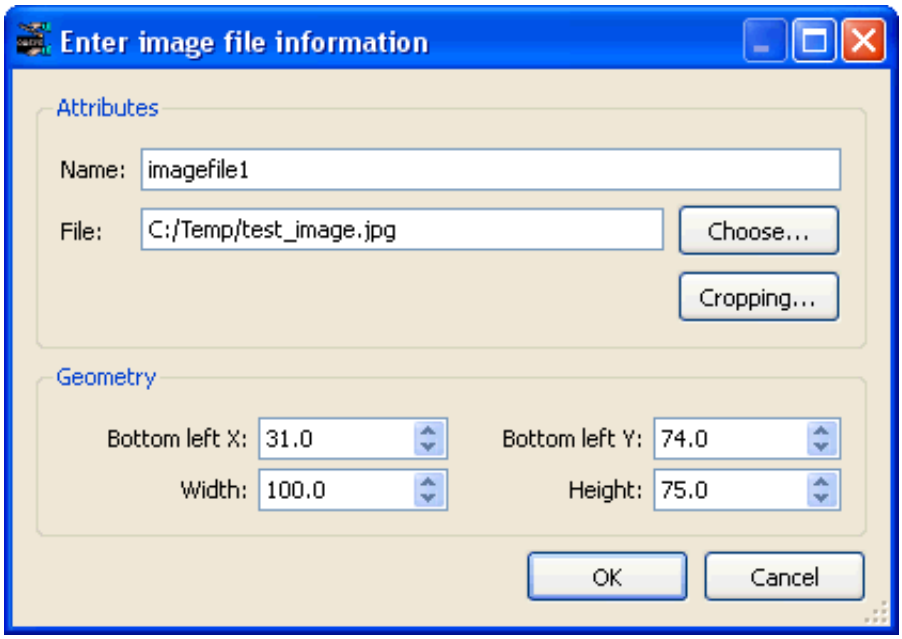
The text, background and fill colour and the border line style can be set using the style toolbar. See section 5.2 for more details.

The margins for the textbox can be changed by using the **Margins...** button.

The **Conditions...** button (see section 10) enables the user to apply conditional formatting to the text.

By default text is not wrapped so long lines will be clipped to the width of the object. If you want text to be wrapped onto multiple lines use the **Wrap text** checkbox.

6.5.2 Image files



To insert an image from a file, select the **File Image** from the **Insert** menu.
The **Choose...** button allows the user to select the file by browsing the computer. The positioning of the image can be changed.

The **Cropping...** button can be used to crop away parts of the image from the top, bottom, left and right before showing it. See section 5.4.2 for more details.

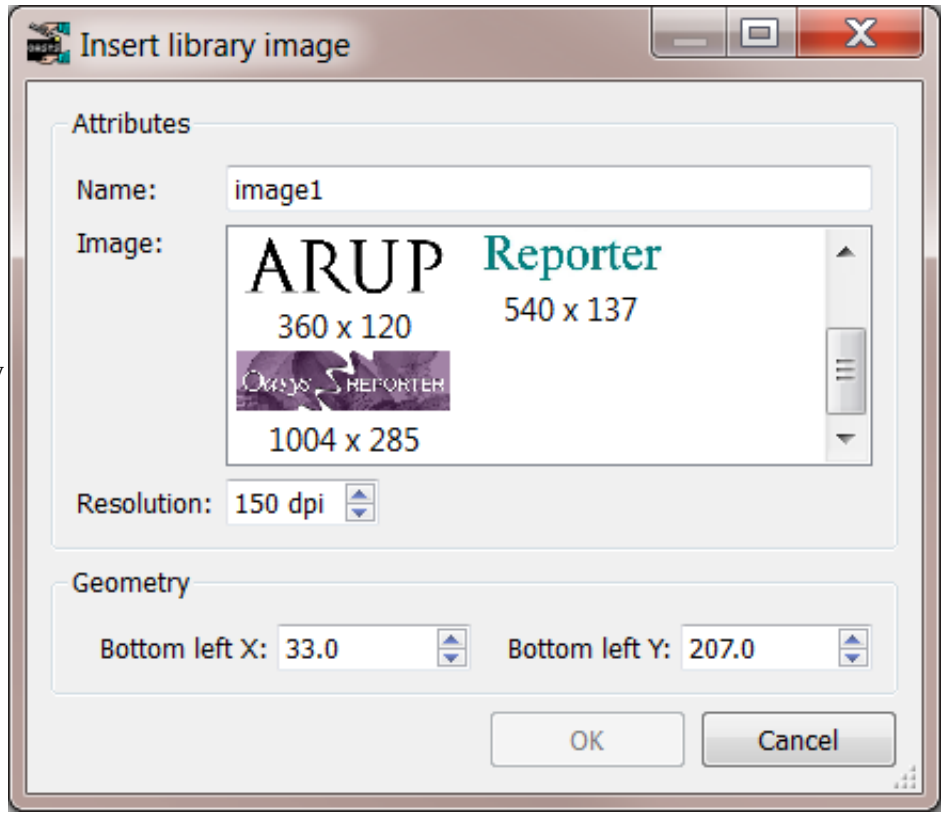
The **OK** button will exit this screen and create the object/save the changes made.
The **Cancel** button will exit this screen without creating the object/saving the changes.

6.6 Library objects

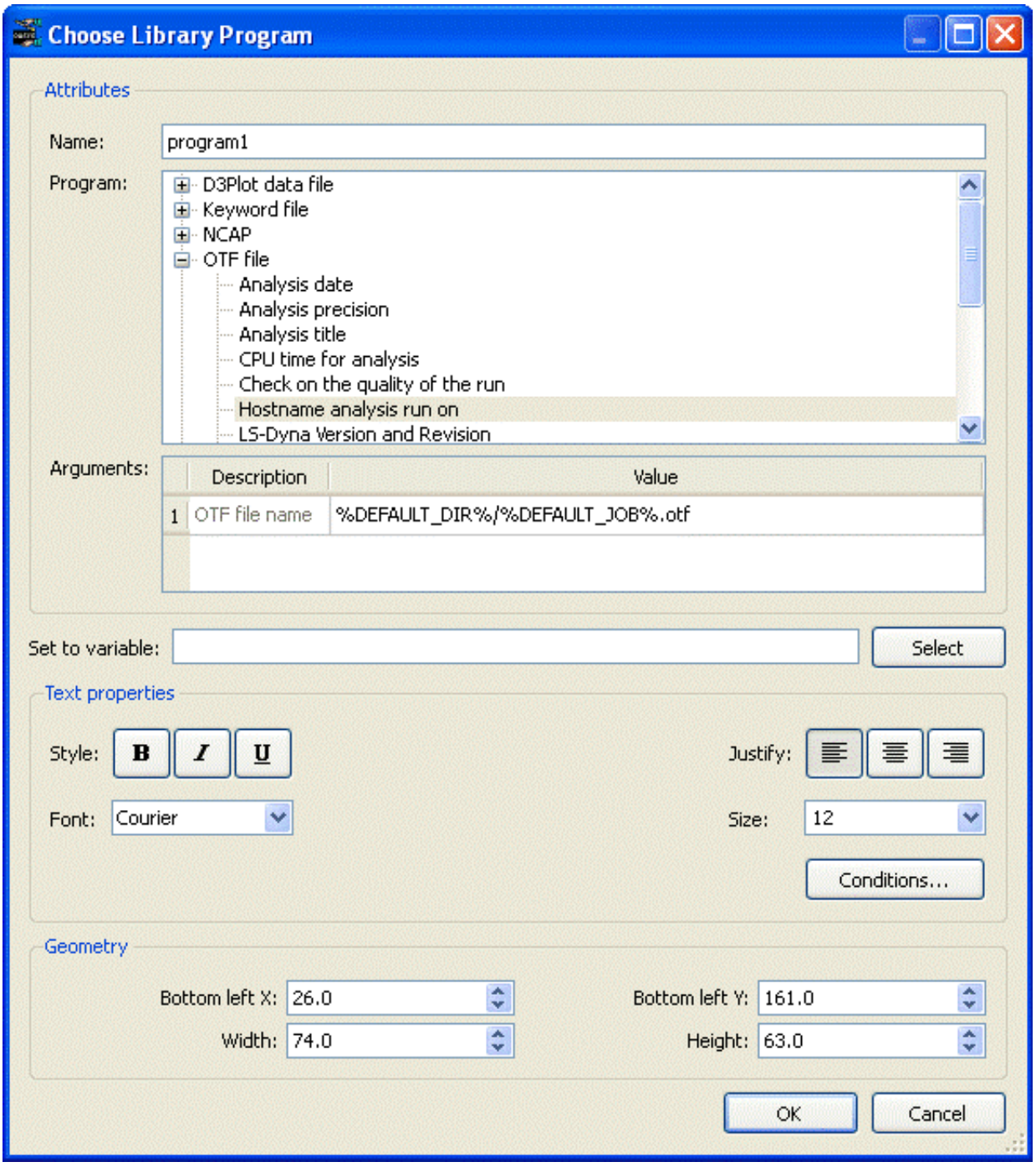
6.6.1 Library images

This option allows the user to view and select an image from the selection held in the image library. The resolution and positioning of the image can also be set. The **OK** button will exit this windows and add the new object to the template. The **Cancel** button will exit this window without adding anything to the report.

See appendix B.3 'Standard library images' - to insert library images.



6.6.2 Library program/script



This option allows you to specify a program/script from the library, the output of which will be inserted into the report by REPORTER when the report is finally generated. (See the library object appendix for more details about using the library)

Once you have selected this option you need to click and drag to create an area in the report where the output is to appear. Then the relevant **Insert** window will be brought up.

From this window you can select the program/script you want from the program list by clicking on it with the mouse. Depending on the program/script a number of argument boxes may appear into which you need to specify any arguments required by the script. By right clicking or pressing **Ctrl+I** in these you can bring up a **Insert variables** window from which to select a variable to use for the argument.

The output from the program/script can be set to a variable using the **Set to variable** input box or **Select** button.

The font properties can be set using the **Text properties** section. The text colour will be set to the current text colour

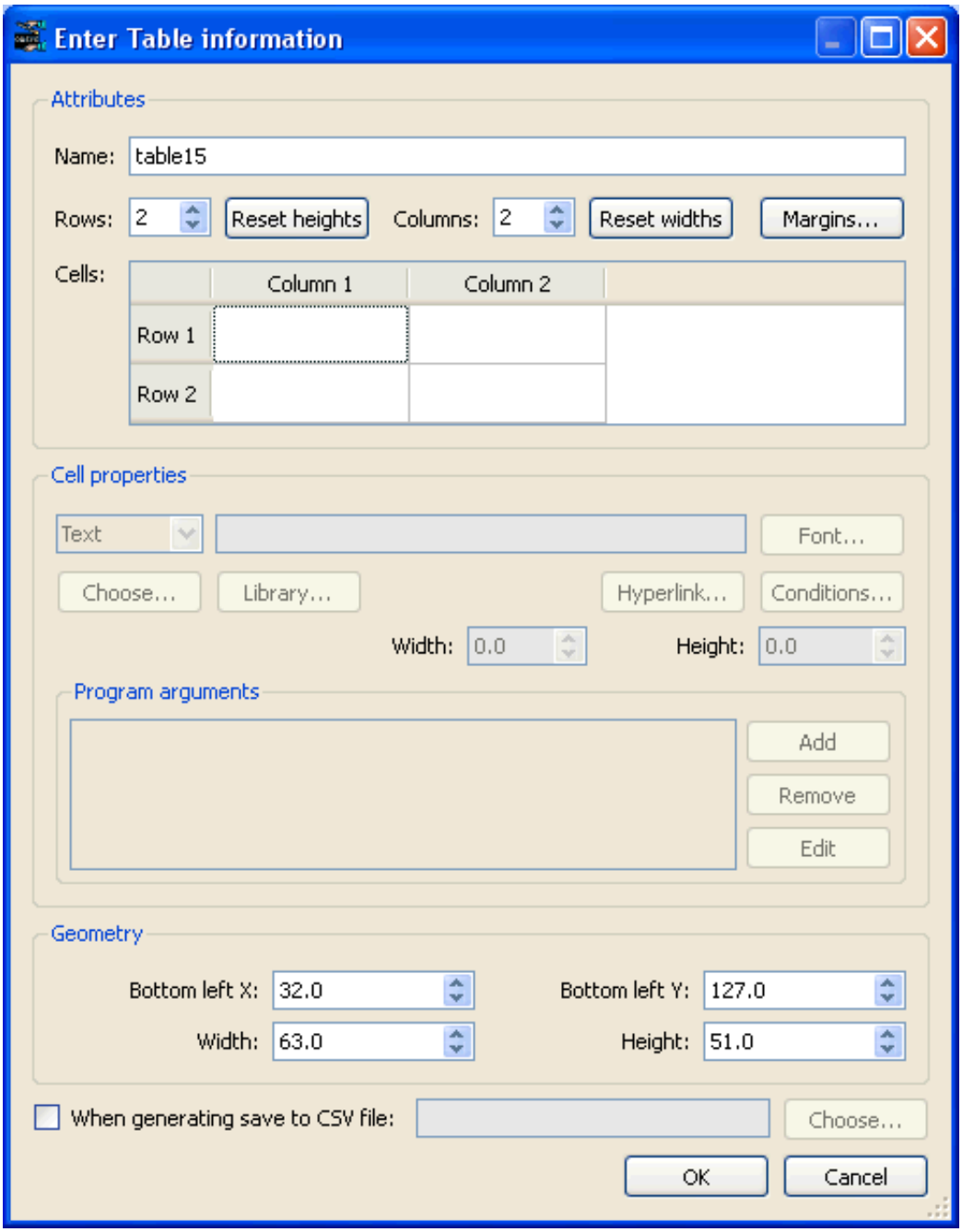
setting.
The **Conditions...** button (see section 10) enables the user to apply conditional formatting to the text.

The **OK** button will exit this windows and add the new object to the template. The **Cancel** button will exit this window without adding anything to the report.

6.6.3 Editing library objects

Library objects can be edited in exactly the same way as the simple shape objects. See section 5 for more details.

6.7 Table objects



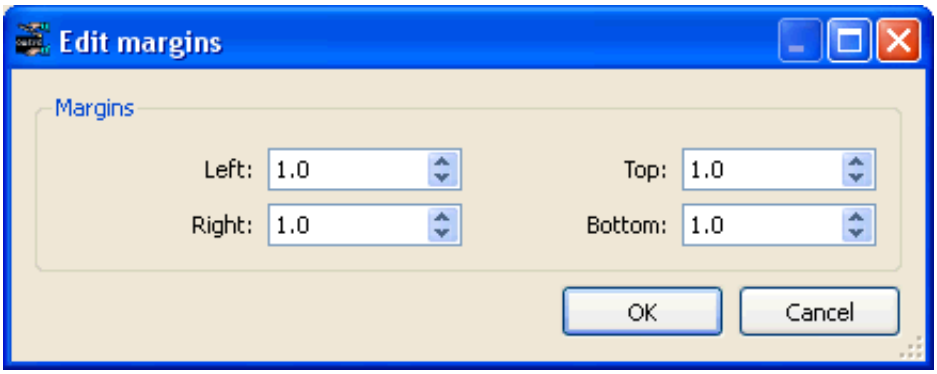
A table allows you to easily line things up on a page in REPORTER. To create a table drag the area on the page that you want to be a table. The menu to the right is then mapped.

6.7.1 Changing the number of rows or columns in the table

By default a table will have 2 rows and 2 columns and initially each cell in the table will be blank. The number of rows and/or columns is changed using the **Rows** and **Columns** spin boxes in the **Attributes** section. As the values are changed the **Cells** section in the menu will be updated accordingly.

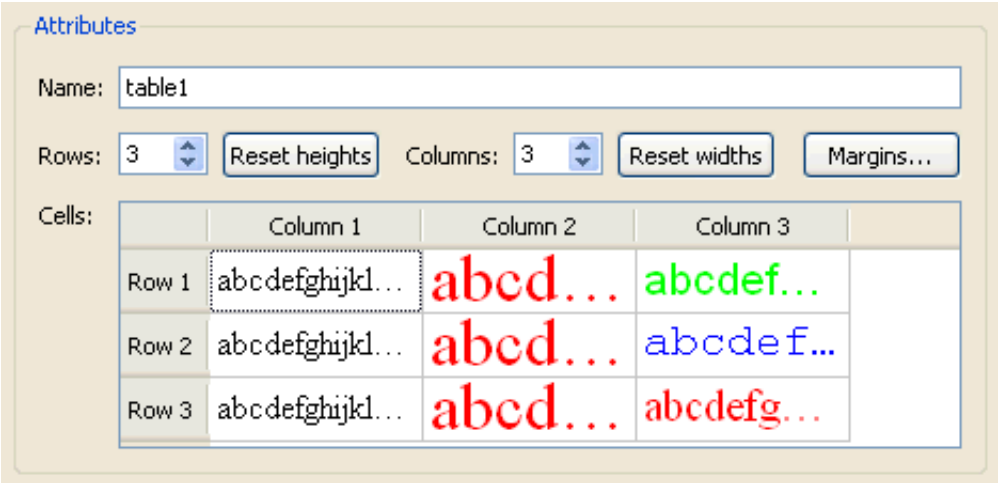
6.7.2 Changing the margins for cells in the table

The margins for the cells in the table can be changed using the margins button in the **Attributes** section.



6.7.3 Seeing what is in each cell

The attributes section of the menu shows a simplified view of the table in a spreadsheet form in the **Cells** section. Cells which have text present in them are shown using the correct font, font colour and size so you can quickly see you have the correct settings.



6.7.4 Changing cells

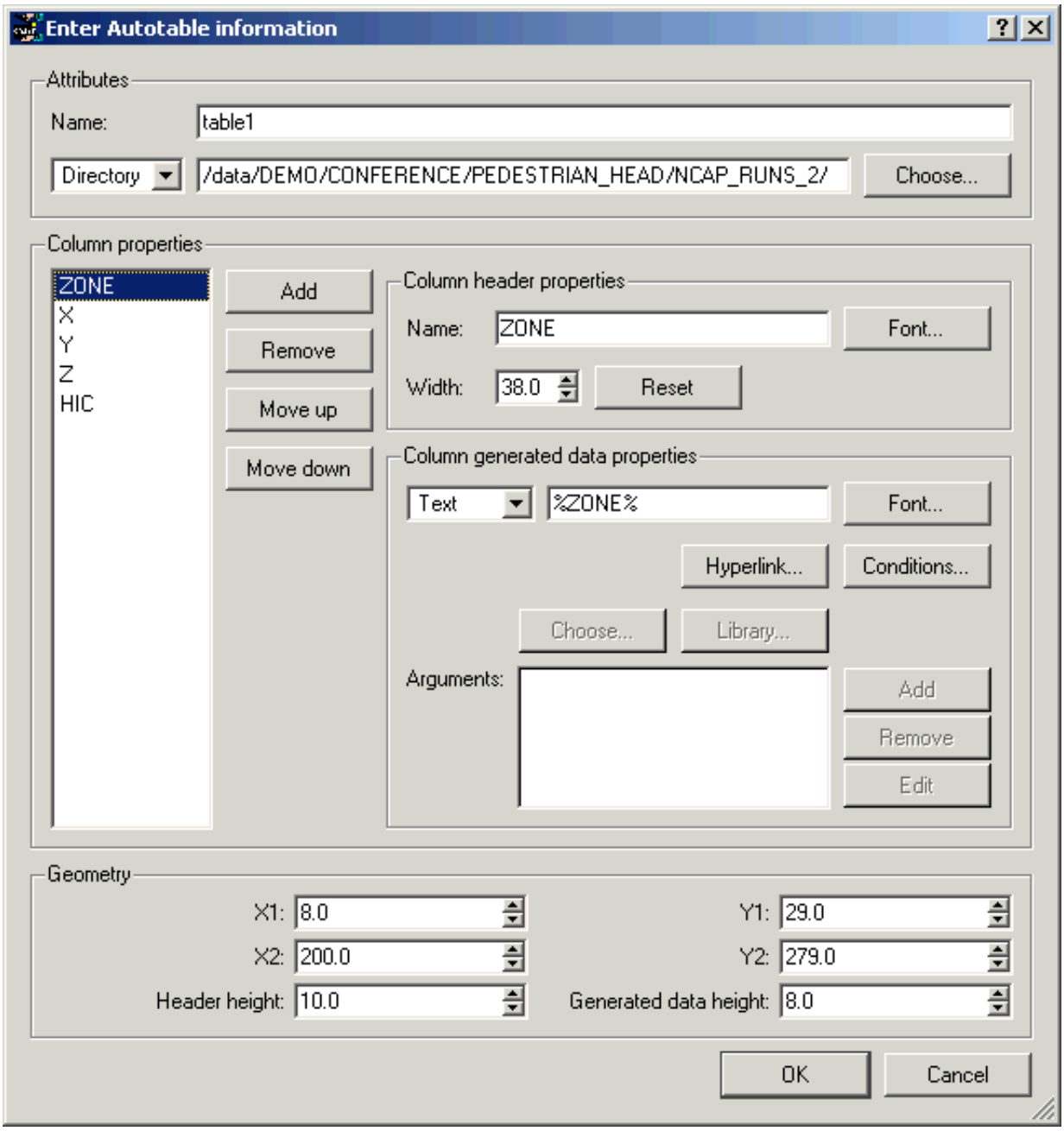
To change a cell (or cells) click on the cell in the simplfified view (or multiple select using Shift and/or Ctrl). The selected cells are highlighted in the simplified view and the **Cell properties** section of the menu becomes active.

The font can be changed with the **Font...** button and hyperlinks and conditional formatting applied to the cell text using the **Hyperlink...** and **Conditions...** buttons.

By default all cells will have the same with and height but you can use the **Width** and **Height** spinboxes to alter the width of this cell (and hence the width of all cells in the same column) and the height(and hence the height of all cells in the same row). To reset widths and/or heights back to be the same use the **Reset heights** and **Reset widths** buttons in the **Attributes** section.

Instead of just using text in the generated data you can run a program instead which could be a standard library program or an external program. In this case the output from the program will be put in the table cell instead. To use a program change the Cell type from **Text** to **Program** using the popup. Once this is done the **Choose...** and **Library...** buttons and the **Program arguments** section become active

6.8 Autotable objects



An autotable object in REPORTER is a table which REPORTER will create when the report is generated. An an example, you may want to run multiple analyses and produce a summary table with one line in a table for each analysis. The autotable object allows you to do this.

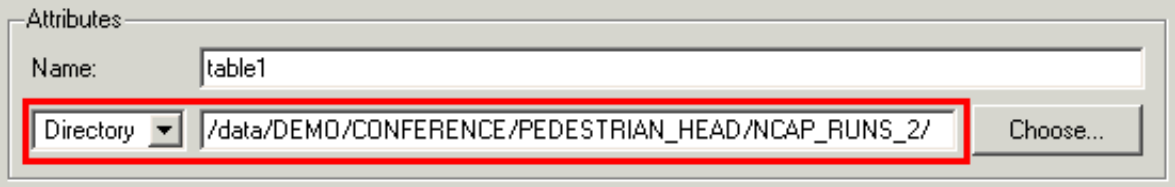
The above image shows the menu to create a table for a set of pedestrian headform analyses. We want to create a table with 5 columns (as shown below) ; the impact zone, the x, y, and z impact points and the calculated HIC.

ZONE	X	Y	Z	HIC
C1A	899.984	1393.17	895.182	4666.223
C1B	841.037	1276.24	896.854	1055.947
C1C	694.404	1399.28	851.726	343.4052
C1D	703.138	1308.79	861.869	627.7126
C2A	804.945	1171.9	898.937	476.1642
C2B	788.008	1057.62	903.647	467.8154

To do this we would run each of the analyses and post-process them with a REPORTER template. Each analysis would calculate the ZONE, X, Y, Z and HIC and store them as variables. These variables would then be saved to a file called `reporter_variables`. The autotable object in the summary template can then pick up these `reporter_variables` files and use them to create the table rows. One row will be created for each file that is read.

6.8.1 Selecting variables files for the table

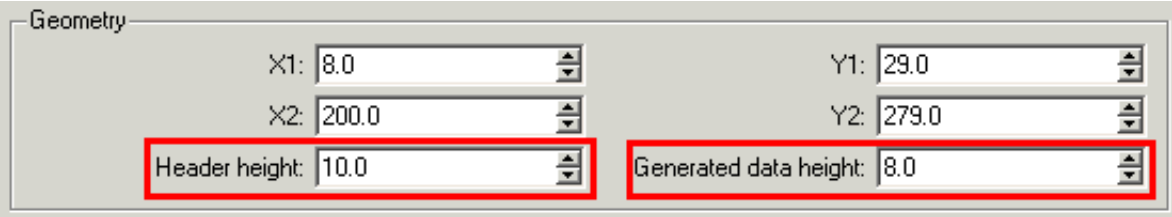
To create the autotable you need to select where REPORTER will read the `reporter_variables` files from. This is done in the **Attributes** section.



In this example REPORTER will look for any `reporter_variables` files recursively from the directory `/data/DEMO/CONFERENCE/PEDESTRIAN_HEAD/NCAP_RUNS_2`. Alternatively you can select a file which will contain a list of directories for REPORTER to look for any `reporter_variables` files. Note that for the file case REPORTER does not look recursively from that directory, it looks in that directory only.

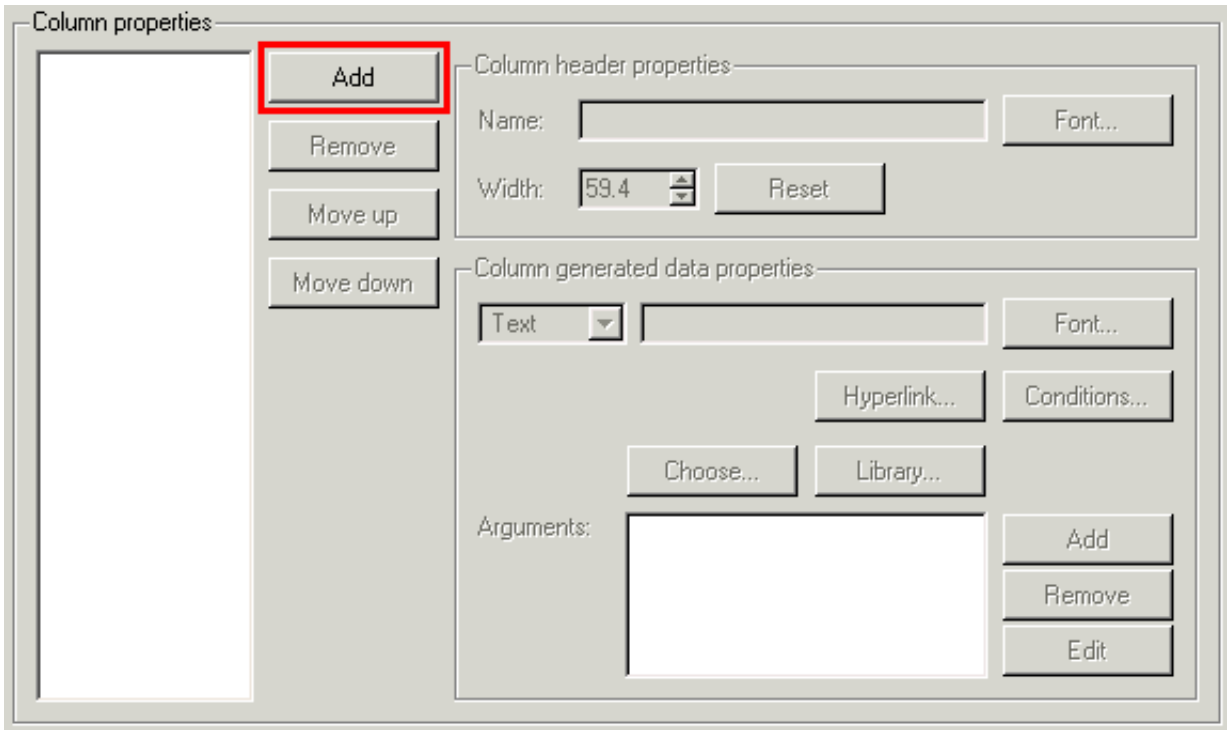
6.8.2 Setting the header and generated row heights

To set the height of the header row and any rows which are generated by REPORTER use the **Header height** and **Generated data height** options in the **Geometry** section.

