User's Guide

Race Timer

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Overview

Introduction

Race Timer is a computer software program that turns a computer into a feature rich recording stopwatch. ***Race Timer*** is a simple and single purpose software application that helps automate the timing of sporting events such as running, biking or skiing races. ***Race Timer*** allows you to record places, times and associate an optional bib number with each time. You can then save the times to a file on disk for easy transferring to other software applications used for results processing. An unskilled volunteer only needs to learn a few commands to become proficient with ***Race Timer*** and be able to record times, bib numbers and save the data. These commands include recording a time by pressing the Enter key, entering a bib number by typing in a number and saving data by pressing the S key.

Race Timer has features and options that allow a more experienced user (called an administrator) to tailor the program to specific timing job requirements. For example, you can configure the time data file to be compatible with the Race Director race management software, among others. This file format is comma delimited ASCII text and is also compatible with most database and spreadsheet programs. This allows you to do results processing with the time data.

Race Timer runs under Windows 3.1 or greater and requires only a minimum computer system.

Typical Timing Scenario

A timing job using ***Race Timer*** consists of a number of small tasks. This section, in a general fashion, walks you through the tasks of a typical timing scenario. It assumes that the software is already installed on a computer, the computer's system clock has been calibrated and the software configured appropriately to start up when the computer is turned on. The person doing the timing, known as the operator or timer, may be an unskilled volunteer or an experienced professional.

Starting the Software

To get ready to time an event, the first thing you must do is start up the ***Race Timer*** software. Typically, you setup ***Race Timer*** on a dedicated computer to be used solely as a timing device. The software starts automatically when you turn the computer on.

Starting the Clock

A critical step when timing an event is starting the official race clock at the start of the event. As the ***Race Timer*** software starts up, it first brings up the Start or Restart the Clock dialog. This gives you the opportunity to start the ***Race Timer*** clock.

You can start the clock at the moment the event starts, or you can start the clock with a pre-elapsed time already on the clock. To start the clock with an elapsed time already indicated, enter the time into the hour and minute fields in the Start or Restart the Clock dialog. Then select the OK button (press the enter key) at the exact moment this time matches the official event clock time. For example, when timing a Marathon road race you may not expect any finishers until well after 2 hours into the race. Instead of starting the computer and the ***Race Timer*** software at the start of the race, you could start the computer 2 hours into the race. If you are running your timing computer on batteries, this would save precious battery power. At least a minute or so before 2 hours have elapsed in the race, turn on the timing computer and start up the ***Race Timer*** software. In the Start or Restart the Clock dialog enter 2 in the HH field. As soon as the official race clock shows 2:00:00 (2 hours exactly) press the enter key. This starts the ***Race Timer*** clock as if 2 hours have already transpired, which they have.

Alternatively, if you do not wish to start the clock and instead record the actual time, you can elect not to start the clock by selecting the Cancel button or Escape key. Any place and time you record will be in actual time of day time in 24-hour format.

Recording Times

After starting the clock, you are free to start recording times. To record a place and time, press the Enter key. This will record the place and exact time you pressed the Enter key. The place is a running tally of how many times you have recorded. As each participant crosses the finish line, press the Enter key. This will record the place and time for each finisher.

Entering Bib Numbers

If you can identify a bib number on a participant, type the number in before recording their finishing place and time. To do this, type in the bib number and then press the enter key. Recording times with a bib number is an important part of the timing process. Having some times with bib numbers is required to synchronize the times with the list of bib numbers obtained from collected pull tags. A place and time that has a bib number associated with it is known as a select time.

Depending upon the race management software and the results processing software you utilize, you can record select times along with your place and

time data. Or you can use a second computer dedicated to recording select times only. The first timing computer will record all the places and times and the second will record a subset of times, each that has a bib number associated with it. This technique requires your results processing software to manage inputting the two separate files.

Editing

If you make a mistake entering a bib number you can delete the last digits entered by pressing the Backspace key. If you have already pressed the Enter key, you can type in a new number and associated it after the fact by pressing the B key.

Saving Times

After recording times, you need to save them so you can use them in other software programs. You can save all the recorded places, times and select bib numbers to a file by pressing the S key. There are features to also append the unsaved times to an existing file, save the new times to a new file or save all the times to a new file. The ***Race Timer*** software allows you to configure where the file is stored. Configuration is a task best left to an administrator that is well experience with and familiar with the ***Race Timer*** software. The location can be the root directory on a floppy drive or a hard drive or even a network drive. This is convenient for transferring time data into other software programs such as race management software.

You can periodically save data during the timing process. This allows you to generate preliminary race results before the event is over. At the end of the event, save all the time data before exiting the ***Race Timer*** software.

Transferring Data

After you save data, you can transfer it to another computer or software program. If the target drive is a floppy drive, remove the disk and take it to another computer. If the target drive is a hard disk, open up another program on the same computer and load the file into the other software. If the target drive is a network drive, a program on another computer on the network can access and load the file.

Exiting

The term Alt+F4 indicates holding down the Alt key on the computer keyboard and simultaneously pushing the F4 key.

After the event is over, you are ready to exit the ***Race Timer*** software. Since it is critical to not exit the software before you are done timing, ***Race Timer*** has built in safe guards to make inadvertently or prematurely exiting the software difficult. To exit the software you must first select Administrator level menus, and then turn off the Always on Top feature. See "Customize Menu" on page 23. After this, select Exit from the File menu or press Alt+F4. If you have not saved all of the times before exiting, ***Race Timer*** prompts you to save them before exiting.

What the Race Timer Software Does

The ***Race Timer*** software turns a computer running the Windows operating system into a full featured recording stop watch. It is an aggressive program and attempts to turn a computer into a single purpose device be preventing the operator from running any other software easily or accidentally. Because timing a race is an intense activity requiring dedicated attention on the part of the person doing the timing, by default, ***Race Timer*** takes over the entire computer screen display and attempts to always be the top-most window. ***Race Timer*** is an easy-to-use program with only a few critical operations or commands. All of these are accessible with single keystroke actions.

The features of the ***Race Timer*** software include: being able to start the clock, record places times and bib numbers, edit times and bib numbers, configure the location and format of saved data, calibrate the computers system clock. The following sections detail the features of the ***Race Timer*** software.

Starting the Race Clock

The ***Race Timer*** software allows you to easily start the clock. You can start the clock at the moment the race event starts or at a later time by entering in an elapsed time. You can even later restart the clock to adjust times you have already recorded for a different start time.

Recording of Places, Times and Bib Numbers

The ***Race Timer*** software conveniently facilitates the hand recording of places, times and bib #s for race events. With a single keystroke, you can record a place and time. Just press the Enter key. To enter a bib number, type in a number, then record the time with the bib number by pressing the Enter key as the racer crosses the finish line.

Saving Times to File

The ***Race Timer*** software allows for the saving of recorded times to a computer file for a permanent record. This file allows transferring place and time data into a other software applications designed to manage race results. You can save times quickly and easily with a single keystroke. Just press the S key. Additionally, you can configure the software to automatically (without user interaction) save data at fixed intervals. While the data is being saved, you can continue to record times without interruption. ***Race Timer*** is multithreaded and saves the data in a background process allowing the foreground process of timing to continue.

Calibration of Computer System Clock

The ***Race Timer*** software has built-in features for calibrating the computer's internal system clock. Computer clocks vary in accuracy and each computer should be calibrated separately. Older computers and portable computers tend to have less accurate clocks than the latest generation of computers. Although calibration is recommended, you do not have to calibrate the system clock before using the ***Race Timer*** software. To obtain the highest

accuracy timing, especially for longer duration events, you should calibrate each computer used for timing.

If there is a chance that you are timing an event where official records may be set, it is imperative that you calibrate the timing devices. When establishing records, the governing body that verifies the record may inspect the timing equipment and insure its accuracy.

Configuration

Race Timer allows you configure and customize many features. Some of these features include, the format of the file that you save time data to, the location of this file, the maximum number of digits on a bib number and many others. You can even configure the software to save data automatically at predefined intervals.

Editing Data

A powerful feature that ***Race Timer*** supports is editing of recording data. You can delete recorded times, edit bib numbers, change bib numbers and restart the clock and adjust all the recorded time for the new start time.

Specifications

The following table lists the specifications and features of the ***Race Timer*** software.

Feature or Item	Specification
Accuracy of clock	+/- 0.1 seconds. Assuming perfect ability on the part of the operator and assuming the computer's system clock is calibrated. Realistically, it is limited to the operator's ability.
Precision (resolution) of clock	Varies from +/- 0.02 seconds to +/- 0.06. Limited by the computers clock tick and the version of the Windows operating system.
Maximum number of places	15,999 (16 bit), 99,999 (32 bit) Demo version limited to 30
Maximum number of bib # digits	Configurable from 2 to 5
Maximum elapsed time when starting the clock	90 hours
Maximum time length of event	100 Hours
File name of ***Race Timer*** program file	TIMER16.EXE (16 bit version) TIMER32.EXE (32 bit version)
File name of ***Race Timer*** help file	TIMER.HLP
File name of results data file	RACETIME.A (default, configurable)

How This Manual is Organized

This user's guide covers instructions for the operation of the ***Race Timer*** software. It covers the operation and the features and the details required for an administrator to be able to configure and customize the software for different timing jobs. This manual is more information than an unskilled volunteer would need to be able to use ***Race Timer*** for a simple timing device. By referring to this manual, an administrator will learn enough skills to setup the software for an unskilled operator and be able to quickly teach an unskilled operator how to effectively use ***Race Timer***.

This manual starts with a description and explanation of timing in the chapter "Background on Timing" on page 7. The next chapter, "Installation and Start Up" on page 11, details how to install the ***Race Timer*** software, start the software, and what the software does when starting up.

The next chapter, "Record Window" on page 16, covers how to interact with the main window of the ***Race Timer*** software. It describes the features and functions available in the main program window and how to access them. This is followed by the chapter, "Dialog Boxes" on page 29, that describes the secondary windows or dialog boxes of the ***Race Timer*** software. This chapter covers editing of data, starting the clock, calibrating the clock and modifying configuration settings.

The next chapter, "Time Data Files" on page 42, describes the time data files format. The last chapter, "Frequently Asked Questions" on page 44, addresses specific questions you may have about the timing process and the ***Race Timer*** software.

Background on Timing

Essential Data

Recording results for a race event is a data gathering and data processing job. Generating results from the data requires at least three essential pieces of information. These include person, place and time.

Person

Enough information is needed to uniquely identify a person participating in the event. At a minimum this usually consists of name, age and sex and a unique identifying number called a bib number. Age and sex are required to determine age group results and how an individual participant places within their age group.

Place

Place is the sequence number of participants finishing the race. It is the order of finish. The first participant to finish the race is place one, the second is place two and so forth. Every recorded time has an implied overall place.

Time

Time is the elapsed time from the start of the event until the moment a participant finishes the event. Each place has a time and only one time associated with it.

Bib

Each participant must have a unique and convenient way to identify him or her. For timing purposes, this is an identifying (ID) number called a Bib # (bib number). The word bib comes from the fact that a bib number is printed on a sheet of paper or cloth that the participant wears on their chest like a bib.

Timing Mission Statement

Timing an event consists of three tasks. In order of priority they are:

1. Record a time for every participant at the moment they cross the finish line.
2. Associate a bib number with as many recorded times as possible.
3. Save the times for use in race management and results processing software.

The most important task is recording times. Lower priority tasks such as capturing bib numbers and saving data must not interfere with higher priority task of recording participant finishing times. These three tasks assume that the timing device utilized for recording times has been started correctly to reflect the correct time since the start of the event.

Select Times

A select time is a time that has a bib number associated with it. It is used as a fixed reference point for processing event results. Select times indicate that the time for a particular participant (identified by bib number) is precisely known. In the strictest definition, a select time does not indicate that the place or finish order for the participant is known.

There are two methods for obtaining select times. The first involves a single timing source. This timing method records all the places and times, and randomly records bib numbers with some of the places and times. The number of select times recorded depends upon the skills of the operator of the timing device and the density of participants crossing the finish line. The highest priority task is recording a time for every finisher and then when possible recording a bib number. Getting a select time is easiest when the participants are spread out or there is a gap between participants in an otherwise dense stream. This gives the timer a chance to type in a bib number.

The second method utilizes two timing devices or sources. One timing device is dedicated to recording a place and time for every finisher and may or may not attempt to record bib numbers. The second timing device is dedicated to recording select times only. The operator focuses on one participant at a time identifying and keying in their bib number. The operator then records the participant's time as they cross the finish line. Times and bib numbers are recorded for some finishers (a select subset of finishers). In general, the second timing device will not be able to record bib numbers and times for every finisher. Consequently, the times and bib numbers are meaningful, but the place and order of finish is not. The data from the two timing sources is combined. Official places and times come from the first timing device. Select times with bib numbers to help with synchronization of results come from the second timing device. Breaking up the task of timing into two by dedicating one timing device to recording all the times, and one timing device recording select times is a good strategy for dealing with large events with a high density of participants crossing the finish line.

