TEACHER TRAVEL CLAIM SYSTEM

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DECLARATION

I certify that no portion of the work referred to in this report has been submitted in support of an application for another degree or qualification of this or any other university or institution of higher learning.

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Jong Mei Sze   19 Mei 2006

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ABSTRACT

The usage of the computer is in sync with our daily life. Most of the application we met today is not longer manually. Most the routines can be done using technology such computer. Therefore, the Teacher Travel Claim System (TTCS) is developed to help the teachers in SK Niup on claim making. The implementation of TTCS is based on user's requirements. The system's goal is enable user to fill their claim easily. By the features provided in the system, the users can gain benefit by making the claim much easier.

ABSTRAK

Penggunaan computer adalah serentak dengan kehidupan seharian kita. Kebanyakan aplikasi yang kita gunakan pada hari ini tidak lagi dilaksanakan secara manual. Kebanyakan rutin harian kita pada hari ini boleh dilakukan menggunakan teknologi seperti computer. Oleh yang demikian, Teacher Travel Claim System (TTCS) dibangunkan khusus bagi membantu guru di SK. Niup dalam membuat tuntutan perjalanan. Sistem ini dibangunkan berdasarkan pemintaaan guru di sekolah. Tujuan utama adalah untuk memudahkan kerja tuntutan perjalanan. Dengan kemudahan yang disediakan dalam system ini, pengguna dapat melaksanakan proses tuntutan perjalanan dengan lebih mudah dan lancar.

CHAPTER 1: AN OVERVIEW

1.1   Introduction

In the era of information technology, school has realized the wide use of computer. There are various types of computer system that assist the teacher in doing the daily job. For example, an EMIS program helps to keep the staff and students information for all school in Kuching. The information from each school can be integrated become one data and retrieve the data based on the criteria required. Besides, some of the school had using library system to keep the book in library. Teachers will no more using book to record the item in library. They will just need to key in the new items into the database. The information key in can be modified and retrieved anytime. All of the manual system has been changed to automatic system day by day.

However, the claim system is still in manual. Teachers have to make claim manually. All teachers have to fill the form provided by Education Ministry whenever they need to make a claim. This manual process is being carried out of almost all the schools in Kuching. Therefore, an automatic claim system is very important now as the system can help the automation of the data filled and process precisely. By using the automatic system, teacher can make the claim more quickly with less human error. The teacher travel claim system (TTCS) is creating to fulfill these entire requirements to make the teacher life easier when making the claim.

1.2 Problem statement

Teacher in SK Niup have to make the claim manually which they need to fill form which are specially designed and provided by Education Ministry. The process of claim is all in paper form. It requires number copies of paper to be stapled together and manually carry through the processing system. Furthermore, it is tedious. It requires user to fill such a lot of form and make all the calculation manually. Besides, user has to prepare a backup copy in case of any incident happen. It also takes time for user to calculate the amount that to be claimed. It is waste time and causes workload. The automated system can assist in calculate the amount involved. Therefore, it is necessary to create a system that is able to solve all these problems.

1.3 Objectives

The main objective of this project is to develop an automated travel claim system for SK Niup that calls Teacher Travel Claim System (TTCS).

Other objectives of the project are as follows:

1. To create database that can store data or information on claims that have been made.

2. To create a system with function claim, automatically calculate and send directly to administration clerk in school.

3. To reduce unnecessary workload of teachers and clerk, where users can make claim themselves by login the system and then send to clerk automatically.

1.4 Scope

This project will cover primary school Teacher Travel Claim System. In this project, SK Niup has been selected as case study. The main focus is to let the teacher in SK Niup make the claim using automated system and send to the clerk electronically for process. The system allowed clerk to generate report such as monthly report and yearly report. Furthermore, this entire system also supports the security function: users have to login by their ID and password. Essentially, the proposed system is not a web-based system that enables the user to send the claim directly to the education department. It is a client server system that allows the clerk and teacher to use in school environment. The proposed system is intended for the ease of teachers and administrative clerk in making the claim.

1.5 Expected outcome

The developed system is a fully functional system that focusing on making the claim, computerized the calculation, report generating and security in accessing the system and preview the claim made. The system is intranet client server network that can be operated in school environment.

1.6 Significance of project

The proposed system makes ease of the system users such as clerk and teachers in the claim process. By changing the current system from manual to electronically, teacher can make the claim automatically, do the calculation accurately and alert the clerk about the claim made. This proposed system would make the claim job easier because user only need to

click into the form and 50% of the form is prefilled for the user based on the claim data already in the system. By a few "click" in minutes might solve the plenty of paper work involved.

1.7   Project Schedule

The project plan is scheduled as in Appendix A (Gantt chart).

1.8   Chapter outline

A general description of each chapter is given as below:

Chapter 1: Chapter Overview

This chapter consists of overview of the project. This includes introduction of the proposed system, problem statement of the existing paper-based system, objectives of the project, scope, expected outcome, research significance, project schedule and the outline of the project.

Chapter 2: Literature Review

In this chapter, certain existing related system will be reviewed to identify the strengths and weakness of the system. Some comparison on programming language used, system interfaces and system features of existing systems was done. Review done contribute in the decision making regarding the most suitable tools for the implementation of the Teacher Travel Claim System.

Chapter 3: Methodology

Chapter 3 illustrates the methodology used to develop the Teacher Travel Claim System. The methodology used is Waterfall Development Methodology. All the phase involved will be discussed in detail in this chapter.

Chapter 4: System Analysis and Design

Chapter 4 illustrates the analyses of current system and proposed system. The user, software and hardware requirements will also be specify in this chapter. Besides, this chapter consists of system design, which included data flow diagram, ERD diagram, business rules, data dictionary, input and output design of the proposed system.

Chapter 5: System Implementation and Testing

This chapter describes the system implementation, system testing and evaluation. System implementation includes the introduction to system implementation, system configuration, implementation of system modules and additional functions. System testing and evaluation will include system testing, system evaluation, user acceptance test, result analysis, user feedback and system limitations.

Chapter 6: Conclusion and Future Enhancement

Chapter 6 reviews the achievement of Teacher Travel Claim system. Besides, this chapter also discuss about the future enhancement of the proposed system.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Literature review will be done to justify and make inference on other literature. The review was conducted on existing systems. It also will be done through paper, books, newspaper, conversations and the internet. These reviews will become the scaffold for providing the better understanding about the technology and methods used to implement the proposed system.

2.2 Reviewing of the Existing Systems

Three systems will be reviewed to gain more knowledge about the similar system to enhance the proposed systems effectiveness. They are TERS (Travel Expense Reimbursement System), eSPKB ("Sistem Perancangan & Kawalan Belanjawan") and Model J305 Professional Entry System. These systems will be evaluated based on User Interface, Functionality, Security and Technology. Interactivity of the system is an important feature in order to create a user friendly and effective system. The technology used is important to make sure the flexibility of the system built. Furthermore, the ability to auto refilled the claim form and generate claim form based on information in database will be a more essential features to be reviewed. Lastly, the system must have security function to enhance the effectiveness in term of security part. These three systems have been selected because each of them has strength function based on the criteria evaluated that will enhance the effectiveness of the proposed system. For example, each system has security function to

authorize the user log in. The further detail about the strengths and weakness of each system will be discussed below.

2.2.1   TERS
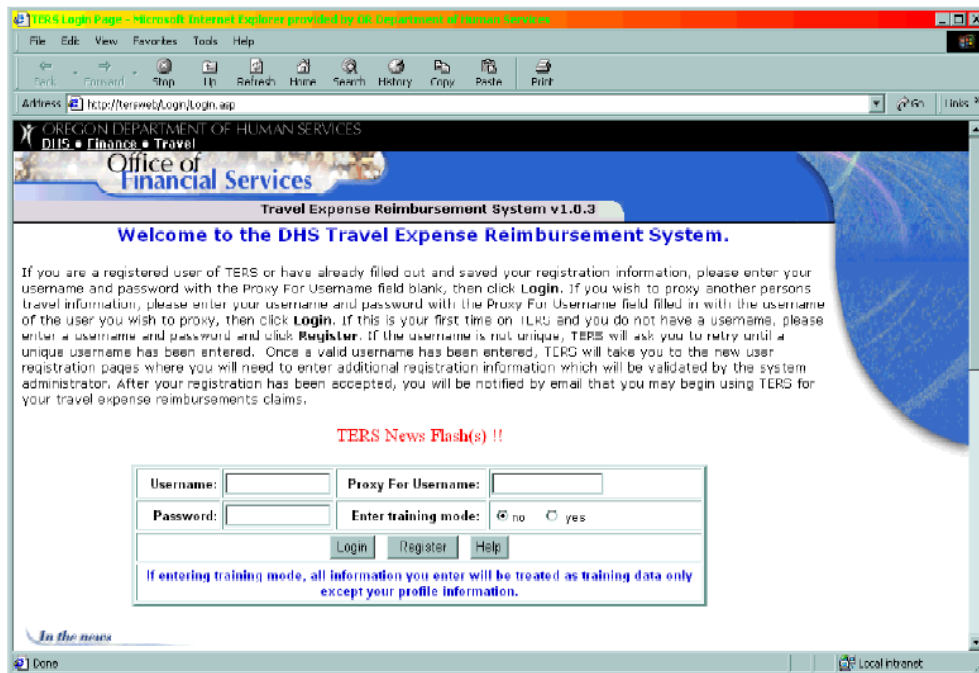
Figure 2.1: Main page of TERS system

(Source: http://tersweb/login/login.asp)

2.2.1.1 Introduction

TERS (Travel Expense Reimbursement System) is an online travel claim system developed by Oregon Department of Human Services. The system requires Internet Explorer 5.5 with SP2 or above to run the program. The TERS main menu contains items such as help, profile, TERS News, general policies, travel templates, travel claims and logoff.
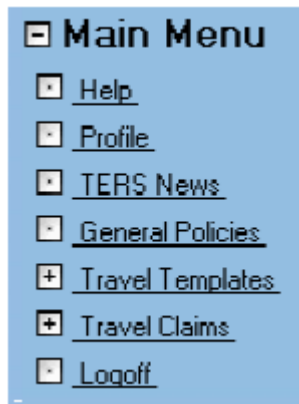
Figure 2.2: Main Menu of TERS system

(Source: http://tersweb/login/login.asp)

The TERS Main Menu will appear on the left of the TERS screen. Each screen has a detailed help page that relates to the information on that screen. The help file will show the step-by-step process for creating the travel claim. Included in this help screen is a very brief outline for completing a trip within a claim.   The profile screen is the default page that appears when you sign into TERS. There are three subject tabs on this page: Identity, Work and Login. The information which user enters in these screens becomes user's Employee Profile. User may change the information entered here as needed. For the TERS News, user can find information such as: rate changes, policy updates, or other messages from the Systems Administrator. General Policies relate to the TERS application rather than DAS travel policy. Travel Templates provided user with a list of any Travel Claim Templates user have created. Through travel claims, user can find a list of paid, rejected, submitted (finalized), or incomplete claims, as well as the number of templates user have. Each claim may include more than one TRIP. Lastly, user can click the item Logoff to logoff the system.

2.2.1.2 Strengths

TERS system has security log in function. User need to key in valid user name and password in order to view and key in the information. For the first time TERS user, they will need to enter the username and password for registration.   Once a valid Username has been entered, TERS will take user to the new user registration pages where user will need to enter additional registration information, which will be validated by the system administrator. After user registration has been accepted, user will be notified by email that user may begin using TERS for the travel expense reimbursement claims. The system also has various functions. User can add, change, or delete trips until the claim is finalized. Once finalized, the Travel Claims Tree View will show the claim in BLUE, and user can view it, but they will not have access to make changes unless accounting rejects the claim. If rejected, the claim will be listed in RED. The technology requires is available which is Internet Explorer 5.5 with SP2 or is above. In addition, the system also has a lot of navigation for linking to other function.

2.2.1.3 Weakness

Before getting started with TERS, user will need to establish the setting and verify the internet explorer 5.5 with SP2 or above. Therefore, the user will need to familiar with the window setting and change the setting if necessary. Besides, user will need to familiar with the internet environment and the entire navigation link provided because it is an online system.

2.2.2   eSPKB ("Sistem Perancangan & Kawalan Belanjawan")
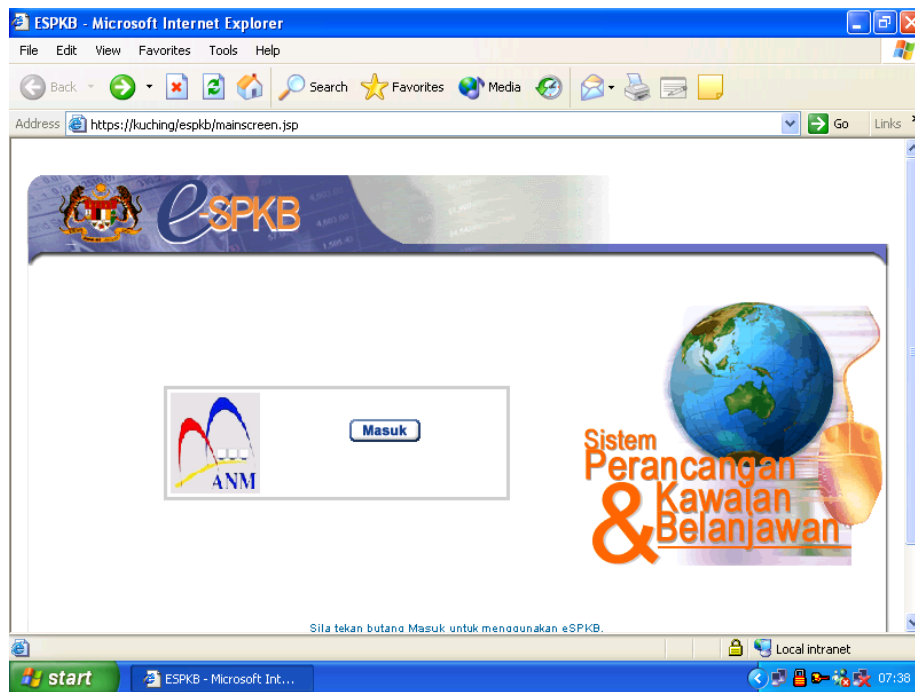
Figure 2.3: Main page of eSPKB system

2.2.2.1 Introduction

"Sistem Perancangan & Kawalan Belanjawan" is used at State Accountant Department for the finance matters. This system is written in Java and used Oracle as database server. The system requirements for this system are window, Internet Explorer 5.0 or 6.0, Acrobat Reader, and Smart Card Reader Technology. The system has widely use since 2004 and will be used in all secondary school by 2020.