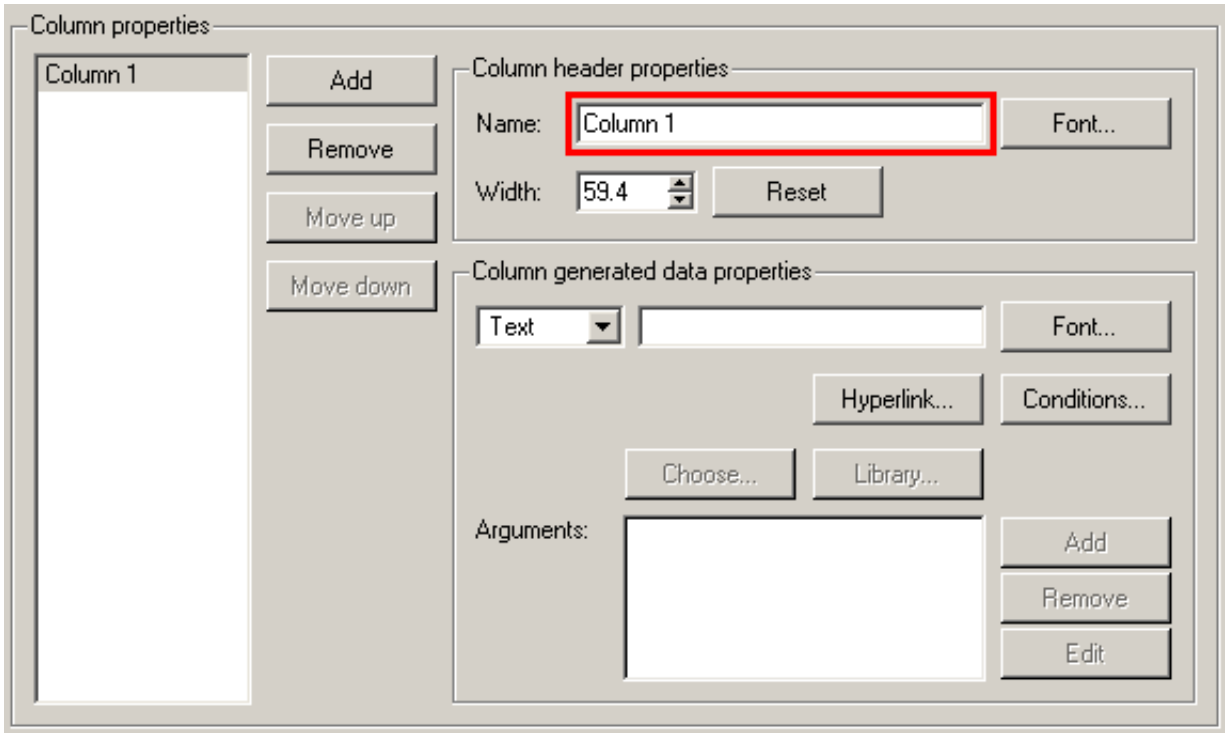


6.8.3 Adding columns to the table

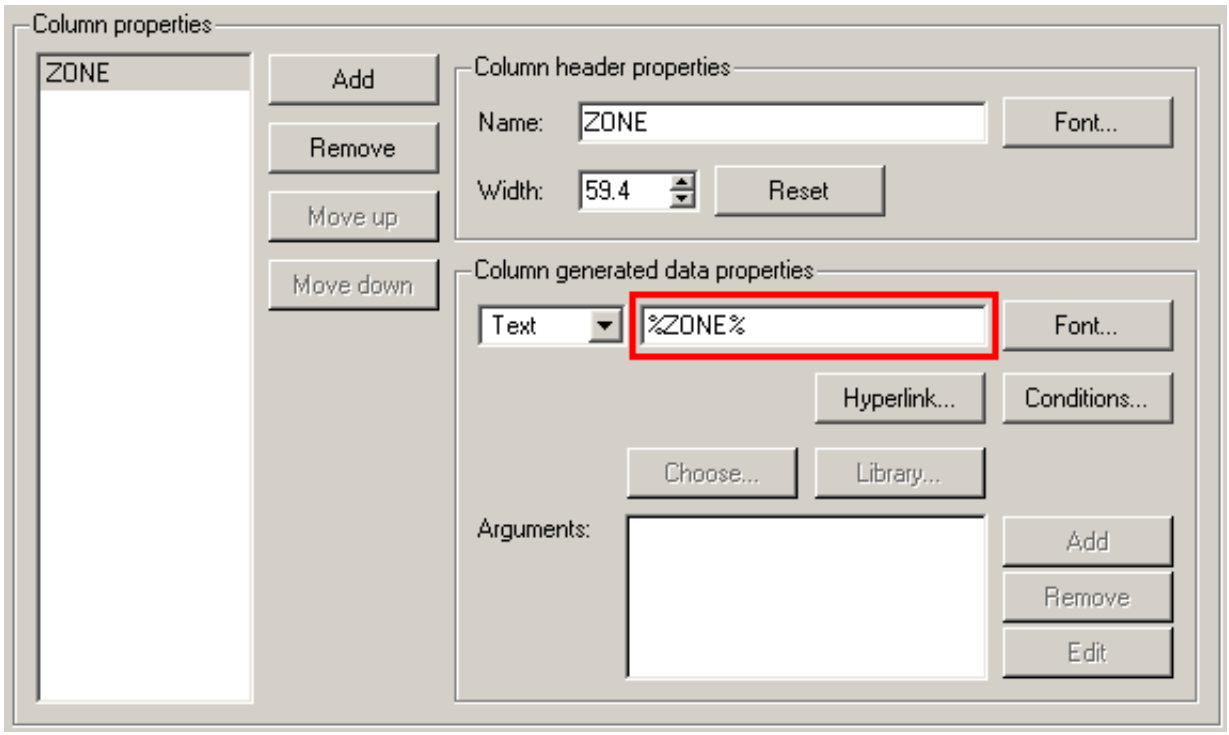
To add a column to the table use the **Add** button in the **Column properties** section.



This will create a new column with the default name **`Column 1`**. This is what will be shown as the column header. You can change the name in the **Name:** textbox and change the font used with the **Font...** button.



Once the column has been created you can decide how the data should be generated. Continuing the example above the first column is the zone so we change the column name to ZONE. The individual analyses that were post-processed by REPORTER saved the zone for the analysis in the variable ZONE, so for the generated data we want to input the text %ZONE% which means the value of variable ZONE. REPORTER will first look for any variables in the `reporter_variables` file. If it finds the variable then the value will be used. If REPORTER cannot find a variable in the `reporter_variables` file it will then look for a variable with the same name in the current template and use that value.

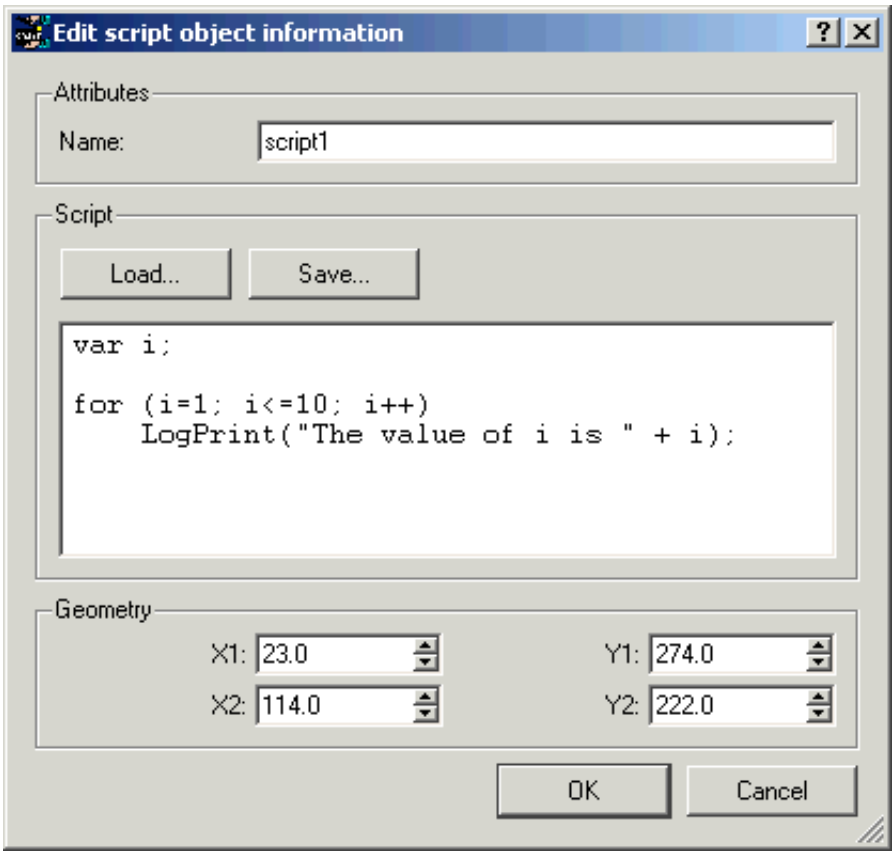


The font can be changed with the **Font...** button and hyperlinks (e.g. see the ZONE column in the above example output) and conditional formatting (e.g. see the HIC column in the above example output) applied using the **Hyperlink...** and **Conditions...** buttons.

Instead of just using text in the generated data you can run a program instead which could be a standard library program or an external program. In this case the output from the program will be put in the table instead.

You can add as many columns to the table as necessary in exactly the same way.

6.9 Script objects

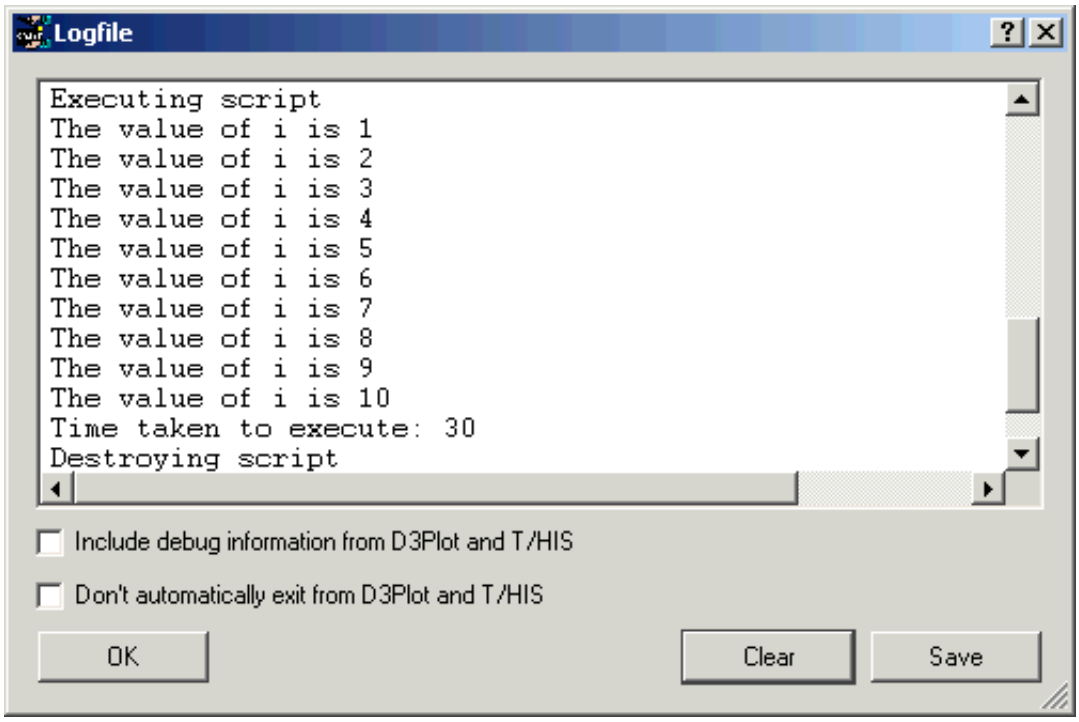


Script objects are JavaScript scripts which REPORTER can run using an embedded JavaScript interpreter. REPORTER also extends JavaScript by defining a number of classes for things specific to REPORTER. See appendix D for a reference to these classes.

To insert a script select the script tool and then click and drag an area on the page. This will draw the area that the script will occupy and then map the script window:

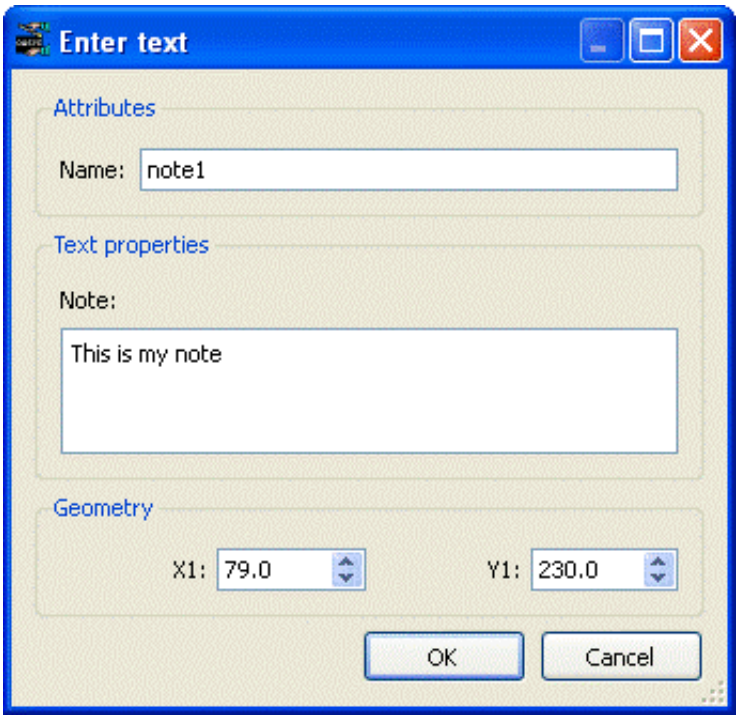
You can load a script into the window with the **Load...** button and save the script to file with the **Save...** button. Scripts do not make any output on the page themselves (i.e. the area on the page that the script occupies will not have anything drawn on it from the script) but they can create output indirectly. For example, a script could create a bitmap using the Image class in REPORTER and then this bitmap could be imported with an image file object.

As a simple example the script above print things to the logfile window using the LogPrint function. This doesn't do anything useful in itself, but shows how you can produce useful diagnostic messages. This generates the following output in the logfile window.



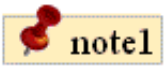
For more information on scripting please see chapter 11.

6.10 Note objects



Note objects are used to add simple notes to your REPORTER template. They are only displayed in design view. To add a note when in design view, click on the note icon and click on the position on the page you wish to add a note. The following window will be mapped:

The name is what is displayed on the screen. The note is what is displayed when you hover the mouse over the note on the screen:



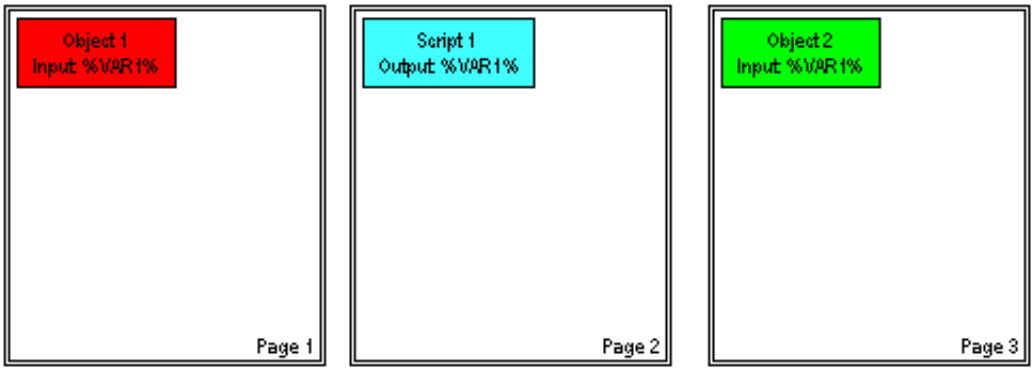
This is a note

7. Generating and outputting reports

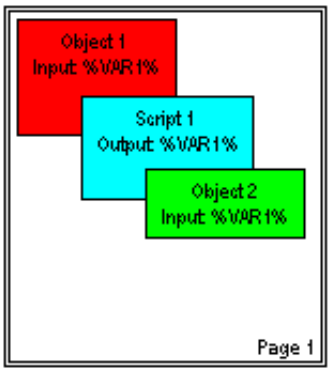
7.1 Effect of object order on generating a report.

The order the various objects are layed out on a page relates to the order in which they will be processed by REPORTER when it generates a report. So if you have a program/script that creates a variable in it's output, that program/script will need to be on the same page or an earlier page than the object that first uses the generated variable. If it is on the same page it also needs to be earlier in the order of objects on the page than any objects that uses that variable.

The following series of example shows what will and won't work. In all the examples Object 1 (red) and Object 2 (cyan) both use a variable (**VAR1**) generated by Script 1 (green) as an input.



In this case Object 1 is on an earlier page than Script 1 so the variable **VAR1** hasn't been created yet. In this situation REPORTER will give a warning and uses a blank for the variable **VAR1** in Object 1. Object 2 however comes after Script 1 so the variable **VAR1** has been created and Object 2 can be generated normally



In this case Object 1 is on the same page as Script 1, but comes before it in the order of items on the page so there variable **VAR1** hasn't been created yet. In this situation REPORTER will give a warning and uses a blank for the variable **VAR1** in Object 1. Object 2 however comes after Script 1in the order of items on the page, so the variable **VAR1** has been created, and Object 2 can be generated normally.

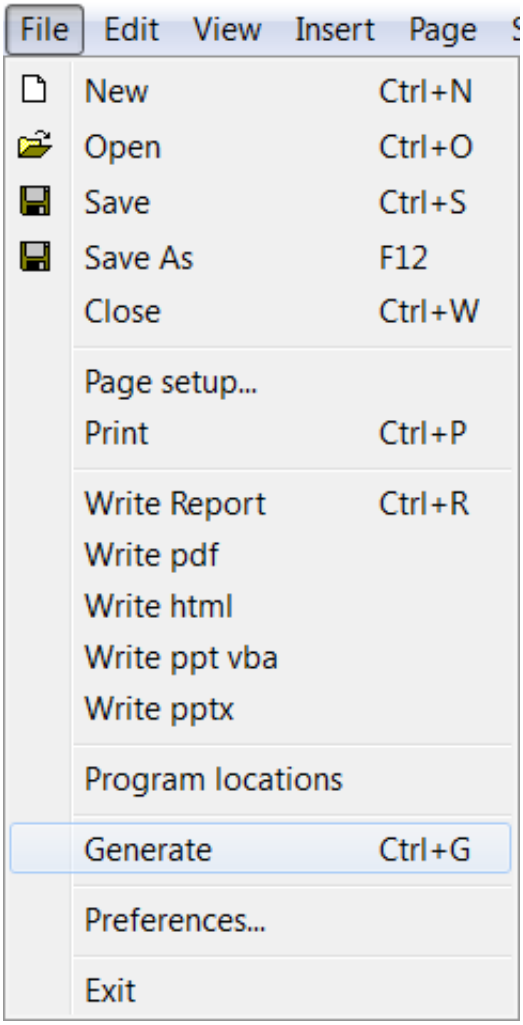
7.2 Generating reports

Once a report template has been created a report can be generated by selecting the **Generate** option in the **File** menu.

Generating a file causes all of the objects on the page to perform any necessary actions to create the output for that object. For example:

- Text objects could expand variables into the actual values
- File objects would read the text/image file and show it
- Program objects would be "run" to generate the output.
- Tables will be created
- etc.

If any objects are to be created from D3PLOT or T/HIS then REPORTER will start the relevant program to produce the object and then insert the object into the report. REPORTER will also run any specified programs/scripts and insert the output into the report as required.



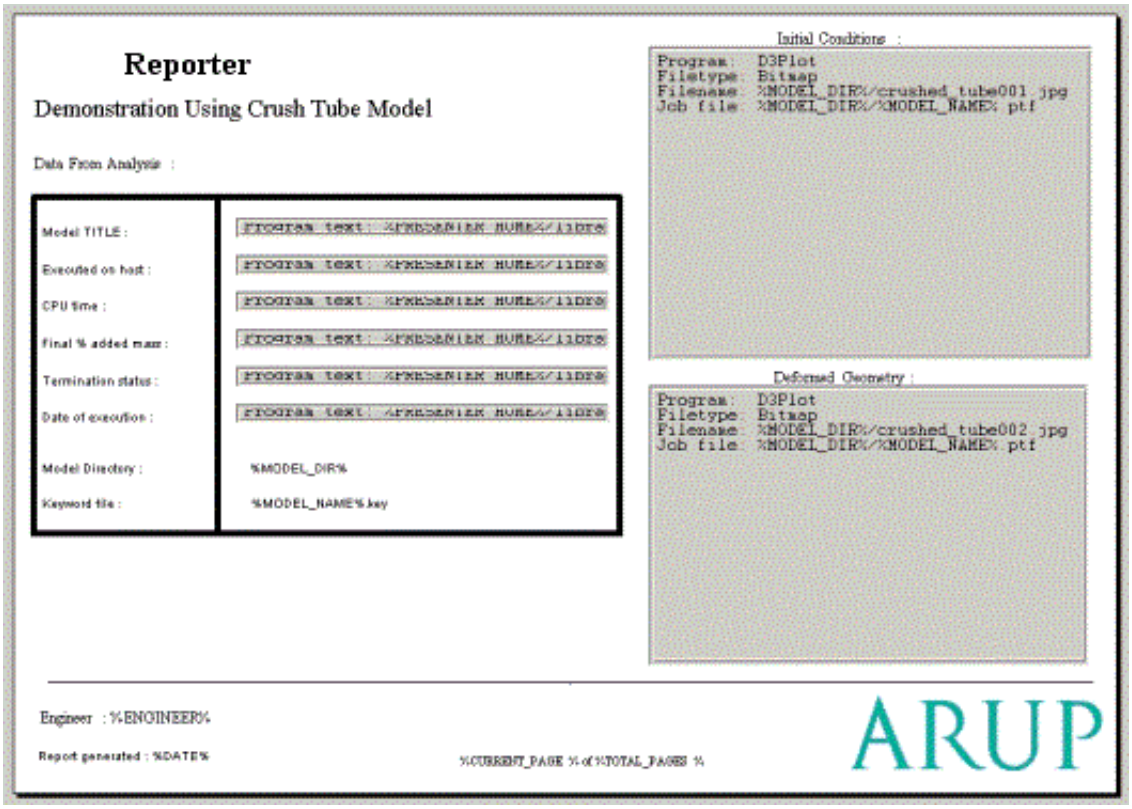
During report generation feedback is given in the status bar showing what REPORTER is doing. For example in the image below REPORTER is currently generating output for object 'oasys21' on page 1 and the report generation is 29% complete.

You can stop report generation at any time by pressing the **Stop** button in the status bar.

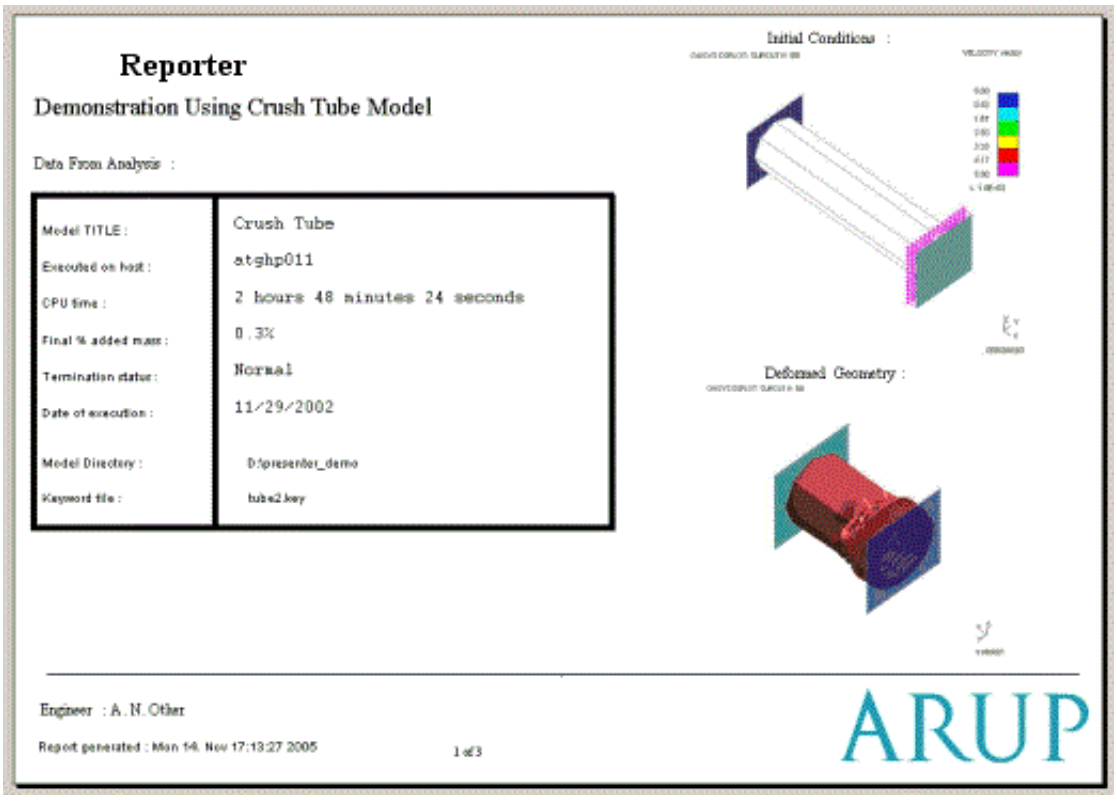
To switch between the the design view (showing the report template) and the presentation view (showing the final report) you use the layout buttons

The images below show an example of a report template before and after generating the page.

Design view before generating report



Presentation view after generating report

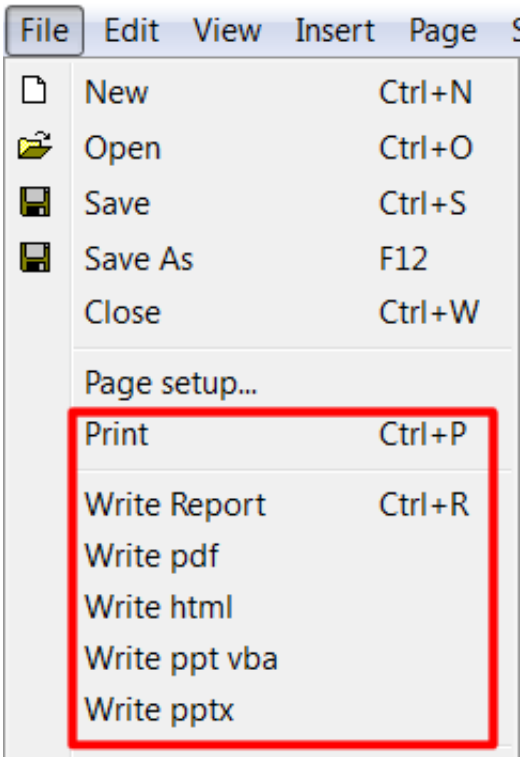


7.2.1 Using the cursor in presentation mode

When you first go into presentation mode after generating a template the cursor mode changes to the "hand" cursor. In this mode you cannot select or edit any objects. The cursor is used for following hyperlinks. This is likely to be extended to other functions in future releases of REPORTER.

You can change the mode back to the select mode in which case all of the normal operations which you can do in design mode can be done including editing. Additionally if you choose any of the other modes you can create new objects even though you are in presentation mode.

7.3 Outputting a generated report



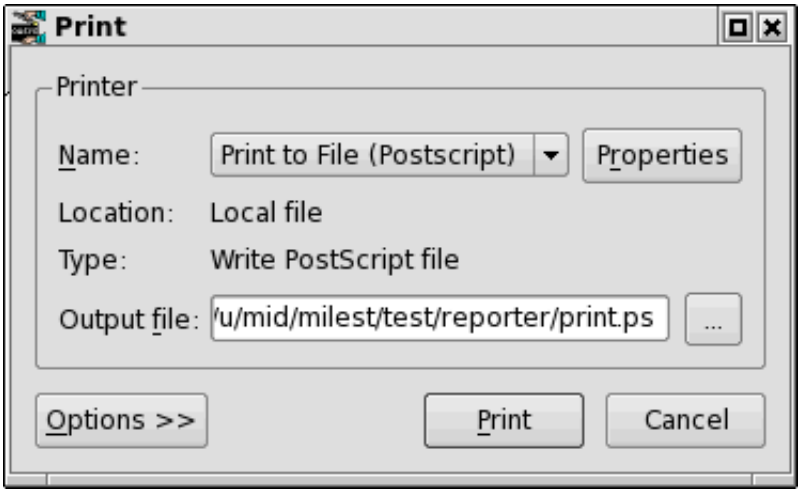
REPORTER can create various types of output by using the various write option in the **File** menu. Currently the types are:

- **Print** - print report onto a printer
- **Write Report** - will write the ffile as a report (images etc included with the temple)
- **Write pdf** - will write an acrobat pdf file
- **Write html** - will write an HTML web page
- **Write ppt vba** - will write visual basic file for Microsoft PowerPoint.
- **Write pptx** - writes a PowerPoint file directly.

7.3.1 Printing

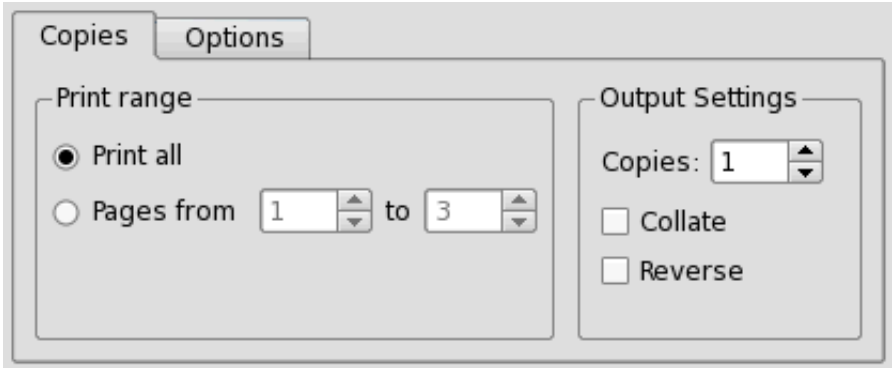
On Windows, the **Print** command will bring up the standard windows printer dialog.

On unix, it will bring up the dialog.

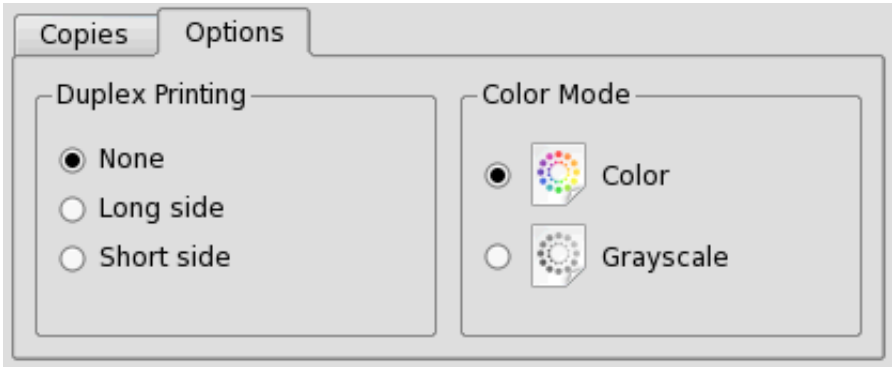


Extra options can be given by pressing the **Options >>** button.

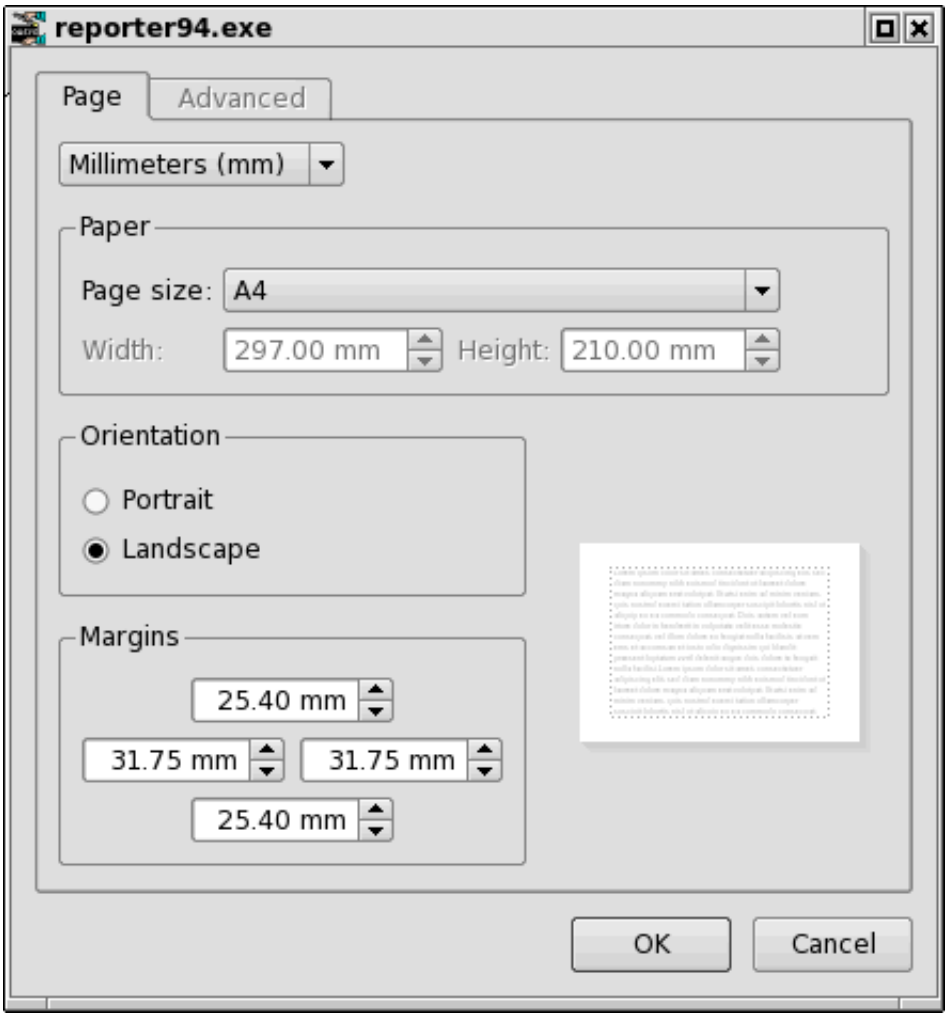
The **Copies** tab allows you to choose what pages should be printed and how many copies.