If you can not get a select time for every participant you must get a complete list of all bib numbers in the correct order of finish. This list is most readily obtained from pull tags from the bib numbers collected after the finish line at the end of the finish chute.

The Clock

A timing device or clock is a central focus in a timed event such as a road race. Many participants carry their own timing device such as a runner's watch. An event must have at least one official clock to which all other timing devices or clocks are synchronized. This is typically a large display chronograph, a computer system, a stop watch or all of the above. The official clock must be started at the moment the event starts.

Start

The elapsed time for an event has a duration from the start of the event to the exact moment a participant finishes the event. A timing device must start at the exact moment the race event starts. This becomes the official clock keeping the official race time. Other timing devices can be started after the event starts by synchronizing them to the official clock. A computer running ***Race Timer*** can be the official race clock if its clock is started correctly.

Accuracy

The overall accuracy of timing an event depends upon the accuracy of the timing device and the ability of the operator to use the timing device.

Saving Data

Permanent Storage

Time data has value only if you can recall it later for processing results. Developing a persistent or historical record of the places and times of finishers for a timed event requires some way of permanently saving the data. A recording timing device such as a printing stop watch, time machine or a computer running ***Race Timer*** affords this ability.

Editing

Mistakes will inevitably be made when hand timing events. To make the timing data useful, a facility for editing and correcting timing mistakes is imperative. Having the time data permanently saved to some format such as a computer file makes editing possible.

Results Processing

Combining Person Data with Time Data

To be able to calculate results and determine event winners and age group places, the time and overall place for each participant must be known. This requires combining the time data with the participant database. The bib number is the key that links these two pieces of information. The database of participant information is typically set up before the event. The time data is imported into or combined with this database during and after the event.

Generating Results

Once a time and place is known for each participant in an event, you can sort the data by place, age group etc. This allows you to post and generate results for use by the participants, awards ceremonies, media, etc.

Installation and Start Up

Hardware Requirements

The ***Race Timer*** software depends upon a host computer for operation. The standard computer is a notebook class computer with the following required minimum specifications. This is a very minimal system. Old notebook computers that are obsolete by today's standards will work well as a timing computer. In fact, old notebook computers with black and white LCD displays are desirable because their display affords better visibility outdoors in bright sunlight. Modern specialized notebook computers designed for outdoor environments with transreflective screens are ideal, but expensive. Modern computers (era 1998 and later) have the advantage of supporting wireless networking abilities that make transferring data convenient. The following items are required:

PC compatible computer running MS-Windows version 3.1 or greater

Color or black and white VGA display 640 x 480 pixels or higher

1 Megabyte RAM

1 Megabyte free space on hard drive

Floppy disk drive

The following items are recommended, but not required:

Built-in track ball or mouse pointing device

Network connection

Long life battery

Software Installation

Copying to Hard Drive

The ***Race Timer*** software distribution consists of three files. They are Timer16.exe, Timer32.exe and Timer.hlp. Timer16.exe and Timer32.exe are the executable program files for 16 bit and 32 bit versions of the Microsoft Windows operating system. Timer.hlp is this manual in context sensitive help

format that you can access from the ***Race Timer*** program. Installation requires you to copy Timer16.exe or Timer32.exe and Timer.hlp to your computer's hard disk at a location of your choice. For the help feature to work, you must locate the program file and the help file in the same directory. Suggested locations are in a directory (folder) called C:\Timer under 16 bit Windows and in a directory called C:\Program Files\Timer under 32 bit Windows.

Putting Race Timer in Startup Group

To set up the computer so that ***Race Timer*** starts automatically, add the short cut to the startup group or folder.

To do this in Windows 3.1, highlight the StartUp group in Program Manager drag the Icon, then select the New item under the Program Manager's File menu. This action brings up a dialog box called New Program Object. In this dialog box, select Program Item and press the OK button. This action brings up the Program Item Properties dialog box. In this dialog box, type in Race Timer in the Description field. Type in the path and name of the ***Race Timer*** program file, C:\Timer\Timer16.exe. Type in the path in the Working Directory field, C:\Timer, then press the OK button. This will add ***Race Timer*** to the StartUp program group so ***Race Timer*** will start automatically when Windows starts up.

To create a short cut to ***Race Timer*** in the startup folder under Windows 95 or greater do the following. Click on the Start menu, click Settings, then click on Taskbar & Start Menu… to bring up the Taskbar Properties dialog box. In this dialog, click on the Start Menu Programs tab, then click on the Add button. This brings up a wizard to walk you through the creation of a shortcut. Within the wizard, type in or browse to the race timer program file, Timer32.exe. Continue with the wizard by clicking Next. Select to place the shortcut into the StartUp folder. Continue through the wizard by clicking Next to the Finish.

Configuring the Computer

To get the best performance and ease of operation out of the ***Race Timer*** software, there are a few settings on you computer and software that you should make. First, you should setup your computer so that there are no other programs running when ***Race Timer*** will be running. Make sure that your computer's power saving features will not interfere with the timing process. Configure the power saving features so that the screen always stays on (no screen savers). Configure the power saving features so that the computer always stays on and powered up (avoid suspend mode or sleep mode). Configure the power saving features to power down the hard drive as soon as possible.

To avoid accidentally recording times, set the computers key repeat rate to the slowest available value and set the computers key repeat delay to the longest available value. This helps prevent extra key strokes that can occur with heavy handed operators or with clumsy fingers outdoors in the cold. This forces the operator to make deliberate and separate actions with the keyboard. To change the keyboard settings, select Keyboard under Control Panel in Windows.

Starting Race Timer

Automatic Startup

For a computer that is dedicated to being used as a timing device, the ***Race Timer*** software should be set up to start when the computer starts up. You can accomplish this by making sure the program file Timer32.exe or Timer16.exe is listed in the Windows startup folder or startup group. See "Putting Race Timer in Startup Group" on page 12.

If ***Race Timer*** is in the startup group of folder, it will start automatically when the computer is turned on and starts up.

Using Run Command

Under Windows 3.1, select Run under the File menu in Program Manager. In the Run dialog, type in the location of the ***Race Timer*** program. For example:

C:\Timer\Timer16.exe

Under Windows 95, 98, ME, 2000, or XP, click on the Start button on the Taskbar. This action brings up the Start menu. Select the item on the Start Menu named Run… This action brings up the Run dialog. In the Open: field type in the location and name of the ***Race Timer*** program. For example:

C:\Timer\Timer32.exe

After you have typed in the program name, press the OK button. This will start the program.

Clicking on Race Timer Icon

If you have created a short cut to the Race Timer program you can click on the Icon for the short cut. Under Windows 3.1, this is an item in a group under the Program Manager. Under Windows 95 or greater is an icon on the desktop or an item in the Start menu.

Initialization on Startup

When the ***Race Timer*** software starts up, it loads various information that it requires for operation. This information is stored in files at the same location that the program file (either Timer16.exe or Timer32.exe) is located. This information includes calibration parameters, configuration parameters, startup history, and runner or participant data. The About Race Timer dialog is displayed during program startup while this initialization process is taking place. Depending upon the speed of your computer this initialization process may be nearly instantaneous or may take a few seconds.

Loading Calibration Data

If the computer's system clock has not been calibrated, the software displays a warning in the in the Status Line indicating the system clock has not been calibrated. See section "Status Line" on page 26.

You do not need to calibrate the computer's system clock to use the computer for timing a race. The accuracy will be limited to the accuracy of the computer's system clock. This accuracy varies from computer to computer and can be quite poor. Some computers have system clocks that have errors of multiple seconds per day. We recommend calibrating the computer's system clock before you use a particular computer for timing.

Once you calibrate the system clock, ***Race Timer*** creates a file name Timer.cal that stores the calibration data. The file is located in the same directory as the program file (Timer16.exe or Timer32.exe). Upon startup, ***Race Timer*** reads this file.

Loading Configuration Data

Race Timer stores parameters that customize its operation and behavior in a file to preserve settings between timing jobs. These parameters include maximum number of digits on bib numbers, location for saving time data, etc. ***Race Timer*** creates a file named Timer.cfg that stores the configuration settings. The file is located in the same directory as the program file (Timer16.exe or Timer32.exe). Upon startup, ***Race Timer*** reads this file. The very first time you run ***Race Timer***, the configuration file does not exist so ***Race Timer*** creates one with all the default values.

Loading Participant Data

Optionally, ***Race Timer*** can load a database of participant data. This allows viewing personal participant information during the timing process by typing in their bib number. See "Participant Information" on page 26 for more information.

Prompt to Start the Clock

When the Race Timer software is full screen and always on top, the context sensitive help feature is either not accessible or not visible. The Help button in dialogs may be disabled.

After the initialization, the program starts and by default, the ***Race Timer*** software starts up in a full screen mode and forces itself to always be the top most window. Full screen means that the program takes up the entire computer display screen. Being the top most window means that the program is always visible, active and has the input focus. The results of being full screen and top most results in ***Race Timer*** being the only program visible and accessible. Immediately after starting up, ***Race Timer*** automatically brings up the Start or Restart the Clock dialog. This gives you the opportunity to start the clock. You can do four things in response to this dialog.

Your first option is to not start the clock at this time. To choose this option, select the Cancel button or press the Escape key. This will exit the Start the Clock dialog box. If you decide to record any times, you will be recording the current real time as known by the computer's internal clock, not event time.

The second option is to start the clock with the start of the event. To start the clock at the moment the race or event starts, select the OK button (press the

Enter key) when the start gun goes off. This will start the clock at 00:00:00.00.

The third option is to start the clock after the start of the event. You must first enter an elapsed time into the hours (HH), minutes (MM) and seconds (SS) data entry fields in the dialog box. This elapsed time must be at least a few seconds later than the current official race time. Then, at the moment the official race or event clock reads the same time as the elapsed time you entered, select the OK button (press the Enter key). This will start the clock with the elapsed time you entered already showing: HH:MM:SS.00

Note that the display resoluion in the ***Race Timer*** main window is one second eventhough times are recorded to a resolution of hundreths of seconds.

The fourth option is to restore and restart the clock from the last timing session. This option allows you to shut down the computer during the event and restart right where you left off. This feature may be useful if you need to shut down the computer to change batteries. You can also recover if the computer was shut down by accident or to save battery life in a long event.

Once the clock is started and the Start or Restart the Clock dialog is exited, you are free to access the Record Window. See "Record Window" on page 16. You are ready to start timing the event and recording places.

Record Window

Overview

After you satisfy the Start or Restart the Clock dialog at startup, ***Race Timer*** displays the main window. This main window consists of a single interactive dialog box. It provides easy control of recording times, entering bib numbers, editing bib numbers and saving data. It is where you will spend most of your time during a timing job.

The Record window behaves a bit differently than typical dialog boxes. To support the time-critical fast-paced process of timing, there is only one dialog control that ever has the input focus. The Record push button always has the input focus. This way, whenever you press the Enter key, a time is recorded. You can still use the mouse or the keyboard, to access other operations. The only thing you can not do is move the input focus from the Record button to some other control. Typically the Tab or Shift-Tab key combinations move

the input focus from control to control. Since the Record push button is the only tab stop in the entire Record window, the Tab key does nothing.

Keyboard Interface

Since the ***Race Timer*** software will be used in situations where a pointing device such as a mouse is impractical (outside an office), all operations and actions available in the Record window are accessible through the keyboard. In fact, the most commonly used operations have more than one keystroke combination that you can use to select them. For ease and quickness of use, all timing actions have single keystroke access. The Record window also supports the standard Alt key combination keyboard access. You can access an action by holding down the Alt key when you press a command's hot key.

As a word of caution, be careful if you configure use of the Space Bar or the Delete key. It is easy to record times or delete times inadvertently when these keys are configured as active.

The following table lists the operations or actions and the keystroke combinations that invoke the actions. The first column identifies the action and the push button for the action. The second column lists the single key and the Alt key combination for invoking the action. Notice the key is mnemonically consistent with the command name. For example, Record is accessed with the R key, Delete is accessed with the D key, Associate Bib is accessed with the B key and so forth. The choice of keys is such so as to not interfere with the numeric keypad overlay on notebook computers. Make note that the Enter key can only access the Record command. Also, depending upon configuration settings, Record may also be accessed with the Space Bar and Delete may also be accessed with the Delete key.

The third column in the table lists the Record window's menu key combinations for accomplishing the same action. Under the Action menu are the first four operations that have to do with recording times and bib numbers. The three operations that have to do with saving data are under the File menu.