2.2.2.2 Strengths

The system used Smart Card Reader to authorize the user log in. Only users that own a smart card are able to access and edit the information. Every user has different authority to

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access certain part of the system according to their work area. The system also provides a lot of navigation and button for the ease of user. For those who prefer keyboard shortcuts, this system is ready for you.

2.2.2.3 Weakness

The system is not providing claim form for user to make the claim. User first has to make claim in paper form and send for approval and then only it will process by the eSPKB. The system has limitation where the error cannot be detected in paper-form claim made. State Accountant Department will not responsible on the error in claim made because all this matters are due with the division that sends the claim.

2.2.3   Model J305 Professional Entry System
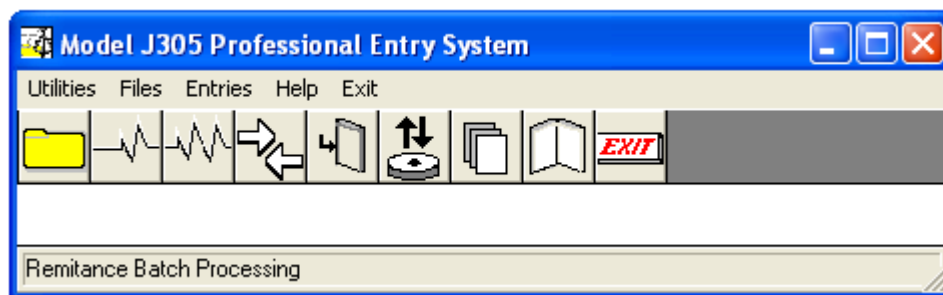
Figure 2.4: Main page of Model J305 Professional Entry System

(Source: http://com1software.com)

2.2.3.1 Introduction

The Model J305 Professional Entry System processes the claims through three methods. They are On Demand Single Claim, Carrier Specific Batch and Clearing Service Batch. The system requires 640K of conventional memory, 32 megabytes of RAM, Microsoft Windows Operating System, and recommended disk space is a minimum of 40 megabytes of free space. However, the requirements will vary based on usage.

2.2.3.2 Strengths

The system provide visual interface to HCFA-1500 like form to help navigate through the screens. The system also keeps track of referrals and pre authorizations. Information entered into system is stored and organized into appropriate database. Data remains in system for later reuse or verification. The system can generate form and print the form filled.

2.2.3.3 Weakness

The system seems not user friendly. Many links make user confuse. Many forms to be filled and no further instruction are available. It has a lot of space for user to key in and the help screen is not provided. None auto filled function also make it not much different from the manual paper based system. In addition, the system is not provided a secured environment user login.

2.3 Comparison of Review System Features

Functionality	TERS	eSPKB	CIA3J305
INTERFACE			
Does the system provide a consistent user interface (including screen layouts, report layouts, messages, field labels and date display)?	√	√	√
Does the system provide interactive interface (GUI)?	√	√	√
Does the system provide, where appropriate, default values for fields?	√	√	**X**
Does the system allow various types of users, including non-staff, to access the system?	√	√	√
FUNCTIONALITY			
Does the system capable of generating the report?	√	√	√
Does the system capable of generating claim form?	√	**X**	√
Does the system capable of keeping claimant information	√	**X**	√
Does the system provide the On Screen Help features?	√	√	**X**
Does the system make real time calculation?	√	√	√
Does the system calculate and display the amount	√	√	√
Are all reports printable, viewable on screen?	√	√	√
SECURITY			
Does the system provide a secured environment by user sign-on identifiers and passwords (security user login)?	√	√	**X**
Does the system provide for users to do secure access only on their own data?	√	√	√
TECHNOLOGY			
a. Topology			
Internet	√		
Intranet		√	√
Single-User Application (Standalone)			
b. System Development Software			
Microsoft Access 97/2000/2002	**X**	**X**	√
Microsoft Visual Basic 6.0	**X**	**X**	√
c. Platform Window 98, 98SE, ME, 2000, XP	√	√	√

Table 2.1: Comparison of TERS, eSPKB and CIA3J305 systems

2.4 Summary of Review Systems and Proposed System

The review of the existing system such as TERS, eS{KB, CIA3J305 contributed on how to develop a flexible and efficient system. Overall all the system reviewed has basic functions such as user log in and automated calculate functions. However, CIA3J305 system is not providing default values for fields and the online screen help is also not available in CIA3J305. For eSPKB system, it is not capable to keep claimant information and generate the claim report. As a result, the Teacher Travel Claim System will have all the necessary function such as making claim, automated calculation, generates form and print the form filled. Furthermore, the system will also establish a log in security function to allow only the privilege user to log in. In addition, the user interactive feature is a must to imply the continuous dialog between the user and the system.

2.5 System Development Tools

From the survey done toward the system developments tools, there are various types of programming languages and database software, which are used in developing the claim system. Each software developments offer advantages and disadvantages and shares many common traits. However, Microsoft Visual Basic Version 6.0 and Microsoft Access 97 have been selected as development tools since they are common use in school.

2.5.1 Microsoft Visual Basic Version 6.0

Visual Basic is an Object-Oriented Programming (OOP) language and a Rapid Application Development (RAD) environment from Microsoft. It is purely a Microsoft product and

Windows based which is widely used in school. Visual Basic is designed for simple, rapid application development, and can be used to prototype an application that will later be written in a more difficult but efficient language. Other object-oriented programming languages such as Java operate in text-only environments, and do not employ a GUI to build programs.

Visual Basic is very easy to learn. Whether you are an experienced professional or new to Windows programming, Visual Basic provides you with a complete set of tools to simplify rapid application development. Visual Basic enriches with in-built functionality for helping developers quickly implement an application or algorithm. Visual Basic also providing powerful features such as graphical user interfaces. Users can simply add prebuilt objects into place on screen to create effective user interface. Furthermore, Visual Basic is suitable for a small system and also the large enterprise-wide system

2.5.2 Java

Java was developed by Sun Microsystems and released in 1995. Java is based on C and C++ and incorporates a number of features from other object-oriented languages. It is object-oriented and well structured. Java includes extensive libraries for doing multimedia, networking, multithreading, graphics, graphical user interface development, database access, distributed computing and much more. However, speed of Java is quite slow because it is essentially compiled at run-time by the system's virtual machine. Therefore, it is difficult to

compile into stand-alone application. Furthermore, memory pointer is not allowed and some people dislikes being forced into object oriented programming.

2.5.3 MySQL

MySQL is an open source database with high-performance, multi-threaded, multi-user RDBMS built around client-server architecture. It is a full multi-user system, which means that multiple clients can access and use one or more MySQL database simultaneously. This RDBMS is widely use in develop web-based application system. It normally used to handle extremely large and complex databases without too much of performance drop. MySQL is available for many different operating systems on a variety of computer architectures. However, MySQL is more complicated for novice user compare to Micrsoft Access.

2.5.4 Microsoft Access 97

Microsoft Access is a relational database management system (RDBMS) that is packaged with the Microsoft suite of office products to run under the Microsoft Windows operating system. Microsoft Access is a Visual Basic (VB) based application that allows Structured Query Language (SQL) statements to be included in associated macros and VB scripts. Microsoft Access is a structured environment, used by novice programmers, with little or no experience, to handle relatively small database functions. It is also a useful tool, for advanced developers, to provide rapid application development. Microsoft Access is widely use in creating small database with a small number of concurrent users.

2.6   Comparison of System Development Tools

Teacher travel claim system will use Microsoft Visual Basic 6.0 to design the user interface and Microsoft Access as a database. Both of the development tools are Microsoft product that provides rapid function development.

2.6.1   Programming software

Microsoft Visual Basic and Java are common used programming software. Both of them have their own strengths and weaknesses depend on what type of program need to be developed. Based on the investigation, Visual Basic is commonly used in developing simple program or application whereas Java is more on complicated application. Since the TTCS is just a simple window based client-server application system, Microsoft Visual Basic has been selected as Teacher Travel Claim system database software.

Reasons for using Microsoft Visual Basic 6.0 as a TTCS development tool:

Microsoft Basic 6.0 is common in design a window platform, which is required in TTCS program. Besides, most of the users will more familiar with the Microsoft visual Basic because it is one of the subject been teach in school. In addition, it is designed in such a way that is simple and easy to be used by users. The user can simply drag and drop a few controls on the form, use a few, almost English commands, and have a working application. With GUI features, user can create user-interface to enhance the interactive between users and program.

2.6.2   Database Software

There are many implementations of Relational Database Management Systems including Microsoft Access, MySQL, Oracle, Microsoft SQL Server, PostgreSQL and Informix. However, only Microsoft Access and MySQL has been consider at last since Oracle is not a open source database which is very expensive and Microsoft SQL server, PostgreSQL and Informix are not common used in school. Based on the analysis, Microsoft Access is common in school and suitable for both the inexperience or experience user although it is not an open source database compare to MySQL. In addition, it is easily available with the package in Microsoft office. Thus, Microsoft Access has been selected as Teacher Travel Claim system database software.

Reasons for using Microsoft Access 97 as TTCS database design tool:

Microsoft Access 97 is easy available in school environment cause the software is available with the package. The school that used Microsoft product program will have the program. Furthermore, Microsoft Access is easy to use. It is a unique product that provides tools, which can be mastered by even the new users. MS Access is the easier too to deploy and use because it provides tools for reporting, forms creation with easy data retrieval and insertion. Thus, user will prioritizes the use of the features in Access more than the features in MySQL. In condition, system built with Microsoft Access provides a low cost, flexible and fast working alternative compared to other custom built applications. Microsoft Access can be integrated with Microsoft Visual Basic easily because both are using Visual Basic language. User can take the data wherever user like by just copying the file into a disk. The

file can be opened with an Access program installed in another computer. Data also can be imported and exported seamlessly from MS Access to other Microsoft Office applications such as Word and Excel. Moreover, Microsoft Access database can be migrating to MySQL when necessary. This flexibility allows the experienced developers to modify in advance. As a consequence of its widespread popularity, MS Access has more consultants available than any other desktop database system. Consultancies rates are therefore correspondingly lower. In addition, no additional software needs to be purchased for any workstation on which Microsoft Office Professional has been installed. Although it is a database with about 2GB, it is great for small single user environment.

2.7 Conclusion

Literature review facilitate in choosing the appropriate and efficient system development tools to develop the Teacher Travel Claim System. Beside that, review on the system's usability and graphic design gives a constructive idea on how the proposed system should be designed and what features should be included to increase the system's effectiveness and efficiency.

CHAPTER 3: METHODOLOGY

3.1   Introduction

A methodology is a formalized approach to implementing the SDLC. There are many different systems development methodologies, and each one is unique because of its emphasis on processes versus data and the order and focus it places on each SDLC phase. However, Waterfall development had been chosen as the structured design methodology for the proposed system.

3.2   Waterfall Model Methodology

Waterfall development uses a formal step-by-step approach to the SDLC that moves logically from one phase to the next. The phases involved are requirements, analysis, design, coding, testing and acceptance. The key deliverables for each phase are typically produced on paper and are presented to the supervisor for approval as the project moves from phase to phase. Once the work that was conducted approved for a phase, the phase ends and the next one begins.
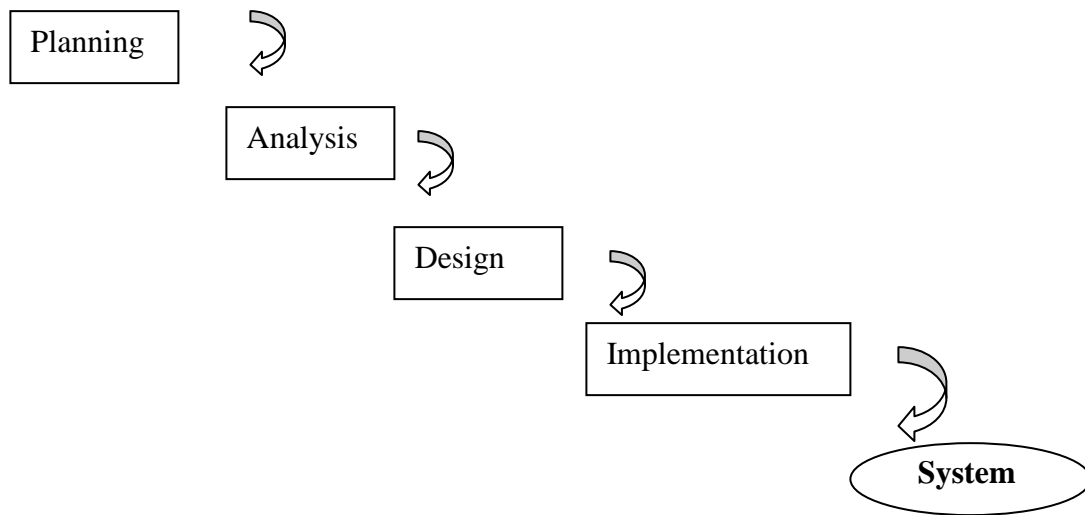
Figure 3.1: The Waterfall Development Methodology

(Source: Dennis A. and Wixom B.H., 2003)

3.3 Reasons for using Waterfall

The two key advantages of waterfall development are that it identifies system requirements long before programming begins and that it minimizes changes to the requirements as the project proceed. Waterfall methodology is good for develop the reliable system such as TTCS.