The **Options** tab allows you to choose double sided printing and black and white or colour output.



The **Properties** button allows you to set the page size and margins.



7.3.2 Pdf files

Write pdf will save the report as a pdf (Adobe Acrobat) file. Select the name of the pdf file you want to write.

7.3.3 HTML

Write html will save the report as a html file for the web. Select the name of the html file you want to write. REPORTER will then create a html page using frames containing the report. There will be a html file for each page in the report and a contents page. All the necessary images and files will be placed in a subdirectory of the main html file which is called **<name>**`.html_files`. So for example if you create a file `example.html`, REPORTER will create a directory called `example.html_files` as well and put any extra files in there. So if you want to move the html file to somewhere else remember to move `example.html` and the directory `example.html_files`.

7.3.4 PowerPoint files

Visual basic file for PowerPoint

REPORTER can write a visual basic macro that can be played in PowerPoint to generate a presentation.

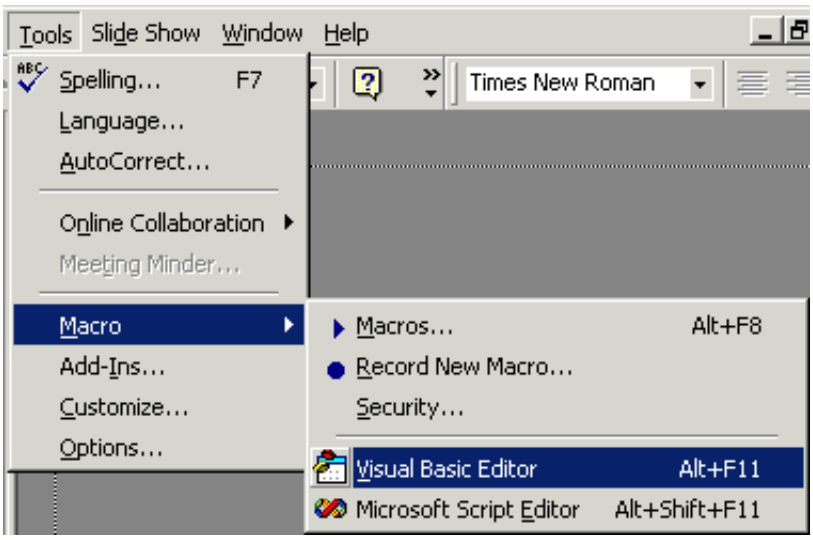
Note. From version 11.0 REPORTER can write pptx files directly on Windows **and Linux** so it is recommended that you use that method rather than using a visual basic macro. Support for writing visual basic macros may be removed in future versions.

To create a powerpoint presentation macro follow these steps.

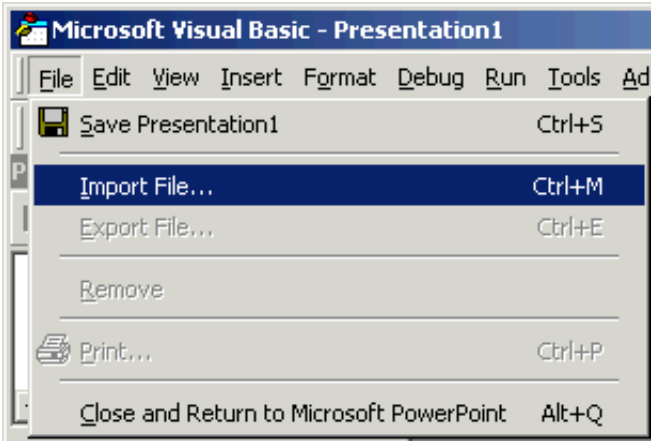
1. Powerpoint visual basic macros which import images can only work if the command to import the image uses the absolute filename for the image. When REPORTER writes a visual basic macro which will use images it **MUST** know the directory where this macro will be run so it can make absolute filenames for images. By default REPORTER will assume that you will run the visual basic macro from **`C:\temp`**. This can be changed by either:
   - Setting the preference **`reporter*vba_directory`** for REPORTER before you start.
   - Changing the preference in REPORTER using **File->preferences**... See section 2.7.5 for more details.
   - Changing the definition of **`scriptFolder`** at the top of the vba file that REPORTER writes.
2. Generate the report contents
3. Write a visual basic macro from REPORTER using **Write ppt vba**. REPORTER will write the visual basic file and will also create a directory containing any images in your presentation. The directory name is the filename with **`_images`** appended. e.g. if you write a file **`powerpoint.bas`**, REPORTER will create a directory **`powerpoint.bas_images`** that contains all the images.
4. Copy/ftp the visual basic file and the directory of images to the location you specified with the **`reporter*vba_directory`** preference in 1. above (or **`C:\temp`** which is the default if you have not specified the preference).
5. Start PowerPoint and create a new presentation with no slides in it.

For PowerPoint versions older than PowerPoint 2007

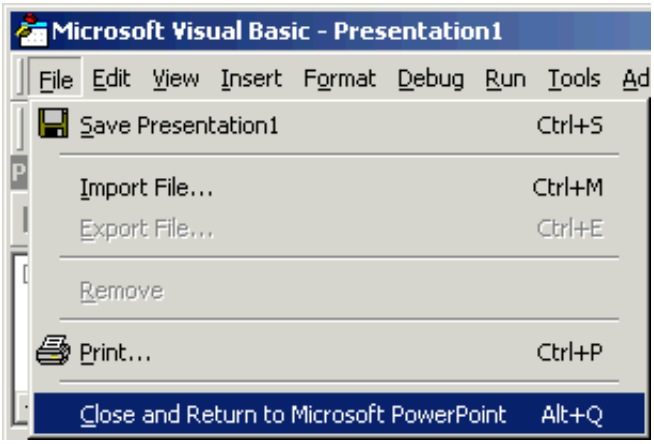
6. Start the visual basic editor by doing **Tools->Macro->Visual Basic Editor**.



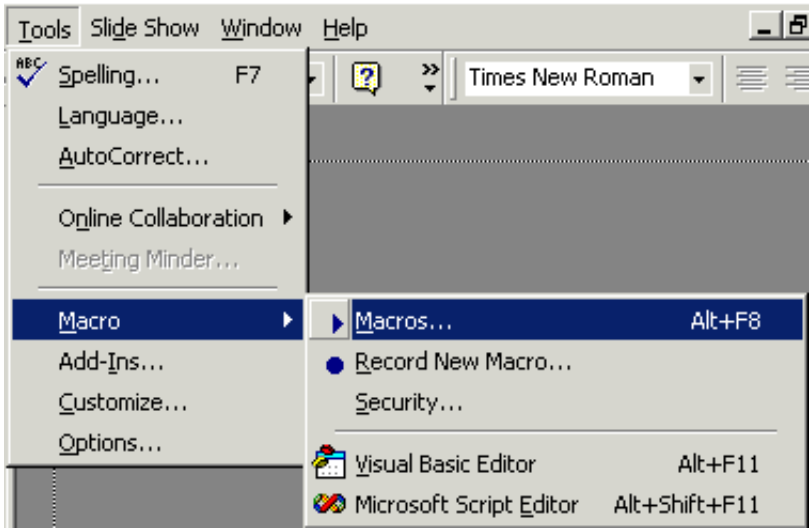
7. Import the visual basic file into the editor by doing **File->Import file** and selecting the file.



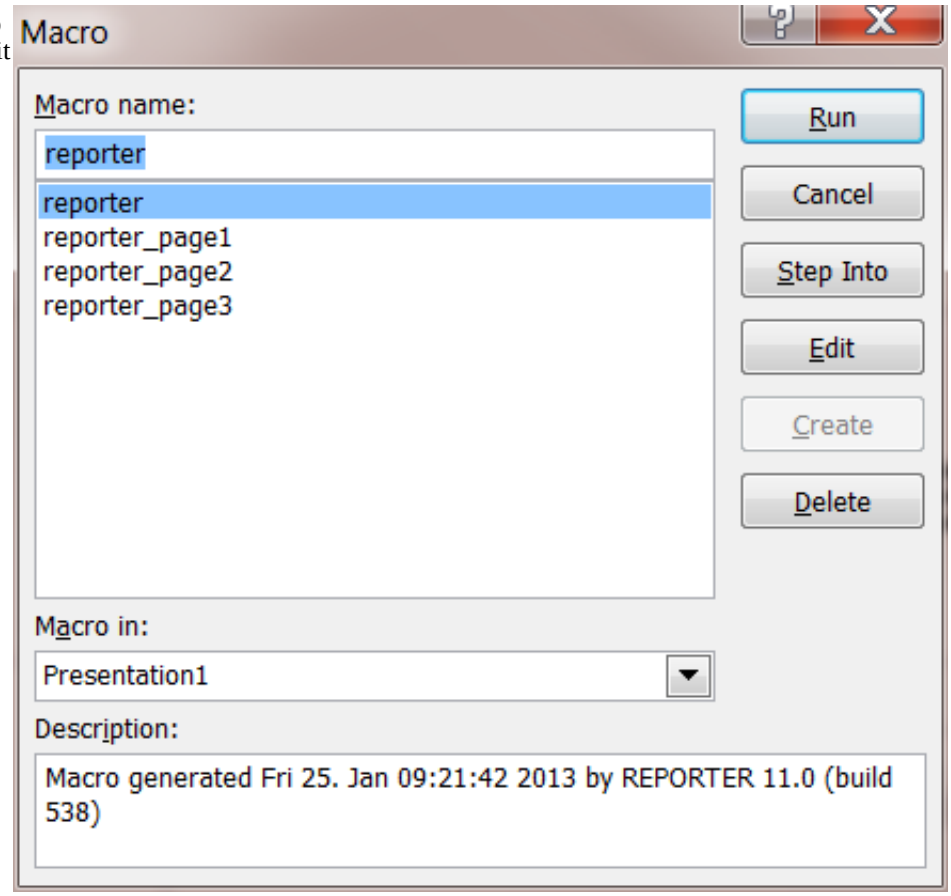
8. Return back to powerpoint by doing **File->Close and return to Microsoft Powerpoint**.



9. In Powerpoint do **Tools->macro->macros...**.



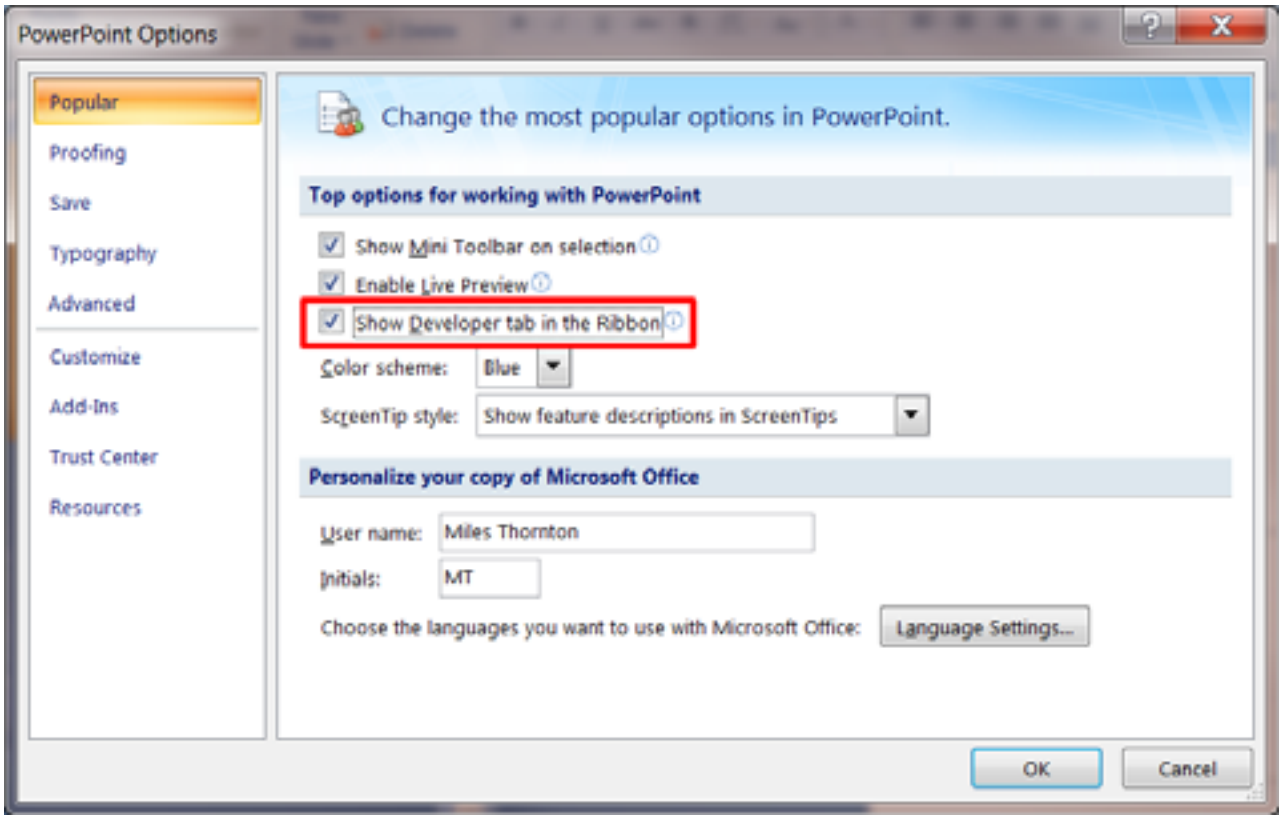
There should be a macro called **reporter**. Select it and press **Run**.



10. Save the powerpoint presentation.

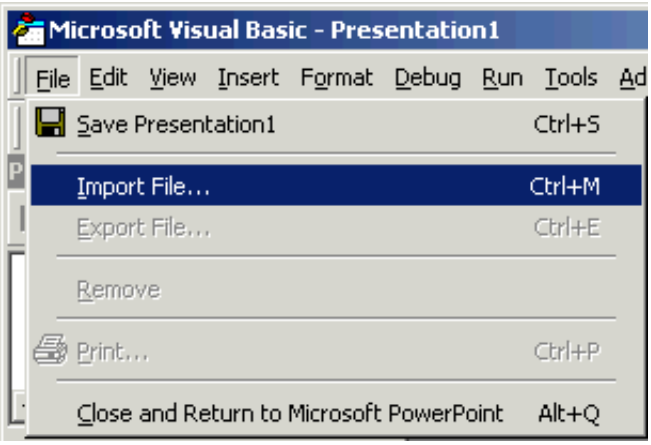
For PowerPoint versions 2007 and higher

6. Make sure the Developer tab is visible by clicking on the Office button  , selecting **Powerpoint Options** and selecting **Show Developer tab in the Ribbon** in the **Popular** section.

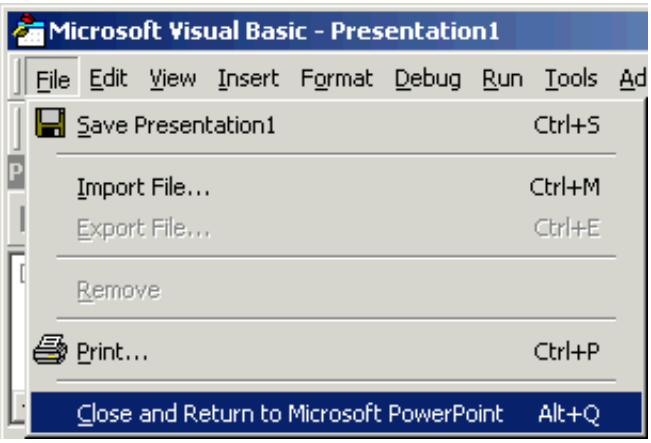


7. Start the visual basic editor by selecting **Visual Basic** from the **Developer** ribbon

8. Import the visual basic file into the editor by doing **File->Import file** and selecting the file.

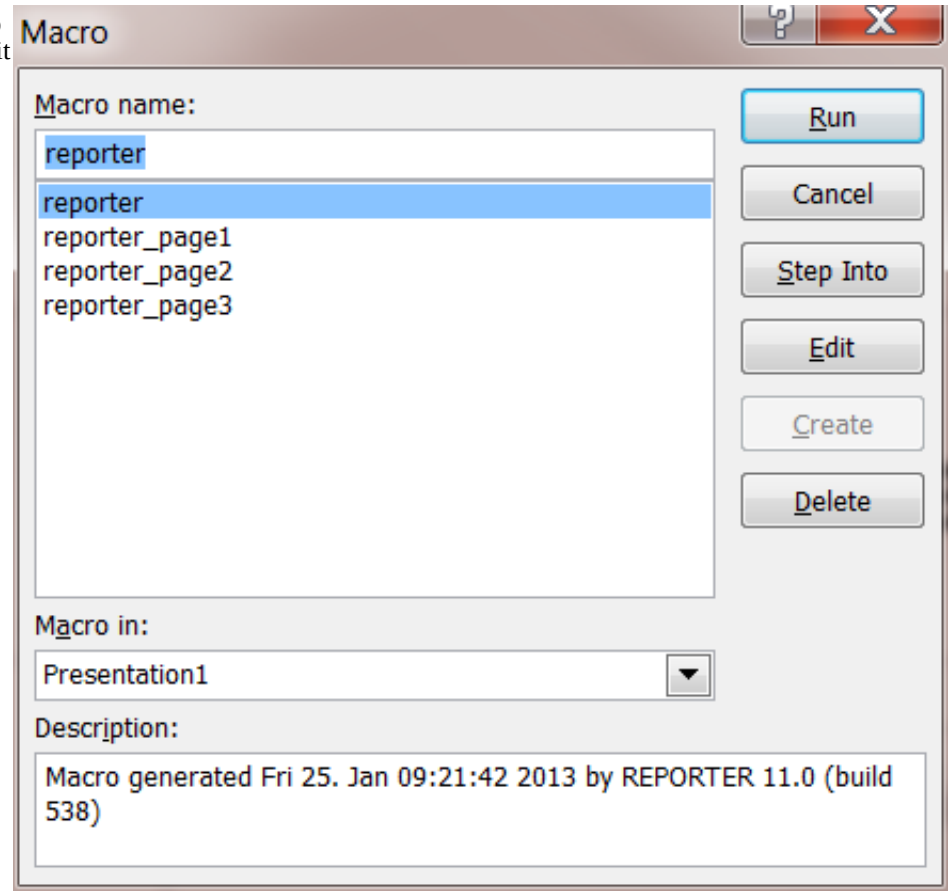


9. Return back to powerpoint by doing **File->Close and return to Microsoft Powerpoint**.



10. In PowerPoint select **Macros** from the **Developer** Ribbon

There should be a macro called **reporter**. Select it and press **Run**.



11. Save the powerpoint presentation.

Writing PowerPoint files directly

REPORTER can write PowerPoint files directly for Windows and Linux. Older versions of REPORTER (before version 11.0) could only do this for Windows if you had PowerPoint installed on your machine. This is no longer the case. Since version 11 REPORTER can write PowerPoint 'pptx' files directly for Windows **and Linux**.

Select **Write pptx** and give the name of the PowerPoint file you want to create. REPORTER will write the file.

Notes on PowerPoint output

When you use textboxes, text files and tables in REPORTER the output is clipped to the size of the object defined on the page. PDF and HTML output also support this but it is not possible to control the size of a 'textbox' in PowerPoint (in PowerPoint a table is made up of a collection of 'textboxes'). When writing PowerPoint output be aware of the following limitations.

1. If the text is too wide to fit in the 'textbox' it will automatically be wrapped onto multiple lines by PowerPoint.
2. If the combined height of the text, the top margin and the bottom margin is greater than the height of the textbox PowerPoint will increase the height of the textbox to make it hight enough.

If the Powerpoint output is not aligned correctly or is not what you see in REPORTER it is likely to be caused by these problems. Adjusting the size of the object, the text size or the margins will help to fix any problems.

7.4 Combining output from multiple reports

If REPORTER generates several templates and saves them as reports (see section 3.4 for more details) then it is sometimes useful to combine the output into a single pdf, html or pptx file. The easiest way to do this is to use the REPORTER options in the SHELL. See the SHELL manual for more details.

It can also be done on the command line in REPORTER by using the `-combine` command line argument. For example, if you wanted to combine the output from 3 reports to a pdf file and a PowerPoint file this could be done with the command:

```
reporter11.exe -combine report1.orr report2.orr report3.orr -pdf=combined.pdf
-ppt=combined.pptx -exit
```

8. Working with Variables

A main feature of REPORTER is that you create a template from which a report can be generated. This allows you to create a standard template for a project and then use that template to automatically create a report for a number of model runs. This is mainly achieved through the use of variables.

Variables are defined with a name and a value which can be a number or a text string, for example.

Variable Name	Value
CURRENT_PAGE	2
MODEL_DIR	/data/test/ tube1
JOB_FILE	tube_test1

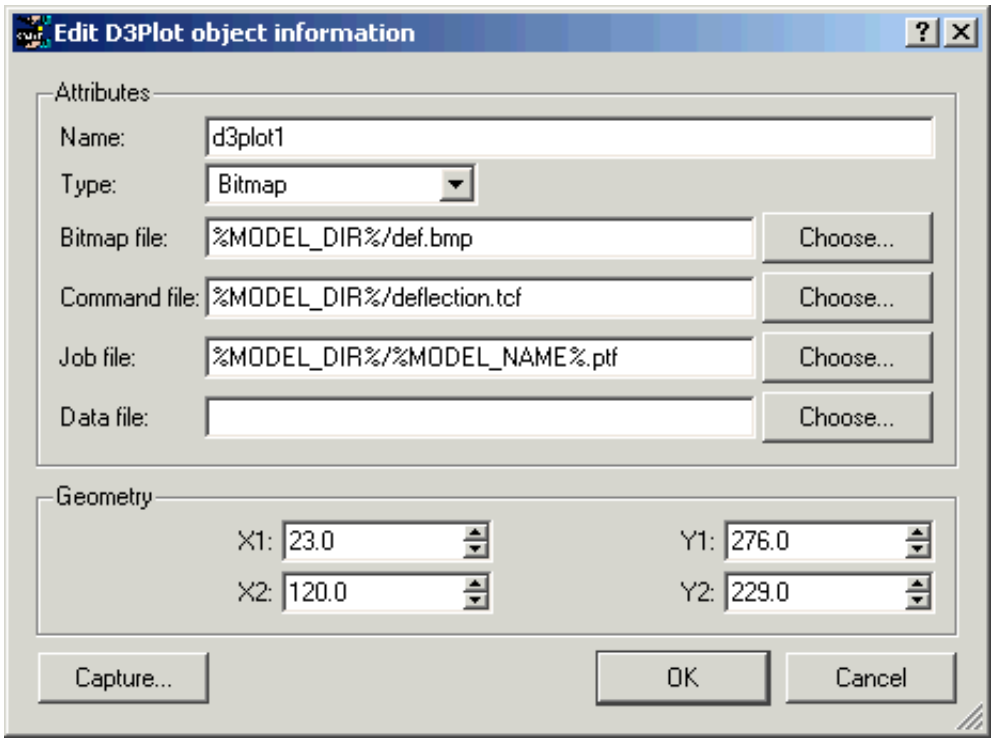
The main advantage of using variables is that if you have used variables when defining the various objects in the report template, rather than having to go through the report and change all the various filenames and directory paths when you want to generate a report from a new model, all you need to do is change the variables. This can be done manually by editing the template in REPORTER or you could insert a program/script into the template that would calculate and define all the necessary variables when REPORTER generates a report.

8.1 User defined variables

For example, if you want to create a report template that has a number of images that are created by a D3PLOT command file. If you want to use the template to generate reports for a number of models, the problem is that the various filenames and directory paths will be different for each model. e.g:

Model	Directory Path	Job Name
Crush Tube 1	/data/test/tube1	tube_test1
Crush Tube 2	/data/test/tube2	tube_test2
Crush Tube 3	/data/test/tube3	tube_test3

To get round this problem you can use a variable for the directory path called MODEL_DIR and a variable for the job name called MODEL_NAME. When inserting the D3PLOT objects (see Section 6 for more detail about inserting D3PLOT objects) use the variables for the directory path and job name. The variables need to be enclosed by % signs to distinguish them from the rest of the text string.



When generating a report for Crush Tube 2 model the variables would be defined as follows:

Variable Name	Value
MODEL_DIR	/data/test/tube2
MODEL_NAME	tube_test2

When REPORTER generates the report it will substitute in the values of the relevant variables, so the 3 text strings would become

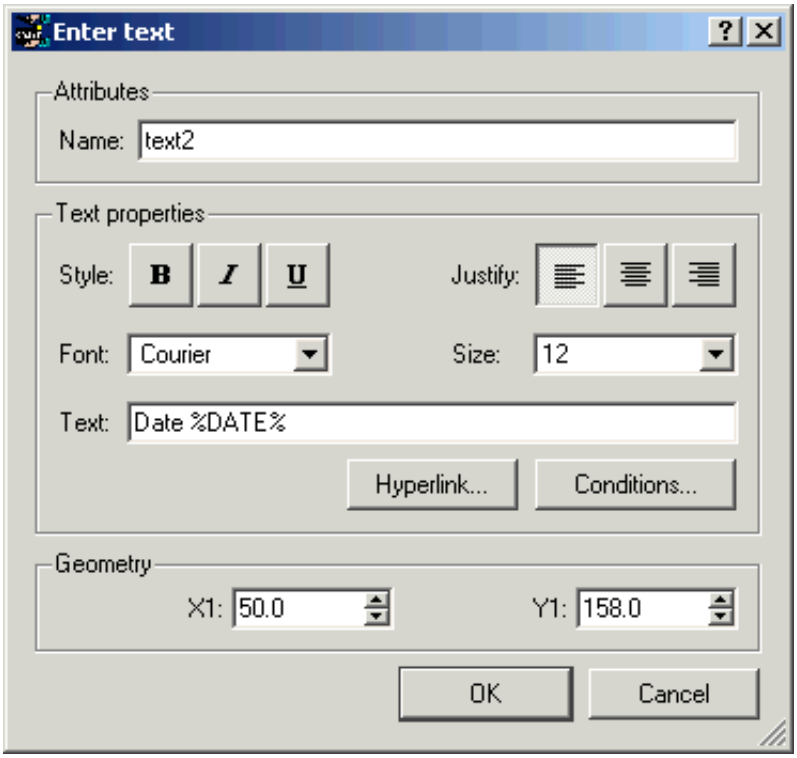
Bitmap File	/data/test/tube2/def.bmp
Job File	/data/test/tube2/tube_test2.ptf
Command File	/data/test/deflection.tcf

To generate a report for one of the other templates all I you need to do is change the value of these 2 variables.

8.2 Predefined variables

REPORTER already has a number of variables defined. They are:

Variable	Description
CURRENT_PAGE	The current page in the report (can be used when a report is generated)
TIME	The current time (can be used when a report is generated)
DATE	The current date (can be used when a report is generated)
DEFAULT_DIR	A default directory for a job
DEFAULT_JOB	A default jobname
REPORTER_HOME	The directory REPORTER is installed in
REPORTER_TEMP	A temporary working directory
TOTAL_PAGES	The total number of pages (can be used when a report is generated)



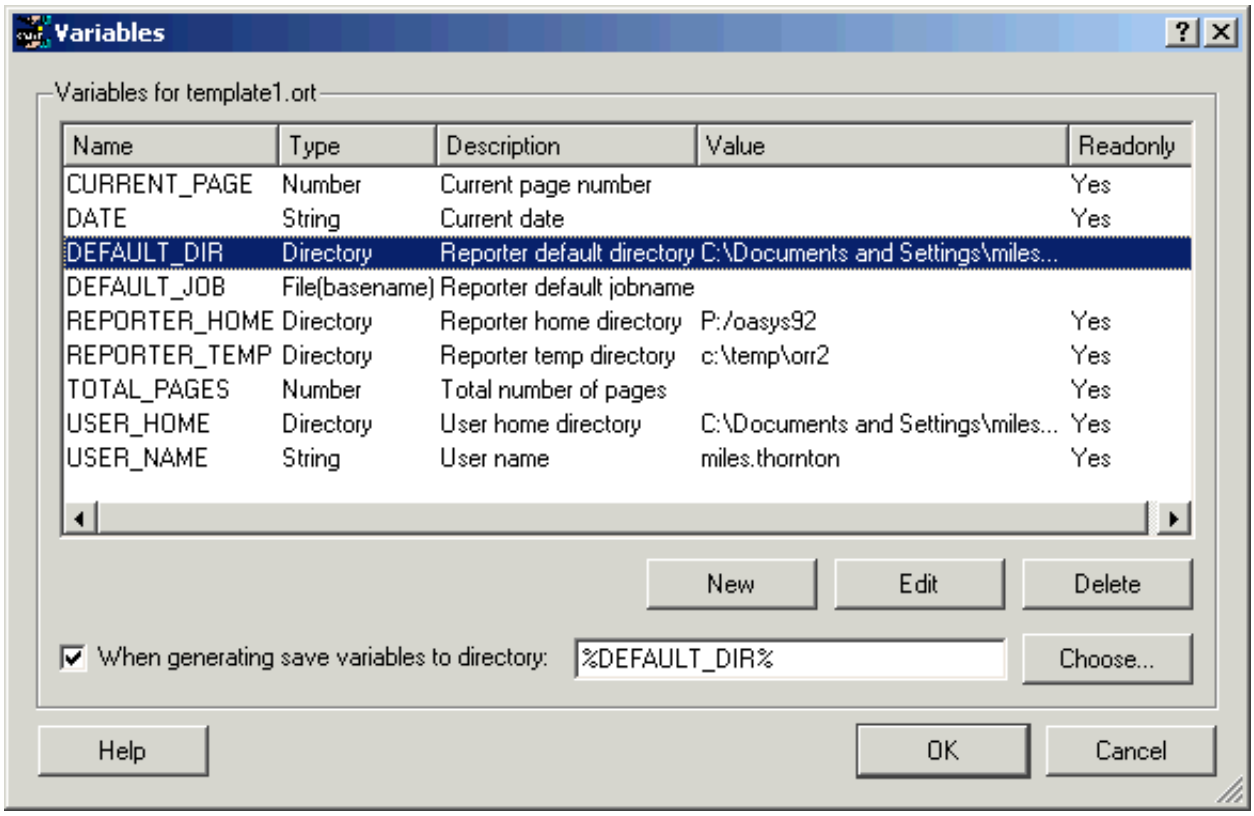
To add the date to each page you can insert a text object (see Section 5 for more detail on text objects) with the relevant variables substituted in.