Operation or Action, Push Button Title	**Push Button Hot Key(s)**	**Menu Key**
Record Time <R> or <Enter>	Enter, R, Alt+R, Space (optional)	Alt+A R
Delete Last Time <D>	D, Alt+D, Delete (all are optional)	Alt+A D
Swap Last 2 Bib #s <W>	W, Alt+W	Alt+A W
Associate Bib # with Last Time <B>	B, Alt+B	Alt+A B
Save All Times to Disk <S>	S, Alt+S	Alt+F S
Save New Times to Disk <N>	N, Alt+N	Alt+F N
Append New Times to Disk <E>	E, Alt+E	Alt+F E

The arrow keys, Page Up/Down keys, Home and End support scrolling the list of places. The following table lists the scrolling action and the key that accomplishes the action.

Scrolling Action	Key(s)
Scroll to Top	Home
Scroll to Bottom	End
Scroll Up One Line	Up Arrow or Left Arrow
Scroll Down One Line	Down Arrow or Right Arrow
Scroll Up One Page	Page Up
Scroll Down One Page	Page Down

There are some other miscellaneous key strokes that cause certain actions. The F1 function key brings up the Windows help application with context sensitive help about the ***Race Timer*** program. There are a couple situations where the F1 key is inactive. During the process of timing with the Record Window active, the F1 key will only work if the Always on Top option is off. When you start ***Race Timer*** and are automatically presented with the Start or Restart the Clock dialog the help feature is disabled. If ***Race Timer*** cannot find the help file, Timer.hlp, pressing the F1 key has no effect.

The F2 function key is the system hot key to activate and make visible the ***Race Timer*** program if it is already running. You will only need to utilize this feature if you have turned the Always on Top option off and have other programs that you are running and activating. Occasionally, even with the Always on Top option on, ***Race Timer*** will be visible but not active. This only occurs with the 32 bit version of ***Race Timer***. The Alt+F4 keystroke combination will exit the program. This is available only when there are no recorded times.

Action	Key(s)
Bring up context sensitive help	F1
Make ***Race Timer*** active and the topmost window	F2
Exit ***Race Timer***	Alt+F4

Mouse Interface

You can use the mouse to select or initiate actions or commands from the Record window. The mouse interface follows the standard Microsoft Windows interface. Position the mouse cursor over a push button and click or press the left mouse button to select the action associated with the push button. The mouse also supports selection of menu items and scrolling of the list box.

A slight variation in behavior compared to other programs is that the input focus will NOT move to the clicked on push button. The input focus will always remain with the Record push button, allowing the Enter key to always record a time.

Title Bar or Caption

The top of the Record window contains a title bar or caption. This caption contains two items of information. The first is the name of the program 'Race Timer'. The second is the time that the race clock was started.

Race Clock Started at:

The time the race clock was started is the actual or real time in 24 hour format at the moment the race started. This time takes into account any elapsed time you specified if you started the clock after the race actually started. This time is the actual time at the moment the race started, even for events that last longer then 24 hours or that may have started on a day previous to the current day. There is no way of telling from this time, if the race started on a different day then the current day.

If you exited the Start or Restart the Clock dialog by pressing the Cancel button, the clock is not started and you will be recording the computers system time. The caption indicates this by displaying the following information: **NOT Started (recording system time)**.

List of Place Time Bib # Disk

The Record window keeps a list of all the places with their times and optional select bib numbers that you have recorded. You can view any portion of the list by using the mouse with the scroll bar or the scroll keys described above. See "Keyboard Interface" on page 17 . When you record a new place, the list automatically scrolls up to show the newest recorded place at the bottom of the list.

Place

The place column is a sequential number indicating the place or order of finish. By default the place starts at 1 and increases by 1 for each participant that you record a time for. The starting place can be set to a value other than 1 in the Start or Restart the Clock dialog. The most recent recorded place will be at the bottom of the list. This list will give you instant feedback on how many participants you have recorded.

Time

There will be a time for each place in the list. This time is the exact time that the Record button was selected. The time format is hours, minutes, seconds and hundredths of a second (HH:MM:SS.HH). The time format has two digits for each unit and will have leading zeros if needed. For example a time of 1 hour, 1 minute, 1 second and 1 hundredth of a second is represented as: 01:01:01.01. The largest supported time is 99:59:59.99 (100 hours).

Bib

The bib number column contains the optional select bib number associated with a place and time. If no bib number was recorded, this column is blank.

Bib number 0 is not allowed and bib numbers cannot have leading zeros or non-numeric characters. For example 12345 is legal, but 01 or A1 is not supported. The number of digits in the bib number is a configurable settings option. See "Configuration Settings" on page 35 for more information.

Disk #s

This column contains the save sequence number of the disk that the recorded place and time was last saved. If the place and time has not been saved to disk, then this column is blank. After saving times to disk, the disk # data is updated with the current disk #. You can also think of the disk # as the number of times you have saved data. This number is incremented each time you do a Save All or a Save New. Appending New times does not increment the disk #. The disk # may or may not reflect the actual disk # as labeled on the physical floppy disk.

Editing Updating

All editing, such as deleting of times, associating a bib number with the last time or clearing the bib number from the last time will be immediately updated in the list of places. Editing of bib numbers in the Edit Bib numbers dialog are also immediately updated in the list of places.

Time

For easy visibility, the Record window has a large format display field for the time. The time field displays the current race time if the clock was started or the current real time if the clock was not started. The time format is hours, minutes and seconds (HH:MM:SS). The display does not show hundredths of a second. The time format has two digits for each unit and will have leading zeros if needed. For example a time of 1 hour 1 minute and 1 second is represented as: 01:01:01. The largest time displayed is 99:59:59.

The time field updates approximately every second. The display will also update when ever the clock is started, restarted, or if you calibrate the clock.

Bib

Right below the Time field is an editable input field that displays an optional bib number. This field is in large format for easy visibility. It is in the same font size and style as the Time field. By typing numbers, you control the value of the Bib # field. Using the Backspace key deletes the Bib # field's last digit.

Editing and Updating

Typing numeric keys either from the top row of the keyboard or from the numeric key pad will update the Bib # display field. You can type up to the maximum number of digits configured in the settings. The maximum number of Bib # digits is configurable from 2 to 5. See "Configuration Settings" on page 35 for more information. Once there are the maximum number of digits displayed, you cannot enter any more digits. To remove digits, or for editing

the Bib #, press the Backspace key. This will delete the right-most (last-entered) digit.

The following table shows the keyboard interface and actions that effect the Bib # field.

Operation or Action **Key strokes**	**Effect on Bib # Field**
Record Time Enter, R, Alt+R, Alt+A R Space (optional)	Records the place, time and Bib # adding it to the list and then clears the Bib # field.
Associate Bib # with Last Time B, Alt+B, Alt+A B	Associates the Bib # with the last recorded time and then clears the field.
Add a digit to Bib #1,2,3,4,5,6,7,8,9,0	Adds a digit to the end of the Bib #. Will only add a digit as long as the number of digits is less then the configured maximum. A 0 digit is not allowed as the leading digit.
Delete a digit from Bib # Back Space ←	Removes the last digit from the Bib #.

Last Recorded

Conveniently located right below the Record push button, is a display of the very last recorded place, time and optional bib number. Refer to this information when editing the last recorded place time and bib number. Recording a time will update the Last Recorded fields. Deleting a time will remove the Last Recorded time, decrement the place and move the previous recorded place information into the Last Recorded fields.

Main Menu

The main menu is a Windows standard menu bar. It consists of four dropdown menus accessible by hot key or pointing device (mouse).

File Menu

Note that the Refresh Backup File and the Exit menu items are available only on the Administrator level menu.

The File menu groups commands for saving the time data to files, and exiting ***Race Timer***. The following table lists the File menu items, their hot keys (shown by underlining) and describes what each menu item does.

File Menu Item	Description
File Save All Times	Save all times to disk, overwriting a previous existing timer file
File Save New Times	Save new (unsaved) times to disk, overwriting a previous existing timer file
File Append New Times	Append unsaved times to the end of existing file on target disk, (existing file created with Save All or Save New)
File Refresh Backup File	Refresh (rewrite) the backup file. Captures all edits to bib numbers from Delete, Associate, Swap, Edit
File Exit	Quit the Race Timer program

Action Menu

The Action menu groups items that are actions associated with the timing process. The following table lists the Action menu items, their hot keys (shown by underlining) and describes what each menu item does. The last three menu items, Edit Bib #s, Calibrate System Clock and Start or Restart the Clock are only available in the Administrator level menu.

Action Menu Item	Description
Action Record Time	Record a place with the current time and optional bib number
Action Delete Last Time	Delete the last recorded place, time and optional bib number
Action Swap Last 2 Bib #s	Swap the bib numbers of the last two recorded places and times
Action Associate Bib # with Last	Associate the current bib # with the last recorded place and time; if the current bib # is blank, bib # is cleared from time
Action Edit Bib #s	Bring up a dialog box for editing bib numbers for previously recorded places
Action Calibrate System Clock	Bring up a dialog box for calibrating the computer's internal clock
Action Start or Restart the Clock	Bring up a dialog box for starting the clock or restarting the clock and adjusting any existing times

Customize Menu

Note that the Always on Top, Configuration Settings and the Zoom menu items are available only on the Administrator level menu.

The Customize menu groups items that provide for customizing the appearance and the operation of the ***Race Timer*** software timing process. The following table lists the Customize menu items, their hot keys (shown by underlining) and describes what each menu item does. Items that are checkable (or toggle-able) are shown with a leading √. The Zoom menu items Medium and Large may be disabled if your computer hardware does not support them. Race Timer only supports changing its window size through the Zoom menu.

All but the Configuration Settings menu item change the appearance of ***Race Timer*** but not the behavior. The Configuration Settings menu item brings up the Configuration Settings dialog box where you can tailor the behavior of the ***Race Timer*** software.

Customize Menu Item	Description
Customize √ Administrator Menu	Toggle the administrator level menu on or off
Customize √ Always on Top	Toggle the timer window's behavior to stay always on top of other windows on or off
Customize Configuration Settings	Bring up a dialog box to configure system settings
Customize √ Show Long Button Labels	Toggle long descriptive labels for push buttons on or off
Customize Zoom Small	Resize the screen to smallest possible size: 640 X 480 pixels
Customize Zoom Medium	Resize the screen to medium size: 800 X 600 pixels
Customize Zoom Large	Resize the screen to large size: 1024 X 768 pixels
Customize Zoom Full Size	Resize the screen to largest possible size: full screen

Help Menu

Note that the help window will not be visible if the Always on Top feature is on and the **Race Timer** *main window is full size.*

The Help menu groups items that provide for interacting with the context sensitive help for the ***Race Timer*** program. The following table lists the Help menu items, their hot keys (shown by underlining) and describes what each menu item does.

If ***Race Timer*** cannot find the help file, Timer.hlp, the Contents and Search menu items will be inactive. Make sure when you install the ***Race Timer*** program that you copy the program file (either Timer16.exe or Timer32.exe) and the help file (Timer.hlp) to the same location on your computer.

Help Menu Item	Description
Help Contents	Display the table of contents for the on-line help
Help Search	Display the search list for the on-line help
Help About Race Timer	Display information about the program

Push Buttons

The Record window contains seven push buttons. The left three are for saving data. They correspond to the operations under the File menu. The right four are for recording places, times and bib numbers and editing bib numbers. These four actions correspond to the items under the Action menu.

File Saving

The following table lists the three push buttons associated with saving data. The left column of the table contains the name or label of the push button. The right column contains the description of what happens when you press the button. These buttons will be grayed out (disabled) until there are recorded times available for saving. After a save, the Save New Times and Append New Times will be grayed out (disabled) until there are new (unsaved) recorded times available for saving.

Button Name (Short Label) **Button Name (Long Label)**	**Description**
Save All Times Save All Times to Disk <S>	Save all times to disk, overwriting a previous existing timer file
Save New Times Save New Times to Disk <S>	Save new (unsaved) times to disk, overwriting a previous existing timer file
Append New Times Append New Times to Disk <S>	Append unsaved times to the end of existing file on target disk, (existing file created with Save All or Save New)

Time Recording, Bib # Editing

The following table lists the four push buttons associated with recording times and editing bib numbers. The left column of the table contains the name or label of the push button. The right column contains the description of what happens when you press the button. Note that the Delete Last Time button may be grayed out (disabled) depending upon configuration settings.

Button Name (Short Label) **Button Name (Long Label)**	**Description**
Record Record Time <Enter> <R>	Record a place with the current time and optional bib number
Delete Delete Last Time <D>	Delete the last recorded place, time and optional bib number
Swap Bib #s Swap Last 2 Bib #s <W>	Swap the bib numbers of the last two recorded places and times
Associate Bib # Associate Bib # with Last <B>	Associate the current bib # with the last recorded place and time; if the current bib # is blank, bib # is cleared from time

Status Line

The Status Line contains information about the current operating condition of the software. It displays the calibration date, the name and location of the file for saving data to, and the current disk #. It also displays a single line of help information for a menu item when a menu item is highlighted. If you put a participant or announcer file in the ***Race Timer*** directory, the status line will display participant information when you type in a bib number.