3.4 Waterfall Model Overview

3.4.1 Planning

In this phase, developer planned for interviews, doing observations and research on the current system. The feasibility analysis is conducted where the propose system will use the existing software and hardware. To identify the system requirements, questionnaires and interview were carried out to find out the problem of the manual system and identify the

criteria needed in proposed system. The respondents consist of 20 teacher have been selected from SK Niup as the sample study for the current system. The study shown 100 percent of teachers in school are using paper-based system to make a claim. The problem of the current system is the process of making claim is in paper form. Teachers in SK Niup have to fill the form and then pass to clerk manually. It requires user to fill a lot of form and make all the calculation manually. Besides, user has to prepare a backup copy in case of any incident happen. It also takes time for user to calculate the amount that to be claimed. Therefore, the proposed system should have basic function such making claim, automated calculating, generating claim form and record information needed. The main objective is to develop an automated travel claim system for SK Niup that can assist teacher in claim making.

3.4.2 Analysis

In this phase, the requirement analysis will be done. The analysis will do both on current and proposed system. Analysis on the current system is necessary to find out the problem of the current system, to identify user's requirements and expectation on the proposed system. On the other hand, the proposed system will be analysis to decide what functions should be establish and how the data are going to process.

3.4.2.1 Current system

Based on the investigation, the current system is all in paper based. There are none automated system in SK Niup. Teachers are irritated of making claim because they have to

fill a lot of form. Besides, they have to calculate manually and lead to human errors. When errors occurred, teachers have to fill in new claim form. As a result, it is waste time. Therefore, teachers in Sk Niup would like to have an automated system that can assist then in claim making.

3.4.2.2 Proposed system

They expect the proposed system can make claim with automated calculate function and then direct send to clerk in school. The system must enable user to fill in the form and store the data filled. Besides, they also required security and auto refill functions. The system must be able to satisfy users need and interface design should be attractive and user friendly. Therefore, the proposed system will have all system requirement required.

3.4.3   Design

The design phases will determine how the system will operate. It discuss the hardware, software, network infrastructure, the user interface, forms and reports that will be used and type of databases for the proposed system. Overall of the phases will talk about the architecture design, user interface design and data storage design.

3.4.3.1 Architecture Design

The system will use Microsoft Visual Basic 6.0 for user interface design and Microsoft Access 97 for database design. The proposed system will only need these two Microsoft Office product to operate includes intranet facility.

3.4.3.2 User Interface Design

User interface design activity focuses on supporting the interactions between end users and the system application of the Teacher Travel Claim System. The system will have menus and on screen buttons for user to click and link to functions required. The system also will has 8 main forms which are user login form, registration form, change password form, main page, new claim form, edit claim form, search claim form, generate report form, transport rate form, salary grade form and rate form. This form enable user to key in information required. Besides, the system will generate claim report and sending to "Pejabat Pelajaran Daerah" for further process.

3.4.3.3 Data Storage Design

Data storage design activity concern on the design of the structure of the databases. There are four types of databases that are likely to be included during a project: legacy, relational, object and multidimensional. However, relational database will be chosen as a database design because it is the most popular kind of database for application development today which exists in school organization. It is based on collections of tables that are related to each other through common fields, known as foreign keys. Besides, relational database support simple data types very effectively and it have matured to support transactional systems. (Dennis.A, 2003) Furthermore, data storage design also includes attributes and characteristic of the entity involve in this system. The Teacher Travel Claim System (TTCS) will only involve two entities which are teacher and clerk. The data storage design will be expressed graphically through entity relationship diagrams (ERDs).   It facilitates in

understanding the process involved in TTCS. The instrument to be used is Microsoft Visio Professional 2002.

3.4.4   Implementation

The final phase in the waterfall methodology is implementation phase. This phase involves system construction (coding and testing), installation and acceptance.

3.4.4.1 System construction

System construction includes coding and testing.

3.4.4.1.1   Coding

System coding involved insert coding into system, produce real user interface, determine data conversation and review process access with database. Teacher Travel Claim System consists of user registration, user login, making claim and generated claim form filed. The selected programming language to implement this proposed system is Visual Basic 6.0.

3.4.4.1.2   Testing

Testing phase is necessary to determine the errors, bugs and problems of the system and evaluate the system's performance. The developers will firstly analyze the final output by produce a sample data to represent the actual system. Then the Teacher Travel Claim System will be tested authentically by 10 selected teachers in SK Niup.

3.4.4.2 Installation

The propose system will be install in a parallel conversion approach which both the old and new systems are operated for a month or more until it is clear that there are no bugs in the new system. The users will be trained on how to use the system

3.4.4.3 Acceptance

After the installation, developer obtains user acceptance and opinion the new system through interview. The developer revises the system and makes the evaluation.

3.5 Conclusion

This chapter discussed about the different phases of the Waterfall Development Methodology that used for developing the Teacher Travel Claim System. They are system planning, analysis, design and implementation. The details of system analysis, design and implementation will be discussed more detail in the following chapter.

CHAPTER 4: SYSTEM ANALYSIS AND DESIGN

4.1 Introduction

Requirement determination is essential step in analysis phase. A requirement is a statement of what system must do and what characteristic it would have to fulfill the user requirement. The proposed system is based on user requirement. In design phase, user requirement evolves to describe how the system will be implemented. The basis process of analysis involved understands the analysis system, identifying improvement and developing requirement for the proposed system. Interview and questionnaires have been selected to study the current system and gather the user requirement for the proposed system.

4.2 Requirements gathering techniques

There are various techniques to gather requirements. Technique interview and questionnaire has been chosen because interview is natural way to seek for information. Therefore, the information gathered will be more accurate. For the questionnaire technique, it will be more suitable to gather information for the proposed system since it involved a number of teacher in school.

4.2.1 Interview

Interview involves meeting one or more people and asking them questions. The interviewees are 3 selected teachers from Sk Niup. The interview questions can be referred to Appendix C.

4.2.2 Questionnaire

Questionnaire is a set of written questions for obtaining information from individuals. Questionnaire often used when there are a large number of people from whom information and opinions are needed. The target respondents are all teachers from SK Niup. The questionnaire can be referred to Appendix D.

4.3 Requirements analysis

4.3.1 Background of Current System Analysis

The feasibility analysis is conducted where the propose system will use the existing software and hardware. To identify the system requirements, questionnaires and interview were carried out to find out the problem of the manual system and identify the criteria needed in proposed system. The respondents consist of 20 teachers have been selected from SK Niup as the sample study for the current system. The study shown 100 percent of teachers in school are using paper-based system to make a claim.

4.4 Process of Current System Analysis

Teacher will make claim after attend a course or traveling for official purpose. The process of claim is done manually. First teacher have to get a claim form to fill all the information required. Then the claim form filled will give to clerk for further check. If there is an error, the form will give back for claimer to refill, else if it is verified by clerk, then it will send to "Jabatan pelajaran Daerah" for approval.

4.5 Problem of Current System Analysis

Based on the investigation, the current system is all in paper based. There are none automated system in SK Niup. Teachers have to fill a lot of form and calculate manually. Calculate manually sometime will lead to human errors. When errors occur, teachers have to fill in the new claim form. Besides, user has to prepare a backup copy in case of any incident happen. As a result, it is waste time. Therefore, teachers in Sk Niup would like to have an automated system that can assist them in claim making.

4.6 Proposed System Analysis

The user expected the proposed system can make claim with automated calculate function and send to clerk in school automatically. The system must enable user to fill in the form and store the data filled. Teacher can easily make claim by retrieve and store information into the database. .If any error occur in the claim made, it will send back again to the claimant automatically for modification. Besides, they also required security and auto refill functions. Auto refill function is available for some part of the information required. For example: user no needs to fill in the amount of salary; they will just need to choose the grade and the system will generate the accurate salary for user.

Therefore, the proposed system enable user to fill all the information required in the system. The user can edit easily and some information has been auto filled for the ease of use. Then the form filled will send to clerk automatically for verifying. Clerk view the claim form from the system. Clerk will ensure that the form is filled correctly. If error

occurs, the claimer will be informed to do the correction. User will just need to edit and send it back to clerk. The verified claim form will be printed out and send to "Jabatan Pelajaran Daerah" for further process. The detail of travel claim will be stored in database for retrieved.

In order to do all of these, the proposed system will had basic function such as making claim, automatic calculating, generate claim form and record information needed. The system must enable user to fill in the form and store the data filled. Besides, the confidential information such as user name and user password will be required to login the system for security purpose. The system must be able to satisfy users need and interface design should be attractive and user friendly. Therefore, the proposed system will had all system requirement required. The main objective is to develop an automated travel claim system for SK Niup that can assist teacher in claim making.

4.7   Process Model For Proposed system

Data flow diagram (DFD) has been selected to show information flow and processing in the proposed system. Data flow diagram (DFD) showed the flow of data from external entities into the system, showed how the data moved from one process to another, as well as its logical storage. The model usually starts with a context diagram showed the system bubble surrounded by the external environment identified by external entities. Data flows bring information to and from the system process. A process can explode to a child diagram that presents its details using data stores, data flows and sub processes. The diagram leveling

process allows complex systems to be easily partitioned into a stack of simple diagrams with rigorous balancing of information between levels. Information structures are defined in an associated data dictionary.

4.7.1 Context Diagram

The context diagram defines how the Teacher Travel Claim System interacted with their entities which are teachers and administrator department ("Jabatan Pelajaran Dearah").

Figure 4.1 illustrates the context diagram for Teacher Travel Claim System (TTCS). The system needs the claimant information and claim information to make claim. The completed claim form or claim report will send to administration department for further process.
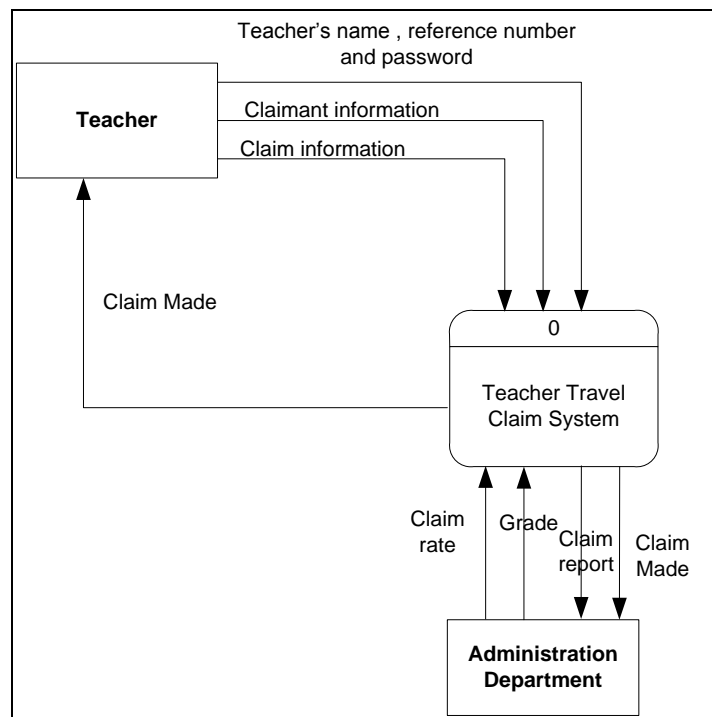
Figure 4.1: Context diagram for Teacher Travel Claim System

4.7.2 Level 0 Data Flow Diagram
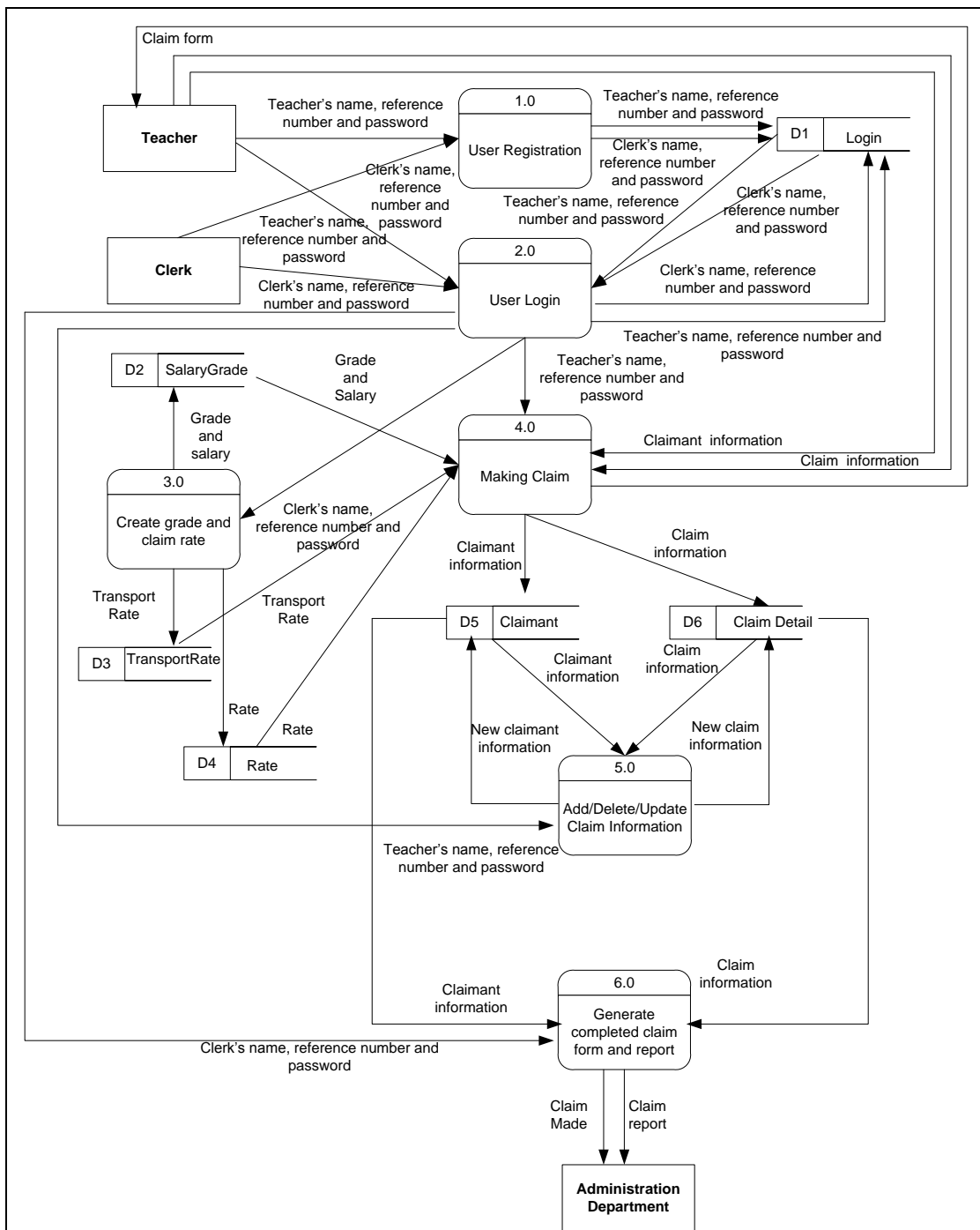
Figure 4.2: Level 0 DFD for Teacher Travel Claim System