So if the page number was 2 and the date was Wednesday 9 April 2003 at 11:00 when the report was generated the text string would come out as

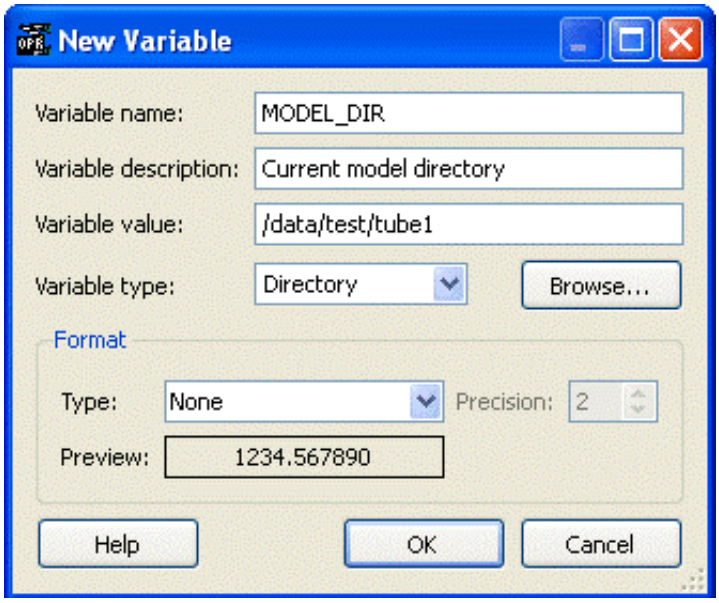
Date Wed Apr 9 11:00:00 2003

8.3 Creating and editing variables

Variables can be viewed, edited, and created by using the **Edit...** option in the **Variables** menu. Selecting this option will bring up the **Variables** window.



Some of the variable such as **CURRENT_PAGE** and **REPORTER_HOME** are standard variables that are predefined by REPORTER. and these cannot be edited or deleted, other user defined variables can be edited or deleted as you chose.



You can create a new variable by selecting **New**. Then in the **New variable** box at the bottom of the window enter the necessary details into the text boxes.

- **Variable name** - enter the variable name you want to use to refer to this variable. Variable names should only use letter (A-Z) or numbers (0-9) and underscores. REPORTER will automatically convert the name into uppercase and replace any spaces with underscores when the new variable is created.
- **Variable description** - enter the description for the variable. This is only for reference and is not actually used by REPORTER. However, it is strongly recommended that you give meaningful descriptions for variables.
- **Variable value** - enter the value for the variable. This can be any text string or number you want.

- **Variable type** - the variable type allows you to give an indication what the variable will be used for. The following types are predefined in REPORTER.
  - `Directory`
  - `Expression`
  - `File(absolute)`
  - `File(basename)`
  - `File(extension)`
  - `File(tail)`
  - `General`
  - `Number`
  - `String`

  Additionally you can give your own variable types if it helps you to manage variables. The `Directory` and `File` types also allow you to choose a directory/file interactively using the **Browse...** button. The different `File` types allow you to extract certain parts of the filename from the file you choose. For example selecting a file '/data/demo/test.key' by using **Browse...** would result in the following:

Variable type	Part of file that is extracted
File(absolute)	/data/demo/test.key
File(basename)	test
File(extension)	key
File(tail)	test.key

- **Format** - the format settings allow you to specify how the variable value is displayed within the REPORTER presentation view. Available options are:
  - Floating point number - displays a number variable as a floating point number. The number of decimal places can be specified using the precision setting.
  - Scientific number - displays a number variable as a scientific number. The number of decimal places can be specified using the precision setting.
  - General number - this uses the shorter of the floating point or scientific methods above..
  - Integer - displays a number variable as an integer.
  - Uppercase - displays a string type variable in uppercase.
  - Lowercase - displays a string type variable in lowercase.

  The setting used here is applied to everywhere the variable is displayed in the report, unless a local format setting is used. The format setting does not change the underlying value of the variable.

You then click on the **OK** button to store this new variable. The **Cancel** button will just exit you from this window.

The only variables which can be edited are the user defined ones you create yourself. To edit a variable select the **Variable** option in the **File** menu to bring up the **Variables** window. You can edit the description or value of a variable by clicking on the relevant description or value in the variable list and pressing **Edit**. You cannot edit the variable name. If you want to rename the variable you will have to delete the existing variable and re-create it using the new name.

For more information on doing simple maths with variables (by using the expression type) see section 8.12.

8.4 Creating a variable using an external program/script

Rather than using the **Variables** window to create and define a variable it is also possible to use a program/script to create a variable. (See Appendix E for some examples of programs/scripts)

When REPORTER generates a report and it runs an external program/script, any output lines that take the form

```
VAR <NAME> VALUE="<value>" DESCRIPTION="<description>"
or
VAR <NAME> VALUE="<value>"
```

will not inserted into the report as text but will be used to create a variable where

- **`<NAME>`** - will become the variable name
- **`<value>`** - will become the value of the variable
- **`<description>`** - will become the variable description

here are a couple of examples

Program/Script Output	Variable Name	Description	Value
`VAR MODEL_DIR VALUE="/data/test"`	MODEL_DIR	(none)	/data/test
`VAR SPEED VALUE="1000" DESCRIPTION="Impact Speed"`	SPEED	Impact speed	1000

So if you inserted a program/script object "Text output from a program/script" (see Section 9 for more detail on inserting program/script objects) that's output was

```
VAR SPEED VALUE="1000"
```

then REPORTER would create a variable called `SPEED` with the value 1000, and because there is no other output then the inserted text object would come up blank when the report was generated. If the output however was

```
VAR SPEED VALUE="1000"
Impact Speed: %SPEED%
```

then REPORTER would create a variable called `SPEED` with the value 1000, and also create the following text object with the new variable `SPEED` substituted in.

```
Impact Speed: 1000
```

8.5 Creating a variable using a FAST-TCF script

Rather than using the **Variables** window to create and define a variable it is also possible for a FAST-TCF script to create and define variables. You can create a variable in FAST-TCF from one of the following curve results. (See the FAST-TCF section of the T/HIS manual for more details)

Property output	**keyword**
Minimum x	`minx`
Maximum x	`maxx`
Minimum y	`min`
X at minimum y	`xatmin`
Y at minimum x	`yatmin`
Minimum y in window t1 t2	`minw`
X at minimum y in window t1 t2	`xminw`
Maximum y	`max`
X at maximum y	`xatmax`
Y at maximum x	`yatmax`
Maximum y in window t1 t2	`maxw`
X at maximum y in window t1 t2	`xmaxw`
Average in window t1 t2	`ave`
Hic	`hic`
Hicd	`hicd`
3ms	`3ms`
Y at X	`yatx`
X when Y is passed after gate time	`xygate`
X at first non-zero Y	`xnonz`
X at last non-zero Y	`xfail`
Y value at last non-zero Y	`yfail`
TTI	`tti`

The values for these results need to have already been calculated in the script before you use them to create a variable. The syntax to create a variable takes one of these two forms:

```
var <NAME> <curve> <result> <description>
```
or
```
var <NAME> <curve> <result>
```

- **`<NAME>`** - will become the variable name
- **`<curve>`** - is the curve tag or number
- **`<result>`** - is the result type (min,max,ave,hic,hicd,3ms)
- **`<description>`** - will become the variable description

REPORTER will set the value of the variable to be the value of the result type for the specified curve. Here are a couple

of examples

FAST-TCF data			REPORTER data		
FAST-TCF script	**Curve No.**	**Value of the result (Result Type)**	**Variable Name**	**Description**	**Value**
`var DEFORM 1 ave`	1	20 (ave)	DEFORM	(none)	20
`var SPEED 2 max Impact Speed`	2	1000 (max)	SPEED	Impact speed	1000

8.6 Creating a variable from the command line

Variables can be defined in REPORTER when starting from the command line with the `-var` option. For example to define variable `MODEL_DIR` you could do:

```
reporter11.exe -varMODEL_DIR=/data/test/tube1
```

If the variable contains spaces then it must be quoted.

```
reporter11.exe -varMODEL_DIR="C:\directory with spaces\tube1"
```

You can also specify the variable type on the command line if required. For more details see appendix A.

8.7 Creating a variable from javascript

You can create variables from javascript scripts in REPORTER with the Variable constructor. For example

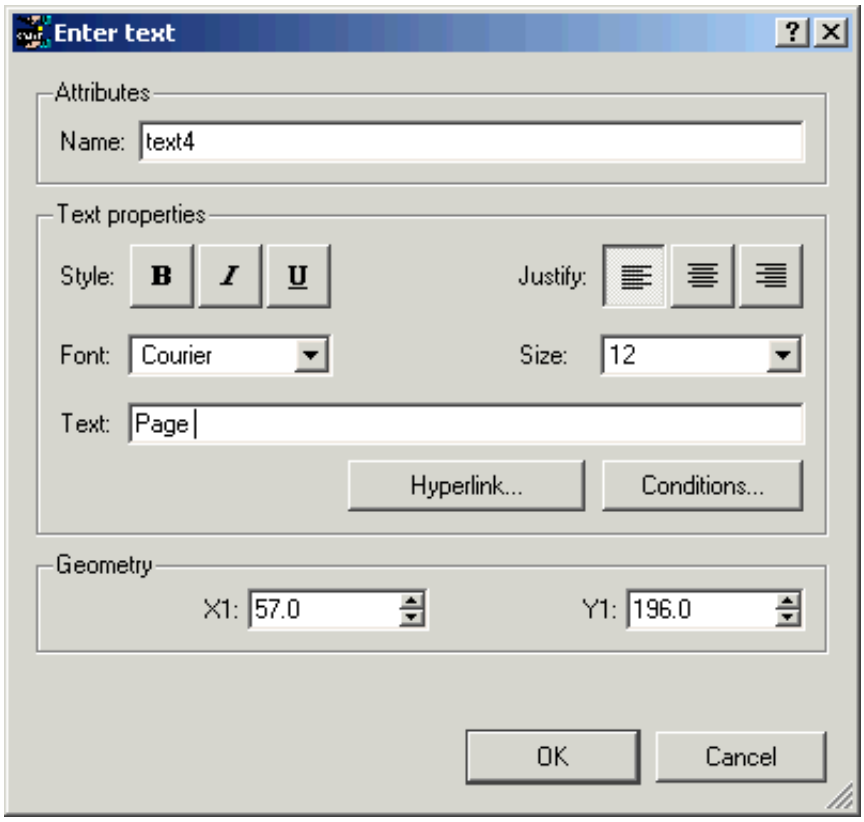
```
var fred = new Variable(reporter.currentTemplate, "MODEL_DIR", "current model
directory", "/data/test1");
```

For more details see the Variable javascript reference.

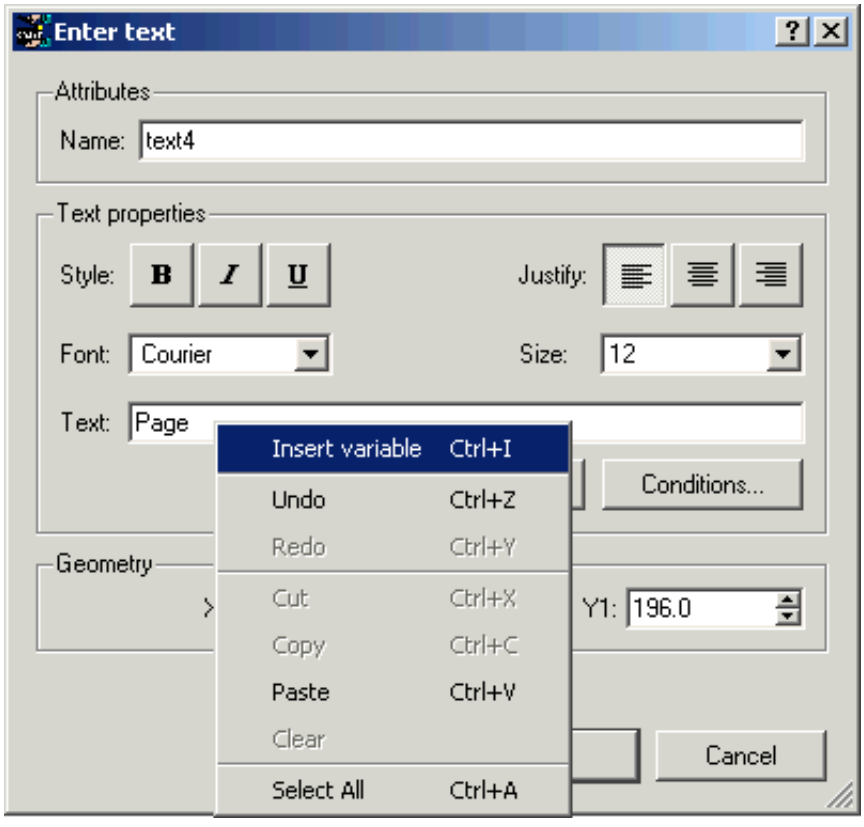
8.8 Deleting a variable

You can delete an user defined variable by clicking on the **Delete** button when the relevant variable in the variable list is selected. Please note that this will delete the variable without bringing up any conformation box.

8.9 Inserting a variable

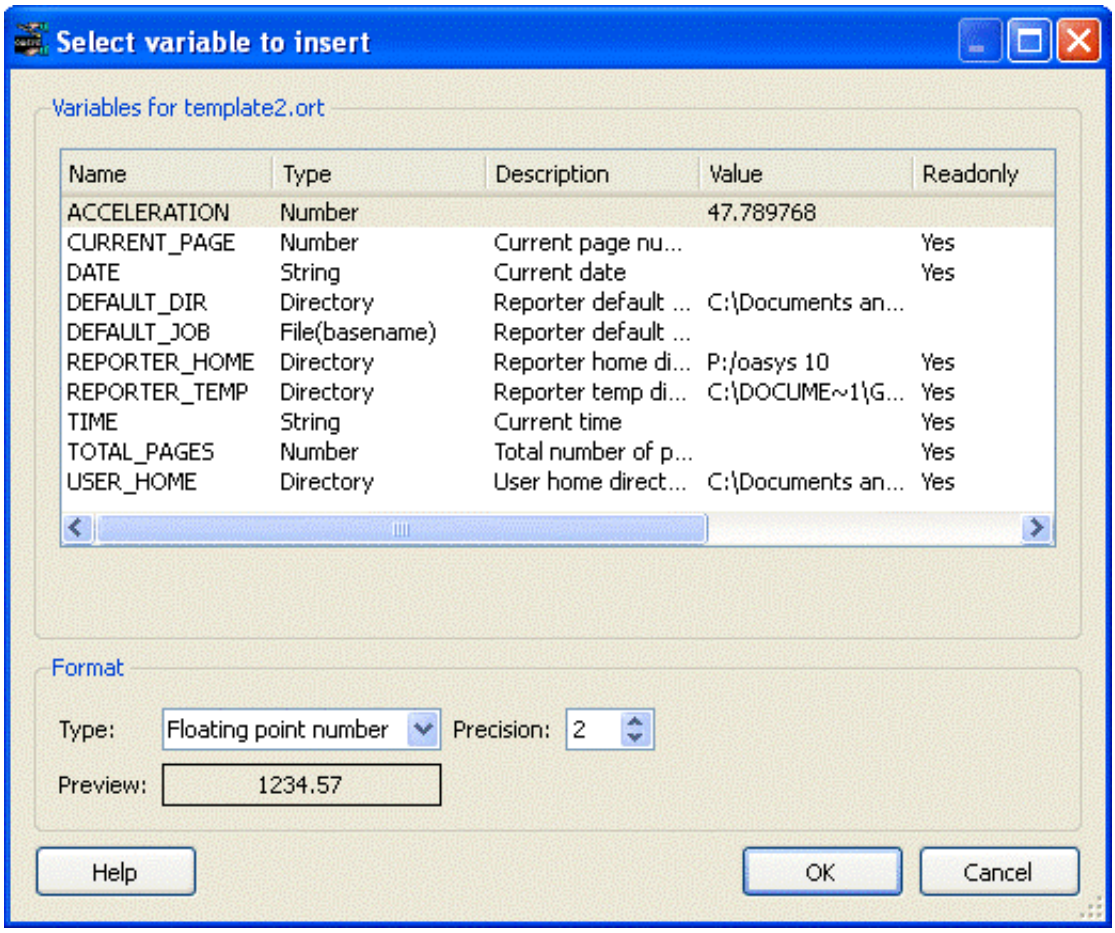


Certain inputs for such things as filenames, text, and program/script arguments can use variables rather than a straight text string. You can insert a variable at the current cursor position by right clicking on the text box



From the popup menu select **Insert variable**.

An **Insert variable** window from which you can select the variable will then be brought up.

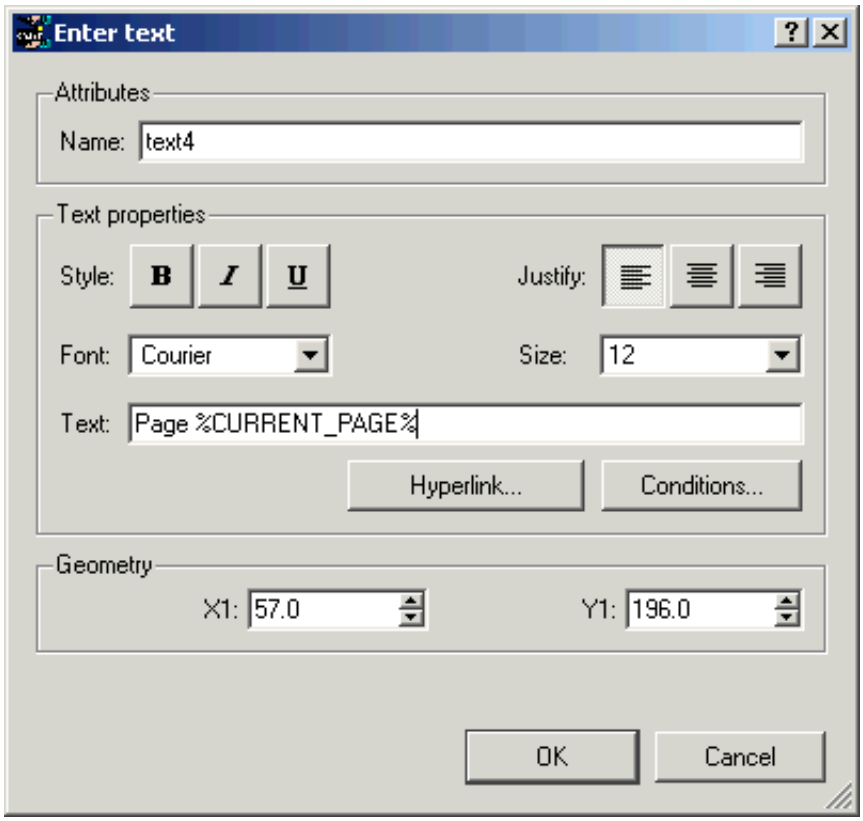


From this window you select the variable you want from the list and click on the **OK** button to insert the variable and exit this window. The **Cancel** button will exit this window with out inserting a variable.

Note in this panel you can set a local format setting for the variable. This is a format that is applied to this instance of variable when viewed in presentation model. The available options are:

- Floating point number - displays a number variable as a floating point number. The number of decimal places can be specified using the precision setting.
- Scientific number - displays a number variable as a scientific number. The number of decimal places can be specified using the precision setting.
- General number - this uses the shorter of the floating point or scientific methods above..
- Integer - displays a number variable as an integer.
- Uppercase - displays a string type variable in uppercase.
- Lowercase - displays a string type variable in lowercase.

This local format setting overrides any global format setting for this variable specified on the main variables panel. However, the format set here is only applied to this instance of the variable.



When entered into a text string the variable needs to be enclosed by **%** signs put at either end of the variable name to distinguish it from the rest of the text string. In this example the variable **CURRENT_PAGE** has appeared in the text box as**%CURRENT_PAGE%** .

8.9.1 Manually inserting a variable

It is also possible for you to manually enter a variable in by simply typing in the variable name enclosed by **%** signs. When the report is generated the **%CURRENT PAGE%** part of the text string will be replaced with the value of the variable. If a local format is set, this will be displayed within the % signs.

8.9.2 Controlling the precision/decimal places of a variable

The precision of a variable can be set in the **Insert variable** window when inserting it. See the section above on variable format. Alternatively the precision can be set when typing in the variable.

For example, for a variable called **ACCELERATION**, if a local format of a two decimal place floating point number is specified, the variable **ACCELERATION** will appear as %**ACCELERATION(2f)**%. When generated, this will appear as the formatted value. A complete list of the formats is available in the table below.

Format	**Example**	**Input string**	**Output string**
Fixed	%NAME(2f)%	1234.5678 12.345678	1234.56 12.35
Exponential / scientific	%NAME(2e)%	1234.5678 12.345678	1.23e+03 1.23e+01
General. uses exponential format or fixed format (whichever is the most concise)	%NAME(2g)%	1234.5678 12.345678	1.23e+03 12
Integer	%NAME(i)%	1234.5678 12.345678	1235 12
Lower case	%NAME(s)%	Reporter	reporter
Upper case	%NAME(S)%	Reporter	REPORTER

8.10 Using variables in D3PLOT and T/HIS command files and FAST-TCF scripts.

It is also possible to use variables in a D3PLOT or T/HIS command file or FAST-TCF script that is referred to by a D3PLOT or T/HIS object inserted in the template (see Section 6 for more details on inserting D3PLOT and T/HIS objects).

8.10.1 Command files

For a command file you will need to first create the command file using an actual value for the variable and then manually edit the command file to replace this value with the variable name enclosed in % signs.

Example

For example, if you have a simple T/HIS command file that reads in a THF file, creates a curve of x displacement for node 30, and then creates a bitmap image of the curve.

```
READ                    31    3    2     3    0    0    0    0
THF                     32    3    2    11    0    0    0    0
cube5.thf                4    3    6     5    0    0    0    0
Nodes                    4    3    2    12    0    0    0    0
Node 30                  3    4    3    14    0    0    0    0
APPLY                    5    3    2     2    0    0    0    0
PLOT                     1    3    2     1    0    0    0    0
IMAGES                  31    3    2    15    0    0    0    0
cube5.bmp               38    3    6    12    0    0    0    0
CAPTURE                 38    3    2    25    0    0    0    0
```

I you want to use the variable **MODEL_NAME** for the filenames instead of cube5, and the variable **NODE** instead of the node number 30. manually edit the command file to give the following. (Note that the position of the numbers on the right hand side should not modified)

```
READ                    31    3    2     3    0    0    0    0
THF                     32    3    2    11    0    0    0    0
%MODEL_NAME%.thf         4    3    6     5    0    0    0    0
Nodes                    4    3    2    12    0    0    0    0
Node %NODE%              3    4    3    14    0    0    0    0
APPLY                    5    3    2     2    0    0    0    0
PLOT                     1    3    2     1    0    0    0    0
IMAGES                  31    3    2    15    0    0    0    0
%MODEL_NAME%.bmp        38    3    6    12    0    0    0    0
CAPTURE                 38    3    2    25    0    0    0    0
```

8.10.2 FAST-TCF scripts

For a FAST-TCF script when you enter the script you need to replace the relevant parts with the variable name enclosed in % signs

Example

For example, a simple FAST-TCF script that will do the same thing as the T/HIS command file above.

```
node 30 disp x tag XDISP
bitmap cube5.bmp XDISP
```

So to make the same changes as the T/HIS command file above (substituting in the variables **MODEL_NAME** and **NODE**) gives the following.

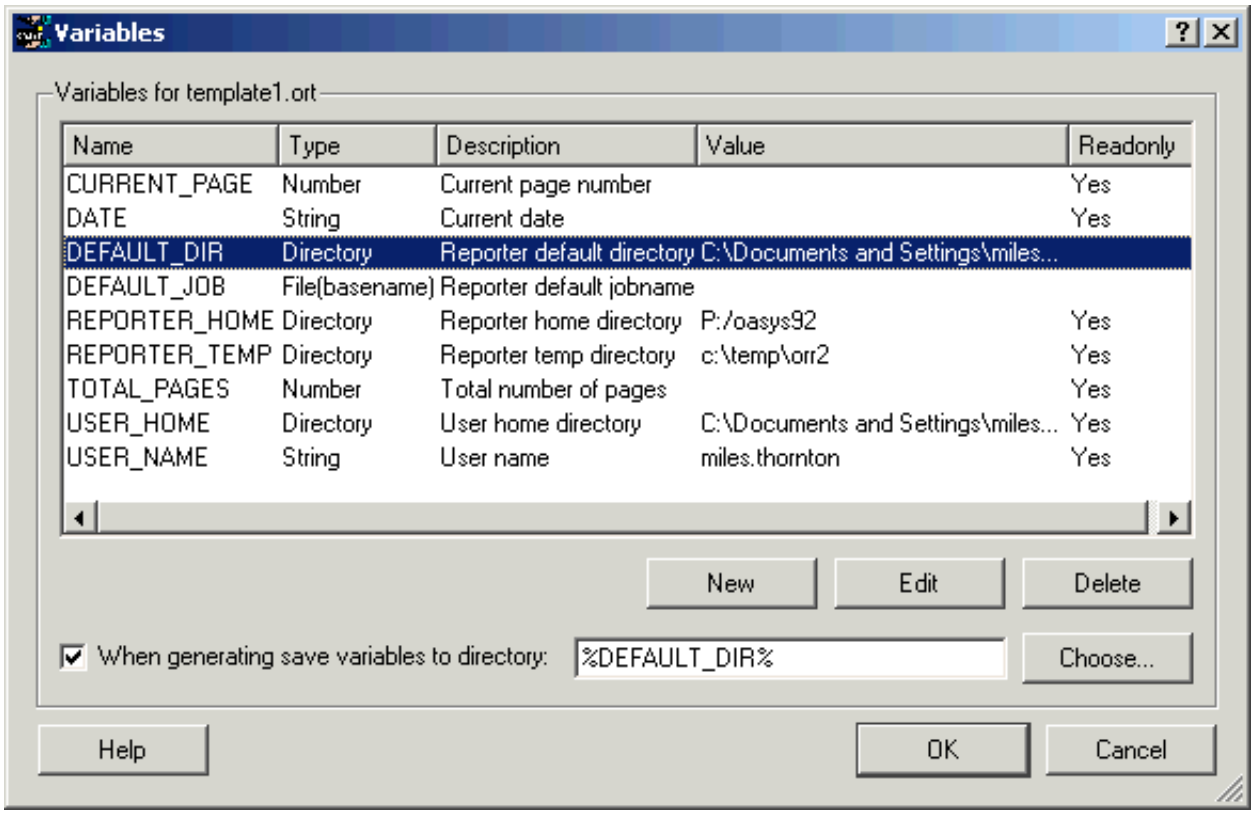
```
Node%NODE% disp x tag XDISP
bitmap %MODEL_NAME%.bmp XDISP
```

8.11 Saving all the variables to a file after generating a report

After REPORTER generates a report, it can automatically save any variables to a file. The file will be called

reporter_variables. This can be very useful for processing multiple analyses. For example, you could perform several analyses which all dump their variables to a file, and then a summary template could create a table using these files (see section 6 .5 for more details).

At the bottom of the variables window there is a checkbox to turn on this option. You can then give a directory to save the variables into.



You can select the directory or use a variable if required. The directory defaults to `%DEFAULT_DIR%` and is on by default.

8.12 Variable expressions

Sometimes it is useful to do some simple maths on variables in REPORTER. Creating a script to do something this simple is tedious. If you use the **Expression** variable type then REPORTER will evaluate this when required to produce the result. For example assume that you have 2 variables, `FORCE` and `AREA` and you want to calculate a stress. You can do this by:

1. Make a new variable `STRESS`.
2. Set the type to **Expression**.
3. Give the value `%FORCE%/%AREA%` (see secion 8.3 for more details) by either typing directly or using the right mouse button and Inserting variables with the menu.

Then if you have some text in the report such as "The stress is %STRESS%" REPORTER will evaluate the stress as required.

The expression can contain +, -, / and * to do addition, subtraction, division and multiplication respectively and can use brackets to enforce which order the expression is evaluated in. The expression is actually evaluated as a JavaScript program so more complex expressions can be formed by using the standard JavaScipt functions (e.g. the Math class). e.g. the following are all valid expressions

- `%FORCE%/%AREA%`
- `Math.sqrt(%X%*%X% + %Y%*%Y%)`
- `Math.min(%X%, %Y%) * Math.sin(Math.PI)`

8.12.1 Rounding values in variable expressions

As the expression is evaluated as a JavaScript program (see the previous section) we can use some of the core functions in JavaScript to alter the variable value. For example, in our example of calculating a variable STRESS from an expression %FORCE%/%AREA% this could have a large number of significant figures in the result.

E.g. if FORCE=10 and AREA=3 then stress is 3.33333333333333 which is far more significant figures than we require.

We can use the core JavaScript function toFixed() to change the number of digits to appear after the decimal point. If we wanted 2 decimal places then we could change the expression to

```
(%FORCE% / %AREA%).toFixed(2)
```

which would change the value of STRESS to 3.33.

Other useful functions are:

- toExponential(n) which formats the number in exponential (scientific) notation with n digits after the decimal point.
- toPrecision(n) which formats the number with n significant figures.