Sys. Clock last calibrated:

The first item in the status line is the date the system clock was last calibrated. If the computer has not been calibrated, the date is listed as **NOT Calibrated**.

Target drive for file, filename.ext, is:

The second item in the status line is the file name and target drive for saving time data. The target drive and file name is a configurable item. See "Configuration Settings" on page 35 for more information. The directory is always the root directory for the target drive.

Current disk is:

The third and last item in the status line is the number of the current disk. This number is for reference only. It helps with keeping track of how many times you have saved all the time data. The disk number starts at 1 and increments by 1 each additional time you invoke the Save New or Save All action. Appending new times to disk will not change the disk #. This number may or may not reflect the actual number of disks used or the labeled number on a floppy disk.

Participant Information

Typing in a bib number that matches a participant in the announcer file will display the participant information. This information includes the name, age, sex, city and state.

Note that the announcer file name ANOUNCER.TXT is not a misprint. It has only one N to conform to a file name of 8 characters or less.

This feature is optional and requires an announcer file to exist in the ***Race Timer*** directory. The announcer file must be named ANOUNCER.TXT. It must be comma delimitated ASCII containing the following quoted fields in the following order:

Bib Number, First Name, Last Name, Age, Sex, City, State, Info1, Info2

The last two items are optional. The contents of an example file containing two participants is:

" 201","Vicki","Kawa","48","F","Bozeman","MT","1 Mile Survivors",""

" 252","Lynnette","Stern","44","F","Helena","MT","5K Survivors",""

Error Messages

When there is an error writing the time data file an error message displays in the status line. The error message is: **ERROR SAVING DATA! CHECK DRIVES**

Menu Item Help

As you scroll through the menu items in the Record Window, the Status Line displays a brief description of the highlighted menu item. This information is handy for learning what each possible menu item does. To see the menu item help information, open up a drop down menu with the mouse or key board and highlight different menu items with the mouse or key board. The Status Line updates automatically with the appropriate information for the highlighted menu item. Once the menu closes, the status line reverts to displaying the operating conditions of calibration date, target drive and disk #.

The following table lists the menu items and their associated help text.

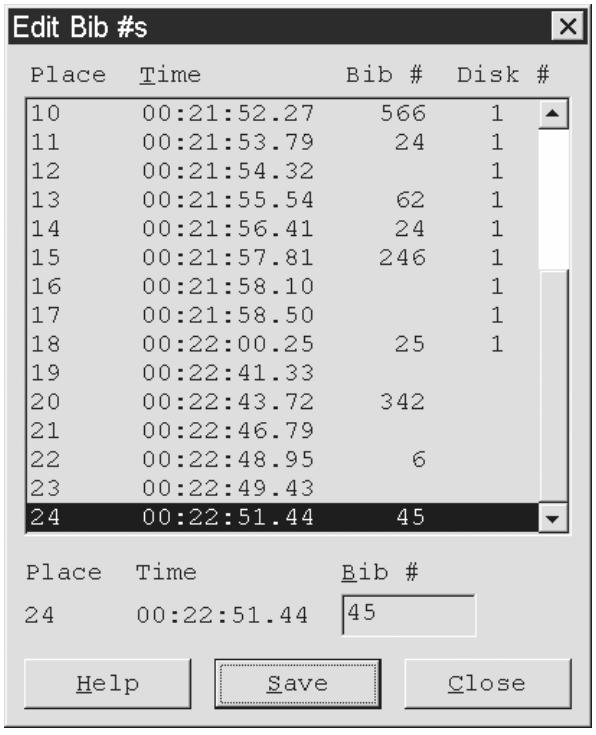
Menu Item	Status Line Help Text
File, Save All Times	Save all times to disk, overwriting a previous existing timer file
File, Save New Times	Save new (unsaved) times to disk, overwriting a previous existing timer file
File, Append New Times	Append unsaved times to the end of existing file on target disk, (existing file created with Save All or Save New)
File, Refresh Backup File	Refresh (rewrite) the backup file. Captures all edits to bib numbers from Delete, Associate, Swap, Edit
File, Exit	Quit the Race Timer program
Action, Record Time	Record a place with the current time and optional bib number
Action, Delete Last Time	Delete the last recorded place, time and optional bib number
Action, Swap Last 2 Bib #s	Swap the bib numbers of the last two recorded places and times
Action, Associate Bib # with Last	Associate the current bib # with the last recorded place and time; if the current bib # is blank, bib # is cleared from time
Action, Edit Bib #s	Bring up a dialog box for editing bib numbers for previously recorded places
Action, Start or Restart the Clock	Bring up a dialog box for starting the clock or restarting the clock and adjusting any existing times
Action, Calibrate System Clock	Bring up a dialog box for calibrating the computer's internal clock
Customize, Administrator Menu	Toggle the administrator level menu on or off
Customize, Always on Top	Toggle the timer window's behavior to stay always on top of other windows on or off
Customize, Configuration Settings	Bring up a dialog box to configure system settings
Customize, Show Long Button Labels	Toggle long descriptive labels for push buttons on or off
Customize, Zoom, Small	Resize the screen to smallest possible size: 640 X 480 pixels
Customize, Zoom, Medium	Resize the screen to medium size: 800 X 600 pixels
Customize, Zoom, Large	Resize the screen to large size: 1024 X 768 pixels
Customize, Zoom, Full Size	Resize the screen to largest possible size: full screen
Help, Contents	Display the table of contents for the on-line help
Help, Search	Display the search list for the on-line help
Help, About Race Timer	Display information about the program

Dialog Boxes

There are five supporting dialog boxes utilized by the ***Race Timer*** program. Only one of these is usually seen during a typical timing job; that is the Start or Restart the Clock dialog that comes up automatically when ***Race Timer*** first starts up. The other four dialogs play a supporting role for calibrating the system clock, adjusting the configuration settings and editing bib numbers. These dialogs are used by an administrator level operator to setup ***the Race Timer*** software and tailor it for a specific timing job.

Edit Bib #s

The Edit Bib #'s dialog box, allows you to change the bib number associated with any recorded place and time. To bring up this dialog box select Edit Bib #'s from the Action menu. You must have first selected the Administrator menu Alt+C A.



List of Place Time Bib # Disk #s

This list box is identical with the list box in the Record window. See "List of Place Time Bib # Disk #" on page 19.

The difference between this list and the list in the Record window is that you can select an item (row) in this list. To select an item in the list, click on it with the mouse, or tab the input focus to the list and use the up and down arrow keys to move through the list. When you select an item the list, the place time and bib number data in the fields below the list is updated.

Selected Place Time Bib # Data

These fields display the currently selected place from the list. The only editable field is the Bib # field. You can modify the bib number, but only enter up to the maximum digits configured for bib numbers. See "Configuration Settings" on page 35

Saving Changes

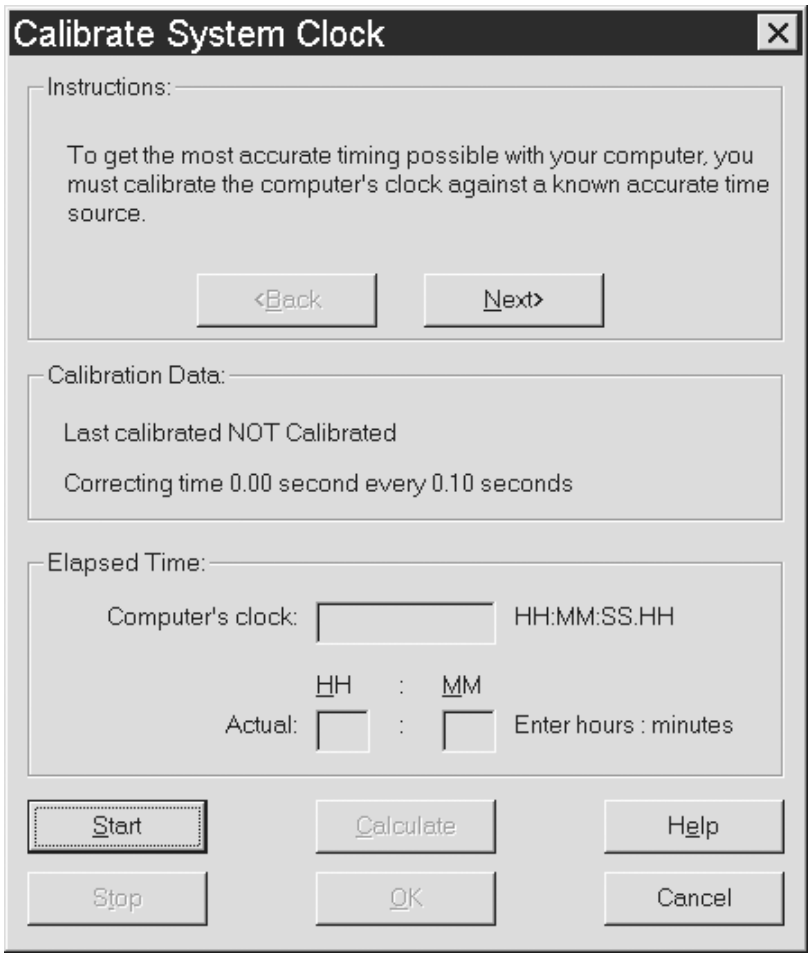
To save your changes to a bib number, click on or select the Save push button (Alt+S). All saves become permanent. This will update the list on places times and bib numbers in both the Edit Bib#s dialog box and in the Record Window. You must save each bib number you change before selecting a new item from the list to edit. If there was a disk number associated with the place it will be cleared indicating that the new bib number has not been saved to disk. Later when you are back in the Record window, save the time data to make sure you have a file containing all the latest changes.

Closing Edit Bib #s Dialog

To exit the Edit Bib #s dialog box click on or select the Close push button (Escape or Alt+C). All changes you made and saved with the Save button are preserved. If Auto Backup Times is on, the back up file is refreshed to capture all the changes.

Calibrate System Clock

The Calibrate System Clock dialog box walks you through the process of calibrating the system clock to an accurate time source. To bring up this dialog box select Calibrate System Clock from the Action menu, Alt+A C. You must have first selected the Administrator menu Alt+C A.



Instructions

At the top of the dialog box is an area that contains written instructions on how to calibrate the system clock. To page through the instructions use the Next and Back buttons to move forward or backward through the instructions.

The instructions are:

"To get the most accurate timing possible with your computer, you must calibrate the computer's clock against a known accurate time source."

"The accuracy of computer clocks varies greatly from computer to computer and each different computer you use as a timing device should be calibrated."

"Accurate time sources include, a GPS receiver, the WWV signal sounded at the top of each hour on AM radios, even a good quality quartz clock will work."

"To calibrate the computer's clock, start the clock (press the Start button) at an accurately known time. This starts the Computer's elapsed time display below."

"Once started, let the clock run for at least 10 hours. To get the most accurate calibration, let the clock run for an entire day."

"After a know amount of time (10+ hours in hours and whole minutes) has transpired on the accurate time source, stop the computer's clock by pressing the stop button."

"To calculate the error and calibration factor, enter the actual amount of time in hours and minutes that has elapsed on the accurate time source. Then press the Calculate button."

"To save the calibration information and exit this dialog, press the OK button. To abandon the calibration information and keep the previous calibration press the Cancel button."

Calibration Data

The calibration data summarizes the date of the last calibration and the corresponding calibration's correction factor. The correction factor is the amount of time that is either added to or subtracted from the system time and how often it is added and subtracted.

Elapsed Time

The elapsed time data indicates the computer's system clock elapsed time from the start of the calibration process. It also contains data entry fields for specifying an actual elapsed time.

Starting the Calibration Process

To start the calibration process, click on or select the Start push button (Alt+S). Do this at an exact known time in hours and minutes. Be prepared to allow the computer to run undisturbed for at least 10 hours. Make sure all computer's energy saving and suspend features are turned off so the computer will be running during the entire calibration process.

Stopping the Calibration Process

To stop the calibration process, click on or select the Stop push button (Alt+T). Do this after 10 or more hours have elapsed. Stop the process at an exact know time in hours and minutes.

Calculating the Calibration Correction

After you have started and stopped the calibration process and entered the actual elapsed time into the hours (HH) and minutes (MM) fields, you can calculate the calibration correction. Click on or select the Calculate push

button (Alt+C). Once you do this, the software displays the new calibration correction factor in the Calibration Data fields.