Figure 4.2 illustrates the level 0 data flow diagram of Teacher Travel Claim System. They are six activities involved, which are process 1.0 user registration, process 2.0 user login, and process 3.0 create grade and claim rate, process 4.0 making claim, process 5.0 add/delete/update and process 6.0 generate completed claim form and report. Each process will be discussed in detail on the level 1 data flow diagram of Teacher Travel Claim System.

4.7.3   Level 1 Data Flow Diagram

4.7.3.1   User Registration Process
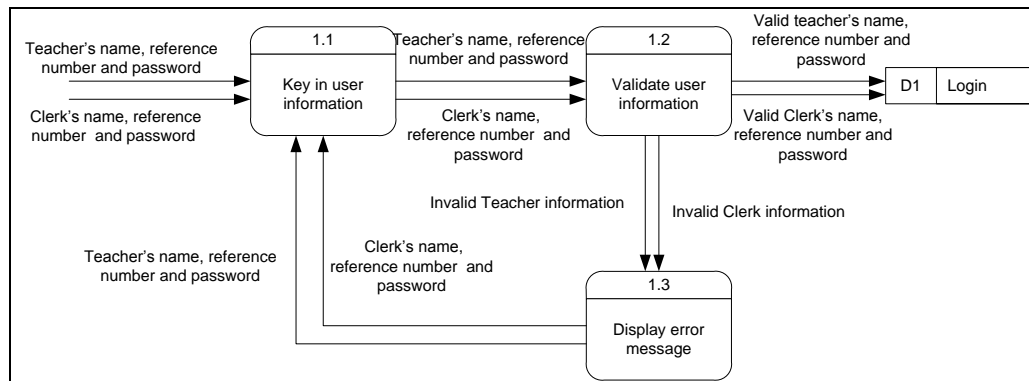
Figure 4.3: Level 1 DFD for User Registration Process of Teacher Travel Claim System

Figure 4.3 illustrates the child diagram of process 1.0 user registration. User registration has three sub processes which are 1.1 key in user information process, 1.2 validate user information process and 1.3 display error message process. A user will need to register before login for the first time. The required information must be entered correctly during the registration. The system will check and verify all the information given before approve

it. If user had given inappropriate information, the registration will display error message and ask for new information, else the user can proceed to use the system.

4.7.3.2 Login Process
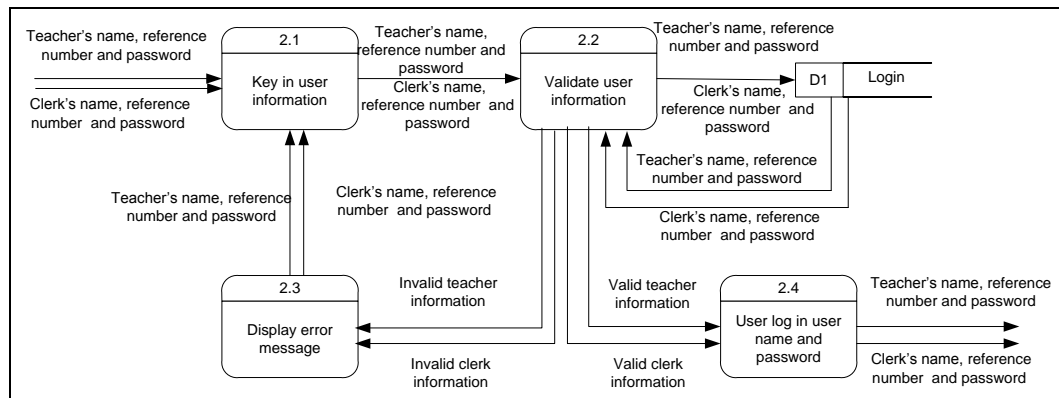
Figure 4.4: Level 1 DFD for User Login Process of Teacher Travel Claim System

Figure 4.4 illustrates level 1 diagram for user login process. The login process has four sub processes which are process 2.1 key in user name and password, process 2.2 validates user name and password, process 2.3 display error messages and process 2.4 user login. User needs to enter user name and password before login. The user name and password will be validated in validate user name and password process. If user name and password is valid, user can successfully login, else if invalid user name and password was given, the system will display error message and asked for valid user name and password.

4.7.3.3 Create Grade and Claim Rate Process
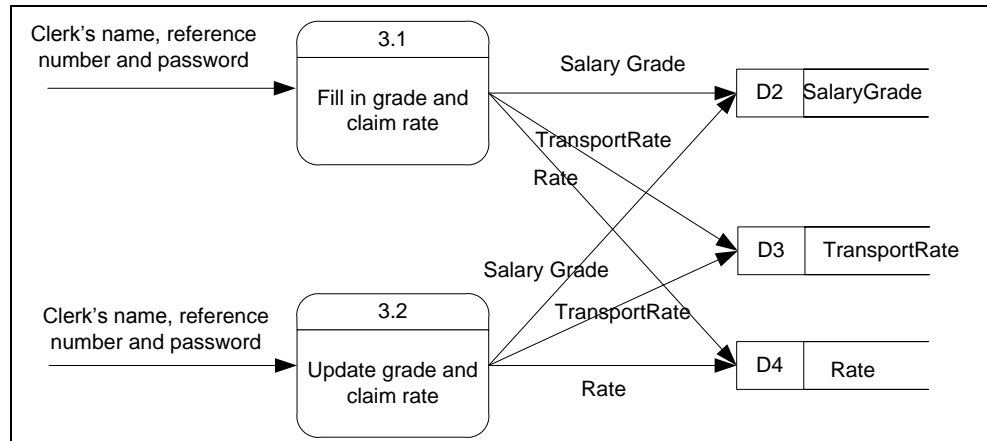
Figure 4.5: Level 1 DFD for Create Grade and Claim Rate Process of Teacher Travel Claim

System

Figure 4.5 illustrates the create grade and claim rate process. This process included two sub

processes which are 3.1 fill in grade and claim rate and 3.2 update grade and claim rate. The

clerk's name and password are required for identify clerk password process. Only the clerk

is allowed to key in and update the grade and the claim rate. The information will be stored

in three data stores which are 'SalaryGrade', 'TransportRate' and 'Rate'. This information

key in will be retrieved by teachers during the making claim process.

4.7.3.4 Make Claim Process
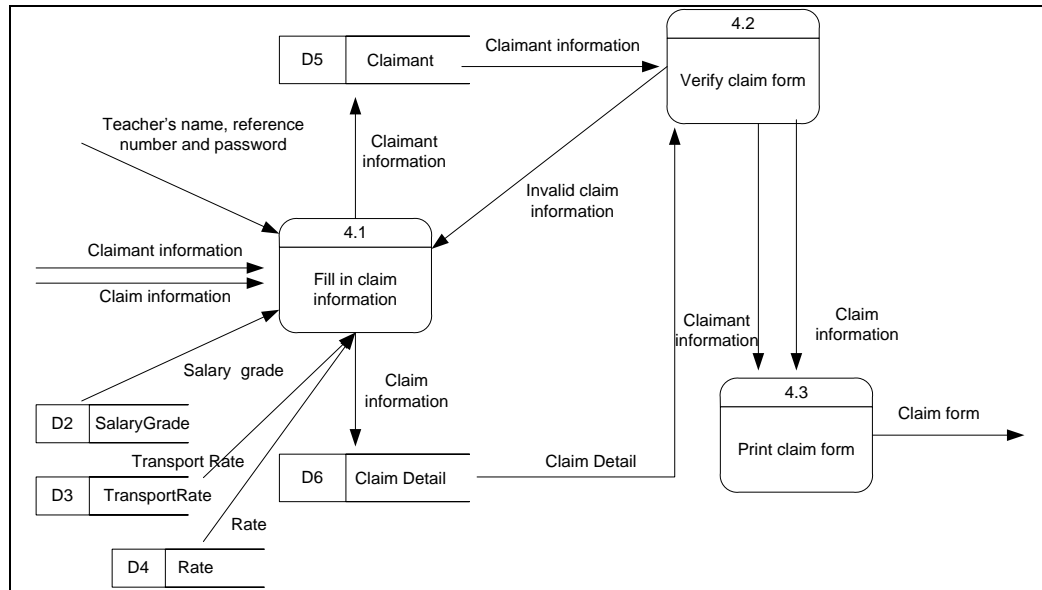
Figure 4.6: Level 1 DFD for Making Claim Process of Teacher Travel Claim
System

Figure 4.6 illustrates the claim making process. The claim making process involved three
sub processes which are 4.1 fill in claim information, 4.3 verify claim form and 4.3 print
claim forms. For the fill in claim information process, teacher will need to retrieve data
such as salary grade and claim rate such as transport rate, hotel rate, meal rate and lodging
rate from the database. The filled claim form will be verified in verify claim form process.

4.7.3.5   Generate Completed Claim Form and Report Process
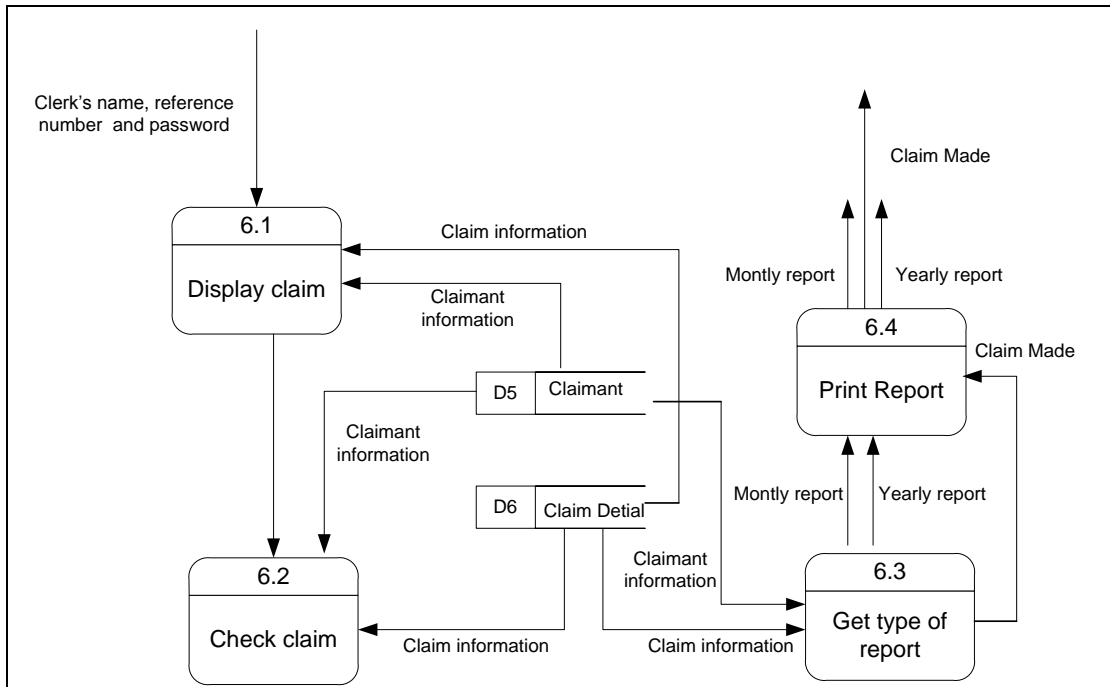
Figure 4.7: Level 1 DFD for Generate Completed Claim Form and Report Process of
Teacher Travel Claim System

Figure 4.7 illustrates the level 1 data flow diagram for generate completed claim form and
report. This process contents four sub processes which are 6.1 display claim, 6.2 check
claims, 6.3 get type of report and 6.4 process print. The display process enables the claim
form to be displayed and the check claim process enables the clerk to check the claim
information key in by teacher. The get type of report process enables clerk to choose what
kind of report need to be generated, for example, monthly report, yearly report or claim form.
Then, the claim form or report generated will be printed and send to administration
department.