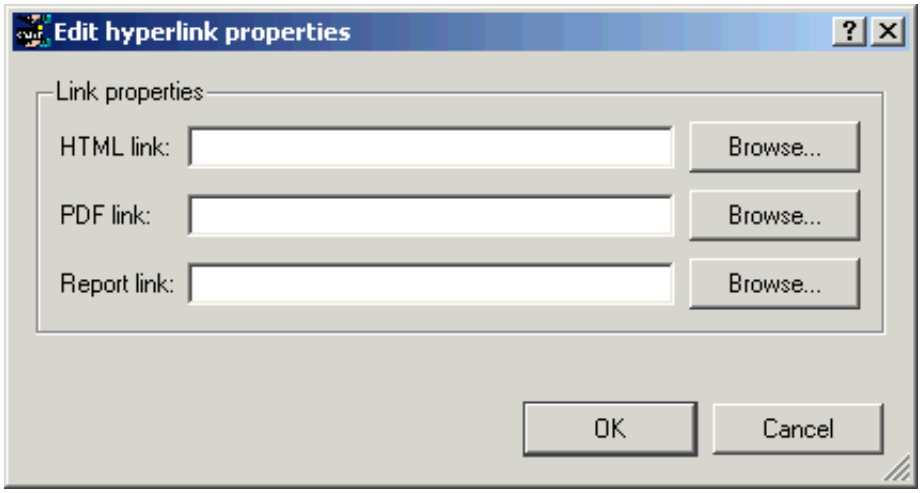
9. Hyperlinks

REPORTER currently allows you to create hyperlinks from the following object types

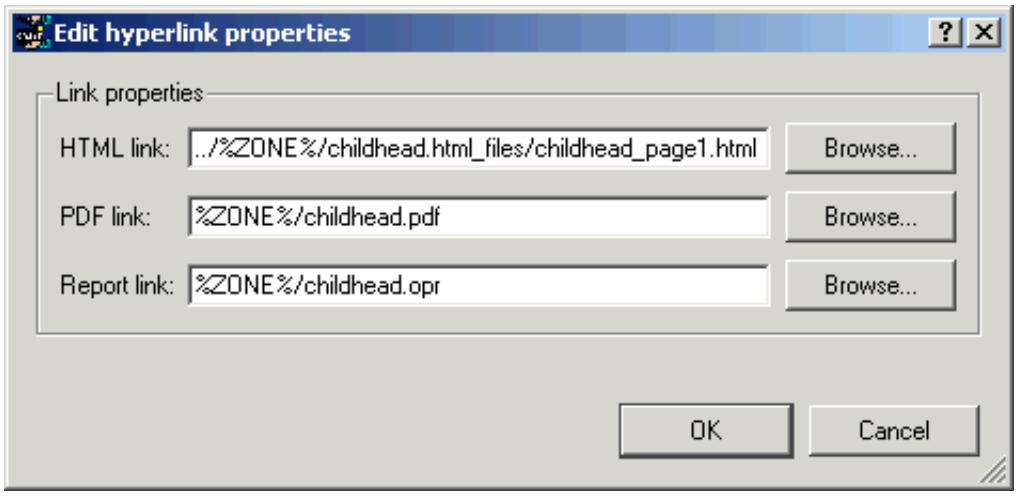
- Text objects
- Image objects
- Table cells
- D3Plot images with external data plots (’blob’ plots).

9.1 Adding basic hyperlinks

Objects that support hyperlinks will have a **Hyperlink...** button. Pressing it maps the hyperlink window.



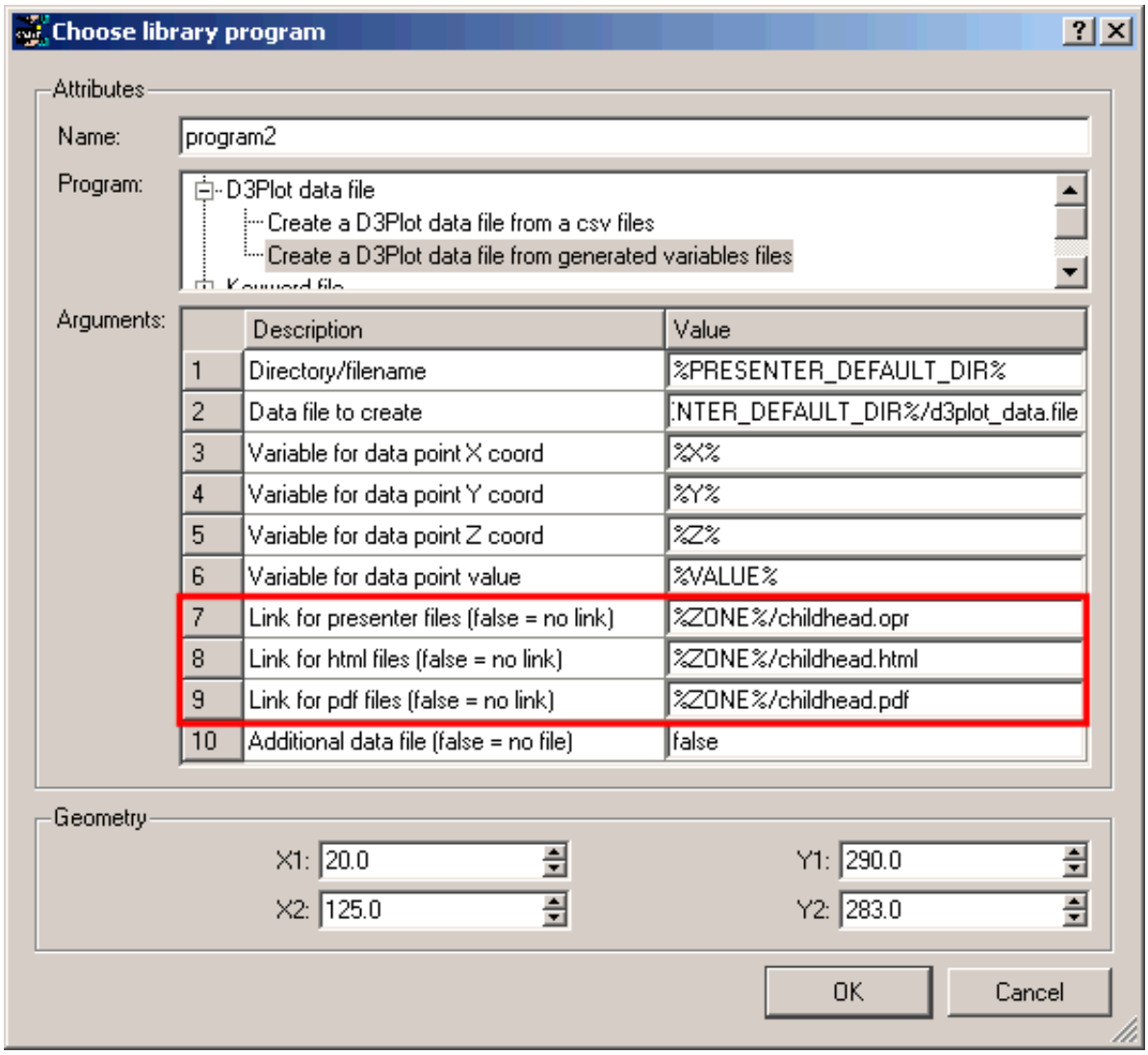
REPORTER can write HTML and pdf and can also save a generated report. As all of these formats support hyperlinks you cannot give a single hyperlink that will work for all of the formats. For this reason REPORTER allows you to give different links for each type. For example in the image below the link is different for each type. If you do not want links for a particular type then leave it blank.



Hyperlinks can be relative or absolute (if you use a relative hyperlink then it is relative to the current document).

9.2 Adding hyperlinks in D3PLOT external data (blob) plots

The data file which D3PLOT uses to create blob plots supports hyperlinks. This enables the user to be able to click on one of the data values on the image and open the report for that data point. The easiest way to create a data file for D3PLOT is with one of the D3PLOT data file library scripts. e.g. below shows the script for generating a data file from `reporter_variables` files.



Arguments 7, 8 and 9 allow you to give your hyperlinks in exactly the same way as a basic hyperlink.

10. Conditional formatting

Conditional formatting can be used in REPORTER to change how text is displayed, depending on if a specific condition has been met. This is very similar to the conditional formatting in Microsoft Excel, but REPORTER can use as many conditions as you wish per object instead of the limit of 3 imposed by Excel.

Conditional formatting is currently supported for the following object types:

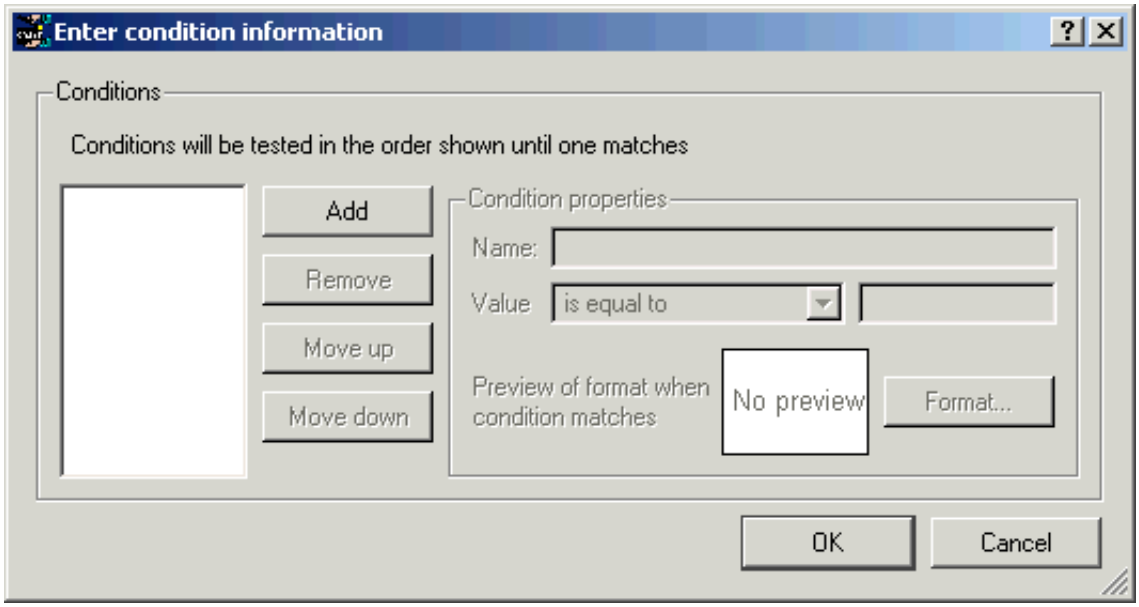
- Text
- Programs/scripts returning text
- Text files
- Table cells
- Text boxes

For example you may want to change the colour of a number in a report depending on the value.
Red if the value is greater than 100
Blue if the number is between 50 and 100
Green if the number is less than 50

This is very easy to do in REPORTER.

10.1. Adding a condition

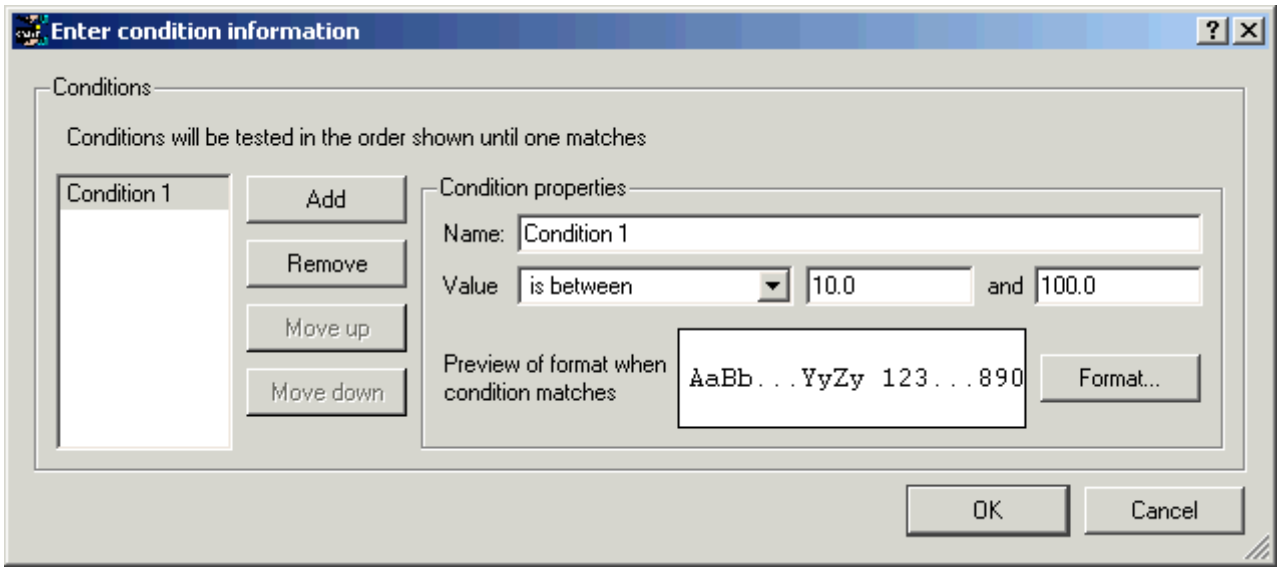
To add a condition for an object, press the **Condition** button. This will start the conditional formatting window.



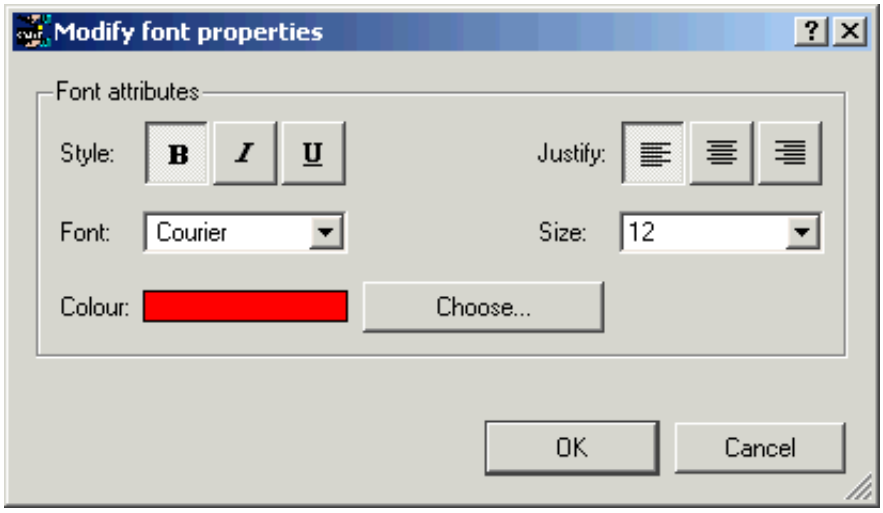
Conditions can be added and removed by using the **Add** and **Remove** buttons. If you have more than one condition, they are tested in the order shown. If the first condition passes the test then that is used, otherwise the second is tested etc. If none of the conditions pass the default font properties for the object are chosen. As the order that they are evaluated is important you can use the **Move up** and **Move down** buttons to change the order.

Once a condition has been added it is given a default name and the condition type is initially set to 'is equal to'

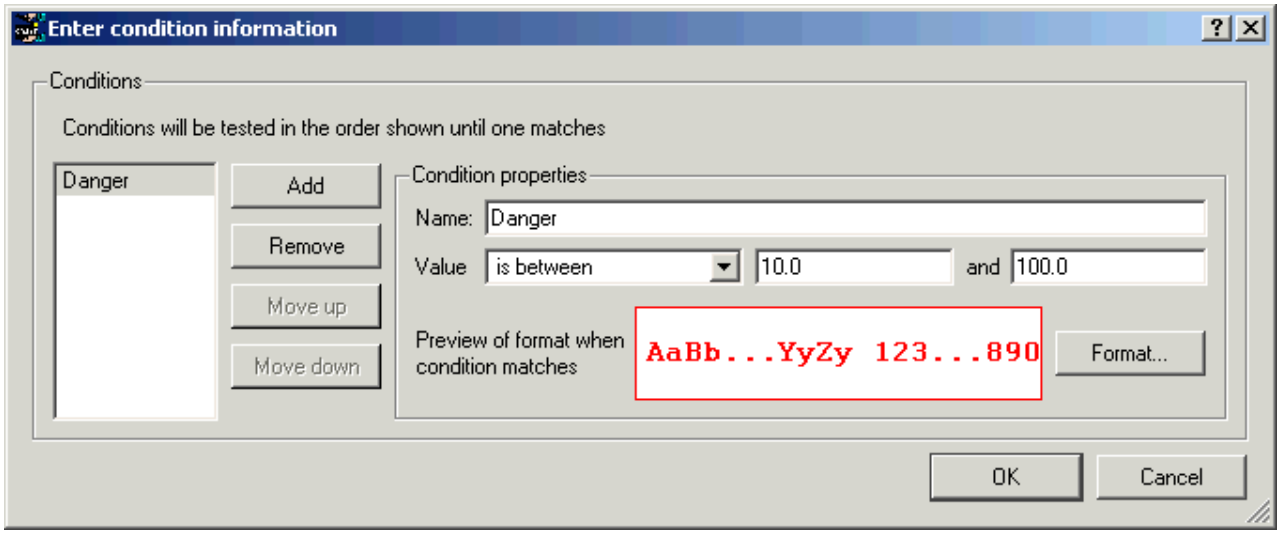
Choose the condition type that you want (see the next section for details) and give the necessary values. For example in the image below the condition will be true if the value is a number between 10.0 and 100.0.



Once you have the correct condition type, the **Format...** button can be used to select the font properties that you want to assign for this condition. In the window (shown below) you can set the font, the style, justification, font size and colour properties.



When you change the font properties, the preview updates to show what the text will look like for this condition. Additionally you can rename the condition to a more meaningful name if required. e.g. in the image below we have made a condition called Danger which will format the text in bold red if the value is a number between 10 and 100.



This process can be repeated as necessary to add as many conditions as you wish.

10.2. Condition types

Condition type	Description
is equal to	Treats the value as a string. Strips leading and trailing white space from the string and compares it to the conditon value. TRUE if the strings are identical. This can also be used to compare integers but should not be used to compare floating point numbers.
is not equal to	As above, but TRUE if the strings are different
is greater than	Treats the value is a real number. It first tries to convert the value and the condition value to real numbers. If this fails the condition is FALSE. If it succeeds then the condition is TRUE if the value is greater than the condition value.
is less than	As above, but TRUE if the value is less than the condition value.
is between	As above, but TRUE if the value is between the two condition values.
is not between	As above, but TRUE if the value is not between the two condition values.
contains string	Treats the value as a string. TRUE if the value contains the condition string.
does not contain string	Treats the value as a string. TRUE if the value does not contain the condition string.
matches regex	Treats the value as a regular expression. TRUE if the regular expression matches.
does not match regex	Treats the value as a regular expression. TRUE if the regular expression does not match.

10.2.1 Regular expressions

REPORTER understands most of the basic operators of perl regular expressions. This section gives a brief introduction into regular expressions (or regexps). For more details please see a suitable book on regular expressions such as Programming Perl.

Regexps are built up from expressions, quantifiers, and assertions. The simplest form of expression is simply a character, e.g. x or 5. An expression can also be a set of characters. For example, [ABCD], will match an A or a B or a C or a D. As a shorthand we could write this as [A-D]. If we want to match any of the captital letters in the English alphabet we can write [A-Z]. A quantifier tells the regexp engine how many occurrences of the expression we want, e.g. x{1,1} means match an x which occurs at least once and at most once. We'll look at assertions and more complex expressions later.

We'll start by writing a regexp to match integers in the range 0 to 99. We will require at least one digit so we will start with [0-9]{1,1} which means match a digit exactly once. This regexp alone will match integers in the range 0 to 9. To match one or two digits we can increase the maximum number of occurrences so the regexp becomes [0-9]{1,2} meaning match a digit at least once and at most twice. However, this regexp as it stands will not match correctly. This regexp will match one or two digits within a string. To ensure that we match against the whole string we must use the anchor assertions. We need ^ (caret) which when it is the first character in the regexp means that the regexp must match from the beginning of the string. And we also need $ (dollar) which when it is the last character in the regexp means that the regexp must match until the end of the string. So now our regexp is ^[0-9]{1,2}$. Note that assertions, such as ^ and $, do not match any characters.

If you've seen regexps elsewhere they may have looked different from the ones above. This is because some sets of characters and some quantifiers are so common that they have special symbols to represent them. [0-9] can be replaced with the symbol \d. The quantifier to match exactly one occurrence, {1,1}, can be replaced with the expression itself. This means that x{1,1} is exactly the same as x alone. So our 0 to 99 matcher could be written ^\d{1,2}$. Another way of writing it would be ^\d\d{0,1}$, i.e. from the start of the string match a digit followed by zero or one digits. In practice most people would write it ^\d\d?$. The ? is a shorthand for the quantifier {0,1}, i.e. a minimum of no occurrences a maximum of one occurrence. This is used to make an expression optional. The regexp ^\d\d?$ means "from the beginning of the string match one digit followed by zero or one digits and then the end of the string".

Our second example is matching the words 'mail', 'letter' or 'correspondence' but without matching 'email', 'mailman', 'mailer', 'letterbox' etc. We'll start by just matching 'mail'. In full the regexp is, m{1,1}a{1,1}i{1,1}l{1,1}, but since each expression itself is automatically quantified by {1,1} we can simply write this as mail; an 'm' followed by an 'a'

followed by an ’i’ followed by an ’l’. The symbol ’|’ (bar) is used for alternation, so our regexp now becomes mail|letter|correspondence which means match ’mail’ or ’letter’ or ’correspondence’. Whilst this regexp will find the words we want it will also find words we don’t want such as ’email’. We will start by putting our regexp in parentheses, (mail|letter|correspondence). Parentheses have two effects, firstly they group expressions together and secondly they identify parts of the regexp that we wish to capture. Our regexp still matches any of the three words but now they are grouped together as a unit. This is useful for building up more complex regexps. It is also useful because it allows us to examine which of the words actually matched. We need to use another assertion, this time \b "word boundary": \b(mail|letter|correspondence)\b. This regexp means "match a word boundary followed by the expression in parentheses followed by another word boundary". The \b assertion matches at a position in the regexp not a character in the regexp. A word boundary is any non-word character such as a space a newline or the beginning or end of the string.

For our third example we want to replace ampersands with the HTML entity ’&’. The regexp to match is simple: &, i.e. match one ampersand. Unfortunately this will mess up our text if some of the ampersands have already been turned into HTML entities. So what we really want to say is replace an ampersand providing it is not followed by ’amp;’. For this we need the negative lookahead assertion and our regexp becomes: &(?!amp;). The negative lookahead assertion is introduced with ’(?!’ and finishes at the ’)’. It means that the text it contains, ’amp;’ in our example, must not follow the expression that preceeds it.

Characters and Abbreviations in regular expressions

Element	Meaning
c	Any character represents itself unless it has a special regexp meaning. Thus c matches the character c.
\c	A character that follows a backslash matches the character itself except where mentioned below. For example if you wished to match a literal caret at the beginning of a string you would write \^.
\a	This matches the ASCII bell character (BEL, 0x07).
\f	This matches the ASCII form feed character (FF, 0x0C).
\n	This matches the ASCII line feed character (LF, 0x0A, Unix newline).
\r	This matches the ASCII carriage return character (CR, 0x0D).
\t	This matches the ASCII horizontal tab character (HT, 0x09).
\v	This matches the ASCII vertical tab character (VT, 0x0B).
\xhhhh	This matches the Unicode character corresponding to the hexadecimal number hhhh (between 0x0000 and 0xFFFF). \0ooo (i.e., \zero ooo) matches the ASCII/Latin-1 character corresponding to the octal number ooo (between 0 and 0377).
. (dot)	This matches any character (including newline).
\d	This matches a digit.
\D	This matches a non-digit.
\s	This matches a whitespace.
\S	This matches a non-whitespace.
\w	This matches a word character
\W	This matches a non-word character

Sets of Characters

Square brackets are used to match any character in the set of characters contained within the square brackets. All the character set abbreviations described above can be used within square brackets. Apart from the character set abbreviations and the following two exceptions no characters have special meanings in square brackets.

^	The caret negates the character set if it occurs as the first character, i.e. immediately after the opening square bracket. For example, [abc] matches ’a’ or ’b’ or ’c’, but [^abc] matches anything except ’a’ or ’b’ or ’c’.
-	The dash is used to indicate a range of characters, for example [W-Z] matches ’W’ or ’X’ or ’Y’ or ’Z’.

Using the predefined character set abbreviations is more portable than using character ranges across platforms and languages. For example, [0-9] matches a digit in Western alphabets but \d matches a digit in any alphabet.

Quantifiers

By default an expression is automatically quantified by {1,1}, i.e. it should occur exactly once. In the following list E stands for any expression. An expression is a character or an abbreviation for a set of characters or a set of characters in square brackets or any parenthesised expression.

E?	Matches zero or one occurrence of E. This quantifier means "the previous expression is optional" since it will match whether or not the expression occurs in the string. It is the same as E{0,1}. For example dents? will match ’dent’ and ’dents’.
E+	Matches one or more occurrences of E. This is the same as E{1,MAXINT}. For example, 0+ will match ’0’, ’00’, ’000’, etc.
E*	Matches zero or more occurrences of E. This is the same as E{0,MAXINT}. The * quantifier is often used by a mistake. Since it matches zero or more occurrences it will match no occurrences at all. For example if we want to match strings that end in whitespace and use the regexp \s*$ we would get a match on every string. This is because we have said find zero or more whitespace followed by the end of string, so even strings that don’t end in whitespace will match. The regexp we want in this case is \s+$ to match strings that have at least one whitespace at the end.
E{n}	Matches exactly n occurrences of the expression. This is the same as repeating the expression n times. For example, x{5} is the same as xxxxx. It is also the same as E{n,n}, e.g. x{5,5}.
E{n,}	Matches at least n occurrences of the expression. This is the same as E{n,MAXINT}.
E{,m}	Matches at most m occurrences of the expression. This is the same as E{0,m}.
E{n,m}	Matches at least n occurrences of the expression and at most m occurrences of the expression.

(MAXINT is implementation dependent but will not be smaller than 1024.)

If we wish to apply a quantifier to more than just the preceding character we can use parentheses to group characters together in an expression. For example, tag+ matches a ’t’ followed by an ’a’ followed by at least one ’g’, whereas (tag)+ matches at least one occurrence of ’tag’.

Note that quantifiers are "greedy". They will match as much text as they can. For example, 0+ will match as many zeros as it can from the first zero it finds, e.g. ’2.**000**5’.

Assertions

Assertions make some statement about the text at the point where they occur in the regexp but they do not match any characters. In the following list E stands for any expression.

^	The caret signifies the beginning of the string. If you wish to match a literal ^ you must escape it by writing \^. For example, ^#include will only match strings which begin with the characters ’#include’. (When the caret is the first character of a character set it has a special meaning, see Sets of Characters.)
$	The dollar signifies the end of the string. For example \d\s*$ will match strings which end with a digit optionally followed by whitespace. If you wish to match a literal $ you must escape it by writing \$.
\b	A word boundary. For example the regexp \bOK\b means match immediately after a word boundary (e.g. start of string or whitespace) the letter ’O’ then the letter ’K’ immediately before another word boundary (e.g. end of string or whitespace). But note that the assertion does not actually match any whitespace so if we write (\bOK\b) and we have a match it will only contain ’OK’ even if the string is "Its OK now".

\B	A non-word boundary. This assertion is true wherever \b is false. For example if we searched for \Bon\B in "Left on" the match would fail (space and end of string aren't non-word boundaries), but it would match in "tonne".
(?=E)	Positive lookahead. This assertion is true if the expression matches at this point in the regexp. For example, const(?=\s+char) matches 'const' whenever it is followed by 'char', as in 'static const char *'. (Compare with const\s+char, which matches 'static const char *'.)
(?!E)	Negative lookahead. This assertion is true if the expression does not match at this point in the regexp. For example, const(?!\s+char) matches 'const' except when it is followed by 'char'.

11. Scripting

REPORTER has a JavaScript interpreter embedded in it to enable you to perform complex operations through scripts. There are currently 3 ways to run a script in REPORTER.

- Running a library script installed in the /library/scripts directory.
- Inserting a script object onto a page. This does not create any direct output itself, but can create output which other objects in the template use.
- Running a script from the command line with the `-script` option.

While most people associate JavaScript with web pages and html it is a full-featured programming language. Additionally JavaScript is not Java! JavaScript is completely unrelated to Java.

Hopefully, enough people are familiar enough with JavaScript through the internet to be able to use it in REPORTER. JavaScript has all of the functionality you would expect from a programming language, such as:

- variables (strings, numbers, booleans, objects, arrays)
- functions
- control flow statements such as `if`, `while`, `do`, `for`, `switch` etc.
- objects
- arrays
- regular expressions
- maths functions (sin cos, log, sqrt etc)

Additionally, REPORTER extends JavaScript by defining several new object classes specifically for REPORTER. A detailed reference on these classes is given the JavaScript class reference appendix. Over time this functionality may be extended. If you need to do something which is not possible with the current functionality then contact Oasys Ltd.

This chapter is not intended to be an introduction or a tutorial for JavaScript. There are many resources on the web for that. However a few examples are given to show the sort of things that are possible with scripts. Additionally, there are several good books on JavaScript. Highly recommended is JavaScript, The Definitive Guide by David Flanagan, published by O'Reilly, ISBN: 0-596-00048-0.

Probably the best way to see what sort of things are easily possible in REPORTER using JavaScript is to look at the library scripts which are given out with REPORTER in the /library/scripts directory. For more details of the scripts see the library scripts appendix.

11.1 Example scripts

Example 1: Percent change in two values

Problem

Take two input variables VALUE and VALUE_BASE
Calculate new variable PERCENT = 100*(VALUE - VALUE_BASE) / VALUE_BASE)
Check if VALUE_BASE=0 and if so don't do the division but set PERCENT to 100

Solution

```
var percent;

// Get variable values from template
var value = reporter.currentTemplate.GetVariableValue("VALUE");
var base_value = reporter.currentTemplate.GetVariableValue("VALUE_BASE");

// Check that the variables exist
if (value == null) throw Error("no VALUE variable\n");
if (base_value == null) throw Error("no VALUE_BASE variable\n");

// Extract numbers from variables
var v = parseFloat(value);
var bv = parseFloat(base_value);

// Check that the variables are valid numbers
```

```
if (isNaN(v)) throw Error("VALUE " + value + " is not a valid number\n");
if (isNaN(bv)) throw Error("VALUE_BASE " + base_value + " is not a valid
number\n");

// Check for zero (very small) base value
if (Math.abs(bv) < 1.0e-20)
    percent = 100;
else
    percent = 100*((v-bv)/bv);

// Create new variable PERCENT
var pvar = new Variable(reporter.currentTemplate, "PERCENT",
                        "Percent change", percent.toFixed(2));
```

Discussion

Variables in REPORTER are stored in each template so to get the values of the variables `VALUE` and `VALUE_BASE` we need to get the template that we are using. The easiest way to do this is to use the `currentTemplate` property of the `reporter` object that is created when REPORTER starts. Once we have the `template` there is a method `GetVariableValue` that allows us to get a variable value.

`GetVariableValue` returns the value of the variable as a string or null is the variable does not exist. We can easily check for this and terminate with an error if the variable is missing.

We want to get the numerical values of the variables and check if they are valid numbers. The standard javascript functions `parseFloat()` and `isNaN()` allow us to do this.

To check if the value is zero (or very small) we use the standard `Math.abs()` function and calculate a value accordingly.

To create a new variable we use the `Variable` constructor. This takes the template, the variable name, description and value as arguments. Finally, maths in javascript is performed in double precision so the value we calculated will be given to many significant figures. We are not interested in this so we use the standard `Number.toFixed()` function to limit the number of decimal places to 2.

The source code for this example is available here.

Example 2: Magnitude from the three vector components

Problem

Given three variables X, Y and Z calculate the vector magnitude and store it in a variable LENGTH.