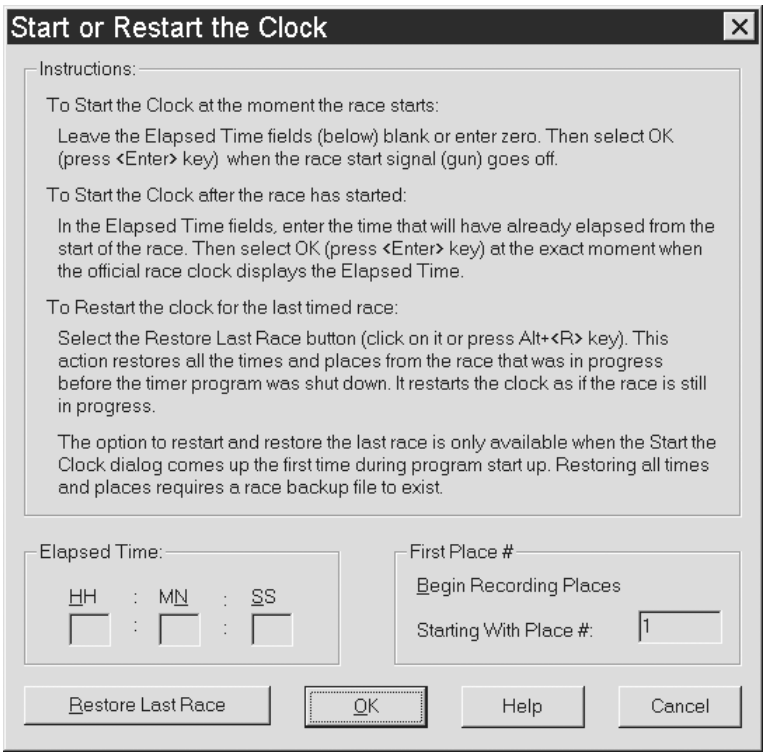
Saving the New Calibration Data

To save the new calibration data, click on or select of OK push button (Alt+O). To abandon (not save) the new calibration data, click on or select the Cancel push button (Escape).

Start or Restart the Clock

The Start or Restart the Clock dialog box allows you to start the clock or restart it if the clock is already started. To bring up this dialog box select Start or Restart the Clock from the Action menu, Alt+A S. You must have first selected the Administrator menu Alt+C A.

Upon initial program startup, Race Timer automatically brings up this dialog giving you the opportunity to start the clock.



Instructions:

Located at the top of the dialog are instructions detailing how to start or restart the clock. The instructions detail three different starting scenarios. The first is how to start the clock at the moment the race starts. The second is how to start the clock after the race has started. The third details how to restart the clock for the last race.

To start the clock at the moment the race starts, press the OK button at the moment the start signal goes off. To start the clock after the race starts requires you to first enter an elapsed time and the press the OK button at the moment the an official race clock indicates the elapsed time. To restart the clock for the last race, press (select) the Restore Last Race button.

Elapsed Time

If you wish to start the clock with an elapsed time already on the clock, fill in the time in these fields. To move to these fields, use the Tab key or the hot keys for the labels for the fields. To move the input focus to the Hours field, press Alt+H. You can enter up to two digits per field. The maximum elapsed time is 90 hours.

Beginning Start Place

If you need to start recording times with a place other than one, enter it into the start place edit field. ***Race Timer*** will then begin recording times starting with this preset place. This is important, if you are timing a portion of an event that does not begin with the first finisher.

Starting the Clock

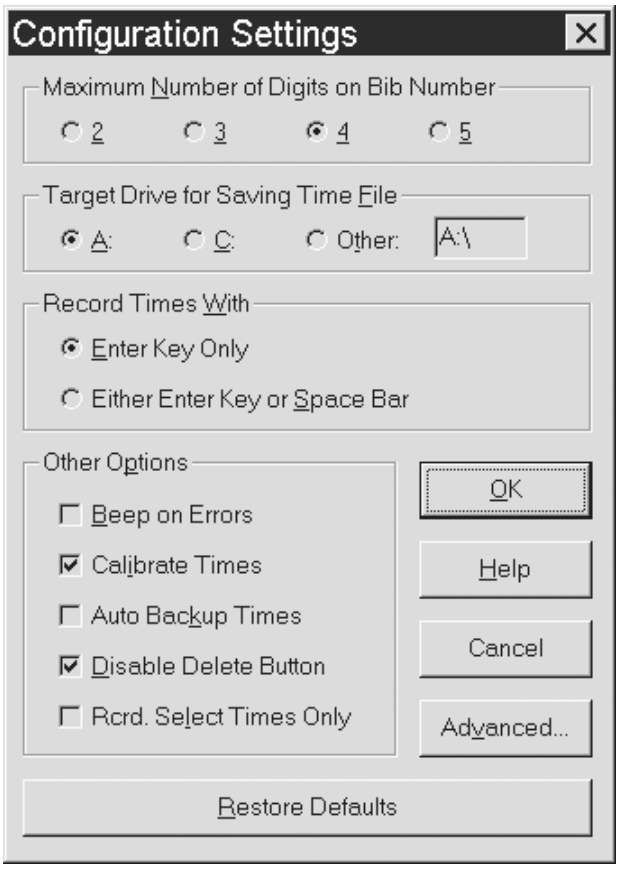
To start the clock, press the OK button. This will start the clock

Restoring Last Race

To start the clock for the last timed race and reload any recorded times, press the Restore Last Race button, Alt+R. This will start the clock as if the previous timing session is still going on. If a backup file exists, ***Race Timer*** will load the recorded times from the backup file.

Configuration Settings

There are many customizable parameters and preferences available in the Configuration Settings dialog. To bring up this dialog box, select Configuration Settings from the Customize menu, Alt+C C. You must have first selected the Administrator menu Alt+C A.



Maximum Number of Digits on Bib #s

To specify the maximum number of digits a bib number contains, select 2, 3, 4 or 5. You can do this by clicking the mouse on the desired radio button or using the Alt key with the desired number. For example to specify 4 digits press hold down the Alt key and press the 4 key. If the input focus is in any dialog control other than an edit box, you can just press the 4 key without holding down the Alt key.

Specifying the correct maximum number of digits for bib numbers is important. It prevents the entering of bib numbers that are longer than the race supports.

Target Drive for Saving Timer File

You must tell the ***Race Timer*** software the location you want it to save data to. There are radio buttons for the A: drive, the C: drive or some Other: drive

of your choice. If you specify Other, you must type in the name of the drive. It must be a single letter of A through Z.

Record Times With

This option allows you to specify how you want to record times. You can choose between using the Enter key or either the Enter key or Space bar.

Beep on Errors

This option allows you to turn on or off the computer's audible beep signaling errors. Common non-critical errors that cause beeps are trying to type in a bib number with more digits than allows, typing in keystrokes that do not map to valid commands or trying to record a time without a bib number when the Rcrd. Select Times Only option is set.

Calibrate Times

Having this option checked will cause ***Race Timer*** to correct all times using the current calibration data. If the system clock has not been calibrated, this option has no effect.

Auto Backup Times

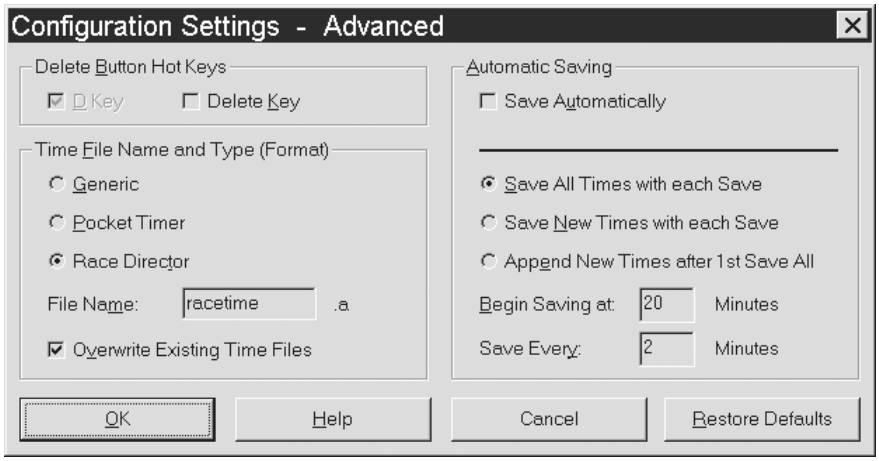
This option tells ***Race Timer*** to keep a backup of all the recorded times for the current timing session. The backup is kept in the file RACETIME.A located in the same directory that the ***Race Timer*** executable file resides.

Disable Delete Button

This option tells ***Race Timer*** to prevent the timer from deleting times with a single key stroke. If this option is checked, you must use the Action menu to delete a time. Disabling the delete button safeguards against accidentally deleting a time. Since the D key is very near other active keys such as the E and S keys that you use for saving data, if you are careless, you can unintentionally delete a time. Once you delete a time, there is no way to get it back.

Advanced

The Advanced push button brings up a sub dialog for accessing more configuration information.



Delete Button Hot Keys

This option allows you to enable or disable the Delete key as a method for deleting recorded times. If you checked the Disable Delete Button option, the Delete Key option has no effect. Otherwise pressing the Delete key will delete the last recorded time.

Timer File Type

Race Timer supports the saving of data in three different formats. They are: a generic format for ease of reading, a format utilized by the Pocket Timer software available from Stevens Creek Software, a format utilized by the Race Director software available from Race Management Software. We will add support for other formats upon special request.

Timer File Name

You can specify ***Race Timer*** to save data to a file with the name of your choice. It must be a file name that is legal in Windows version 3.1.

Overwrite Existing Time Files

This option tells ***Race Timer*** to overwrite any existing time file when saving a new time file. If this option is not checked, ***Race Timer*** will create a new file with each Save All or Save New. Each file name will have a different extension. The extension will be the number of the save.

Save Automatically

This option supports automatic saving. In situations where you do not have to remove any floppy disks during the timing process, this option eliminates the need for the timer to remember to save.

Restore Defaults

To restore the recommended and default values, click on or select the Restore Defaults push button. This will load the default values into the dialog box. To save the defaults, you must exit the dialog box using the OK push button. The following table lists the default values for all the Configuration Setting items.

Configuration Setting Item	Default Value
Maximum Number of Digits on Bib #s	4
Target Drive for Saving File RACETIME.A	A:\
Record Times with	Enter Key Only
Beep On Errors	Not Checked, Off
Calibrate Times	Checked, On
Auto Backup Times	Not Checked, Off
Disable Delete Button	Checked, On
Rcrd. Select Times Only	Not Checked, Off
Delete Key	Not Checked, Not Active
Timer File Type	Race Director
Timer File Name	Racetime.a
Overwrite Existing Time Files	Checked, On
Save Automatically	Not Checked, Off
Save Type	Save All Times with each Save
Begin Saving at	20
Save Every	2

Saving Changes

To save any changes you made, click on or select the OK push button (Alt+O). To abandon or cancel any changes, click on or select the Cancel push button (Escape). The OK and Cancel push buttons will exit the dialog box. If you press the OK button to exit the Advanced sub dialog and then press the Cancel button to exit the main Configuration dialog, the changes you made in the Advanced sub dialog will still be saved.

Other Dialog and Message Boxes

About Race Timer

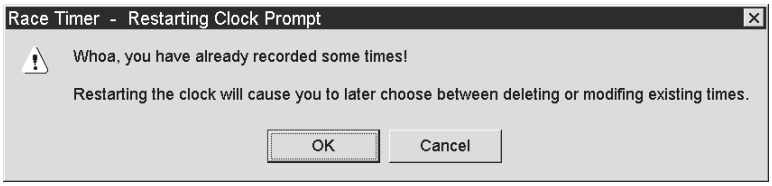
You access this dialog through the Help menu, press Alt+H A. It displays version information, copyright, and contact information about the ***Race Timer*** software. At startup, ***Race Timer*** displays this dialog temporarily during initialization before the Record Window becomes visible.

Unsaved Data Prompt

If you attempt to exit ***Race Timer*** before you save all the data you will be greeted with a prompt informing you that you have not saved all the data. Pressing Enter or N will bring you back to the Record Window so you can save. Pressing Y for yes, will exit the program with a loss of data.

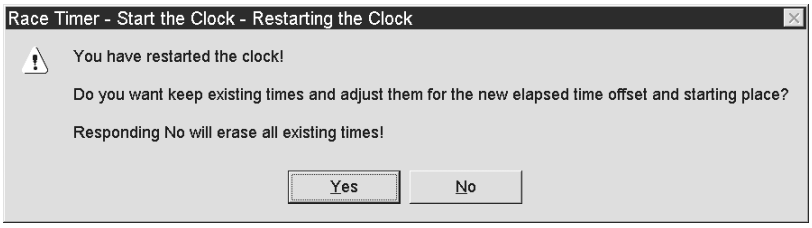
Restarting Clock Prompt

If you attempt to bring up the Start or Restart the Clock dialog after you have recorded times ***Race Timer*** greets you with a message box prompt informing you that you are about to restart the clock and have already recorded some time. You can continue or cancel the operation by pressing the Escape key.