4.7.3.6 Add, Delete and Update Process
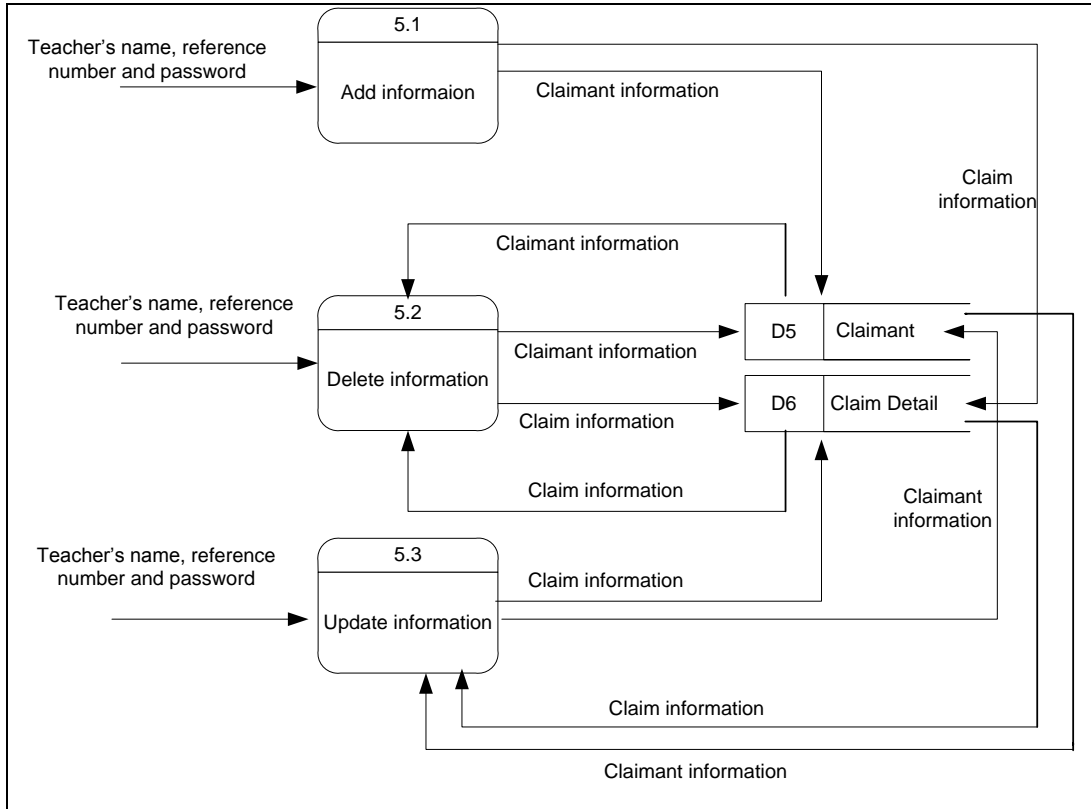
Figure 4.8: Level 1 DFD for Add, Delete and Update Process of Teacher Travel Claim System

Figure 4.8 is Level 1 data flow diagram for add, delete and update process. Add, delete and update process has three sub processes, which are process 5.1 add information, process 5.2 delete information and process 5.3 update information. The teacher's name and password is required to do all this process. For add and delete information process, teacher can add some new information or remove unnecessary information for the claim form whereas update process enable teacher to revise some information in the claim form.

4.8   Business Rules

Business rules are narrative descriptions of policies, procedures, or principles within an organization. It is a statement that defines or constrains some aspect of the business. It is intended to assert business structure or to control or influence the behavior of the business. The business rules for the Teacher Travel Claim System can be referred to Appendix E.

4.9   Entity Relationship Diagram (E-R models)

According to Peter Rob (2004), an entity relationship diagram (ERD) is a diagram that depicts an entity relationship model's entities, and attributes and relations. It also displays connectivity and cardinality. Obviously, it is a picture that shows the information that is created, stored, and used by a system. An analyst can read an ERD to find out the individual pieces of information in a system and how they are organized and related to each other. ERD for the Teacher Travel Claim System can be referred to Appendix F.

4.10   Requirement Specification

Requirements specification establishes what are the software requirements to be used in implementation and the hardware requirements to run the Teacher Travel Claim System (TTCS).

4.10.1 Software Requirement

Microsoft Visual Basic 6.0, Microsoft Visio Professional and Microsoft Access are type of software needed to support the development of Teacher Travel Claim System. Table 4.1 shown types of the software and the purpose.

Software	Purpose
Microsoft Visio Professional 2002	- Use to design and implement the context diagram, data flow diagram, activity diagram and entity relationship diagram.
Microsoft Access version 97	- Use as a data repository for Teacher Travel Claim System (TTCS).
Microsoft Visual Basic 6.0	- Use to develop the proposed system.

Table 4.1 Software requirement for the Teacher Travel Claim System

4.10.2 Hardware Requirement

Teacher Travel Claim System is a small system that enables the teachers to make claim with ease. Therefore, the minimum hardware requirements for Teacher Travel Claim System are as below:

(a) A printer

(b) 128MB of RAM

(c) Pentium III 700MHz or better

(d) 20 GB of Hard disk

(e) CD-ROM Max 50X

(Source: http://www.microsoft.com)

4.11 Data Dictionary

Data Dictionary is a database containing data about all the databases composing a database system. The content of the data dictionary may best be thought of as "data about the data"— that is, a description of all of the other objects such as files, programs, and so on in the system. In particular, a data dictionary stores all the various schemas and file specifications and their locations. A complete data dictionary also includes information about which programs use which data and which users are interested in which reports.

Data dictionary for TTCS can be referred to Appendix G.

(Source: http://www.microsoft.com/encarta/eng)

4.12 User Interface Design

The user interfaces design defines the way which the users will interact with the system and the nature of inputs and outputs that system accepts and produces (Alan Dennis, 2003). User interfaces consist three fundamental parts which are navigation mechanism, input mechanism and output mechanism. The user interface will be designed aesthetically pleasing, include significant white space, carefully use of color and be consistent with fonts. The design will be supported both the novice and experience users. Furthermore, the system also attempted to minimize user effort with function such as click for the information required.

4.12.1 Input design

Input design means designing the screens used to enter the information. It reflects how information can be captured or entered into the system through different types of input. Examples type of inputs that to be used for the proposed system are text fields and combo boxes. Text boxes used to enter text and combo boxes enabled user to select a value from a predefined list. The input devices for the proposed system are keyboard and mouse or trackball on laptops. The input design for the TTCS can be referred to Appendix H

4.12.2 Output design

Outputs are the information that system produces, whether on screen, on paper, or in other media (Alan Dennis, 2003). Output design reflects how the system presents information to users. The Teacher Travel Claim System will be able to display information on screen and generate report requested by users. The output design for the TTCS can be referred to Appendix I

4.13 Conclusion

System analysis and design is essential in order to prepare the physical design for the Teacher Travel Claim System. The data flow diagrams (DFD) and entity relationship diagram (ERD) indicated how final system will work. In addition, it is to make sure that the specifications of the proposed system meet the user requirements and able to satisfy the user in claim making.

CHAPTER 5: SYSTEM IMPLEMENTATION AND TESTING

5.1   Introduction

This chapter illustrates the implementation and testing of each module in the Teacher Travel Claim System (TTCS). During the implementation phase, a few alterations are made in order to implement a system that only function well but also will fulfill the user requirements. Therefore, it is important to involve users in system testing and evaluation. The response and comment from the users would enhance the usability and functionality of the system.

5.2   System Composition

The Teacher Travel Claim System is implemented on a step by step basis following the hierarchy model below. Upon the completion each module it will be tested before the next module begins.

Figure 5.1 below illustrates the hierarchy model.
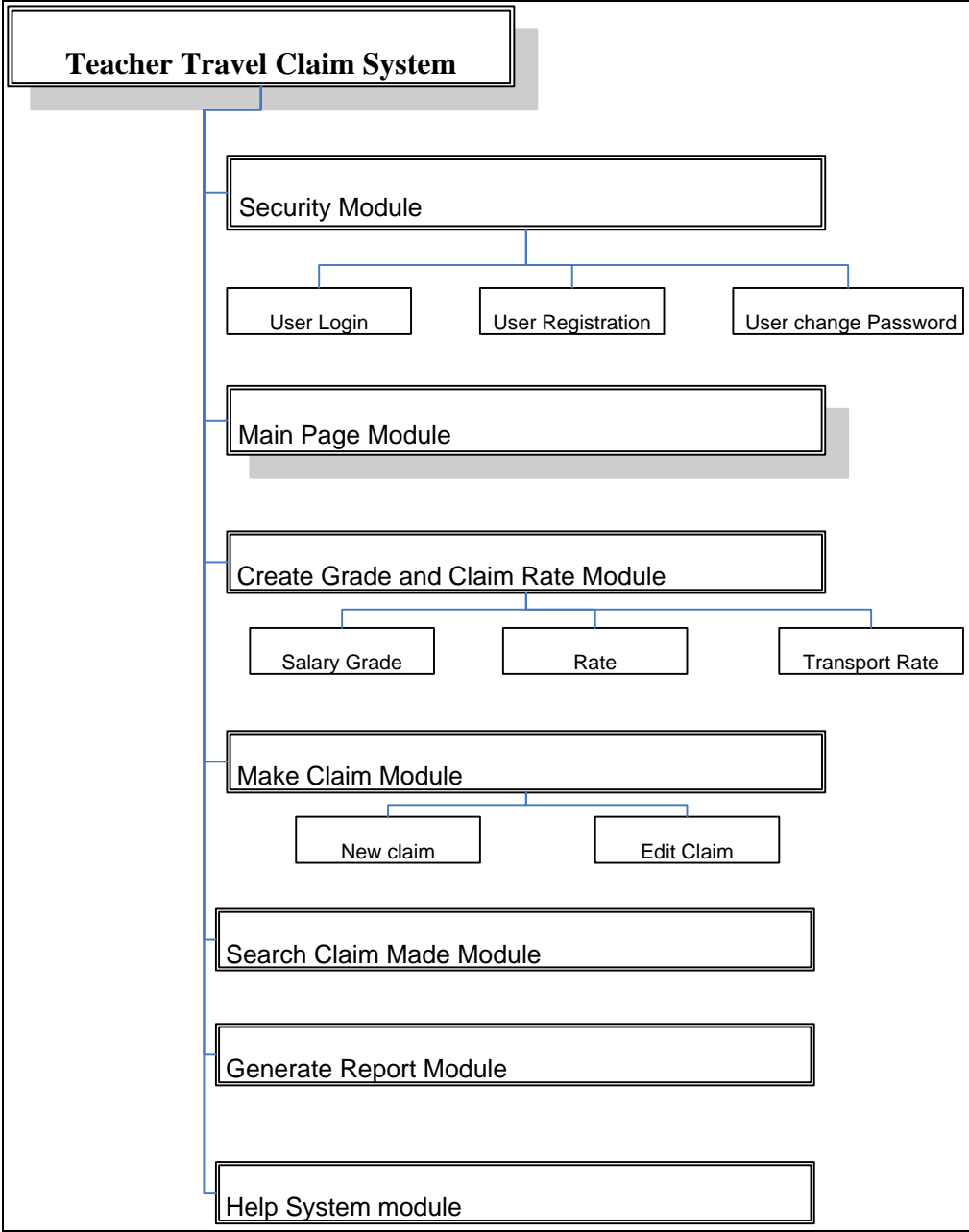
Figure 5.1 Hierarchy Model

5.3   System Configuration

Some configuration needs to be done before creating the features and functionality of the Teacher Travel Claim System. As this involved database storage, Microsoft Access 97 (Database Management System) is used. Visual Basic Enterprise (Version 6.0 edition) is installed to perform the coding phase for the system.

5.4   Database Implementation

Database implementation is one of the most essential steps in implementing the Teacher Travel Claim System. It is important to make sure that all the relationship is well defined in the database so that the information can be retrieved and edit successfully. The database used in the system is called TTCS database. TTCS database is used to store the claimant information, claim information and other related computational rates to perform the calculation of the relevant claims.

5.5   Implementation of System Modules for TTCS

In the Teacher Travel Claim System, there are seven important modules that need to be implemented.

They comprise of the following:

- Security module,

- Main page module,

- Create Grade & Claim Rate Module,

- Make claim module,

- Search claim made module,

- Report module

- Help module.

The details of each module are as below:

5.5.1   Security Module

5.5.1.1 User Registration

User registration allows the administrator to create an account for the new user. The System registration form can be referred to in Appendix J (1). The Administrator needs to fill in all the fields and click on the *'Daftar'* button. If the fields are not complete or invalid information is given then an error messages will pop up. Once registration is successful, a message box will pop up to indicate that the registration is successful and prompt the user to proceed. However, user can click on the *'Batal'* button to cancel the registration.

5.5.1.2 User Login

Users need to login through the Claim System Login of the system before using the system. The Teacher Travel Claim System Login form can be referred to in Appendix J.

For existing users, they are required to enter their username, password and user reference number at the System login module before they can access the system. For new users, the System Administrator needs to create a "new account" for them in order for them to access the system.   There are 2 types of users categorized under Clerk or Teacher. If the system login is successful, a pop up message will indicate successful login.

5.5.1.3 Change Password

The change password module is provided in TTCS to ensure that user information and details are secured, protected and access is restricted to only authorize users. The Change password form can be referred to in Appendix J (3). In order to change the password, the user needs to enter the new password and reconfirm it by entering it another time. The New password and the second reconfirm new password must be the same otherwise an error message will appear that require user to retry. Once correctly done TCCS will show a message indicating that the password has been successfully changed.