Solution

```
// Get variable values from template
var x = reporter.currentTemplate.GetVariableValue("X");
var y = reporter.currentTemplate.GetVariableValue("Y");
var z = reporter.currentTemplate.GetVariableValue("Z");

// Check that the variables exist
if (x == null) throw Error("no X variable\n");
if (y == null) throw Error("no Y variable\n");
if (z == null) throw Error("no Z variable\n");

// Extract numbers from variables
var X = parseFloat(x);
var Y = parseFloat(y);
var Z = parseFloat(z);

// Check that the variables are valid numbers
if (isNaN(X)) throw Error("X " + x + " is not a valid number\n");
if (isNaN(Y)) throw Error("Y " + y + " is not a valid number\n");
if (isNaN(Z)) throw Error("Z " + z + " is not a valid number\n");

// Calculate magnitude
```

```
var length = Math.sqrt(X*X + Y*Y + Z*Z);

// Check for valid magnitude
if (isNaN(length)) throw Error("Bad vector magnitude\n");

// Create new variable LENGTH
var lvar = new Variable(reporter.currentTemplate, "LENGTH",
                        "vector magnitude", length);
```

Discussion

This is done using very similar methods to example 1. The only differences here are using the function `Math.sqrt()` and we do not use the standard `Number.toFixed()` function as the length could be smaller than 2 decimal places. Instead we could use `Number.toPrecision()` or `Number.toExponential()` if we wanted to format the result instead of leaving it with several decimal places.

The source code for this example is available here.

Example 3: Setting a character variable according to the result of a calculation

Problem

Input variable = PERCENT
If (abs(PERCENT) < 5.0) then new variable RESULT = 'OK'
otherwise 'not OK'

Solution

```
var result;

// Get variable value from template
var percent = reporter.currentTemplate.GetVariableValue("PERCENT");

// Check that the variable exist
if (percent == null) throw Error("no PERCENT variable\n");

// Extract number from variable
var p = parseFloat(percent);

// Check that the variable is a valid number
if (isNaN(p)) throw Error("PERCENT " + percent + " is not a valid number\n");

// Check for less than 5
if (Math.abs(p) < 5.0)
    result = "OK";
else
    result = "not OK";

// Create new variable RESULT
var rvar = new Variable(reporter.currentTemplate, "RESULT",
                        "is it OK?", result);
```

Discussion

This uses exactly the same methods as examples 1 and 2. The only difference is that the value used in the Variable constructor is a character string, not a number.

The source code for this example is available here.

Example 4: Reading a T/HIS curve file and operating on it

Problem

input variables = CURVE_FILE and GATE_TIME.
read the T/HIS curve file, calculate average y-value of all points that occur after x-value=GATE_TIME. Return the average in a new variable Y_AVERAGE

Solution

```
var count, line, x, y, X, Y, ytot, ny;

// Get variable values from template
var curveFile = reporter.currentTemplate.GetVariableValue("CURVE_FILE");
var gateTime = reporter.currentTemplate.GetVariableValue("GATE_TIME");

// Check that the variables exist
if (curveFile == null) throw Error("no CURVE_FILE variable\n");
if (gateTime == null) throw Error("no GATE_TIME variable\n");

// Check curve file exists
if (!File.Exists(curveFile)) throw Error("Curve file " + curveFile + " does not
exist\n");

// Check gateTime is a valid number
var t = parseFloat(gateTime);
if (isNaN(t)) throw Error("Gate time " + gateTime + " is not a valid number\n");

// create a new File object
var file = new File(curveFile, File.READ);

// Zero variables
count = 0;
ytot = 0;
ny = 0;

// Keep reading lines from the file until we get to the end of the file
while ( (line = file.ReadLine() ) != File.EOF)
{
    if (line.charAt(0) == '$')
        continue;
    else if (line.match(/CONTINUE/))
        break;
    else
    {
        count++;

// Skip the four title lines at the top of the curve file
        if (count > 4)
        {
// strip leading and trailing apaces
            line = line.replace(/^\s+/, "");
            line = line.replace(/\s+$/, "");
            result = line.match(/([0-9eE+\-\.]+)\s*,?\s*([0-9eE+\-\.]+)/);
            if (result != null)
            {
                x = result[1];
                y = result[2];

// Extract numbers
                X = parseFloat(x);
                Y = parseFloat(y);

// Check that they are valid numbers
                if (isNaN(X)) throw Error("X " + x + " is not a valid
number\n");
                if (isNaN(Y)) throw Error("Y " + y + " is not a valid
number\n");
```

```
// If greater than gate time then include value
                if (X > t)
                {
                    ny++;
                    ytot += Y;
                }
            }
        }
    }
}

// Close the file
file.Close();

// If we have read any values calculate average and set variable
if (ny)
{
    ytot /= ny;
// Create new variable LENGTH
    var ave = new Variable(reporter.currentTemplate, "Y_AVERAGE",
                           "average Y value", ytot);
}
```

Discussion

This example uses the `File` class which REPORTER defines to read the T/HIS curve file. The function `File.Exists()` can be used to test if a filename is valid. Then the `File constructor`, `ReadLine()` and `Close()` functions are used to read the data from the file.

To extract the xy data pairs from the file we use a regular expression. This is perhaps the most complicated part of the program. We want to be able to read x and y values that can be separated by a comma, one or more spaces, or both. If we break the expression `([0-9eE+\-\.]+)\s*,?\s*([0-9eE+\-\.]+)` into it's constituent parts we get:

`([0-9eE+\-\.]+)`. The `[]` groups characters that we allow to match. `-` and `.` have special meanings so they have to be escaped with a `\` character. So this means we are allowing any of the characters `0123456789eE+-.` to match. The `[]` specifies a single character so we use + to mean one or more. Finally, using `()` captures the expression so we can extract the value that matched. So this will match values such as '10', '1.2345', '1.0e+05', '-23.4'

`\s*,?\s*`. The `\s` matches a single space. A `*` means that it will try to match 0 or more spaces (as many as are present). The `,` matches a comma and the `?` means match either 0 or 1 of them. So this expression means "Match 0 or more spaces followed by 0 or 1 commas followed by 0 or more spaces".

More details on regular expressions can be found in the Conditional formatting chapter as these can use regular expressions.

Once we have extracted the data values with the regular expression we can easily calculate the average and make a new variable using the techniques in the first 3 examples.

The source code for this example is available here.

A. Command line arguments and oa_pref options

A.1 Command line arguments

The following command line arguments are available in REPORTER. Unless stated otherwise, all command line options are evaluated in the order that they are given.

Argument	Description
`file.orr` or `-file=file.orr`	Opens REPORTER file "file.orr"
`-pdf=file.pdf`	Creates a pdf file "file.pdf"
`-html=file.html`	Creates a HTML file "file.html"
`-print=printer`	Prints report to `printer`
`-varNAME[::type]=value[::description]`	Creates a variable "NAME" in REPORTER with value "value" and description "description". `::description` and `::type` can be omitted. If the type is omitted it defaults to "General".
`-vba=file.bas`	Create a powerpoint macro visual basic file "file.bas"
`-ppt=file.ppt`	Create PowerPoint file "file.ppt". Note: Not available on unix. Only available on Windows if Powerpoint is installed.
`-log=logfile`	Save the logfile REPORTER produces in the file "logfile" as plain text after processing all the command line options.
`-loghtml=logfile`	Save the logfile REPORTER produces in the file "logfile" as HTML after processing all the command line options.
`-generate`	Generate a report (previously read with `-file` argument). Note: this is not required if you use any of the `-ps`, `-pdf`, `-html`, `-vba` or `-ppt` options (they do this automatically)
`-report=file.orr`	Saves generated report (previously read with `-file` argument) to `file.orr`
`-script=script.js`	Runs javascript script `script.js`.
`-argfile=argfile`	Reads command line arguments from file `argfile`, one argument per line. This could be useful if you want to read lots of variables on the command line and you reach the command line length limit.
`-exit`	Automatically exit after processing all other command line options
`-iconise`	Start REPORTER iconised. This is useful for running reporter from scripts when you want to continue working on something else and you do not want the REPORTER window to interfere.
`-new`	Create a new template.
`-batch`	Batch mode. This stops REPORTER prompting the user. For example, normally if an error occurs when generating REPORTER brings up a warning box allowing the user to look at the error. Giving the `-batch` argument stops this. Note that this does NOT make REPORTER run without the user interface (see `-iconise`)
`-oasys_batch`	On Windows run D3PLOT and T/HIS without any windows being shown.
`-combine`	Combine multiple report output into pdf, html or pptx.

So for example:

```
reporter -file=/job/templates/example.orr                    /
         -pdf=/local/output.pdf                              /
```

```
-print=printer                                          /
-varKEYWORD=/job/keyword/example.key::example deck /
-html=/local/example.html                               /
-exit
```

Will:
1. Load the file "/job/templates/example.orr" into REPORTER
2. Install a variable called KEYWORD with value "/job/keyword/example.key" and description "example deck"
3. Create a pdf file "/local/output.pdf"
4. Print the file on printer "printer"
5. Create a HTML file "/local/example.html"
6. automatically exit

A.2 oa_pref options

The "oa_pref" preferences file.

This file contains code-specific preferences that can be used to modify the behaviour of Oasys Ltd LS-DYNA Environment products. It is optional and, where entries (or the whole file) are omitted REPORTER will revert to its default settings.

"oa_pref" naming convention and locations

The file is called "oa_pref"

It is looked for in the following places in the order given:
- The site-wide admin directory (**$OA_ADMIN**)
- The site-wide "Oasys Ltd LS-DYNA Environment" directory (**$OA_INSTALL**)
- The user's home directory: **$HOME** (Unix/Linux) or **$USERPROFILE** (Windows)

The first encountered file will be used, so this file can be customised for a particular job or user at will.
Files do not have to exist in any of these locations, and if none exists the programme defaults will be used.

On Unix and Linux:

$HOME on Unix and Linux is usually the home directory specified for each user in the system password file.
The shell command "**printenv**" (or on some systems "**setenv**") will show the value of this variable if set.
If not set then it is defined as the "**~**" directory for the user. The command "**cd; pwd**" will show this.

On Windows:

$USERPROFILE on Windows is usually **C:\Documents and Settings*<user id>***
Issuing the "**set**" command from an MS-DOS prompt will show the value of this and other variables.

Generally speaking you should put
- Organisation-wide options in the version in $OA_INSTALL,
- User-specific options in $HOME / $USERPROFILE

"oa_pref" file syntax

The syntax used for Primer is:

reporter*<keyword>: <argument>

for example:

reporter*default_item_width: 10.0

The rules for formatting are:

- The **<programme>*<option>:** string must start at column 1;
- This string must be in lower case, and must not have any spaces in it.
- The **<argument>** must be separated from the string by at least one space.
- Lines starting with a "**#**" are treated as comments and are ignored.

"oa_pref" options valid for REPORTER

Preference	Type	Description	Valid arguments	Default
file_names	<string>	Controls output file names. LSTC = d3plot, d3thdt, d3hsp etc, OASYS/ARUP = job.ptf, job.thf job.otf etc	OASYS, ARUP, LSTC	OASYS
maximise	<logical>	Maximise window when REPORTER started	TRUE, FALSE	FALSE
placement	<string>	Location for initial window on multi-screen display	LEFT, RIGHT, BOTTOM, TOP, LEFT_BOTTOM, LEFT_TOP, RIGHT_BOTTOM, RIGHT_TOP	<none>
start_in	<string>	Directory to start REPORTER in		<none>
use_default_vars	<logical>	Use default vars in filenames when capturing if possible	TRUE, FALSE	TRUE
use_file_vars	<logical>	Use file/directory vars in filenames when capturing if possible	TRUE, FALSE	TRUE

The following options control the library directory used by REPORTER

Preference	Type	Description	Valid arguments	Default
library_directory	<string>	User defined library directory for REPORTER		$OA_INSTALL/reporter_library

The following options control how objects are edited

Preference	Type	Description	Valid arguments	Default
coordinate_method	<string>	Method used for editing object coordinates	Opposite corners, Width and height	Width and height
default_item_height	<real>	Default width given to item (mm) if it is not dragged when creating	0.0 - 999.9	10.0
default_item_width	<real>	Default height given to item (mm) if it is not dragged when creating	0.0 - 999.9	10.0
object_reference_corner	<string>	Corner used as reference when editing objects	TopLeft, TopRight, BottomLeft, BottomRight	BottomLeft

The following options control pdf output

Preference	Type	Description	Valid arguments	Default
pdf_image_downsample	<logical>	Downsample images in pdf files	TRUE, FALSE	FALSE
pdf_image_downsample_resolution	<integer>	Resolution to downsample images to	10 - 3000	150

pdf_image_downsample_threshold	<real>	Factor above pdf_image_downsample_resolution before downsampling is done	1.0 - 10.0	1.5

The following options control which other Oasys Ltd LS-DYNA Environment programmes are used by REPORTER

Preference	Type	Description	Valid arguments	Default
d3plot	<string>	D3PLOT executable to use		<none>
d3plot_args	<string>	Extra command line arguments to pass to D3PLOT		<none>
primer	<string>	PRIMER executable to use		<none>
primer_args	<string>	Extra command line arguments to pass to PRIMER		<none>
this	<string>	T/HIS executable to use		<none>
this_args	<string>	Extra command line arguments to pass to T/HIS		<none>

The following options control unicode

Preference	Type	Description	Valid arguments	Default
cjk_default	<string>	Default language for ambiguous CJK Kanji	Chinese, Japanese, Korean	Japanese
chinese_characters	<string>	Style for chinese characters in pdf files	Simplified, Traditional	Traditional
japanese_font	<string>	Font for japanese characters in pdf files	Kozuka Mincho Pro, Kozuka Gothic Pro	Kozuka Mincho Pro

The following options control visual basic output

Preference	Type	Description	Valid arguments	Default
vba_directory	<string>	Directory script will be run from		C:\temp

Editing/changing preferences

There is currently no interactive preferences editor for REPORTER. To change preferences for REPORTER please use the interactive preferences editor in Oasys Ltd SHELL, D3PLOT, T/HIS or PRIMER or edit the preferences file by hand.

B. Library objects

B.1. Standard library programs

REPORTER has a number of buit in scripts to retrieve data from the keyword or otf files. New scripts can be added as required. See Adding scripts to the library. By default REPORTER looks for library programs in the subdirectory `reporter_library/scripts` in the directory where REPORTER is installed. Other directories can be added if required. See User defined library directories for more details.

D3PLOT data file programs

Create a D3Plot data file from a cvs file	Create a data file which is suitable for use by D3PLOT. The data will be extracted from a csv (comma separated value) file. See section 6.1
Create a D3Plot data file from generated data files	Create a data file which is suitable for use by D3PLOT. The data will be extracted from `reporter_variables` files. See section 6.1

Error programs

Read PRIMER error file	Read an error file produced by doing a model check in PRIMER and extract the errors

Keyword file programs

The following programs retrieve information from a keyword file.

Analysis title	Prints the title of the analysis from the `*TITLE` card.
Comments between `*KEYWORD` and `*TITLE`	Prints any comment lines in the keyword file between the `*KEYWORD` and `*TITLE` keywords. The $ will be removed from each line. An optional second argument can be used to impose a maximum limit on the number of lines printed.
Create variables for parameters used in analysis	
Extract title and LCSS curve from *MAT_PIECEWISE_LINEAR_PLASTICITY_TITLE cards	
Include files used in analysis	Prints a list of all the include files used in the analysis. By default the full pathname of include files is written. An optional second argument can be used to give the names relative to the master file
Initial velocity card used in analysis	Prints the first line of any `*INITIAL_VELOCITY` cards in the keyword file. The script will also recursively look in include files for `*INITIAL_VELOCITY` cards.
Timestep from `*CONTROL_TIMESTEP` card	Reads the `DT2MS` value from the `*CONTROL_TIMESTEP` card

NCAP

Create a US-NCAP graph	Create a graph for US-NCAP star rating using HIC and chest acceleration (3ms clip)

OTF file programs

The following programs retrieve information from an OTF file.

Mass info

Added mass at end of analysis	Prints the mass added to the analysis by mass-scaling at the end of the analysis. This will also look at otf files generated from restarts (otf01, otf02 etc)
Added mass at start of analysis	Prints the mass added to the analysis by mass-scaling at the start of the analysis.
Percentage final added mass	Prints the percentage mass added to the analysis by mass-scaling at the end of the analysis. This will also look at otf files generated from restarts (otf01, otf02 etc)
Percentage initial added mass	Prints the percentage mass added to the analysis by mass-scaling at the start of the analysis.
Total mass in analysis	Prints the mass of the model at the start of the analysis

Timestep info

Mass-scaled timestep (DT2MS) echo in OTF file	Prints the `DT2MS` value from the `*CONTROL_TIMESTEP` card echoed to the OTF file.
Smallest initial timestep	Prints the element with the smallest timestep from the 100 smallest timesteps. The line has the form: `<element_type> <element_number> timestep = <timestep>`

Timing info

Elapsed time for analysis	Prints the total elapsed time for the analysis.
Start time for analysis	Prints the date and time that the analysis finished.
Problem cycle for analysis	Prints the cycle in the analysis that the problem terminated.
Problem time for analysis	Prints the time in the analysis that the problem terminated.
Start time for analysis	Prints the date and time that the analysis started (same as Analysis date).
Termination time(ENDTIM) echo in OTF file	Prints the termination time from the `*CONTROL_TERMINATION` card echoed to the OTF file. This will also look at otf files generated from restarts (otf01, otf02 etc).

Other OTF programs

Analysis date	Prints the date and time that the analysis started
Analysis precision	Prints the precision (single/double) LS-DYNA used for the analysis
Analysis title	Prints the title of the analysis echoed to the OTF file.
CPU time for analysis	Prints the total CPU time used for the analysis. This will also look at otf files generated from restarts (otf01, otf02 etc)

Check on the quality of the run	Looks to see if the analysis terminated normally, if the initial and final added masses, the total energy fluctuation and hourglass energy are below (user definable) limits. Either prints OK or NOT OK.
Hostname analysis run on	Prints the hostname of the machine the analysis was run on.
LS-Dyna version and revision	Prints the version and revision of LS-DYNA used to run the analysis
Normal or Error termination message	Prints `N o r m a l` or `E r r o r` termination message from LS-DYNA.
Number of CPUs used for analysis	Prints the number of CPUs used for the analysis
OS analysis run on	Prints the operating system level of the machine the analysis was run on.
Platform analysis run on	Prints the platform of the machine the analysis was run on.

Pedestrian

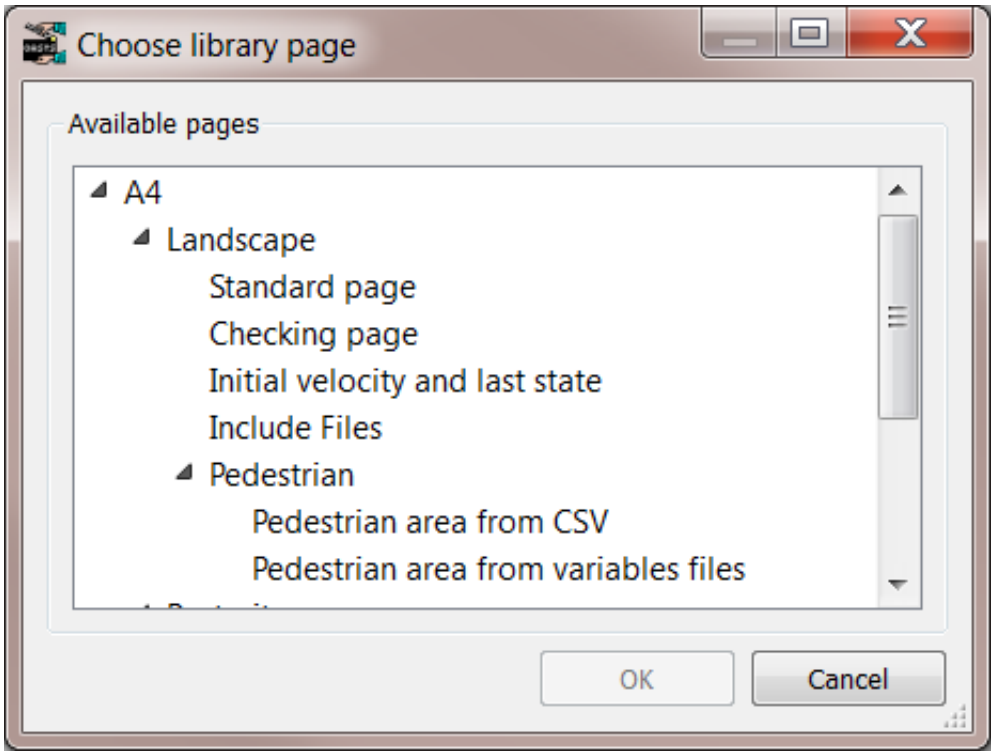
Create a contour image of HIC for pedestrian HIC results in a CSV file	Creates an image showing contours of HIC from values in a csv file. See http://www.oasys-software.com/dyna/en/downloads/extras.shtml#pedestrianarea for more details.
Create a contour image of HIC for pedestrian HIC results in reporter variables files	Creates an image showing contours of HIC from values in reporter variables files. See http://www.oasys-software.com/dyna/en/downloads/extras.shtml#pedestrianarea for more details.

Variables

Read a REPORTER variable file	Read a variables file written by another REPORTER template and install the variables from it into the current template
Read variables from a CSV file	Read variables from a CSV file (one variable per row).
Read variables from a CSV file (data in rows)	Read variables from a CSV file (one variable per column)

B.2. Standard library pages

REPORTER comes with some standard pages which can be installed from a library. They are shown in the image below. The pages are available in landscape and portrait versions. The information on the page is the same in either case.

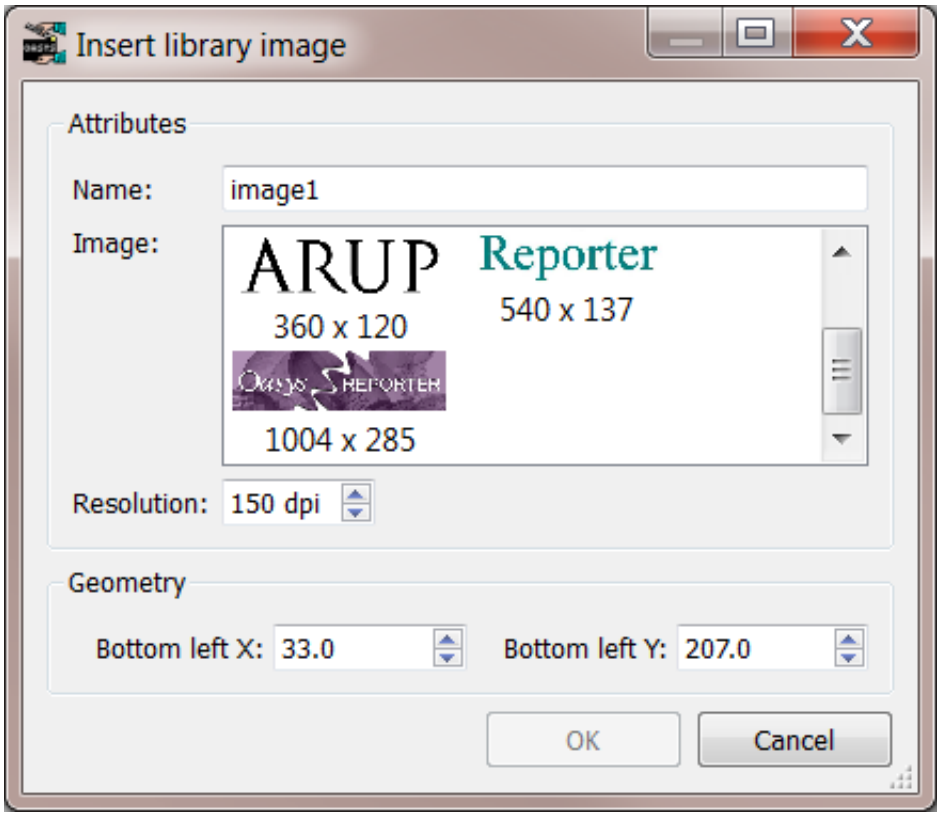


Type	Description
Checking page	Information for the analysis extracted from the OTF file and an energy balance plot from T/HIS.
Include Files	A list of any include files that were used in the analysis
Initial velocity and last state	Images captured from D3PLOT of the initial velocity in the analysis and of the last state.
Standard page	A blank page with a standard footer
Pedestrian area from CSV	Information and a contour plot of HIC values for pedestrian HIC analyses. See http://www.oasys-software.com/dyna/en/downloads/extras.shtml#pedestrianarea for more details.
Pedestrian area from variables files	Information and a contour plot of HIC values for pedestrian HIC analyses. See http://www.oasys-software.com/dyna/en/downloads/extras.shtml#pedestrianarea for more details.

New pages can be added as required. See Adding pages to the library.

B.3. Standard library images

REPORTER comes with some standard images which can be installed from a library. They are shown in the image below.



New images can be added as required. See Adding images to the library.

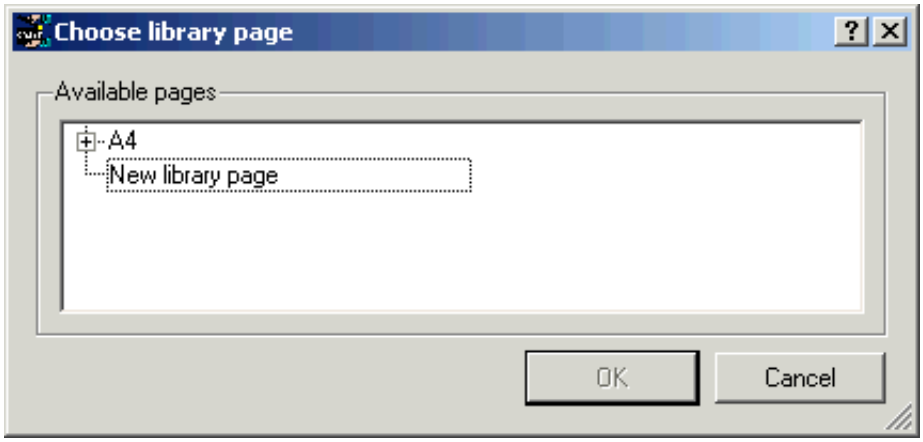
B.4 Adding pages to the library

To add a new page layout to the library you need to:

- Create a the page in REPORTER.
- Export the page, saving it with extension **`.orp`** using Page->Export... (see exporting pages for more details).
- Copy the exported page into the `/library/pages/` directory of your Oasys Ltd LS-DYNA Environment installation.

It will then be shown the next time you start REPORTER. Note that the title of the page is what will be shown in the library page tree so make sure that the page has a sensible title. This can be changed using Page->properties... (see Changing the page properties for more details).

So, for example, if you have a page called 'New library page' and you put it in the `/library/pages/` directory you will get:



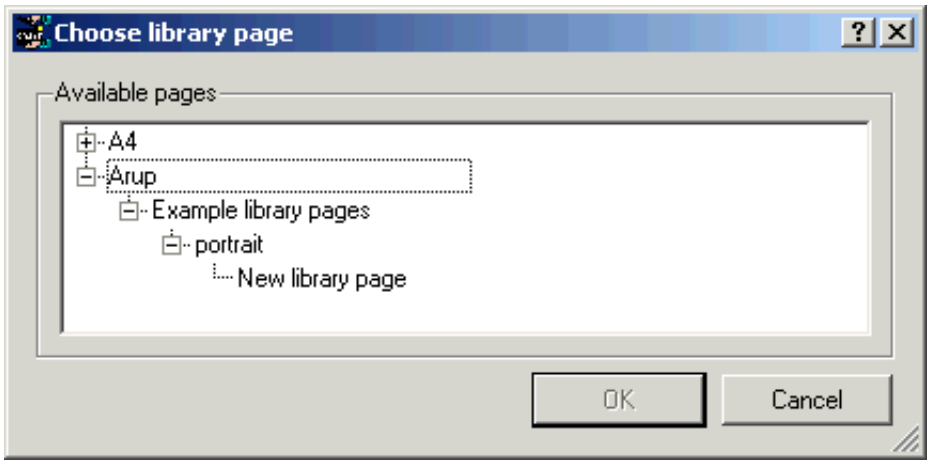
If you want the page to be shown in a different branch of the tree then edit the file using a text editor and change the file as follows. The first line should look like:

```
<REPORTER FILETYPE='page' VERSION='92'>
```

If I wanted a branch in the tree to be 'Arup/Example library pages/portrait' I would change this to

```
<REPORTER FILETYPE='page' VERSION='92' FOLDER='Arup/Example library
pages/portrait'>
```

The page would then be shown in the tree as:



B.5 Adding scripts to the library

REPORTER has a javascript interpreter built into it. The scripts which are available in the library are run inside REPORTER

To add a new script to the library save it into the `/library/scripts/` directory of your Oasys Ltd LS-DYNA Environment installation. Then you need to add the following special comment at the top of the file.

```
/* A description of your script
PROGRAM::<script_name>
DESC::<description>
FOLDER::<folder>                                (optional)
RETURN::<output_type>
[+-]ARG::<description>[::<default text>]    (repeat for as many arguments as
required)
EXPAND_ARGS::false                              (optional)
END_INFO
*/
```

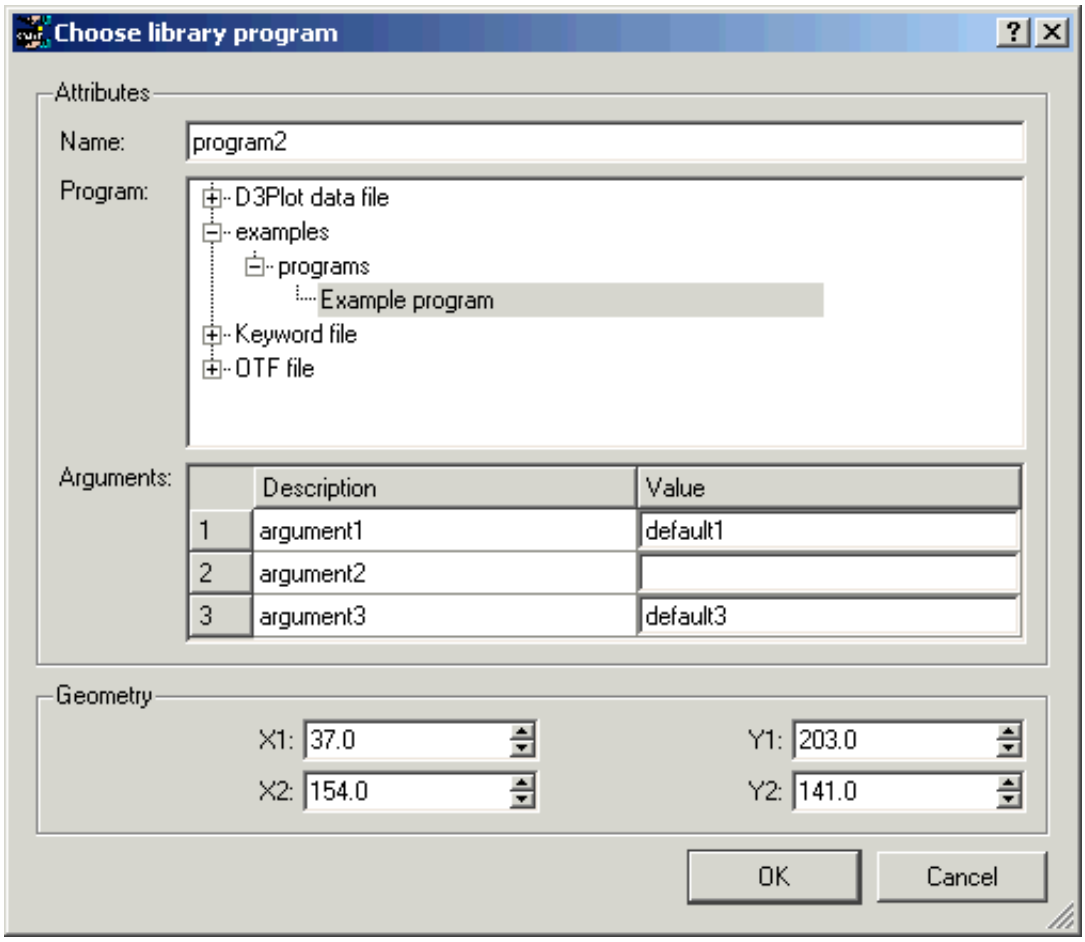
Note the `/*` at the beginning and `*/` at the end.
The lines have the following meaning:

PROGRAM	`<script_name>` is the name of the javascript program. It should have the extension js
DESC	`<description>` is a description of the program/script that will appear in the **Insert program from library** window
FOLDER	The programs in the **Insert program from library** window are shown in a 'tree' view. `<folder>` indicates which folder or 'branch' of the tree the program is shown in. This is the same as for library pages above.
RETURN	`<output_type>` is the type of output the program returns. Currently the only value supported is `text`.
ARG	`<description>` is the argument description that will appear in the **Insert program from library** window. Optionally the line can be prefixed with a `+` or `-` sign. If a `-` sign is used the argument is optional. If a `+` sign is used (default) the argument is mandatory. Optionally an argument can be followed by `<default_text>` which will be used as a default for the argument in the window.
EXPAND_ARGS	Normally any variables in program arguments get expanded to their actual values and so you would omit this line. There may be instances where you do not want to expand them. In this case use the line `EXPAND_ARGS::false` (e.g. see data_file_from_variables.js).
END_INFO	This line indicates the end of the informat and must be included

For example, the following lines

```
/*
PROGRAM::example.js
DESC::Example program
FOLDER::examples/programs
RETURN::text
ARG::argument1::default1
ARG::argument2
-ARG::argument3::default3
END_INFO
*/
```

would give the output:



Rules for writing scripts

As REPORTER runs the scripts internally, they have to be written in a specific way. The following guidelines should be used for writing custom scripts for REPORTER. If these guidelines are too restrictive or you do not want to work this way, remember that you can write external programs for REPORTER in any language you choose. See Appendix E for more details.