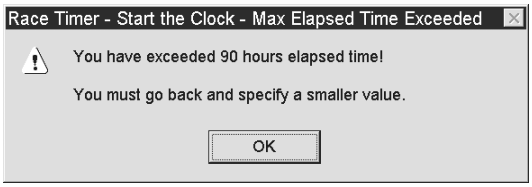
Restarting the Clock

After you restart the clock and there are existing recorded times, ***Race Timer*** asks you on what you would like to do with the existing times. You can keep them and adjust them for the new start time (select Yes) or you can erase them (select No).



Max Elapsed Time Exceeded

If you attempt to enter an elapsed time greater than 90 hours when starting the clock, ***Race Timer*** informs you that you must specify a smaller value.



File IO Error

If you try to save to a drive or disk that is non-existent, full, not-ready or not write enabled, you will be given a chance to either cancel the operation or fix the problem and retry.

Time Data Files

What are Time Data Files

Data files are stored as ASCII files. They are simple text only files that can be read by most word processing, spreadsheet and file viewing software. Most printers also provide for direct printing of ASCII files.

Time Data File Format

Generic Format

The generic format is comma delimited ASCII with quotes around each field. Each record begins on a new line. The first field is the place number. The second field is the time in HH:MM:SS.HH format. The third field is the bib number. The third field may be empty for times recorded without bib numbers.

The following is a generic format file with three places.

"1","00:20:13.08","101"

"2","00:20:14.77",""

"3","00:20:28.11","203"

Pocket Timer Format

The Pocket Timer format is comma delimited ASCII with no quotes around each field. Each record begins on a new line. The first field is the place number. The second field is the bib number. The third field is the time in HH:MM:SS.HH format. The second field contains a 0 for times recorded without bib numbers.

The following is a Pocket Timer format file with three places.

1,101,00:20:13.08

2,0,00:20:14.77

3,203,00:20:28.11

Race Director Format

Note that the time has no colons or decimal points.

The Race Director format is comma delimited ASCII with quotes around each field. Each record begins on a new line. The first two fields are blank and of unknown purpose. The third field is the place number. It is five digits padded with leading spaces for places with less than five digits. The fourth field is the time in HHMMSSHH format. The fifth field is the bib number. It is five digits padded with leading spaces for bib numbers with less than five digits. The fifth field is five spaces for times recorded without bib numbers.

The following is a Race Director format file with three places.

" "," ","   1","00201308"," 101"

" "," ","   2","00201477","   "

" "," ","   3","00202811"," 203"

Transferring Timer Data Files

The purpose of saving the time data to a file is to be able to transfer the data to other programs. This allows you to utilize the time data for processing results.

Hard Drive Transfer to Other Software

If you will be running results processing software on the same computer running the ***Race Timer*** software, you can save the data to the hard drive. Both programs (***Race Timer*** and the results processing software) can access the hard drive and consequently the timer data files.

Floppy Disk Transfer to Other Computer

If you will be running results processing software on a computer different than the one running the ***Race Timer*** software and the two computers are NOT networked together, you need some way to move the timer data files from one computer to the other. The simplest non-network method to move the data between the computers, is by removable media such as a floppy disk. Set the target drive for saving the timer file to the floppy drive. After you save the data to the floppy drive, you can remove it and physically take it to the other computer.

Network Drive Transfer to Other Computer

If you will be running results processing software on a computer different than the one running the ***Race Timer*** software and the two computers are networked together, you can set ***Race Timer*** to save the timer files to the other computer. Set the target drive for saving the timer file to a mapped network drive that is accessible to both computers. The results processing software can then access the timer data as well as the timing computer.

Frequently Asked Questions

Starting the Clock

How do I start the Race Timer clock when the starting gun fires?

Make sure to start the computer and software at least a few minutes before the anticipated start of the event. When the ***Race Timer*** software first starts up, it presents you with the Start or Restart the Clock dialog. At the moment the start gun goes off, press the enter key. This will close the dialog box and start the clock with the starting gun.

How do I start the Race Timer clock after the race has started?

At least a few minutes before the anticipated finish of the first (fastest) participants in the event, start the computer and the ***Race Timer*** software. In the Start or Restart the Clock dialog specify an elapsed time amount. This should be at least a few seconds ahead of the official race clock. To move the input focus to the desired input fields for the elapsed time, press Alt+H for hours, Alt+N for minutes, Alt+S for seconds. You can also use the Tab key to move the input focus between controls. Once the input focus is in the correct edit box, type in the value of hours or minutes or seconds. At the moment the time on the official race clock matches the elapsed time you specified, press the enter key. This will close the dialog box and start the clock after the race has started. ***Race Timer*** will display and record the correct race times as if the clock was started at the start of the event.

If I started the clock at the wrong time, how do I restart?

If you have not recorded any times yet, you can exit the ***Race Timer*** software and start it again. To exit, press Alt+F4. You must exit by holding down the Alt key and simultaneously pressing the F4 function key. You can exit this way even if you are not in Administrator menu. There must be no recorded times to exit this way. After you have exited, restart the ***Race Timer***

software. You can then start the clock after the race has started. See the previous question "How do I start the Race Timer clock after the race has started?" on page 44. Another way to restart without exiting the program requires you to be in the Administrator menu. Bring up the Start or Restart the Clock dialog by pressing Alt+A S. Then start the clock after the race has started.

How do I restart the clock and get rid of all the existing times?

The situations where you would need to do this are probably associated with testing the software or during practice timing sessions. To restart the clock in the middle of the timing process, you must first select the Administrator menu (Alt+C A). Then bring up the Start or Restart the Clock dialog by pressing Alt+A S. The ***Race Timer*** software pops up a message box giving you a chance to cancel this operation. Choose OK to continue. In the Start or Restart the Clock dialog specify a correct elapsed time for the start and start the clock. See question "How do I start the Race Timer clock after the race has started?" on page 44. After you press the enter key and start the clock, ***Race Timer*** asks you whether you want to keep all the existing times and adjust them for the new start time. If you desire to get rid of all the existing times press the No button (N).

How do I start timing in the middle of a race at a particular place?

A situation where you may want to start timing in the middle of a race can occur if you are using one computer to time the first portion of a race and another computer to time a later portion where the first one left off. You may wish to do this if the battery is running low on the first computer and turning off the computer to change batteries would disrupt the timing process. If the density of participants crossing the finish line is high, one person should continue timing on the first computer, while a second person starts up the second computer. The second person will then start the clock the way you start the clock after the race has started. See "How do I start the Race Timer clock after the race has started?" on page 44. One additional piece of data needs to be entered into the Start or Restart the Clock dialog. You must enter the First Place # as the last place recorded on the first computer right before you press the OK button. To move the input focus to the First Place # edit box, press Alt+B. After you start the second computer's clock, you can begin recording finishers right where the first computer left off. This is easiest to accomplish when there is at least 15 seconds between finishers. Otherwise, you may miss some finishers.

Is it possible to turn the computer off and then restart the timing process?

Yes. If the configuration option Auto Back Times was turned on before you turned off the computer, you can restart the last timing job. When the ***Race Timer*** software starts up and the Start or Restart the Clock dialog comes up, press the Restore Last Race button. Press Alt+R or just R. There are some limitations to this. You must restart and restore the last race within the same day that the race was started. The accuracy of times after restoring can be

affected as the length of time between shutting down the computer and restoring increases. The reason for this is that computers have two internal clocks. One is used while the computer is on and a different one keeps time while the computer is off. The accuracy of these clocks are different and ***Race Timer*** only provides for calibration of the clock that is use when the computer is on.

How do I restart the clock and adjust existing times for the new start time?

To restart the clock after you have recorded some times, you must be in the Administrator menu. To turn on the Administrator menu, press Alt+C A. To bring up the Start or Restart the Clock dialog, press Alt+A S. Select OK to dismiss the message box warning. In the Start or Restart the Clock dialog, enter the correct elapsed time and press enter when the official clock displays the elapsed time. See question "How do I start the Race Timer clock after the race has started?" on page 44. When the Restarting the Clock message box, prompts you if you want to keep existing times and adjust them for the new start time, press the Yes button. Press the Y or Enter key.

Recording Times

How do I record a place and time?

The ***Race Timer*** program must be up and running. It must also be active and accepting input. Then all you do is press the Enter key.

How do I delete an inadvertently recorded time?

To delete the last recorded time, press the D key or the Delete key. You can only delete the last recorded time. Once you delete the last recorded time the previously recorded time becomes the last recorded time and you can then delete that time, and so on. To be able to delete times with a single keystroke the Disable Delete Button option in the Configuration Settings dialog must be unchecked. To be able to use the Delete key, the Delete Key option on the Configuration Settings - Advanced dialog must be checked. To delete the last recorded time, if the Disable Delete Button is checked, select Delete Last Time from the Action menu. Press Alt+A D. Being able to disable the delete key prevents inadvertently deleting a time by accidentally hitting the D key. Note the D key is next to the S key used for saving. A clumsy key press of the S key may bump the D key. Once a time is deleted, there is no way to get it back!

How do I record a time with a bib number (a select time)?

Type in the bib number and then press Enter when the participant with that bib number crosses the finish line. To type in the bib number after you record the participants time, press Enter when the participant crosses the finish line, then type in the bib number, then press the B key. Pressing the B key selects the Associate Bib # with Last Time push button.

Editing Bib Numbers

How do I change the bib number for a recorded time?

You can change the bib number of the last recorded time quickly and easily. Just type in the bib number and press the B key. If you need to change the bib number for place other than the last recorded place, you must use the Edit Bib #s dialog. To bring up the Edit Bib #s dialog, you must first be in the Administrator menu, the press Alt+A E. Using the Edit Bib#'s dialog to edit bib numbers is a time consuming process. You need to have at least a half-a-minute or more gap between participants crossing the finish line to give you enough time for changing a bib number without a missing a participant finishing. Once you are in the Edit Bib #s dialog, you need to select the desired place and time to edit. Press Alt+T to move the input focus to the list of places. Use the arrow keys to move through the list to select the desired place and time to edit. To move the input focus to the bib number edit field, press Alt+B. Type in the new bib number. Save the changes by pressing the Save push button; press Alt+S. To exit the dialog, select the Close push button by pressing the Escape key or Alt+C. You can also move the input focus between the list box, the edit field and the push buttons by pressing the Tab key.

How do I clear the bib number from the last recorded time?

To clear the bib number from the last time, just associate a blank bib number with the last time. Make sure the Bib number field is empty. If it is not, press the Backspace key until it is. Once it is empty, press the B key.

How do I swap the bib numbers of the last two recorded times?

To swap the bib numbers associated with the last two recorded times, press the W key. This situation arises when you type in a bib number for a participant expecting that participant to be the next finisher. Then, right before the finish line, another participant passes the participant that you have typed in a bib number for. You do not have time to type in the correct bib number and must record the time of the first finisher with the bib number of the second finisher. Immediately pressing the W key after recording the second time will move the bib number from the first finisher to the second leaving the first finisher's bib number blank. If you have time, that meaning there is a big enough gap before the next participants reach the finish line, you could enter in the bib number for the first finisher associate it with the second finisher and then swap the bib numbers. The sequence of operations become: enter in a bib number, record a time, record a second time, enter in a bib number, associate the bib number with the last time, swap the two bib numbers. An example of keystrokes for recorded two times with the bib numbers 1 and 2 when the participant with bib number 2 was in the lead until the last moment: 2 Enter Enter 1 B W.

Saving Data

How do I save data?

To save all the times, press the S key. To save just the new times, press the N key. The new times are times that you have not saved yet. Saving all the times or saving the new times overwrites any existing file or creates a new file if an existing time file does not exist. If you save just the new times with the N key, the time file will only contain the new files, not all the times that you have recorded.

To append the new times to an existing data file, press the E key. Append requires a time file to already exist. It appends or concatenates the new times onto the end of the existing file. The existing file must have been first created by saving all the times or saving the new times. Once you have created a time file with the S or N key, you can then append new times onto the end of the file with the E key. You can do this over and over again as you record new times. This keeps the time file up to date. A good practice is to do a save all to create the time file and then keep the time file current by appending new times onto the file as you record times.

These actions of saving all the times, saving the new times or appending the new times save data to the destination drive and file specified in the Configuration Settings dialog.

Why am I limited to 8 character file names?

To maintain consistency between the 16 and 32 bit versions of ***Race Timer***, only 8 character file names are supported by ***Race Timer***. The intention is to also keep things as simple as possible when identifying the time data files and finding them for later use in other software programs.

Does race timer keep a backup of the time data?

Yes. A backup of the timing job is kept in the file RACETIME.A located in the same directory as the ***Race Timer*** program (Timer16.exe or Timer32.exe). Automatic backup is a configurable option. To turn automatic backup on, check the Auto Back Times option in the Configuration Settings dialog. ***Race Timer*** uses this backup file to restore the last race. If you do not elect to restore the last race when starting ***Race Timer***, the program will overwrite the backup file as soon as you start recording times. If you wish to archive or save the backup file, you need to rename it or move it so that ***Race Timer*** does not overwrite it during the next timing job.