5.5.2   Main Page Module

The system main page can be referred to in Appendix J (4a & 4b). This Main page module has a drop down menu that consist of functions such as EXIT, ENTIRE SYSTEM INFORMATION, CHANGE PASSWORD FUNCTION AND HELP FILE. The *'Perihal Aplikasi'* is a brief information about the entire system. The Help file assist the user in using the Teacher Travel Claim System.

5.5.2.1 Teacher login

This page, see Appendix (J (4a) has four buttons. The buttons are placed at the left side of the form for easy access. The user can decide to either create a new claim or edit existing claim. The user can also change password by clicking on the '*Tukar Kata Laluan'* button. The '*Keluar'* button is used to exit from the system.

5.5.5.2 Clerk login

This page, see Appendix (J (4b)) has eight buttons. The relevant Clerk have the access authority to check the claim made, edit or amend the salary grade and edit or amend other related computational rates such as transport rate. This is to ensure that the teacher's claims are properly made in accordance to approved criteria.

5.5.3   Create Grade and Claim Rate Module

Appendix J (11), J (12) and J (13) show the forms for the clerk to key in the salary grade, transport rate and other related rate. All the buttons in this form are group together and are all in same shape for easy access. The clerk will need to fill in the rate base on the correct category. For example with respect to the transport rate, the user needs to fill in information such as type of transport, class, distance and the rate given.

In order to add a new record, the user needs to click on '*Tambah*' button. The user can click the *'Ubah'* button to edit and the *'Hapus'* button to delete. However the user will need to select which record to be deleted or modified from the data grid before clicking the *'Ubah'* or *'Hapus'* button. This module has vertical and horizontal scroll bar to enable user scrolling around the window when they minimize the window. The User can click the '*Batal'* button to cancel the action. The '*Simpan'* button is used to save all the changes made.

5.5.4 Make Claim Module

The make claim module is implemented for a dual purpose ie. To Make A New Claim and To Edit A Claim. The new claim and edit claim process are done using the same form. This is to make use of the form since the entire process used the same form design. When user chooses to make a new claim, the list of claim made on right side of the form will be in hidden mode. This list will appeared when user chooses to edit the claim.

The claim information is divided by using tabs. The tab helps to organize the data and result in less complex screens. Tab name *'Umum'* allows the user to key in or alter the claimant information. The *'Perjalanan'* tab allowed user to key in or alter the traveling information whereas the tab name *'Tuntutan'* allows the user to key in or amend the claim made.

This form contains drop down menus and four buttons which is Save, Calculator, Print and Exit. The '24 hours system 'is used to assist user in converting the time to a 24 hours system when keying in traveling information. User can print the claims made by clicking the Print button for a hardcopy record.

5.5.4.1 Make New Claim

The Making Claim form can be referred to in Appendix J (5), J (6) and J (7). To make a new claim, users need to fill in all information that is required on the screen. New user will prompt to key in the claimant information once. The claimant information then will then be

automatically generated for the following time. However, user can edit or amend the claimant information. The rates will be automatically generated after the user key in the salary grade. The user will need to fill in certain fields and the system will generate the relevant amounts and totals. The changeable data such as hotel rate, teacher salary are all retrieve from database so that it can be edited by the clerk when necessary. User can click save button to save the claim made and click exit button to exit.

5.5.4.2 Edit Claim

Appendix J (8) shows the Edit Claim form. The existing claim made can be edited before approval. The user (teacher) can select the claim to be edited from the list placed at the right corner of the form. For purpose of confidentiality the teachers can only see their own claim. User can save the changes and print out the claims make.

5.5.5   Search Claim Made Module

Appendix J (9) shows the Search Claim Made form. The purpose of this module is to enable a search of all records of claims made based on the user (teacher) reference number, name or claim date. The option button enable user to choose whether to look for the Approved form or Not Approved form category. The search result will be appeared in the *"Rekod Semasa"* list. The clerk can click the title in the list to view the claims made. The *'Reset'* button are used to clear the fields and display the entire claim made based on approved option. The option buttons are used because only one option can be chosen at any one time. The Clerk has the authority to print the claim made if no mistakes are identified.

5.5.6   Report Module

The Clerk can look for historical records based on month or year by selecting the relevant option button (see Appendix J (10)). The result is displayed in the list view. User can change the font size, font color, bold the layout or change the font to italic style by selecting the relevant buttons provided or selecting the choices from the combo box. The User also can arrange the layout in ascending or descending order based on the criteria selected from the combo box. The print button enable clerk to print the report. The total amount of claim will be auto generated in the report. User can press exit button to exit.

5.5.7   Help Module

The help module comprises the user manual (see Appendix J (16)). It assists the user in using the Teacher Travel Claim System. It is in HTML file format. User can easily access the information attached by whether click on the *"Bantuan Pengguna"* in the drop down menu or use the shortcut 'F9' key.

5.6   Testing

Once the TTCS is designed and developed, it needs to be thoroughly tested before implementation. Testing is very important to ensure the system is efficient, effective, reliable and meets the user requirements. The system must be simulated in real life environments on a trial basis to identify bugs, avoid computational errors, accuracy of data stored in databases and that the security of the system is adequate. In system testing the user

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feedback and comments are essential to improve the system graphical user interface, functionality, reliability, ease of usability and system compatibility.

5.6.1 Integration Testing

Integration testing will be done to ensure that all the Teacher Travel Claim System modules can function together reliably. The focus is on the flow of the control among modules, and the data exchange among them. It ensures that the interfaces and linkages between the modules of the system work properly. The accuracy of data and reliability is paramount here.

5.6.2 System Testing

System testing examines how well the system meets the user requirements and its usability, security and performance under task (Dennis, 2003). System testing involves the participation of the developer and end user. Developer will need to test the system during the implementation to ensure that the system meets the specification whereas it's also tested by the end user to ensure the entire system work as expected. (Refer Appendix K)

5.6.3 Acceptance Testing

Acceptance testing will be carried out to confirm that system is complete and acceptable by the users. User acceptance testing is conducted with 15 teachers from SK. Niup. Questionnaires were distributed to them in order to collect qualitative data after the test. The questionnaires can be referred in Appendix L.

5.7   System Evaluation

System evaluation is a process through which information about the usability of a system is gathered in order to improve the system and aim to measure some aspect of usability of the interface (Debbie Stone, 2005).

5.7.1 Heuristic evaluation

A heuristic is a guideline or general principle or rule of thumb that can guide a design decision or be used to critique a decision that has already been made (Jakob Nielsen, 1994). The general idea behind heuristic evaluation is that several evaluators independently critique a system to come up with potential usability problems. The heuristic evaluation checklist (see Appendix M) is given to the evaluators after they done the validation testing and usability testing. Table 5.1 shows the result of the heuristic evaluation.

ITEM	Rate Given (5 Evaluators)					Average
Interface						
Consistency user interface (including screen layouts, report layouts, messages, field labels and date display)	4	5	4	4	4	4.2
Interactive interface (GUI)	4	4	4	4	4	4
Provide appropriate default values for fields	3	4	4	4	3	3.6
Consistency of font and color used	5	5	4	5	4	4.6
Functionality						
Capability of generate report	5	5	4	5	5	4.8
Capability of generate claim form	5	5	5	5	5	5

Capability of keeping user information	4	5	4	3	4	4
On Screen Help features.	3	4	4	3	3	3.4
Make real time calculation.	4	4	4	3	4	3.8
Calculate and display the amount claimed	4	3	5	4	4	4
All reports printable, viewable on screen.	5	4	5	5	4	4.6
Shortcuts provided for important function	4	4	4	4	4	4
Appropriate feedback provided.	5	4	4	5	5	4.6
Users' error is treated in positive and helpful manner	5	5	5	4	5	4.8
Help is provided	4	4	5	5	4	4.4
Security						
security user login	5	5	5	5	5	5
Secure access only on own data.	4	3	4	4	3	3.6
Language						
Simple and natural language used.	5	5	5	5	5	5
Consistency of language	5	5	5	5	5	5

Table 5.1: Teacher Travel Claim System Heuristic Evaluation Checklist Result

5.7.2 User Acceptance Test Result

The questionnaires for the user acceptance test are appended in Appendix L. The results of the questionnaires collected are summarized as below:

5.7.2.1 Usability

Usability is defined in ISO 924 standard as "the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use." The usability of Teacher Travel Claim System is shown in Table 5.2.

Grade	Excellent	Good	Acceptable	Poor
Numbers of users	2	11	2	0

Table 5.2: Usability of the TTCS

5.7.2.2 Ease of Use

Ease of Use of the TTCS allows the user to navigate system easily and access each module effortlessly. In addition, this system is metaphor of making a claim in paper form. Therefore, the users are not facing any major problems in using the system. The ease of use of the Teacher Travel Claim System is shown in Table 5.3.

Grade	Excellent	Good	Acceptable	Poor
Numbers of users	6	7	2	0

Table 5.3: Ease of use of the TTCS

5.7.2.3 Interface Design

"A good interface design encourages an easy, natural, and engaging interaction between a user and a system", (Debbie Stone and atl, 2005). The evaluation of the interface design of Teacher Travel Claim System is shown in Table 5.4.

Grade	Excellent	Good	Acceptable	Poor
Numbers of users	1	10	4	0

Table 5.4: Interface design of the TTCS

5.7.2.4 Attractiveness

System attractiveness is importance to enhance the acceptability and usability of the system. The suitable use of images, color, icons and font size make the system more satisfy to use. The attractiveness of the Teacher Travel Claim System is shown in Table 5.5.

Grade	Excellent	Good	Acceptable	Poor
Numbers of users	1	13	1	0

Table 5.5: Attractiveness of the TTCS

5.7.2.5 System Features

TTCS provided the major features needed to make a claim. Most of the users are satisfy with auto fill function. The evaluation of system features for Teacher Travel Claim System is shown in Table 5.6.

Grade	Excellent	Good	Acceptable	Poor
Numbers of users	3	12	0	0

Table 5.6: TTCS system features

5.7.2.6 System Reliability

Reliability refers to the system security and data validation. The system provided security functions which only authorized users to access the system. The evaluation of system reliability of the proposed system is shown in Table 5.7.

Grade	Excellent	Good	Acceptable	Poor
Numbers of users	10	5	0	0

Table 5.7: TTCS system reliability

5.7.3 Result Analysis

The heuristic evaluation performed indicates that the system interface design, functionality, security function and language used accomplished the user requirement and basic design principle. The user acceptance test also indicates good general acceptance. Figure 5.2 illustrates the result of user acceptance test for the System. The graph shows average 60 % of the users found that the system is good in usability, ease of use, interface design, attractiveness and system features.   Most of the user is generally satisfied with the system reliability. An average of 25.5% of users commented that the system is excellent. About 27 % of users said that the system is acceptable.
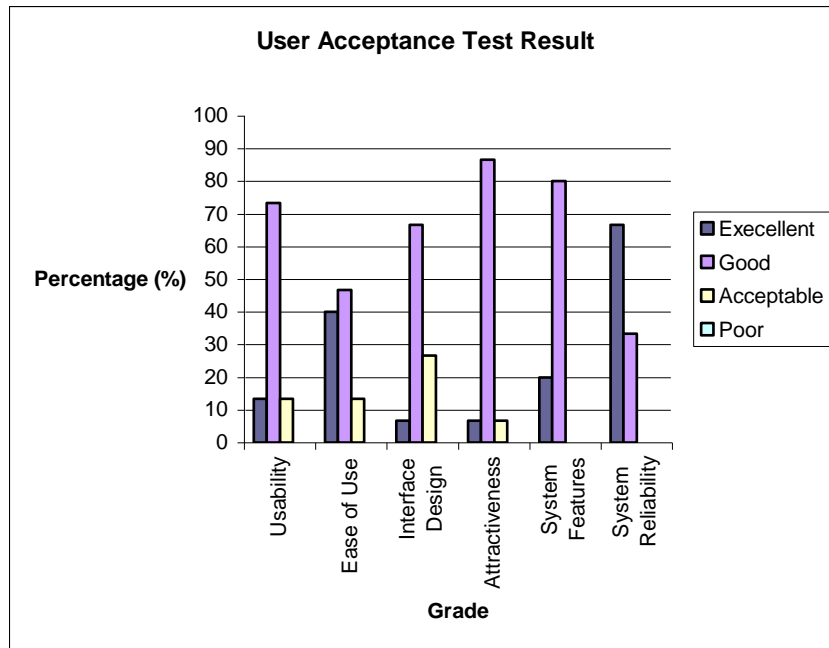
User Acceptance Test Result

Figure 5.2: User acceptance test result

5.7.4   User Feedback

Users commented that the system can help them perform their claims efficiently, effectively and reliably. Time saving is the main advantage due to the advantages of a computerized claim system that in the near future can be internet linked or intranet within the relevant office department. User also comments that the system is easy to use because the metaphor of the paper based claim form is used in developing the system. Furthermore, there are adequate instructions given to user on what and how they should do or perform the relevant task. However, they request that the system must be able to display all the information in capital letter so that they can use either lower case or upper case in typing. Some teachers suggest that the system can be upgraded to a web based system where they access from home. This can be easily done and the system can be hosted on a secured website.

5.8 Discussion

Overall, the users are generally satisfied with the entire system. They are satisfied with the system reliability. All the information enters by user is kept correctly in the databases and only can be accessed based on authority. The system computes the claim made accurately and system can generate the claim made accurately. The suggestion to make all the information displayed in capital letter can be easily done. However it may be difficult to edit. This is because users perceive the lower case better compare to upper case. The second suggestion about the enhancement to web based is good. However, it only can be done when the "Pejabat Pelajaran Daerah" and "Pejabat Pelajaran Bahagian" has such a claim system to store that information. Furthermore, to centralize all the system is troublesome.