- Scripts must be written in javascript! REPORTER contains a javascript interpreter. Other languages are NOT supported.
- To output text back to REPORTER use the output function.
- See the scripting chapter for javascript scripting.
- See the Javascript class reference appendix for extra javascript classes that REPORTER defines.

The scripts in the `/library/scripts` directory give an indication of what is possible with internal scripts. For more details refer to the individual scripts.

The functionality will be extended over time. If you have requests for new features contact Oasys Ltd.

B.6 Adding images to the library

To add an image to the library copy it into the /library/images directory of your Oasys Ltd LS-DYNA Environment installation. It will then be shown next time you start REPORTER. The image should be a bmp, jpg, png or gif image.

Note that if you add images to the library and then use the image in a template, the image will not work for installations that do not have this library image. This is fine if you are using this internally in your company, but be careful when giving a template to another person/company. The way round tis problem is to save your template as a report once it has been generated. When you save as a report any images are embedded to this is then portable. See Outputting a generated report for more details.

B.7 User defined library directories

By default REPORTER looks for library programs in a subdirectory `reporter_library/scripts` in the directory where REPORTER is installed. Extra library programs can be added to this directory using the above logic. However, this may not be possible due to file permissions. For this reason it is possible to specify another directory for REPORTER to use an addition to the default directory. This can be done using the `library_directory` oa_pref option. If this option is set then REPORTER will also treat this directory as a user defined `reporter_library` directory.

Currently only scripts are supported as user library items (i.e. images and pages are currently not supported). User scripts should be put in a subdirectory `scripts` of your `library_directory`.
For example, if `library_directory` is set to `/home/user/reporter_library` then you should put your scripts in `/home/user/reporter_library/scripts`.

In future versions of REPORTER it may be possible to have user defined pages and images.

C. FAQ

This section gives answers to some common questions which have been asked about REPORTER. Over time this FAQ will be extended. If the answer to your question is not here then contact Oasys Ltd for support.

C.1 Running REPORTER

C.2 Generating output

C.3 Extending REPORTER

C.4 Other questions

Answers

1.1 **Can I run REPORTER from the command line?**
Yes you can. See appendix A for a list of command line options.

1.2 **Do I need a license to run REPORTER?**
To run REPORTER you need a valid license for REPORTER or alternatively a valid license for D3PLOT, T/HIS or PRIMER. To get maximum benefit from REPORTER, D3PLOT and T/HIS are required.

1.3 **How do I get REPORTER to run automatically after my LS-DYNA job finishes?**
Use the Oasys Ltd shell to submit your job which has options to allow you to run REPORTER automatically.

1.4 **How do I run REPORTER in batch mode?**
REPORTER does not have a batch mode which means that it requires a display to be able to draw things on. In reality this is not too much of a problem as D3PLOT will also need a display. You can give a DISPLAY that REPORTER can display back to. This can be a computer which is left logged in or a virtual display using xvfb. Additionally to stop REPORTER from pausing to ask for confirmations you should use the `-batch` command line argument.

2.1 **None of my scripts/programs work on windows**

1. Do you have perl, python, Tcl (or whatever your script is written in) installed on your machine?
2. Do you have the correct file extensions and associations for this type of file. e.g. for perl the script should be 'script.pl' and this should be associated with the perl executable on your machine.
3. Do any of the program arguments have spaces in them? If so you may need to quote them. For example:
```
%MYPATH%\scripts\title.pl "C:\my directory\my file with spaces.key"
```

3.1 **Can I write my own scripts?**
Yes. See chapter 11 and appendix D for more details.

3.2 **Can I add new scripts/images/pages to the library?**
Yes. See appendix B for more details.

4.1 **Text appears to be bigger/smaller on the screen than in a postscript/pdf file.**
This can be a problem on Unix machines. Unlike windows machines which use true type fonts, fonts on unix are stored as bitmaps. Only certain sizes are actually available. If you request a size that is not available the one that is displayed could be the wrong size.
To get a list of the fonts (and sizes) on your unix machine use the command **`xlsfonts`**.
If you are trying to see how much space some text will take up in the presentation view try zooming into the page. This may help.

4.2 **REPORTER doesn't have xxxx capability. Can you add it?**
We will try. Please contact Oasys Ltd support to discuss it.

D. JavaScript class reference

This appendix documents the javascript classes that REPORTER uses for scripting. It is not an introduction to scripting. See chapter 11 for that.

REPORTER extends the javascript interpreter with the following new classes.

Class	Description
File	The File class allows you to read and write from text files in REPORTER.
Image	The Image class allows you to create bitmaps in REPORTER.
Reporter	The Reporter class is the root class for objects, properties etc in REPORTER.
Template	The Template class gives access to templates in REPORTER.
Variable	The Variable class gives access to variables in REPORTER.

In addition REPORTER also adds some new methods to the global Javascript object.

global class

The global class is the root object in Javascript. More...

Member functions

- LogError(arg1*[Any valid javascript type]*, ...*[Any valid javascript type]*)
- LogPrint(arg1*[Any valid javascript type]*, ...*[Any valid javascript type]*)
- LogWarning(arg1*[Any valid javascript type]*, ...*[Any valid javascript type]*)
- debug(string*[Any valid javascript type]*)
- exit()
- output(string*[Any valid javascript type]*)

global properties

Name	Type	Description
reporter	Reporter	The global Reporter Reporter object.

Detailed Description

When Reporter is started a **single** global class object is created. All of the standard JavaScript functions and properties are available from it.
In addition an instance of a Reporter class is available, from the global reporter property. The reporter object allows you to access the properties and templates used in Reporter.

Details of functions

LogError(arg1*[Any valid javascript type]*, ...*[Any valid javascript type]*)

Description

Print an error to log file. Anything that you print will be output to the log file window in bold red text. **Note that a carriage return will automatically be added**.

Arguments

Name	Type	Description
arg1	Any valid javascript type	The string/item that you want to print
...	Any valid javascript type	The string/item that you want to print

Return type

No return value

Example

To give error "Error: something has gone wrong" to the log file
```
LogError("Error: something has gone wrong");
```

Any number of arguments can be given. They will be concatenated. e.g.
```
LogError("The value of i is ", i, " elephants");
```

LogPrint(arg1*[Any valid javascript type]*, ...*[Any valid javascript type]*)

Description

Print a string to log file. Anything that you print will be output to the log file window. **Note that a carriage return will automatically be added**.

Arguments

Name	Type	Description
arg1	Any valid javascript type	The string/item that you want to print
...	Any valid javascript type	The string/item that you want to print

Return type

No return value

Example

To print string "Hello, world!" to the log file
```
LogPrint("Hello, world!");
```

Any number of arguments can be given. They will be concatenated. e.g.
```
LogPrint("The value of i is ", i, " elephants");
```

LogWarning(arg1*[Any valid javascript type]*, ...*[Any valid javascript type]*)

Description

Print a warning to log file. Anything that you print will be output to the log file window in red text. **Note that a carriage return will automatically be added**.

Arguments

Name	Type	Description
arg1	Any valid javascript type	The string/item that you want to print
...	Any valid javascript type	The string/item that you want to print

Return type

No return value

Example

To give warning "Warning: something has gone wrong" to the log file
```
LogWarning("Warning: something has gone wrong");
```

Any number of arguments can be given. They will be concatenated. e.g.
```
LogWarning("The value of i is ", i, " elephants");
```

---

debug(string*[Any valid javascript type]*)

Description

Print a string to log file for debugging. Anything that you call the debug method on will be 'printed' to the log file window. **Note that a carriage return will automatically be added**.

Arguments

Name	Type	Description
string	Any valid javascript type	The string/item that you want to debug

Return type

No return value

Example

To print string "Hello, world!" to the debug log file
```
debug("Hello, world!");
```

---

exit()

Description

Stop execution and exit from script

Arguments

No arguments

Return type

No return value

Example

Exit from script with
```
exit();
```

---

output(string*[Any valid javascript type]*)

Description

Output a string from a script. **Note that a carriage return is not automatically added**.

Arguments

Name	Type	Description

string	Any valid javascript type	The string/item that you want to print

Return type

No return value

Example

To output string "Hello, world!" with a carriage return:

```
output("Hello, world!\n");
```

File class

The File class allows you to read and write from text files. More...

Class functions

- ConvertSeparators(filename*[string]*)
- Directory(filename*[string]*)
- Exists(filename*[string]*)
- FindFiles(directory*[string]*, pattern*[string]*, recursive*[boolean]*)
- IsAbsolute(filename*[string]*)
- IsDirectory(filename*[string]*)
- IsFile(filename*[string]*)
- Mkdir(name*[string]*)
- SimplifyName(filename*[string]*)
- Size(filename*[string]*)

Member functions

- Close()
- FindLineContaining(contain1*[string]*, contain2 (optional)*[string]*, contain3 (optional)*[string]*, ... containn (optional)*[string]*)
- FindLineMatching(regex*[RegExp]*)
- FindLineStarting(start1*[string]*, start2 (optional)*[string]*, start3 (optional)*[string]*, ... startn (optional)*[string]*)
- Flush()
- ReadChar()
- ReadLine()
- ReadLongLine()
- Seek(position*[integer]*)
- Write(string*[Any valid javascript type]*)

File constants

Name	Description
File.APPEND	Flag to open file for appending
File.EOF	Flag to indicate end of file
File.READ	Flag to open file for reading
File.WRITE	Flag to open file for writing

Detailed Description

The File class allows you to read text and write text to files. There are various functions available that allow to to find lines matching specific strings or regular expressions when reading.
Additionally, there are a number of utility functions to check if a file exists or is a directory etc.

Constructor

File(filename*[string]*, mode*[constant]*)

Description

Create a new File object for reading and writing text files.

Arguments

Name	Type	Description
filename	string	Filename of the file you want to read/write. If reading, the file must exist. If writing, the file will be overwritten if it already exists
mode	constant	The mode to open the file with. Can be File.READ, File.WRITE or File.APPEND

Return type

File object

Example

To create a new file object to read file "/data/test/file.txt"

```
var f = new File("/data/test/file.txt", File.READ);
```

Details of functions

Close()

Description

Close a file opened by a File object.

Arguments

No arguments

Return type

No return value

Example

To close File object f.

```
f.Close();
```

ConvertSeparators(filename*[string]*) [static]

Description

Convert directory separators to the correct type for this operating system

Arguments

Name	Type	Description
filename	string	Filename you want to convert separators on.

Return type

string filename

Example

e.g. on windows the filename "c:/test/file.key" would be converted to "c:\test\file.key" by
```
var converted = File.ConvertSeparators("c:/test/file.key");
```

Directory(filename*[string]*) [static]

Description

Extract directory name from an absolute filename

Arguments

Name	Type	Description
filename	string	Absolute filename you want to extract directory from.

Return type

string directory

Example

To extract the directory "/data/test/" from file "/data/test/file.key"
```
var directory = File.Directory("/data/test/file.key");
```

Exists(filename*[string]*) [static]

Description

Check if a file exists

Arguments

Name	Type	Description
filename	string	Filename you want to check for existance.

Return type

true/false

Example

To see if the file "/data/test/file.key" exists
```
if (File.Exists("/data/test/file.key")) { do something }
```

FindFiles(directory*[string]*, pattern*[string]*, recursive*[boolean]*) [static]

Description

Find any files in a directory (and subdirectories if required) matching a pattern

Arguments

Name	Type	Description
directory	string	Directory to look for files in
pattern	string	Pattern to use to find matching files
recursive	boolean	If Reporter should look for files recursively or not

Return type

array filenames

Example

To find all of the files matching the pattern "*.key" recursively from directory /data/test

```
var filelist = File.FindFiles("/data/test/", "*.key", true);
```

FindLineContaining(contain1*[string]*, contain2 (optional)*[string]*, contain3 (optional)*[string]*, ... containn (optional)*[string]*)

Description

Reads a line from a file which contains contain, opened for reading by a File object. To enable this function to be as fast as possible a maximum line length of 256 characters is used. If you expect a file to have lines longer than 256 characters then use ReadLongLine which allows lines of any length. If one argument is used then the line must contain that string. If more than one argument is used then lines which contain argument1 OR argument2 OR argument3 will be returned

Arguments

Name	Type	Description
contain1	string	String which matching lines must contain (maximum length of 256 characters).
contain2 (optional)	string	alternative string which matching lines must contain (maximum length of 256 characters).
contain3 (optional)	string	alternative string which matching lines must contain (maximum length of 256 characters).
... containn (optional)	string	alternative string which matching lines must contain (maximum length of 256 characters).

Return type

string read from file or `File.EOF` if end of file

Example

Loop, reading lines from File object f which contain 'example'.

```
var line;
while ( (line = file.FindLineContaining("example") ) != File.EOF)
{
}
```

FindLineMatching(regex*[RegExp]*)

Description

Reads a line from a file opened for reading by a File object. To enable this function to be as fast as possible a maximum line length of 256 characters is used. If you expect a file to have lines longer than 256 characters then use ReadLongLine which allows lines of any length. Note that this may be much slower than FindLineStarting or FindLineContaining, especially if the regular expression is very complicated.

Arguments

Name	Type	Description
regex	RegExp	Regular expression which matching lines must match with.

Return type

string read from file or `File.EOF` if end of file

Example

Loop, reading lines from File object f which contain digits.

```
var line;
var regex = new RegExp("\\d+");
while ( (line = file.FindLineMatching(regex) ) != File.EOF)
{
}
```

FindLineStarting(start1*[string]*, start2 (optional)*[string]*, start3 (optional)*[string]*, ... startn (optional)*[string]*)

Description

Reads a line from a file which starts with start, opened for reading by a File object. To enable this function to be as fast as possible a maximum line length of 256 characters is used. If you expect a file to have lines longer than 256 characters then use ReadLongLine which allows lines of any length. If one argument is used then the line must start with that string. If more than one argument is used then lines which start argument1 OR argument2 OR argument3 will be returned

Arguments

Name	Type	Description
start1	string	String which matching lines must start with (maximum length of 256 characters).
start2 (optional)	string	alternative string which matching lines must start with (maximum length of 256 characters).
start3 (optional)	string	alternative string which matching lines must start with (maximum length of 256 characters).
... startn (optional)	string	alternative string which matching lines must start with (maximum length of 256 characters).

Return type

string read from file or `File.EOF` if end of file

Example

Loop, reading lines from File object f which start 'example'.

```
var line;
while ( (line = file.FindLineStarting("example") ) != File.EOF)
{
}
```

Flush()

Description

Flushes a file opened for writing by a File object.

Arguments

No arguments

Return type

No return value

Example

To flush File object f.

```
f.Flush();
```

IsAbsolute(filename*[string]*) [static]

Description

Check if a filename is absolute

Arguments

Name	Type	Description
filename	string	Filename you want to test if absolute.

Return type

true/false

Example

To see if the file "/data/test/file.key" is absolute

```
if (File.IsAbsolute("/data/test/file.key")) { do something }
```

IsDirectory(filename*[string]*) [static]

Description

Check if a filename is a directory

Arguments

Name	Type	Description
filename	string	Filename you want to test to see if it is a directory.

Return type

true/false

Example

To see if "/data/test" is a directory

```
if (File.IsDirectory("/data/test")) { do something }
```

IsFile(filename*[string]*) [static]

Description

Check if a filename is a file

Arguments

Name	Type	Description
filename	string	Filename you want to test to see if it is a file (i.e. not a directory).

Return type

true/false

Example

To see if "/data/test" is a file

```
if (File.IsFile("/data/test")) { do something }
```

Mkdir(name*[string]*) [static]

Description

makes a directory

Arguments

Name	Type	Description
name	string	Directory you want to create.

Return type

true if successful

Example

To make directory "/data/test" if it does not exist:

```
if (!File.IsDirectory("/data/test")) File.Mkdir("/data/test");
```

ReadChar()

Description

Reads a single character from a file opened for reading by a File object.

Arguments

No arguments

Return type

character read from file or `File.EOF` if end of file

Example

Loop, reading characters from File object f.

```
var c;
while ( (c = f.ReadChar()) != undefined) { ... }
```

ReadLine()

Description

Reads a line from a file opened for reading by a File object. To enable this function to be as fast as possible a maximum line length of 256 characters is used. If you expect a file to have lines longer than 256 characters then use ReadLongLine which allows lines of any length.

Arguments

No arguments

Return type

string read from file or `File.EOF` if end of file

Example

Loop, reading lines from File object f.

```
var line;
while ( (line = file.ReadLine() ) != File.EOF)
{
}
```

ReadLongLine()

Description

Reads a line from a file opened for reading by a File object. The line can be any length. If your file has lines shorter than 256 characters then you may want to use ReadLine instead which is faster.

Arguments

No arguments

Return type

string read from file or `File.EOF` if end of file

Example

Loop, reading lines from File object f.

```
var line;
while ( (line = file.ReadLongLine() ) != File.EOF)
{
}
```

Seek(position*[integer]*)

Description

Sets the file position for reading a file

Arguments

Name	Type	Description
position	integer	Position you want to seek to.

Return type

No return value

Example

To seek to position 1000 in file object f:

```
f.Seek(1000);
```

SimplifyName(filename*[string]*) [static]

Description

Simplify the name of a file by removing //, /./ and /../

Arguments

Name	Type	Description
filename	string	Filename you want to simplify.

Return type

string filename

Example

To simplify the filename "/data/test//../file.key"

```
var simple = File.SimplifyName("/data/test//../file.key");
```

This simplifies to "/data/file.key"

Size(filename*[string]*) [static]

Description

Check if a filename is a file

Arguments

Name	Type	Description
filename	string	File you want to find the size of.

Return type

integer

Example

To find the size of file "/data/test"

```
var size = File.Size("/data/test");
```

Write(string*[Any valid javascript type]*)

Description

Write a string to a file opened for writing by a File object

Arguments

Name	Type	Description
string	Any valid javascript type	The string/item that you want to write

Return type

No return value

Example

To write string "Hello, world!" to File object f
```
f.Write("Hello, world!\n");
```

To write the title of model 2 to File object f
```
f.Write("The title of model 2 is " + models[2].title + "\n");
```

Image class

The Image class allows you to create bitmaps in Reporter. More...

Member functions

- Ellipse(x1*[integer]*, y1*[integer]*, x2*[integer]*, y2*[integer]*)
- Fill(x*[integer]*, y*[integer]*, tol (optional)*[integer]*)
- Line(x1*[integer]*, y1*[integer]*, x2*[integer]*, y2*[integer]*)
- Load(filename*[string]*)
- PixelCount(colour*[string]*, tol (optional)*[integer]*)
- Polygon(x1*[integer]*, y1*[integer]*, x2*[integer]*, y2*[integer]*, ... xn*[integer]*, ... yn*[integer]*)
- Polyline(x1*[integer]*, y1*[integer]*, x2*[integer]*, y2*[integer]*, ... xn*[integer]*, ... yn*[integer]*)
- Rectangle(x1*[integer]*, y1*[integer]*, x2*[integer]*, y2*[integer]*)
- Save(filename*[string]*, filetype*[constant]*)
- Star(x*[integer]*, y*[integer]*, r*[integer]*)
- Text(x*[integer]*, y*[integer]*, text*[string]*)

Image constants

Name	Description
Image.BMP	Save image as BMP
Image.JPG	Save image as JPG
Image.PNG	Save image as PNG

Image properties

Name	Type	Description
fillColour	string	Colour to use when filling shapes on the Image. Can be "none", a valid colour from the X colour database (see /etc/X11/rgb.txt) e.g. "Blue", or #RRGGBB (each of R, G and B is a single hex digit) e.g. "#0000FF" for blue.
font	string	Font to use when drawing text on the Image. Can be "Courier", "Helvetica" or "Times"
fontAngle	integer	Angle (degrees) text is drawn at on the Image. Can be between -360 and 360 degrees.
fontColour	string	Colour to use when drawing text on the Image. Can be "none", a valid colour from the X colour database (see /etc/X11/rgb.txt) e.g. "Blue", or #RRGGBB (each of R, G and B is a single hex digit) e.g. "#0000FF" for blue.
fontJustify	constant	Justification to use when drawing text on the Image. Can be Reporter.JustifyCentre, Reporter.JustifyLeft or Reporter.JustifyRight
fontSize	integer	Size of font (in points) to use when drawing text on the Image
fontStyle	constant	Style of font to use when drawing text on the Image. Can be any combination of Reporter.TextNormal, Reporter.TextBold, Reporter.TextItalic and Reporter.TextUnderline
height	integer	Height of the Image
lineCapStyle	constant	Style to use for the end of lines on an Image. Can be Reporter.CapFlat, Reporter.CapSquare or Reporter.CapRound
lineColour	string	Colour to use when drawing lines on the Image. Can be "none", a valid colour from the X colour database (see /etc/X11/rgb.txt) e.g. "Blue", or #RRGGBB (each of R, G and B is a single hex digit) e.g. "#0000FF" for blue.
lineJoinStyle	constant	Style to use for the line join at vertices of polygons and polylines on an Image. Can be Reporter.JoinMitre, Reporter.JoinBevel or Reporter.JoinRound
lineStyle	constant	Style to use when drawing lines on an Image. Can be Reporter.LineNone, Reporter.LineSolid, Reporter.LineDash, Reporter.LineDot, Reporter.LineDashDot or Reporter.LineDashDot

lineWidth	integer	Width to use when drawing lines on an Image value
width	integer	Width of the Image

Detailed Description

The Image class allows you to create, load and save bitmaps. There are various functions available that allow to to draw lines, rectangles, ellipses, text etc on a bitmap.

Constructor

Image(width (optional)*[integer]*, height (optional)*[integer]*)

Description

Create a new Image object for creating an image. If no arguments are given a null (0 pixels wide by 0 pixels high) is made. If 2 arguments are given they are used as the width and height of the image.

Arguments

Name	Type	Description
width (optional)	integer	Width of image
height (optional)	integer	Height of image

Return type

Image object

Example

To create a new image object 100 pixels wide by 50 pixels high

```
var img = new Image(100, 50);
```

Details of functions

Ellipse(x1*[integer]*, y1*[integer]*, x2*[integer]*, y2*[integer]*)

Description

Draw an ellipse on an image

Arguments

Name	Type	Description
x1	integer	X coordinate of start position for ellipse
y1	integer	Y coordinate of start position for ellipse
x2	integer	X coordinate of end position for ellipse
y2	integer	Y coordinate of end position for ellipse

Return type

no return value

Example

To draw an ellipse with no fill and solid red border line width 2 pixels, on image 'idata', starting at point 30, 20 and finishing at point 100, 50

```
idata.lineColour = "red";
idata.fillColour = "none";
idata.lineWidth = 2;
idata.lineStyle = Reporter.LineSolid;
idata.Ellipse(30, 20, 100, 50);
```

Fill(x*[integer]*, y*[integer]*, tol (optional)*[integer]*)

Description

Fill an area in an image with a colour.

Arguments

Name	Type	Description
x	integer	X coordinate of start position for fill
y	integer	Y coordinate of start position for fill
tol (optional)	integer	Tolerance for colour matching (0-255). Default is 0. When filling a shape if the red, green and blue components are within tol of the colour of pixel (x, y) the pixel will be filled with the current fill colour.

Return type

no return value

Example

To fill an area of image 'idata', starting at point 30, 20 with red:

```
idata.fillColour = "red";
idata.Fill(30, 20);
```

Line(x1*[integer]*, y1*[integer]*, x2*[integer]*, y2*[integer]*)

Description

Draw a line on an image

Arguments

Name	Type	Description
x1	integer	X coordinate of start position for line
y1	integer	Y coordinate of start position for line
x2	integer	X coordinate of end position for line
y2	integer	Y coordinate of end position for line

Return type

no return value

Example

To draw a blue, dashed line width 2 pixels, on image 'idata', starting at point 30, 20 and finishing at point 100, 50

```
idata.lineColour = "blue";
idata.lineWidth = 2;
idata.lineStyle = Reporter.LineDash;
idata.Line(30, 20, 100, 50);
```

Load(filename*[string]*)

Description

Load an image file (gif, png, bmp or jpeg)

Arguments

Name	Type	Description
filename	string	Imagename you want to load.

Return type

no return value

Example

To load the image file "/data/test/image.jpg" into the image object 'idata'

```
idata.Load("/data/test/image.jpg");
```

PixelCount(colour*[string]*, tol (optional)*[integer]*)

Description

Count the number of pixels in an image that have a specific colour.

Arguments

Name	Type	Description
colour	string	A valid colour from the X colour database (see /etc/X11/rgb.txt) e.g. "Blue", or #RRGGBB (each of R, G and B is a single hex digit) e.g. "#0000FF" for blue
tol (optional)	integer	Tolerance for colour matching (0-255). Default is 0. When looking at pixels if the red, green and blue components are within tol of the colour of pixel (x, y) the pixel will be counted.

Return type

Number of pixels (integer) with the colour.

Example

To fill an area of image 'idata', starting at point 30, 20 with red:

```
idata.fillColour = "red";
idata.Fill(30, 20);
```

Polygon(x1*[integer]*, y1*[integer]*, x2*[integer]*, y2*[integer]*, ... xn*[integer]*, ... yn*[integer]*)

Description

Draw a polygon on an image. The last point is always connected back to the first point.

Arguments

Name	Type	Description
x1	integer	X coordinate of point 1
y1	integer	Y coordinate of point 1
x2	integer	X coordinate of point 2
y2	integer	Y coordinate of point 2
... xn	integer	X coordinate of point n
... yn	integer	Y coordinate of point n

Alternatively you can specify a single argument which is an array of coordinates to use.

Return type

no return value

Example

To draw a blue polygon with a solid red border line width 2 pixels, on image 'idata', connecting points (10,10) (20,10) (20,20) (10,20)

```
idata.fillColour = "blue";
idata.lineColour = "red";
idata.lineWidth = 2;
idata.lineStyle = Reporter.LineDash;
idata.Polygon(10,10, 20,10, 20,20, 10,20);
```

or

```
idata.fillColour = "blue";
idata.lineColour = "red";
idata.lineWidth = 2;
idata.lineStyle = Reporter.LineDash;
var a = new Array(10,10, 20,10, 20,20, 10,20);
idata.Polygon(a);
```

Polyline(x1*[integer]*, y1*[integer]*, x2*[integer]*, y2*[integer]*, ... xn*[integer]*, ... yn*[integer]*)

Description

Draw a line with multiple straight segments on an image

Arguments

Name	Type	Description
x1	integer	X coordinate of point 1
y1	integer	Y coordinate of point 1
x2	integer	X coordinate of point 2
y2	integer	Y coordinate of point 2
... xn	integer	X coordinate of point n
... yn	integer	Y coordinate of point n

Alternatively you can specify a single argument which is an array of coordinates to use.