How do I configure the software to automatically save the data?

In the Configuration Settings - Advanced dialog, turn automatic saving on by checking the Save Automatically option. You need to also specify when to begin saving and how often to save. As a guideline, begin saving after you expect the first finishers and save as often as your results processing team requires. An example for a 5K road race would be to begin saving at 20 minutes and save every 2 minutes. For a 10K road race would be to begin

saving at 40 minutes and save every 4 minutes. You can also specify the type of save to make. There are three options available. They are: Save All Times with each Save, Save New Times with each Save, Append New Times after 1st Save All. The simplest and recommended is to Save All Times with each Save. You may desire to use the other methods if you are saving to a storage device that takes a long time to write to, such as a floppy drive.

Why can't I specify a directory or folder instead of a target drive?

To make sure the time data file is easy to find, you are limited to specifying a drive as the target location. You can then quickly find the time data file in the target drives root directory. If you need to save to a directory other than the root directory of a drive, Windows allows you to map that directory to a drive name.

How do I get the software to automatically save across a network?

To save data across a network, you must map a drive to a location on the network. Consult your Windows documentation on how to do this. Once you have a mapped drive, you can specify the name of that mapped drive in the Configuration Settings dialog. Select the Other option in the Configuration Settings dialog. Enter the name of the mapped network drive in the edit box located next to the Other option.

How do I get Race Timer to create a new file each time I save data?

In the Configuration Settings - Advanced, make sure the Overwrite Existing Time Files is not checked. When this is unchecked, each time you save, a new file is created with a new name. The name of the file is different in the extension which is a number that is incremented for each save. For example, the first time the data is saved the file name is racetime.1. The second time the data is saved the file name is racetime.2 and so on. Only Save All Times or Save New Times will increment the save number and create a new file with a new name. The Append New Times command only adds (appends) onto the last file created.

What do I do if, during saving, a message box pops up indicating a file error?

If you can quickly remedy what caused the problem, typically a floppy disk not in the drive, then fix the problem and select Retry in the message box. To select the Retry button press the R key or Enter key. If you cannot quickly remedy the problem and you need to get back to timing chores, then press the Escape key to get back to the main ***Race Timer*** window so you can continue timing.

Calibration

How do I calibrate the system clock?

To calibrate the system clock, you need an absolutely accurate time source. You also need at least 10 hours, preferably 24 hours. Start up the ***Race Timer*** software. When the Start or Restart the Clock dialog box comes up, dismiss it by pressing the Escape key. You must then select the Administrator menu by pressing Alt+C A. Bring up the Calibrate System Clock dialog by pressing Alt+A C. Once the dialog is up, you can read the instructions. To page through the instructions, press the N key for the next page or the B key to go back a page. To begin the calibration process, press the Start button. You can do this easily by pressing the Alt+S key or pressing Enter if the Start button has the input focus. Do this at an exact known time on your accurate time source. Make a note of this time. After at least 10 hours, stop the calibration process by pressing the Stop button (press Alt+T). Do this at an exact known time on an even minute on your accurate time source. The longer the calibration duration, the more accurate the calibration. 24 hours is recommended but 48 hours would be even better. After you press the Stop button, enter in the time from your accurate time source that elapsed between pressing the Start button and the Stop button. Enter the hours in the edit box below the HH and enter the minutes in the edit box below the MM. After you have enter the actual elapsed time press the Calculate button (press Alt+C). The new calibration shows up in the Calibration Data field. If you decide to use the new calibration, press the OK button (press Alt+O). If you decided to not use the new calibration, discard it by pressing the Cancel button (press the Escape key).

Is it necessary to calibrate the system clock?

It is not necessary, but it is highly recommended. Unless you calibrate the system clock, the accuracy of the times you record are dependant upon the accuracy of the system clock. Computers have notoriously inaccurate clocks. They can be in error multiple seconds per day. The longer your event lasts, the greater the error. With proper calibration, the accuracy can be improved to +/- 0.1 second.

Configuration

Should I time with Num Lock on or off?

This is a personal choice. Some people have grown accustomed to the notebook style of numbers. If you are skilled at 10-key data entry, you will probably be faster and more accurate timing with Num Lock on. Most notebook computers have a pseudo numeric keypad that overlays the regular keyboard. Depending upon the computer, even with Num Lock on you may still have to hold down a special function key (like a shift key) to access the numeric keys. This is of limited value. ***Race Timer*** is set up with the hot keys for the main window to avoid conflicts with the overlaid numeric keypad. Most, but not all, notebook computers map U to 4, I to 5, O to 6, P to -, J to 1, K to 2, L to 3 and M to 0.

When should I select Administrator menu?

If you wish to perform any of the Administrator level functions, you must select the Administrator menu. The Administrator level functions include:

Exiting ***Race Timer*** if there are recorded times

Editing Bib #'s other than for the last recorded time

Calibrating the System Clock

Starting or Restarting the Clock after the initial opportunity when ***Race Timer*** first starts up

Turning off the Always on Top feature

Being able to Customize the Configuration Settings

Resizing or Zooming ***Race Timer***'s main window size

How do I bring up the Administrator menu?

To bring up the Administrator menu, make sure the Administrator Menu item on the Customize menu is checked. To do this press Alt+C A.

Should I record times with the Space Bar or Enter Key?

This is a personal preference. If you have Num Lock on, then the right hand can be typing in bib numbers and the left hand can be recording times with the space bar. If you have Num Lock off, the left hand can be typing in bib numbers and the right hand can be recording times with the Enter key. The risk of having the Space Bar set up to record times is that it is large and easy to bump inadvertently, recording times in error.

What is the best type of computer to run Race Timer on?

Since most timing jobs occur outside, a computer that is portable and works well in an outdoor environment is best. A ruggedized notebook computer that has a transrefletive display screen would be ideal. The Panasonic toughbook is an example of this. One that is also waterproof would be even better. The downside of specialized computers for outside use is their high cost. Older notebook computers with black and white display screens instead of color are inexpensive and their black and white screens afford better visibility in bright sunlight than newer color screen notebook computers.

An important consideration is battery life. Being able to run off batteries is convenient and avoids the need for power cables at the finish line. High quality batteries are available for even old notebook computers and worth obtaining. Older notebooks that have slower processing speeds tend to require less power and can have longer battery life than newer notebook computers. A 1992 era 33 MHz 486 AST Advantage notebook computer with a high capacity replacement battery runs about 7 hours on a fresh charge. A 2002 era 1 GHz Pentium Dell Inspiron with a high capacity battery runs about 3.5 hours on a fresh charge. This particular Dell can hold a second battery doubling the battery life, provided you do not need removable media.

Removing the floppy drive opens up a second battery bay. Without a removable media drive, you would need a network to transfer time data during the timing process.

The absolute minimum system to run ***Race Timer*** is a computer with 386SX processor, 1 Mega Byte of memory, and a black and white VGA display running Windows 3.1. Old notebook computers can be found on auction sites like ebay.

Another highly desirable option is wireless networking. Inexpensive wireless network cards for notebook computers are readily available. Taking advantage of wireless networking requires a more modern notebook computer running a 32 bit version of Windows such as Windows 98, 2000, XP etc. Wireless networking allows for direct saving of the time data from the computer running ***Race Timer*** to a computer not at the finish line that is used for results process. This allows for processing results while the race is in progress. Preliminary results are available before the race is over for participants to view. Final results are usually available soon after the event is over. Without networking, preliminary results processing during the race, requires removable media such as floppy disks being hand carried back and forth between the computer running ***Race Timer*** and a computer running race results processing software such as Race Director or Run Score.

How do I configure the software to only record select times?

You can customize ***Race Timer*** so that you can only record select times (a time attached to a bib #). That is, you must type in a bib number before you can record a time. To configure ***Race Timer*** to only record select times, check the Rcrd. Select Times Only option in the Configuration Settings dialog. With this option set, you must type in a bib number before you record a place and time. You can later correct that bib number by typing in a new bib number and pressing the B key to associate it with the last recorded time.

How do I decrease or increase the size of the Race Timer window?

By default, ***Race Timer*** starts up and is displayed full size. If you desire to change the size, you must first have Administrator menu turned on. Then select the Zoom menu from the Customize menu. Under the Zoom menu, select the desired screen size. The menu items for sizes not supported will be grayed out or disabled.

How do I configure the software for use by an unskilled race volunteer?

The theme for unskilled race volunteers is to keep their job as simple as possible. Starting with the default configuration settings, consider making the following changes in the Configuration Settings dialog. If the event has bib numbers with a maximum number of digits other than the default 4, set the maximum to the correct value. If there is a chance that the computer may be turned off (either inadvertently or intentionally) and restarted to restore the race, make sure the Auto Backup Times option is checked. If the volunteer is responsible to record select times only, then make sure the Rcrd. Select

Times Only option is checked. If the target drive for saving the time file is different than the default A:\, change it to the correct value. If it is a non-removable drive such as a hard disk or mapped network drive, then you should configure ***Race Timer*** to save data automatically. This eliminates the need for the volunteer to concern themselves with saving data during the timing process. Do this in the Configuration Settings - Advanced dialog. Make sure the Save Automatically item is checked. With automatic saving on, you need to specify appropriate Begin Saving at and Save Every time values. If the target drive is a removable drive and it will be removed during the race for processing interim results, then automatic saving needs to be off. The volunteer operator needs to control when to save and has the responsibility to save. Check the configuration and make any changes needed before you start the clock. During the race, when the volunteer operator is timing, make sure Administrator level menu is off.

How do I configure my computer for Race Timer?

You should turn off all power saving features with the exception of powering down the disk drives. Remove any screen saver programs and set the power saving features so that the screen stays on. Configure the computer to always stay on, avoiding suspend or sleep modes. Set up the key repeat rate to the lowest value possible. Set up the key repeat delay to the longest value possible. The intention is to avoid inadvertently recording times by triggering key repeats by hitting the keys too slowly or hard or leaving the fingers on a key too long. This is a common mistake made in the pressure of timing an event with lots of participants.

How do I get Race Timer to save the time data in a generic file format for loading into a spreadsheet?

The default file format is the Race Director format. This is a quoted comma delimited text file that can be imported into a spreadsheet. It contains some extra blank fields of unknown utility. If you desire a cleaner file format you can configure ***Race Timer*** to save data in a generic file format. In the Configuration Settings - Advanced dialog select the Generic option.

My race has bib numbers 1 through 999; how do I keep the timer from entering bib numbers outside this range?

In the Configuration Settings dialog set the maximum number of digits on bib number to 3.

Recovering from Mistakes

What do I do if I recorded an extra time?

If the extra time is the last recorded time you can delete it by selecting Delete Last Time (Alt+A D, or D, or Delete depending upon configuration). If the extra time is not the last recorded time, there is nothing you can do so just

ignore it and continue the timing job. The extra time will have to be removed during the results processing. If you can, you could make a note of the mistake and pass that information on to the person doing the results processing.

What do I do if I missed recording a time?

There is nothing you can do, so just keep on timing. A time will have to be inserted during the results processing. If you can, you could make a note of the mistake and pass that information on to the person doing the results processing. Inserting a time can introduce significant inaccuracy in the time for the participant that ends up with the created time. The error of missing a time is more severe than recording an extra time. Remember the first priority of the timing mission statement: “Record a time for every participant that crosses the finish line.”

What do I do if I recorded a time with an incorrect bib number?

If it was the last recorded time, type in the correct bib number and press the B key to associate the bib number with the last recorded time. If the mistake occurred a few places back you can change it in the Edit Bib #s dialog. Accessing this dialog requires being in the Administrator level menu. It also requires a significant amount of time and can disrupt the timing process. It should be only done if there are large gaps between finishers. If the density of finishers requires concentration on the timing chores, then just ignore the mistake and keep timing.

The timing computer was turned during a race; how do I recover?

See the question "Is it possible to turn the computer off and then restart the timing process?" on page 45.

The Race Timer clock was started at the wrong time; how do I recover?

See the questions "If I started the clock at the wrong time, how do I restart?" on page 44 and "How do I restart the clock and adjust existing times for the new start time?" on page 46.

Other

How do I time a relay event?

If you only need to record the overall time, then you can just record the time when the last member of a team crosses the finish line. If you need to record times for all team members, then you need some way to indicate what are times for leg 1 versus leg 2 versus leg 3 etc. You either need bib numbers

that indicate the leg of the relay or you need to have different timers and computers timing each leg independently.

How do I maximize battery life?

You must have your computer set up so that the screen always stays on and that the computer never enters sleep or suspend mode. Unfortunately, these requirements rule out some of the most effective power saving features of some notebook computers. There are some other power saving features that you can employ that will not interfere with the timing process but will maximize how long your computer runs on a single charge of the battery. First, you can set your computer to turn the hard disk off as soon as possible (typically after few minutes). Another thing you can do is to set your computers processor speed to the slowest possible speed or power saving speed. Just make sure you calibrate the computers clock with the same settings as that you use during actual timing.