5.9 System Limitations

The system limitations refer to what functions or services that the system could not provide to the user. The limitations of Teacher Travel Claim System are as follows:

i)   Export data to other location

       The claim made cannot be exported to other location such as diskette or CD.

ii)   The on screen help is not specific to the topic.

       User need to look into the user manual to search for related topic for help.

The system limitation will be discussed more details in the following chapter, future works.

5.10 Conclusion

During the implementation phase a lot of problems were faced in coding and the database relationship management. However the Teacher Travel Claim System is developed successfully based on proper problem identification and problem solving. The system testing and user evaluation has been carried effectively out to improve the current developed system. Modifications have been done on the system after system testing to enhance its functionality.

CHAPTER 6:PROJECT CONCLUSION AND FUTURE WORK

6.1   Introduction

This chapter reviews the achievement of Teacher Travel Claim system. This chapter also looks further on future enhancement of the proposed system through recommendation.

6.2   Objective Achievement

Overall the objective of the Teacher Travel Claim System that was defined in the early stages of the project has been achieved. The objectives and corresponding achievements are shown in Table 6.1.

Objectives	Status	Achievements
To create database that can store data or information on claims that have been made.	Done	-Users can make claim and save it in the database. The claim made can be retrieved from the database and any modifications can be performed easily.
To create a system with function claim, automatically calculate and send directly to administration clerk in school.	Done	-User can use a system to make claim and print out the entire claim made. -User can use the automatic calculate function to compute claim instantly
To reduce unnecessary workload of teacher and clerk, where users can make claim themselves by login the system then send to clerk automatically for verification.	Done	-The system allows clerk to view all claim made and verify all the information entered. - Clerk can print out the claim made for further process. -Clerk can generate monthly report to see particular person that claim in particular month

		and the total claim.
		-The system can replace the existing manual system that enable user to print report generated.

Table 6.1: Project's Objectives and Achievements

6.3   Future Enhancements

The TCCS system can be further upgraded and enhanced. The system enhancements that can be performed to make the system more advantage included:

i) Export the data to other location

The claim made or reports should be able to export to diskette or CD. This feature can be used as backup for the claim made or report generated. Besides, it also enables the user to bring the data in soft copy to the main office.

ii) The on screen help is not specific to the topic.

User need to look into the user manual to search for related topic for help. The instance help should direct to the topic required so that users will no need to spend time look inside the user manual.

iii) The system is not web based yet. This could be easily upgraded.

iv) The system can be upgraded so that it is linked up with the National teachers profile database for further use such as government housing loan processing, scheduling and posting of teachers, performance evaluations etc.

6.4   Conclusion

Teacher Travel Claim System is able to achieve the objectives it was designed for. The Teacher Travel Claim System is endeavoring to become an effective system that can be used in all schools as. As discussed above there is no doubt that this system can be enhanced for value added and further integrated use with the National teachers database in Malaysia.

APPENDIX A   PROJECT SCHEDULE

APPENDIX B   SYSTEM EVALUATION FORM

Functionality	Yes	No	Comments
INTERFACE			
Does the system provide a consistent user interface (including screen layouts, report layouts, messages, field labels and date display)?			
Does the system provide interactive interface (GUI)?			
Does the system provide, where appropriate, default values for fields?			
Does the system allow various types of users, including non-staff, to access the system?			
FUNCTIONALITY			
Does the system capable of generating the report?			
Does the system capable of generating claim form?			
Does the system capable of keeping user information			
Does the system provide the On Screen Help features?			
Does the system make real time calculation?			
Does the system calculate and display the amount			
Are all reports printable, viewable on screen?			
SECURITY			
Does the system provide a secured environment by user sign-on identifiers and passwords (security user login)?			
Does the system provide for users to do secure access only on their own data?			
TECHNOLOGY			
a. Topology			
Internet			
Intranet			
Single-User Application (Standalone)			
Multi-User Application			
b. System Development Software			
Microsoft Access 972000/2002			
Microsoft Visual Basic 6.0			
d. Platform Is the system equally accessible to users with different computing platforms?			
Window 98, 98SE, ME, 2000, XP			
Mac OS			
Linux			

APPENDIX C   INTERVIEW QUESTIONS

Interviewee: Date:

Interviewer: System Name:

Interview question

1. Can you explain briefly the procedures and formalities of the current travel claim system?

2. How many reports does u generate per day /per month?

3. What's your opinion about the current travel claim system? Do you feel this system really help you in the daily work?

4. Did you facing any problem with the current system? If yes, what are the problems?

5. What are some common errors made when using the system? It there any data entry error or system functionality error for the current system?

6. If u will the developer, what are your recommendation in enhance the effectiveness of the current system?

APPENDIX D   QUESTIONNAIRE

Date: _____

Time: _____

Please tick (√) on the appropriate field.

1. Do you often make claim?

☐   Yes   ☐   No

2. How do you make a claim after attending for a course?

☐   Computerized system   ☐   Paper-based system

☐   Others _____

3. Do you like to make claim in paper formed?

☐   Yes   ☐   No

4. Do you have basic skills in using the computer?

☐   Yes   ☐   No

5. Would you like to have a computerized system for claim making?

☐   Yes   ☐   No

APPENDIX E   BUSINESS RULES

1. Claimant can make more than one claim.

2. Each claim is own by one claimant.

3. Salary grade can use by many claimant.

4. Each claimant can only has one salary grade.

5. Each claim can only has one claimant information.

6. Claimant information can found in many claims.

7. Each claim can only has one account number.

8. Each account number can be used many times in making claim.

9. Claimant can claim for public transport more than once.

10. Transport rate can be used in many own transport.

11. Each own transport can only has one transport rate.

12. Rate can used many times when claim for hotel, meal, lodging and day allowance.

13. Each claimant can only has one rate for hotel, meal, lodging and day allowance claim.

14. A claim form can has one or more travel information.

15. Claimant can either choose to claim or not to claim the logging expenses.

16. Claimant can either choose to claim or not to claim the hotel expenses.

17. Claimant can either choose to claim or not to claim the day allowance.

18. Claimant can either choose to claim or not to claim the vehicle expenses.

19. Claimant can either choose to claim or not to claim the meal expenses.

20. Claimant can either choose to claim or not to claim the miscellaneous expenses and he or she can claim more than one.

21. Claimant can either choose to claim or not to claim the transportation expenses and he or she can claim more than one.
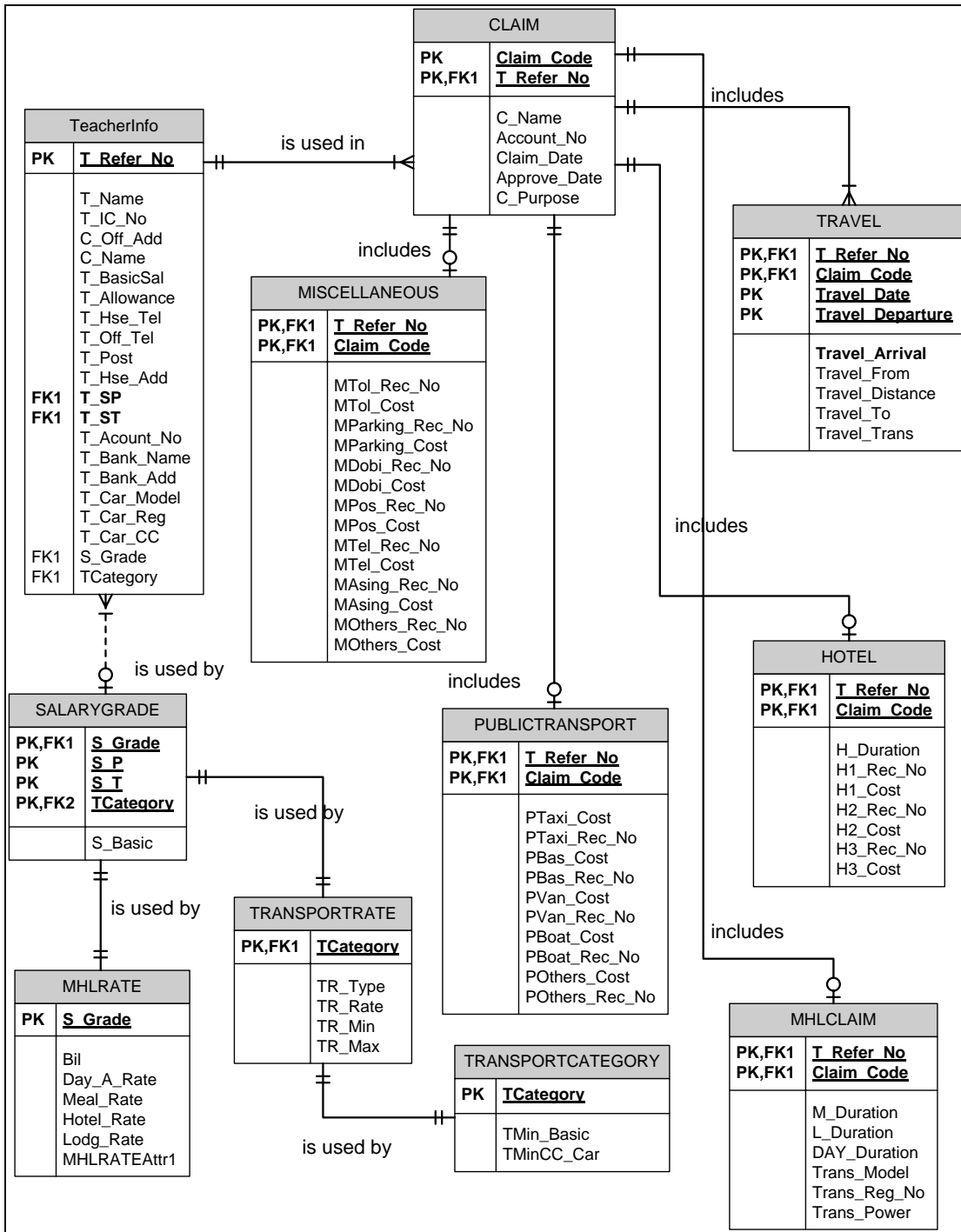
APPENDIX G   DATA DICTIONARY

Process : **1.0 User Registration**				
Description				
Teacher or clerk key in the name and password. If the entries are valid, the information is saved inside the login file.				
Source : Teacher, Clerk				
Destination : User login process				
Data Structure : Registration = User_ID + User_Name + User Password				
Data Elements				
Table: USER				
Attribute's name	Description	Type	Format	Range
User_ID	Uniquely identifies a user	Text	Xxxxxx	50
User_Name	User name	Text	Xxxxxx	50
User_Password	User password	Text	Xxxxxx	10

Process : **2.0 User Login**				
Description				
Teacher or clerk key in the name and password. If the entries are valid, user can successful login.				
Source : Teacher, Clerk				
Destination : Making claim process, Create grade and claim rate process				
Data Structure : Login = User Name + User Password				
Data Elements				
Table: USER				
Attribute's name	**Description**	**Type**	**Format**	**Range**
User_ID	Uniquely identifies a user	Text	Xxxxxx	50
User_Name	User name	Text	Xxxxxx	50
User_Password	User password	Text	Xxxxxx	10

Process : **3.0 Create grade and claim rate**
Description :
Teacher key in the salary grade, transport rate and rates such as lodging rate, hotel rate, meal rate and day allowance rate.
Source : Administration department
Destination : Making claim process
Data Structure : SalaryGrade = Grade and salary

Data Structure (continued):

TransportRate = Transport rate

MHLRate = Meal rate, Daily rate and Hotel rate

Data Elements

Table : SALARYGRADE

Attribute's name	Description	Type	Format	Range
S_Grade	Salary grade	Text	xxxxx	50
S_P	Salary Rank	Text	xxxxx	50
S_T	Salary step	Text	xxxxx	50
S_Basic	Salary Basic	Currency	####.##	0.00-9999.00
Car_Class	Car Class	Text	Xxxxxx	50

Table : TRANSPORTRATE

Attribute's name	Description	Type	Format	Range
TR_Type	Transport type	Text	Xxxxxx	50
TR_Cat	Transport category	Text	Xxxxxx	50
TR_Min	Minimum distance	Number	#####	Long Integer
TR_Max	Maximum distance	Number	#####	Long Integer
TR_Rate	Transport rate	Currency	#.##	0.00-0.99

Table : MHLRATE

Attribute's name	Description	Type	Format	Range
S_Grade	Salary grade	Text	Xxxxx	50
Bil	Sequence	Text	Xxxxx	50

Day_A_Rate	Day allowance rate	Currency	###.##	0.00-999.00
Meal_Rate	Meal rate	Currency	###.##	0.00-999.00
Hotel_Rate	Hotel rate	Currency	###.##	0.00-999.00
Lodg_Rate	Lodging rate	Currency	###.##	0.00-999.00
Table : TRANSPORTCATEGORY					
T_Category	Transport Category	Text	Xxxxx	50
TMin_Basic	Salary	Currency	###.##	0.00-999.00
TMinCC_Car	C.C. Car	Number	#####	Long Integer

Process : **4.0 Making Claim**	
Description	
Teacher make claim by key in the claimant and claim information.	
Source : Teacher	
Destination : Add/Delete/Update process, Generate completed claim form and report	
Data Structure : TeacherInfo= Claimant information	
Claim = Claim information	
Data Elements	

Table : TEACHERINFO

Attribute's name	Description	Type	Format	Range
T_Refer_No	Uniquely identifies a teacher	Number	#####	0-99999
T_Name	Teacher name	Text	Xxxxxx	50
T_ICNo	Teacher IC number	Text	Xxxxxx	50
T_BasicSal	Teacher basic salary	Currency	####.##	Single
T_Allowance	Teacher allowance	Currency	####.##	Single
T_Hse_Tel	Teacher house telephone	Text	Xxxxxx	15
T_Off_Tel	Teacher office telephone	Text	Xxxxxx	15