Return type

no return value

Example

To draw a blue, dashed polyline width 2 pixels, on image 'idata', connecting points (10,10) (20,10) (20,20) (10,20)

```
idata.lineColour = "blue";
idata.lineWidth = 2;
idata.lineStyle = Reporter.LineDash;
idata.Polyline(10,10, 20,10, 20,20, 10,20);
```

or

```
idata.lineColour = "blue";
idata.lineWidth = 2;
idata.lineStyle = Reporter.LineDash;
var a = new Array(10,10, 20,10, 20,20, 10,20);
idata.Polyline(a);
```

Rectangle(x1*[integer]*, y1*[integer]*, x2*[integer]*, y2*[integer]*)

Description

Draw a rectangle on an image

Arguments

Name	Type	Description
x1	integer	X coordinate of start position for rectangle
y1	integer	Y coordinate of start position for rectangle
x2	integer	X coordinate of end position for rectangle
y2	integer	Y coordinate of end position for rectangle

Return type

no return value

Example

To draw a rectangle with no fill and solid red border line width 2 pixels, on image 'idata', starting at point 30, 20 and

finishing at point 100, 50
```
idata.lineColour = "red";
idata.fillColour = "none";
idata.lineWidth = 2;
idata.lineStyle = Reporter.LineSolid;
idata.Rectangle(30, 20, 100, 50);
```

Save(filename*[string]*, filetype*[constant]*)

Description

Save an image to file (gif, png, bmp or jpeg)

Arguments

Name	Type	Description
filename	string	Imagename you want to save.
filetype	constant	Type you want to save as. Can be: Image.BMP, Image.JPG or Image.PNG

Return type

no return value

Example

To save the image object 'idata' to file "/data/test/image.jpg" as a jpeg
```
idata.Save("/data/test/image.jpg", IMAGE.JPG);
```

Star(x*[integer]*, y*[integer]*, r*[integer]*)

Description

Draw a star on an image

Arguments

Name	Type	Description
x	integer	X coordinate of centre of star
y	integer	Y coordinate of centre of star
r	integer	Radius of star

Return type

no return value

Example

To draw a blue star with yellow fill, on image 'idata', centred at point 30, 20 with radius 10
```
idata.lineColour = "blue";
idata.fillColour = "yellow";
idata.Star(30, 20, 10);
```

Text(x*[integer]*, y*[integer]*, text*[string]*)

Description

Draw text on an image

Arguments

Name	Type	Description
x	integer	X position for text
y	integer	Y position for text
text	string	Text to write on image

Return type

no return value

Example

To write the text 'Test' in Helvetica 12pt bold underlined, coloured red on image 'idata', at point 30, 20

```
idata.fontColour = "red";
idata.fontSize = 12;
idata.fontStyle = Reporter.TextBold | Reporter.Underline;
idata.Text(30, 20, "Test");
```

Reporter class

The Reporter class is the root class for objects, properties etc in Reporter. More...

Reporter constants

Name	Description
Reporter.CapFlat	A square line ending at the end point of the line
Reporter.CapRound	A rounded line ending
Reporter.CapSquare	A square line that extends beyond the end point of the line by half the line width
Reporter.JoinBevel	The triangular notch where the line segments meet is filled
Reporter.JoinMitre	The outer edges of the line segments are extended to meet at an angle and this is filled
Reporter.JoinRound	A circular arc between the two line segments is filled
Reporter.JustifyCentre	Centre justification of text
Reporter.JustifyLeft	Left justification of text
Reporter.JustifyRight	Right justification of text
Reporter.LineDash	A dashed line (dashes separated by a few pixels)
Reporter.LineDashDot	A line drawn with alternate dashes and dots
Reporter.LineDashDotDot	A line drawn with one dash and two dots
Reporter.LineDot	A dotted line (dots separated by a few pixels)
Reporter.LineNone	Invisible line
Reporter.LineSolid	A simple continuous line
Reporter.TextBold	Text drawn in a bold font
Reporter.TextItalic	Text drawn in an italic font
Reporter.TextNormal	Text drawn in a normal font
Reporter.TextUnderline	Text drawn underlined
Reporter.ViewDesign	Show template in design view
Reporter.ViewPresentation	Show template in presentation view

Reporter properties

Name	Type	Description
currentTemplate	Template	The current Reporter Template.
templates	array	Array of Templates in this Reporter session.

Detailed Description

When Reporter is started a **single** Reporter class object is created called *reporter*. You should not create any additional instances of the class.
The reporter object allows you to access the properties and templates used in Reporter.

Constructor

Reporter()

Description

Create Reporter object. This should not be called.

Arguments

No arguments

Return type

Reporter object

Template class

The Template class gives access to templates in Reporter. More...

Member functions

- Close()
- ExpandVariablesInString(string*[string]*)
- Generate()
- GetVariableDescription(name*[string]*)
- GetVariableValue(name*[string]*)
- Html(filename*[string]*)
- Pdf(filename*[string]*)
- Print(printer*[string]*)
- Save()
- SaveAs(filename*[string]*)

Template properties

Name	Type	Description
name	string	Name of the Template
variables	array	Array of Variable objects for this template.
view	constant	Current view type (presentation or design view) for this Template. Can be: Reporter.ViewDesign or Reporter.ViewPresentation.

Detailed Description

The Template class allows you to access the templates that Reporter currently has open.
Note that if you want to get a list of the current templates in Reporter you should see the templates array in the reporter object.
The currently active template is stored in the currentTemplate property of the reporter object.

Constructor

Template(filename (optional)*[string]*)

Description

Create a new Template. The filename argument is optional. If present it is a file to open

Arguments

Name	Type	Description
filename (optional)	string	Name of template file to open

Return type

Template object

Example

To create a new blank Template object

```
var template = new Template();
```

Details of functions

Close()

Description

Close a template.
Note that if you call this function for a Template object, the Template data will be deleted, so you should not try to use it afterwards!.

Arguments

No arguments

Return type

no return value

Example

To close template data"
```
data.Close();
```

ExpandVariablesInString(string*[string]*)

Description

Replaces any variables in a string with their current values

Arguments

Name	Type	Description
string	string	The string you want to expand variables in.

Return type

String (string) with variables expanded. If a variable in a string does not exist it is replaced by a blank.

Example

If the variable FRED in template contains the value "test", then the following
```
var value = template.ExpandVariablesInString("This is a %FRED%");
```

will return "This is a test" in variable value.

Generate()

Description

Generate a template

Arguments

No arguments

Return type

no return value

Example

To generate template data"
```
data.Generate();
```

GetVariableDescription(name*[string]*)

Description

Get the description for a variable

Arguments

Name	Type	Description
name	string	Variable name you want to get description for.

Return type

Variable description (string) or null if variable does not exist

Example

To get description for variable FRED in template"
```
var description = template.GetVariableDescription("FRED");
```

GetVariableValue(name*[string]*)

Description

Get the value for a variable

Arguments

Name	Type	Description
name	string	Variable name you want to get value for.

Return type

Variable value (string) or null if variable does not exist

Example

To get value for variable FRED in template"
```
var value = template.GetVariableValue("FRED");
```

Html(filename*[string]*)

Description

Save a template as HTML

Arguments

Name	Type	Description
filename	string	Filename you want to save.

Return type

no return value

Example

To save template data as file /data/test/template.html"
```
data.Html("/data/test/template.html");
```

Pdf(filename*[string]*)

Description

Save a template as postscript

Arguments

Name	Type	Description
filename	string	Filename you want to save.

Return type

no return value

Example

To save template data as file /data/test/template.pdf"
```
data.Pdf("/data/test/template.pdf");
```

Print(printer*[string]*)

Description

Print template on a printer

Arguments

Name	Type	Description
printer	string	Printer you want to print to.

Return type

no return value

Example

To print template data on printer myprinter"
```
data.Print("myprinter");
```

Save()

Description

Save a template

Arguments

No arguments

Return type

no return value

Example

To save template data"
```
data.Save();
```

SaveAs(filename*[string]*)

Description

Save a template with a new name

Arguments

Name	Type	Description
filename	string	Filename you want to save.

Return type

no return value

Example

To save template data as file /data/test/template.opt"

```
data.SaveAs("/data/test/template.opt");
```

Variable class

The Variable class gives access to variables in Reporter. More...

Member functions

- Remove()

Variable properties

Name	Type	Description
description	string	Variable description
name	string	Variable name
readonly	logical	If Variable is read only or not.
type	string	Variable type. Predefined types are "Directory", "File(absolute)", "File(basename)", "File(extension)", "File(tail)", "General", "Number" and "String". Alternatively give your own type. e.g. "NODE ID"
value	string	Variable value

Detailed Description

The Variable class allows you to access the name, description and value of a variable inside Reporter.
Note that if you want to get a list of the variables used in a Template you should see the variables array in the Template object.
The name, description and value properties give access to the variable name, description and value respectively.

Constructor

Variable(template*[Template]*, name*[string]*, description (optional)*[string]*, value (optional)*[string]*, type (optional)*[string]*, readonly (optional)*[boolean]*)

Description

Create a new Variable. The template and name arguments MUST be given, all others are optional

Arguments

Name	Type	Description
template	Template	Template object to create variable in
name	string	Name of variable
description (optional)	string	Description of variable
value (optional)	string	Variable value
type (optional)	string	Type of variable. Predefined types are "Directory", "File(absolute)", "File(basename)", "File(extension)", "File(tail)", "General", "Number" and "String". Alternatively give your own type. e.g. "NODE ID". If omitted default is "General"
readonly (optional)	boolean	If variable is readonly or not. If omitted default is false.

Return type

Variable object

Example

To create a new Variable object called TEST with description 'test variable', type of "Number" and value '10' which is not readonly for template, templ

```
var variable = new Variable(templ, "TEST", "test variable", "10", , "Number",
false);
```

Details of functions

Remove()

Description

Remove a variable
Note that if you call this function for a Variable object, the Variable data will be deleted, so you should not try to use it afterwards!.

Arguments

No arguments

Return type

no return value

Example

To remove variable data"

```
data.Remove();
```

E. Writing external programs/scripts

Programs or scripts for REPORTER that do some external function can be written in any language. It is up to you if you prefer to use a scripting language such as Perl, Python, Tcl etc or a compiled language such as C or Fortran.

Anything which a program prints to stdout (standard output) will be returned to REPORTER (the one exception to this is returning variables which is described below)

Returning variables from programs

To return a variable back to REPORTER output a line that take the form

```
VAR <NAME> VALUE="<value>" DESCRIPTION="<description>"
or
VAR <NAME> VALUE="<value>"
```

It will not inserted into the report as text but will be used to create a variable. See section 4.4 for more details.

Accessing existing variables in REPORTER

If you only want to use one or two variables from REPORTER then they can be passed as arguments to your program. However, if you want to access a lot of variables (or print all the variables to a file) this would not be possible.

To overcome this, REPORTER adds an extra argument to every program that it runs. This extra argument is a filename which contains lines of the form:

```
VAR <NAME> VALUE="<value>" DESCRIPTION="<description>"
```

You can read this file and pick up all the variables from REPORTER.

Example perl program to read variables file from REPORTER

The following example shows how you could read this file.

```
# Skeleton REPORTER Perl script showing extraction of variables fed to program
# The variable file REPORTER generates will be the LAST argument
#
# Variables are stored in a hash '%vars', each entry in the hash contains
# {value} and {description}.
#
# e.g. If REPORTER has a variable 'FRED' with value '1' and description
# 'Example variable' you can get at the variable value and description using:
#
# $vars{FRED}->{value}
# $vars{FRED}->{description}
#
# Arguments
# =========
# 1: Variables file
#
# Miles Thornton 23/5/2002
#
%vars = ();
if ($#ARGV >= 0)
{
    open (VAR, "< $ARGV[$#ARGV]") or die "Error: Cannot open variable file";
    while ( <VAR> )
    {
        chomp;
        &get_var_from_string($_);
    }
}
else
{
```

```
    die "Error: No variable file on the command line\n";
}
############################################################
# START OF YOUR PROGRAM
#
# e.g. loop over variables and save them to a file
open (SAVE, "> varfile") or die "Error: Cannot open variables file";
foreach $var (sort keys %vars)
{
    print SAVE "Variable $var value=$vars{$var}->{value} ",
               "desc=$vars{$var}->{description}\n";
}
close (SAVE);
# END OF YOUR PROGRAM
############################################################
exit;
#   ===================
sub get_var_from_string
#   ===================
#
# Tries to read a variable from the variable file
#
{
    my $string = shift;
    my ($var, $val, $desc);
    if ($string =~ /VAR\s+(\w+)\s+
                    VALUE\s*=\s*['"](.*?)['"]\s*
                    DESCRIPTION\s*=\s*['"](.*?)['"]
                   /x)
    {
        $var  = $1;
        $val  = $2;
        $desc = $3;
    }
    elsif ($string =~ /VAR\s+(\w+)\s+
                       DESCRIPTION\s*=\s*['"](.*?)['"]\s*
                       VALUE\s*=\s*['"](.*?)['"]
                      /x)
    {
        $var  = $1;
        $val  = $3;
        $desc = $2;
    }
    elsif ($string =~ /VAR\s+(\w+)\s+
                       VALUE\s*=\s*['"](.*?)['"]
                      /x)
    {
        $var  = $1;
        $val  = $2;
        $desc = undef;
    }
    if ($var)
    {
        $var = uc($var);
        $var =~ s/\s+/_/g;
        if (exists $vars{$var})
        {
            $vars{$var}->{value}       = $val;
            $vars{$var}->{description} = $desc;
        }
        else
        {
            my $variable = {};
            $variable->{value}       = $val;
            $variable->{description} = $desc;
            $vars{$var} = $variable;
        }
    }
}
```

Example program: Extracting the smallest timesteps (Text output)

These programs/scripts are designed to extract from the OTF file the 5 elements with the smallest timesteps, and write out the data as text to the standard output. They also output the smallest timestep as a REPORTER variable called **TIMESTEP**. Note that these programs/scripts are only simple examples and as such don't have all the necessary error checking that should be included.
They work by searching the OTF file for the text string "100 smallest timesteps" which appears towards the end of the model initialization section, and then reading in relevant element data from this list. An example of this section of an OTF file is shown below. The one argument for this program/script is the OTF filename (for example tube2.otf).

```
 The LS-DYNA time step size should not exceed 0.133E-05
 to avoid contact instabilities. If the step size is
 bigger then scale the penalty of the offending surface.
       0 t 0.0000E+00 dt 0.00E+00 flush i/o buffers
 100 smallest timesteps
 ----------------------
 element                        timestep
 shell     16620                0.66873E-06
 shell     16619                0.66873E-06
 shell     16612                0.66873E-06
 shell     16611                0.66873E-06
 shell     16572                0.66873E-06
 shell     16571                0.66873E-06
 shell     16564                0.66873E-06
 shell     16563                0.66873E-06
 shell     16520                0.66873E-06
 shell     16519                0.66873E-06
 shell     16512                0.66873E-06
 shell     16511                0.66873E-06
 shell     16504                0.66873E-06
 shell     16503                0.66873E-06
 shell     16472                0.66873E-06
```

Example programs to extract the data are shown in 4 languages:

- C
- C shell script
- Fortran
- Perl

C program/script

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#define MAX_LEN 257
int main(int argc, char *argv[])
{
    char line[MAX_LEN], *ptr;
    int c, i, l, n = 5;
    float t, tmin;
    FILE *fp;
    if (argc < 2)
    {
         printf("No otf filename\n");
         exit(0);
    }
    if ( (fp = fopen(argv[1], "r")) == NULL)
    {
         printf("Cannot open otf file %s\n", argv[1]);
         exit(0);
    }
    while (fgets(line, MAX_LEN, fp))
    {
        if (strstr(line, "smallest timesteps"))
        {
             sscanf(line, "%d", &n);
             if (n > 5) n = 5;
             tmin = 1.0e+20;
```

```
            fgets(line, MAX_LEN, fp);
            fgets(line, MAX_LEN, fp);
            for (i=0; i<n; i++)
            {
                fgets(line, MAX_LEN, fp);
                printf ("%s", line);
/* Remove any trailing characters */
                l = strlen(line) - 1;
                while ( (c = line[l]) == ' ' || c=='\n' || c=='\r' || c=='\t')
                    l--;
                line[l+1] = '\0';
/* Find start of number */
                l = strlen(line) - 1;
                while ( (c = line[l]) != ' ')
                    l--;
                ptr = &line[l];
                sscanf(ptr, "%e", &t);
                if (t < tmin)
                    tmin = t;
            }
            printf ("VAR TIMESTEP VALUE=\"%e\"\n", tmin);
            exit(0);
        }
    }
    fclose(fp);
}
```

C Shell program/script

```
#!/bin/csh -f
#
# Script to extract the 5 smallest timesteps from otf file
#
# Arguments: 1: otf filename

# Test to see if there is an argument
if ($#argv < 1) then
    echo "No otf filename";
    exit;
endif
# test to see if the otf file exists
if ( !(-e $argv[1]) ) then
   echo "otf file $argv[1] does not exist";
   exit;
endif
# Use awk to extract the timesteps
awk '/smallest timesteps/ {                # search for smallest timestep \
                    n = $1;                # save how many found \
                    getline;               # skip a line \
                    getline;               # skip a line \
                    if (n > 5) n = 5;      # limit to 5 timesteps \
                    t = 1.0e+20;           # initialise smallest timestep \
                    for (i=0; i<n; i++)    # loop over lines \
                    {                      # \
                     getline;              # read the line \
                     print $0;             # print it \
                     if ($NF < t) t = $NF; # save timestep if smaller \
                    }                      # than current smallest \
                  }                        # \
 END {                                          # \
      printf ("VAR TIMESTEP VALUE=\"%e\"\n", t); # Print smallest timestep \
     }                                          # \
  ' $argv[1]
```

Fortran program/script

```
c
      character*80 fname,line
      integer elemno(5)
      real timestep(5)
```

```
      n=iargc(1)
c
c Read in model name argument
c
      call getarg(1,fname)
c
c Open model OTF file
c
      open (unit=25, file=fname, status='old')
c
c Scan file for line with the text string
c " 100 smallest timesteps"
c
 10   continue
      read (25,'(a)',end=900) line
      if (line(1:23).eq.' 100 smallest timesteps') then
         goto 20
      else
         goto 10
      endif
c
c Read in but ignore next 2 lines of data
c
 20   continue
      read(25,*)
      read(25,*)
c
c Read in the element no. and timestep data
c from the next five lines
c
 101  format(i10)
 102  format(e23.0)
c
      do 30 i=1,5
       read (25,'(a)') line
       read (line(7:16),101) elemno(i)
       read (line(20:42),102) timestep(i)
 30   continue
c
c Write out the data as a text output
c
 201  format (2x,i9,5x,e11.5)
c
      write (*,*) ' Element No.    Timestep  '
      do 40 i=1,5
       write (*,201) elemno(i),timestep(i)
 40   continue
c
c Also write out the smallest timestep as
c REPORTER variable
c
 301  format ('VAR TIMESTEP VALUE="',e11.5,'"')
      write(*,301) timestep(1)
      goto 999
c
 900  write(*,*) 'End of file reached'
c
 999  continue
      stop
      end
c
```

Perl program/script

```
# Perl Script to extract the 5 smallest timesteps from otf file
#
# Arguments: 1: otf filename
use strict;
# Test to see if there is an argument
if ($#ARGV < 0)
{
```

```
    print "No otf filename\n";
    exit;
}
# test to see if the otf file exists
if ( !(-e $ARGV[0]) )
{
    print "otf file $ARGV[0] does not exist\n";
    exit;
}
open (OTF, "< $ARGV[0]");
my $n;
my $t = 1.0e+20;
while ( <OTF>)
{
    if (/ (\d+) smallest timesteps/)
    {
         $n = $1;
         if ($n > 5) { $n = 5; }
         <OTF>;
         <OTF>;
         for (my $i=0; $i<$n; $i++)
         {
             $_ = <OTF>;
             print $_;
             my @f = split;
             if ($f[$#f] < $t) { $t = $f[$#f]; }
         }
         print "VAR TIMESTEP VALUE=\"$t\"\n";
         exit;
     }
}
close (OTF);
```

F. Unicode support

REPORTER has basic unicode (i.e. non-latin characters) support. This means that if you have the appropriate language kit and fonts installed on your computer you can input and use European accented, Japanese, Korean and Chinese characters. On Windows you can input unicode characters using the normal IME (global Input Method Editor).

The XML format that REPORTER uses to save files supports unicode.

As Japanese, Korean and Chinese have many common ideographs, but these may have different appearances depending on the font there is a preference in REPORTER which allows you to set the default language you want to use, `reporter*cjk_default` which can be either `Chinese`, `Japanese` or `Korean`.

Note that although REPORTER has unicode support, currently D3PLOT, T/HIS and LS-DYNA do not so you should not use unicode characters in filenames.

F.1 Output formats that support unicode

Currently only text objects and table headers can be output with unicode characters.

HTML

Unicode is fully supported in the HTML written by REPORTER. To view the HTML a user needs the appropriate fonts installed.

PowerPoint and vba

Unicode is fully supported in the powerPoint and visual basic files written by REPORTER (as long as the appropriate language pack(s) are installed).

PDF

The PDF files created by REPORTER do not embed the fonts used in the document. However, newer versions of the acrobat reader will automatically detect that the document uses a Chinese, Japanese or Korean font and prompt the user to download the necessary fonts.

There are two preferences which affect what fonts are used in pdf files:
Firstly for Japanese the preference `reporter*japanese_font` indicates what font should be used for Japanese characters. It can be '`Kozuka Mincho Pro`' (a serif font) or '`Kozuka Gothic Pro`' (a sans serif font). The default is '`Kozuka Gothic Pro`'.
For Chinese the preference `reporter*chinese_characters` indicates if traditional or simplified characters should be used. It can be `Traditional` or `Simplified`. the default is `Traditional`.

Installation organisation

The version 11 installation can be customised to try and avoid a number of issues that often occur in large organisations with many users.

- Large organisations generally imply large networks, and it is often the case that the performance of these networks can be intermittent or poor, therefore it is common practice to perform an installation of the software on the local disk of each machine, rather then having a single installation on a remote disk.

  This avoids the pauses and glitches that can occur when running executable files over a network, but it also means that all the configuration files in, or depending upon, the top level "Admin" directory have to be copied to all machines and, more to the point, any changes or additions to such files also have to be copied to all machines.

- In larger organisations the "one person per computer" philosophy may not apply, with the consequence that users will tend to have a floating home area on a network drive and may not use the same machine every day.

  This is not usually a problem on Linux where the "home" directory is tied to the login name not the machine. However on Windows platforms it means that %USERPROFILE%, which is typically on the local C drive of a machine, is not a good place to consider as "home" since it will be tied to a given computer, therefore a user who saves a file in his home directory on machine A may not be able to access it from machine B.

- In a similar vein placing large temporary files on the /tmp partition (Linux) or the C: drive (Windows) may result in local disks becoming too full, or quotas exceeded.

This section gives only a brief summary of the installation organisation, and you should refer to the separate Installation Guide if you want to find out more about the details of installation, licensing, and other related issues.

Version 11.0 Installation structure

In version 11.0 the option is provided to separate a top-level ’administration’ directory from the ’installation’ one where the executables are located.

For large installations on many machines this allows central configuration and administration files to exist in one place only, but executables to be installed locally on users’ machines to give better performance. Version 11.0 also allows the following items to be configured

- The location for user manuals and other documentation.
- The definition of a user’s home directory.
- The definition of the temporary directory for scratch files.

In addition parsing of the ’oa_pref’ (preferences) file will now handle environment variables, so that a generic preference can be configured to give a user-specific result, and preferences may be ’locked’ so that those set at the administration level cannot be changed by users.

These changes are entirely optional, and users performing a simple installation on a single machine do not need to make any changes to their existing installation practice.

Directory	**Status**	**Directory Content and purpose**	**oa_pref file option**
`OA_ADMIN_xx`	*Optional*	Top level configuration files. (**`xx`** =11 for release 11.0, thus **`OA_ADMIN_11`**) Admin level oa_pref file Other configuration files Timeout configuration file	

OA_ADMIN	*Optional*	Same as **OA_ADMIN_11**, provided for backwards compatibility with earlier releases. It is recommended that plain **OA_ADMIN**, without the **_xx** version suffix, is not used since otherwise there is no easy way of distinguishing between parallel installations of different releases of the Oasys Ltd software in an installation. *If* **OA_ADMIN_11** *is not defined then this non-release specific version is checked.*	
OA_INSTALL_xx	*Optional*	(**xx** =11 for release 11.0, thus **OA_ADMIN_11** All executables Installation level oa_pref file	**oasys*install_dir: <pathname>**
OA_INSTALL	*Optional*	Same as **OA_INSTALL_11**. If no "**OA_ADMIN_xx**" directory is used and all software is simply placed in this "install" directory, which would be typical of a single-user installation, then it is recommended that the **_xx** version suffix is used in order to keep parallel installations of different releases of the Oasts Ltd software separate on the machine. *If* **OA_INSTALL_11** *is not defined then this non-release specific version is checked*	**oasys*install_dir: <pathname>**
OA_MANUALS	*Optional*	Specific directory for user manuals. If not defined then will search in: **OA_ADMIN_xx/manuals** (xx = major version number) **OA_INSTALL/manuals**	**oasys*manuals_dir: <pathname>**
OA_HOME	*Optional*	Specific "home" directory for user when using Oasys Ltd software. If not defined will use: **$HOME** (Linux) **%USERPROFILE%** (Windows)	**oasys*home_dir: <pathname>**
OA_TEMP	*Optional*	Specific "temporary" directory for user when using Oasys Ltd software. If not defined will use: **P_tmpdir** (Linux, typically /tmp) **%TEMP%** (Windows, typically C:\temp)	**oasys*temp_dir: <pathname>**

It will be clear from the table above that no Environment variables have to be set, and that all defaults will revert to pre-9.4 behaviour. In other words users wishing to keep the status quo will find behaviour and layout unchanged if they do nothing.

OA_INSTALL_XX
Previously the software used the **OA_INSTALL** (renamed from **OASYS**) environment variable to locate the directory the software was installed in.

- On Windows this is no longer required as the software can work out its own installation directory. As this environment variable is no longer required it is recommended that it is removed from machines it is currently set on as in some cases where more than one version has been installed in different directories it can cause problems.

- On LINUX systems the "oasys_11" script that starts the SHELL automatically sets this Environment Variable and passes it to any application started from the SHELL. If you run applications directly from the command line and bypass the SHELL then you should set **OA_INSTALL_XX** so that the software can locate manuals and other required files.

OA_ADMIN_XX
Users wishing to separate configuration and installation directories will be able to do so by making use of the new top level **OA_ADMIN_xx** directory.

Installation Examples

The following diagrams illustrate how the installation might be organised in various different scenarios..

a) Single user installation on one machine

There is no need to worry about separating administration and installation directories, and the default installation of all files in and below the single installation directory will suffice.

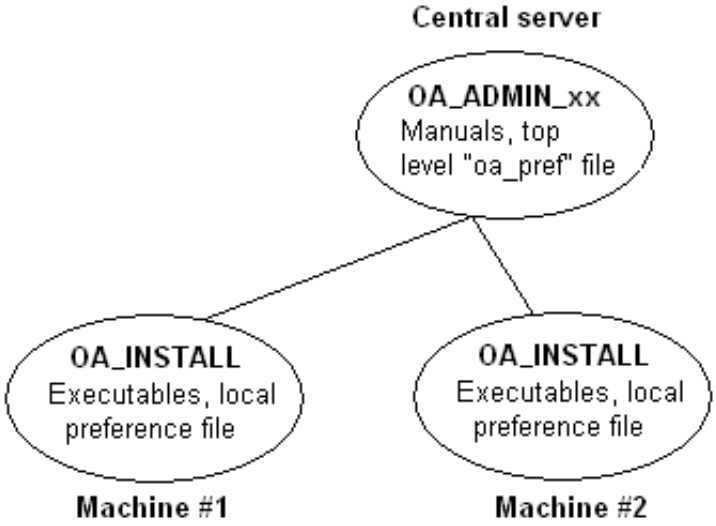
It is suggested that the **_xx** version suffix of **OA_INSTALL_xx** is used in order to keep parallel installations of different releases of the Oassys Ltd software separate on the machine.

b) A few machines on a small network, each user has his own machine

The top level administration directory can be installed on a network server, possibly also locating the manuals centrally.

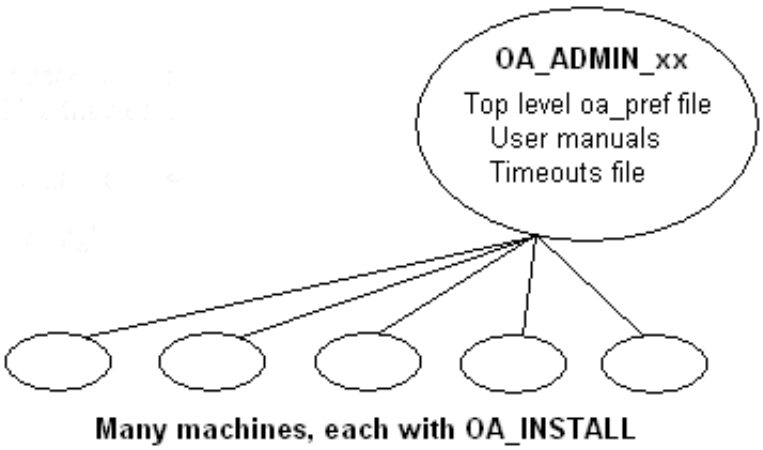
Each user's machine has its own 'installation' directory to give good performance, but there is no need to manage home or temporary directories centrally since each user 'owns' his machine.

If network performance is good an alternative would be to install executables on the central server, meaning that local OA_INSTALL directories are not required.



c) Large corporate network

There is no need to worry about separating administration and installation directories, and the default installation of all files in and below the single installation directory will suffice.



Dynamic configuration using the top level oa_pref file.

A further improvement is that all environment variables below **OA_ADMIN_xx** may either be set explicitly, or dynamically using the options in the oa_pref file at the top **OA_ADMIN_xx** level. This permits parallel installations of different versions of the software to co-exist, with only the top level administration directory names being distinct. For example:

Release 11.0	**Release 11.1**
Top level directory **OA_ADMIN_11**	Top level directory **OA_ADMIN_111**
oa_pref file in **OA_ADMIN_11** contains: **oasys*install_dir:** <*pathname for **11.0** installation*> **oasys*manuals_dir:** <*pathname for **11.0** manuals*> **oasys*home_dir:** <*pathname for home directory*> **oasys*temp_dir:** <*pathname for temporary files*>	oa_pref file in **OA_ADMIN_111** contains: **oasys*install_dir:** <*pathname for **11.1** installation*> **oasys*manuals_dir:** <*pathname for**11.1** manuals*> } would almost certainly be unchanged between major } versions, although they could be different if desired
Pathnames in the oa_pref file may contain environment variables which will be resolved before being applied.	

The hierarchy of oa_pref file reading

It will be clear from the above that in a large installation the "oa_pref" files have a significant role. Each piece of software reads them in the following order:

OA_ADMIN_xx	Top level configuration
OA_INSTALL_xx	Installation level
OA_HOME	User's personal "home" file
Current working directory	File specific to the current directory (rarely used)

The rules for reading these files are:

- If a given directory does not exist, or no file is found in that directory, then no action is taken. This is not an error.
- A more recently read definition supersedes one read earlier, therefore "local" definitions can supersede "global" ones (unless it was locked).
- If two of more of the directories in the table above are the same then that file is only read once from the first instance.

Locking Preference Options

From version 9.4 onwards preference options can be locked. If a preference option is locked in a file then that preference option will be ignored in any of the subsequent preference files that are read.

Therefore by locking a preference in a top-level file in the hierarchy above, eg in **OA_ADMIN_xx**, and then protecting that file to be read-only, an administrator can set preferences that cannot be altered by users since any definitions of that preference in their private oa_pref files will be ignored.

Preferences are locked by using a hash (#) rather than an asterisk (*) between the code name and the preference string. For example:

primer*maximise: true	Normal case using "*", means an unlocked preference

primer#maximise: true	Locked case using "**#**"

These changes may be made either by editing the file manually, or by using the preferences editor.