There are things you can do to make your batteries usable lifetime as long as possible. Batteries for notebook computers are expensive. You may be able to get an old notebook computer for less than $100.00, but a replacement battery for the computer may cost over $100.00. So how do you maximize the service life of a battery and reap the most from your battery investment? There are many different kinds of batteries and each may have slightly different guidelines on care. Familiarize yourself with the type of battery you have and what the manufacture's care guidelines are. In my experience, here is what I have found to work well in getting the longest lifetime out of a battery.

Charge the battery with the computer off. Begin charging the battery only when it is fully discharged. Once you begin charging the battery, let it fully charge. Once the battery is fully charged, stop charging it (avoid overcharging). If you are running the computer on AC power, remove the battery (avoid running the computer on AC power with the battery installed).Once you begin using the battery, let it fully discharge before you begin charging it. Avoid over-discharging the battery. Run the computer until the battery is discharged and will no longer run the computer. At this point begin charging the battery. Do not leave a discharged battery in a computer, especially if the computer’s power switch is still on. Store batteries at room temperature (avoid extremes of cold or heat). Store computers with the battery installed. Computers have a internal clock that requires power even when the computer is off. There is a small internal battery that powers this internal clock. To make this internal battery last as long as possible, store unused computers with their main battery installed. The main battery will discharge over time. Check its charge state every few weeks and when fully discharged, recharge it. Depending upon the age of the battery, the battery stored in a computer may discharge in as little as a few days to as long as several months. As soon as you discover that a battery is discharged, charge it back up. Even a battery that is stored outside of the computer will discharge over time. Periodically check its charge state and when it becomes discharged, charge it up. When placing a battery in storage, begin with it being fully charged. As a battery ages, it will discharge quicker even when being stored in an unloaded state. To maximize the charge life of even old batteries, charge them up right before you will be using them.

How do I time a multilane event?

Time each lane separately and independently as if there a multiple races. Each lane represents its own finish line. You need a timing computer dedicated to each lane. Each lane represents a subset of the event. The timing data is merged and combined in the results processing computer to produce finial overall results. Multiple lanes are needed for events with large numbers of participants. The multiple lanes afford may runners to finish near the same time without clogging the finish area and backup the finish chutes.

In addition, you need results processing software that accommodates multilane time data.

How do I exit the Race Timer software?

You must be in the Administrator level menu and have the Always on Top menu item turned off. Then you can select Exit from the File menu. A sequence of key strokes become: Alt+C A, Alt+C T, Alt+F X.

How come I can not see the online help?

The only way to see the online or context sensitive help for ***Race Timer*** is to turn the always on top feature off. To do this, make sure the Always on Top Menu item under the Customize menu is unchecked. Or make sure the main ***Race Timer*** window is not full screen to expose the help window underneath. To zoom to a smaller screen size, press Alt+C Z S. To access this feature, Administrator level menu must be on. During the timing process, you should concentrate on timing and avoid accessing the help features. The appropriate opportunity to access help and learn about the ***Race Timer*** software is during a practice session or a session dedicated to setting up the software.

The help features of ***Race Timer*** will only be available if the help file (Timer.hlp) exists in the same directory (folder) as the ***Race Timer*** program file (either Timer16.exe or Timer32.exe). If the help window is not visible even when you think it should be, make sure you copy the help file, Timer.hlp, into the same location (directory) as the program file.

Why can't I enter 0's (zeros) in a bib number?

The first digit of a bib number must be a non-zero digit (1-9). You cannot use bib numbers with leading 0's. You should be able to enter zeros after the first digit. If you still can't, it may be because Num Lock is on and you are trying to enter a zero using the normal 0 key which is remapped to the * key for the numeric keypad. To fix this, turn Num Lock off or use the key (usually the M key) that becomes the 0 key with Num Lock on.

How do I time an event that lasts over 100 hours?

Race Timer is limited to timing events of less then 100 hours. If all the participants finish in a span of time less then 100 hours you could time the event as if it is a shorter event started at known time after the true start. You would then correct the times outside the ***Race Timer*** software by adding the known difference in start times.

The Race Timer Software does not start up or run?

There are two versions of ***Race Timer***. There is a 16 bit version that runs on Versions 3.1 and 3.11 of Windows. It's file name is Timer16.exe. The other version is a 32 bit version that runs on Versions 95,98,ME,2000 and XP of Windows. Its file name is Timer32.exe. You can not run the 16 bit version on a 32 bit version of Windows. Likewise, you can not run the 32 bit version on the 16 bit versions of Windows.

There may be another reason why the 16 bit version does not run on the 16 bit versions (3.1 or 3.11) of Windows. ***Race Timer*** utilizes undocumented multimedia extensions to support a running a background task for saving data without interrupting the timing process. This requires the files mmtask.tsk and mmsystem.dll to exist in the System directory under the Windows directory. Most installations of Windows have these files. If not, you need to reinstall Windows and make sure the multimedia features are installed.

How do I handle two or more people that finish in a tie?

Race Timer does not support ties. Theoretically, there is no such thing as a tie. The difference may be very small, but someone always is ahead of the other. Your job is to do the best you can in timing the participants and recording times for all participants that cross the finish line. You may get the finish order right and they may change order after the finish line before pull tags are collected affecting the results. A caveat is, that if the people are intentionally in a tie, then they do not care if you get their places out of order. If the participants are truly racing each other, do the best you can to get their finish order correct. They will appreciate it.

How do I set things up to display participant information?

The first step is to create a participant file. See "Participant Information" on page 26 for a description of the participant file. The participant file must be named ANOUNCER.TXT. It must be located in the same directory as the ***Race Timer*** program (the directory where Timer16.exe or Timer32.exe resides).

How do I time an event with multiple start times or waves?

Race Timer only handles a single start time for a timing session. Time all participants as if they started in the first wave. Your results processing software must be able to determine which wave a participant is in by bib number or division and enter in an offset time for each wave.

How do I run a different program when Race Timer is running?

Race Timer is designed to be the only program running. The timing process is one that can be intense and easily disrupted by distractions. Distractions lead to mistakes and inaccuracies in the timing process. Running another program on the computer is a distraction. If you absolutely need to run another program, you must turn the always on top feature off. To do this, make sure the Always on Top menu item on the Customize menu is not selected by pressing Alt+C T. You must be in the Administrator Menu to access the Always on Top menu item. When the always on top feature is turned off, Race Time behaves like any other program and will run in the back ground if you bring up another application.

What are the most critical things to teach a volunteer operator?

The operator or timer must be efficient at recording times, entering bib numbers and saving the data. See the "Timing Mission Statement" on page 7.

Show them how to:

How to record a time with the Enter key.

Enter bib numbers with the number keys.

How to delete the last digit of the bib number with the Backspace key.

How to associate a bib number with the last time with the B key.

How to save the times to disk with the S key.

How do I get the highest accuracy from the Race Timer program?

There are three things required to get the highest accuracy. The first is to accurately start the clock. This is operator dependant. The second is to accurately record participants as they cross the finish line. This is also operator dependant. The third is to calibrate the system clock. You can improve accuracy of the first two items by practicing with the software.

The Race Timer window is visible, but not active; how do I activate it?

To quickly bring the ***Race Timer*** window to the top and make it active press the F2 key. The F2 function key is the system hot key for the ***Race Timer*** program. The other way to activate it is to click the mouse inside the window.

What does the refresh backup function do and when do I need to use it?

The refresh backup function found as the Refresh Backup File under the File menu in the Administrator menu rewrites the backup file. There is a remote

possibility that the backup file will not contain the latest edits. Selecting this operation will insure that it does. If you avoid deleting more than a couple places back, you can assume that the backup file will be kept up to date. To be extra cautious, you may want to select this operation right before you exit ***Race Timer***. Then if you decide to restart ***Race Timer*** and restore the last race, you will be certain that the race will be restored as you left it.

Race Timer quit responding and recording times; how do I get it working?

There may be rare situations where ***Race Timer*** is visible on your screen but does not respond. This can happen in the 32 bit version (Timer32.exe) if you bring up context sensitive help with the F1 key and the Always on Top option is on. It can also happen if ***Race Timer*** is displaying a message box and you attempt to switch to another program. When timing an event, the operator should avoid switching to other programs or accessing the help feature. For highest reliability, ***Race Timer*** should be the only program running on your timing computer. Keeping things as simple as possible helps avoid many potential problems.

To remedy this and quickly bring the ***Race Timer*** window to the top and make it active so it starts responding, press the F2 key. The F2 function key is the system hot key for the ***Race Timer*** program. If this does not work, you may have to restart the computer and ***Race Timer***. A conservative approach to timing is to always have a backup computer system running ***Race Timer*** that you can switch to.

Glossary of Terms

Accuracy

How close a measured value is to actual reality is known as accuracy. A very accurate measured value would be close to the real value. The difference or error would be small. A measured value with poor accuracy would differ significantly from the real value. The difference or error would be significant.

Bib Number

This is an ID number that uniquely identifies a participant of a timed event. It also refers to the number worn by a runner. This is usually a half size piece of paper that is pinned onto the front of the runner's shirt.

Calibration

Calibration is the process of determining the error in the computer's system clock and then correcting this error to ensure accurate timing.

Cancel Button

This is a push button that will exit a dialog box. It will exit the dialog box without saving (abandons) any input or changes you may have made.

Comma Delimited ASCII

This is a type of file format that is simple and unadorned with special codes that may be proprietary to special software. Each line in the file represents a record of information. Different fields of information on a line are separated (delimited) by commas.

Configuration

This is the process of setting up the ***Race Timer*** software to match the requirements of a particular timing chore. You can also configure the software to adhere to personal preferences.

Dialog

This is a window that contains screen controls that you, the user, utilize to interact with a particular program or piece of software. Interactions include data entry, option selections, initiating actions and just viewing information.

Dialog Box

See the definition for Dialog.

Dialog Control

A child window in a dialog box is called a control. Examples are push buttons, radio buttons, check boxes, list boxes, edit fields and static text fields.

Directory

This is a location on a disk or drive in Windows. The term directory is synonymous with folder.

Disk

A disk is a storage device for data. It can either be removable such as a floppy disk, or fixed such as a hard drive. Typically the floppy drive is designated A: and the hard drive is designated C:

Drive

This term is interchangeable with the term disk. A disk is a storage device for data. It can either be removable such as a floppy disk, or fixed such as a hard drive. Typically the floppy drive is designated A: and the hard drive is designated C:

Input Focus

The term input focus applies to user interface items on the computer screen. Items that can have the input focus include buttons, edit controls and list boxes. Having the input focus, means that any key board input is directed to that item that has the input focus. You can move the input focus from control to control using the Tab key. When you select a control by clicking on it with the mouse or by using the hot key for it by holding down the Alt key and pressing the key that is underlined, Windows moves the input focus to the selected control. If the current selected control is any type of control other than an edit control, you can select it by typing the underlined hot key without holding down the Alt key.

Num Lock

This is a keyboard key similar to Caps Lock. It puts the keyboard in a shifted state that makes certain keys produce numbers when hit. A full size keyboard has a separate cursor and numeric keypad. A notebook computer usually has the numeric keypad overlay a portion of the keyboard.

OK Button

This is a dialog box push button with the label OK. Clicking this button will exit the dialog box and save all the changes you have made during your session in the dialog box.

Precision

The smallest difference between two measured valued is called the precision or resolution. For example, a watch with a sweep second hand can measure times that can differ by 1 second. It has a precision of 1 second. A high quality digital stop watch can measure times that differ by 0.01 second (1 hundredth of a second). It has a precision of .01 seconds. A fine precision does not necessarily mean good accuracy. The watch with the sweep second hand may actually keep better time than the highly precise digital stop watch. The digital stop watch may precisely measure inaccurate values.

Pull Tags

Bib numbers usually have a tag on the bottom that can be pulled and removed. This allows you to collect bib numbers as participants finish. It is helpful for generating a order of finish list by bib number.

Push Button

This is a dialog control that upon selection performs some action. The most common push buttons in Windows are the OK and the Cancel buttons.

Race Director

This is a popular software package for managing races.

Radio Button

This is a dialog control that you can select. There are usually more than one radio buttons grouped together to represent a choice between options. You can only choose one options out of the group.

Select Time

A recorded place and time with a bib number associated with it.

System Clock

All PC compatible computers have an internal clock that operates when the computer is running. This clock is referred to as the system clock or the computer's internal clock. The ***Race Timer*** software utilizes this clock for its timing functions.

Windows

This refers generically to the Microsoft operating system. It may mean 16 bit versions 3.1 or 3.11. Or it may mean a variant of 32 bit versions NT, 95, 98, ME, 2000, XP. The term may also refer to screen items like dialog boxes or program screens.