T_Post	Teacher post	Text	Xxxxxx	10
T_Hse_Add	Teacher house address	Text	Xxxxxx	100
T_Off_Add	Teacher office address	Text	Xxxxxx	100
T_SGrade	Salary grade	Text	xxxxx	10
T_SP	Salary rank	Text	xxxxx	5
T_ST	Salary step	Text	xxxxx	5
T_Account_No	Account number	Text	Xxxxxxx	20
T_Bank_Name	Bank name	Text	Xxxxxxx	50
T_Bank_Add	Bank address	Text	Xxxxxxx	100
T_Car_Model	Car model	Text	Xxxxxx	50
T_Car_Reg	Car registration number	Text	Xxxxxx	50
T_Car_CC	Car power	Number	#####	Long Integer

Table : CLAIM

Attribute's name	Description	Type	Format	Range
Claim_Code	Uniquely identifies a claim	Text	xxxxxxxxxx	10
C_Name	Claimant name	Text	Xxxxxx	50
C_Refer	Claimant refer number	Number	#####	0-99999
C_Purpose	Travel purpose	Text	Xxxxxx	250
C_Amount	Amount claim	Number	#####	Double
Claim_Date	Claim date	Date/Time	DD-MON-YYYY	NA
Approve_Date	Approved date	Date/Time	DD-MON-YYYY	NA
Approved_Amount	Approved claim amount	Number	#####	Double

Table : TRAVEL

Attribute's name	Description	Type	Format	Range

Claim_Code	Uniquely identifies a claim	Text	xxxxxxxxxx	10
Travel_Date	Traveling date	Date/Time	Short date	NA
Travel_Departure	Travel departure time	Date/Time	Short time	NA
Travel_Arrival	Travel arrival time	Date/Time	Short time	NA
Travel_From	Traveling from	Text	Xxxxxx	100
Travel_To	Destination	Text	Xxxxxx	100
Travel_Trans	Travel transport	Text	Xxxxxx	20
Travel_Distance	Travel distance	Number	###	0-999

Table : PUBLICTRANSPORT

Attribute's name	Description	Type	Format	Range
Claim_Code	Uniquely identifies a claim	Text	xxxxxxxxxx	10
PTaxi_Cost	Taxi cost	Currency	####.##	Single
PTaxi_Rec_No	Taxi receipt number	Text	Xxxxxx	50
PBas_Cost	Bas cost	Currency	####.##	Single
PBas_Rec_No	Bas receipt number	Text	Xxxxxx	50
PVan_Cost	Van cost	Currency	####.##	Single
PVan_Rec_No	Van receipt number	Text	Xxxxxx	50
PBoat_Cost	Boat cost	Currency	####.##	Single
PBoat_Rec_No	Boat receipt number	Text	Xxxxxx	50
POthers_Cost	Others cost	Currency	####.##	Single
POthers_Rec_No	Others receipt number	Text	Xxxxxx	50

Table : MHLCLAIM

Attribute's name	Description	Type	Format	Range
Claim_Code	Uniquely identifies a	Text	xxxxxxxxxx	10

Attribute's name	Description	Type	Format	Range
	claim			
M_Duration	Meal duration	Number	##	Integer
L_Duration	Lodging duration	Number	##	Integer
DAY_Duration	Daily duration	Number	##	Integer

Table : HOTEL

Attribute's name	Description	Type	Format	Range
Claim_Code	Uniquely identifies a claim	Text	xxxxxxxxxx	10
H_Duration	Hotel duration	Number	##	Integer
H1_Rec_No	Hotel receipt number	Text	Xxxxx	50
H1_Cost	Hotel cost	Currency	####.##	0.00-9999.00
H2_Rec_No	Hotel receipt number	Text	Xxxxx	50
H2_Cost	Hotel cost	Currency	####.##	0.00-9999.00
H3_Rec_No	Hotel receipt number	Text	Xxxxx	50
H3_Cost	Hotel cost	Currency	####.##	0.00-9999.00

Table : MISCELLANEOUS

Attribute's name	Description	Type	Format	Range
Claim_Code	Uniquely identifies a claim	Text	xxxxxxxxxx	10
MTol_Rec_No	Tol receipt number	Text	Xxxxx	50
MTol_Cost	Tol cost	Currency	####.##	Single
MParking_Rec_No	Parking receipt number	Text	Xxxxx	50
MParking_Cost	Parking cost	Currency	####.##	Single
MDobi_Rec_No	Dobi receipt number	Text	Xxxxx	50
MDobi_Cost	Dobi cost	Currency	####.##	Single
MPos_Rec_No	Pos receipt number	Text	Xxxxx	50

MPos_Cost	Pos cost	Currency	####.##	Single
MTel_Rec_No	Tel receipt number	Text	Xxxxxx	50
MTel_Cost	Tel cost	Currency	####.##	Single
MAsing_Rec_No	Foreign currency receipt number	Text	Xxxxxx	50
MAsing_Cost	Foreign currency cost	Currency	####.##	Single
MOthers_Rec_No	Others receipt number	Text	Xxxxxx	50
MOthers_Cost	Others cost	Currency	####.##	Single

Process : 5.0 Add/Delete/Update

Description

Teachers add, delete or update the information.

Source : Teacher

Destination : Generate completed claim form and report

Data Structure : TeacherInfo = Claimant information

Claim Detail = Claim information

Data Elements

Table : TEACHERINFO

Attribute's name	Description	Type	Format	Range
T_Refer_No	Uniquely identifies a teacher	Number	#####	0-99999
T_Name	Teacher name	Text	Xxxxxx	50
T_ICNo	Teacher IC number	Text	Xxxxxx	50
T_BasicSal	Teacher basic salary	Currency	####.##	Single
T_Allowance	Teacher allowance	Currency	####.##	Single
T_Hse_Tel	Teacher house telephone	Text	Xxxxxx	15
T_Off_Tel	Teacher office telephone	Text	Xxxxxx	15
T_Post	Teacher post	Text	Xxxxxx	10

T_Hse_Add	Teacher house address	Text	Xxxxxx	100
T_Off_Add	Teacher office address	Text	Xxxxxx	100
T_SGrade	Salary grade	Text	xxxxx	10
T_SP	Salary rank	Text	xxxxx	5
T_ST	Salary step	Text	xxxxx	5
T_Account_No	Account number	Text	Xxxxxxx	20
T_Bank_Name	Bank name	Text	Xxxxxxx	50
T_Bank_Add	Bank address	Text	Xxxxxxx	100
T_Car_Model	Car model	Text	Xxxxxx	50
T_Car_Reg	Car registration number	Text	Xxxxxx	50
T_Car_CC	Car power	Number	#####	Long Integer

Table : CLAIM

Attribute's name	Description	Type	Format	Range
Claim_Code	Uniquely identifies a claim	Text	xxxxxxxxxx	10
C_Name	Claimant name	Text	Xxxxxx	50
C_Refer	Claimant refer number	Number	#####	0-99999
C_Purpose	Travel purpose	Text	Xxxxxx	250
C_Amount	Amount claim	Number	#####	Double
Claim_Date	Claim date	Date/Time	DD-MON-YYYY	NA
Approve_Date	Approved date	Date/Time	DD-MON-YYYY	NA
Approved_Amount	Approved claim amount	Number	#####	Double

Table : TRAVEL

Attribute's name	Description	Type	Format	Range
Claim_Code	Uniquely identifies a	Text	xxxxxxxxxx	10

	claim			
Travel_Date	Traveling date	Date/Time	Short date	NA
Travel_Departure	Travel departure time	Date/Time	Short time	NA
Travel_Arrival	Travel arrival time	Date/Time	Short time	NA
Travel_From	Traveling from	Text	Xxxxxx	100
Travel_To	Destination	Text	Xxxxxx	100
Travel_Trans	Travel transport	Text	Xxxxxx	20
Travel_Distance	Travel distance	Number	###	0-999

Table : PUBLICTRANSPORT

Attribute's name	Description	Type	Format	Range
Claim_Code	Uniquely identifies a claim	Text	xxxxxxxxxx	10
PTaxi_Cost	Taxi cost	Currency	####.##	Single
PTaxi_Rec_No	Taxi receipt number	Text	Xxxxxx	50
PBas_Cost	Bas cost	Currency	####.##	Single
PBas_Rec_No	Bas receipt number	Text	Xxxxxx	50
PVan_Cost	Van cost	Currency	####.##	Single
PVan_Rec_No	Van receipt number	Text	Xxxxxx	50
PBoat_Cost	Boat cost	Currency	####.##	Single
PBoat_Rec_No	Boat receipt number	Text	Xxxxxx	50
POthers_Cost	Others cost	Currency	####.##	Single
POthers_Rec_No	Others receipt number	Text	Xxxxxx	50

Table : MHLCLAIM

Attribute's name	Description	Type	Format	Range
Claim_Code	Uniquely identifies a claim	Text	xxxxxxxxxx	10

Attribute's name	Description	Type	Format	Range
M_Duration	Meal duration	Number	##	Integer
L_Duration	Lodging duration	Number	##	Integer
DAY_Duration	Daily duration	Number	##	Integer

Table : HOTEL

Attribute's name	Description	Type	Format	Range
Claim_Code	Uniquely identifies a claim	Text	xxxxxxxxxx	10
H_Duration	Hotel duration	Number	##	Integer
H1_Rec_No	Hotel receipt number	Text	Xxxxxx	50
H1_Cost	Hotel cost	Currency	####.##	0.00-9999.00
H2_Rec_No	Hotel receipt number	Text	Xxxxxx	50
H2_Cost	Hotel cost	Currency	####.##	0.00-9999.00
H3_Rec_No	Hotel receipt number	Text	Xxxxxx	50
H3_Cost	Hotel cost	Currency	####.##	0.00-9999.00

Table : MISCELLANEOUS

Attribute's name	Description	Type	Format	Range
Claim_Code	Uniquely identifies a claim	Text	xxxxxxxxxx	10
MTol_Rec_No	Tol receipt number	Text	Xxxxxx	50
MTol_Cost	Tol cost	Currency	####.##	Single
MParking_Rec_No	Parking receipt number	Text	Xxxxxx	50
MParking_Cost	Parking cost	Currency	####.##	Single
MDobi_Rec_No	Dobi receipt number	Text	Xxxxxx	50
MDobi_Cost	Dobi cost	Currency	####.##	Single
MPos_Rec_No	Pos receipt number	Text	Xxxxxx	50
MPos_Cost	Pos cost	Currency	####.##	Single

MTel_Rec_No	Tel receipt number	Text	Xxxxxx	50
MTel_Cost	Tel cost	Currency	####.##	Single
MAsing_Rec_No	Foreign currency receipt number	Text	Xxxxxx	50
MAsing_Cost	Foreign currency cost	Currency	####.##	Single
MOthers_Rec_No	Others receipt number	Text	Xxxxxx	50
MOthers_Cost	Others cost	Currency	####.##	Single

Process : 6.0 Generate completed claim form and report
Description
Teacher or clerk generates completed claim form by retrieved the information from the 'TeacherInfo' and claim detail data stores.
Clerk generates report by retrieved the information from the 'TeacherInfo' and claim detail data stores.
Source: TeacherInfo and claim detail data stores.
Destination : Administration department
Data Structure : TeacherInfo = Claimant information

Claim Detail = Claim information

Data Elements

Table : TEACHERINFO

Attribute's name	**Description**	**Type**	**Format**	**Range**
T_Refer_No	Uniquely identifies a teacher	Number	#####	0-99999
T_Name	Teacher name	Text	Xxxxxx	50
T_ICNo	Teacher IC number	Text	Xxxxxx	50
T_BasicSal	Teacher basic salary	Currency	####.##	Single
T_Allowance	Teacher allowance	Currency	####.##	Single

T_Hse_Tel	Teacher house telephone	Text	Xxxxxx	15
T_Off_Tel	Teacher office telephone	Text	Xxxxxx	15
T_Post	Teacher post	Text	Xxxxxx	10
T_Hse_Add	Teacher house address	Text	Xxxxxx	100
T_Off_Add	Teacher office address	Text	Xxxxxx	100
T_SGrade	Salary grade	Text	xxxxx	10
T_SP	Salary rank	Text	xxxxx	5
T_ST	Salary step	Text	xxxxx	5
T_Account_No	Account number	Text	Xxxxxxx	20
T_Bank_Name	Bank name	Text	Xxxxxxx	50
T_Bank_Add	Bank address	Text	Xxxxxxx	100
T_Car_Model	Car model	Text	Xxxxxx	50
T_Car_Reg	Car registration number	Text	Xxxxxx	50
T_Car_CC	Car power	Number	#####	Long Integer

Table : CLAIM

Attribute's name	Description	Type	Format	Range
Claim_Code	Uniquely identifies a claim	Text	xxxxxxxxxx	10
C_Name	Claimant name	Text	Xxxxxx	50
C_Refer	Claimant refer number	Number	#####	0-99999
C_Purpose	Travel purpose	Text	Xxxxxx	250
C_Amount	Amount claim	Number	#####	Double
Claim_Date	Claim date	Date/Time	DD-MON-YYYY	NA
Approve_Date	Approved date	Date/Time	DD-MON-YYYY	NA
Approved_Amount	Approved claim amount	Number	#####	Double

Table : TRAVEL				
Attribute's name	**Description**	**Type**	**Format**	**Range**
Claim_Code	Uniquely identifies a claim	Text	xxxxxxxxx	10
Travel_Date	Traveling date	Date/Time	Short date	NA
Travel_Departure	Travel departure time	Date/Time	Short time	NA
Travel_Arrival	Travel arrival time	Date/Time	Short time	NA
Travel_From	Traveling from	Text	Xxxxxx	100
Travel_To	Destination	Text	Xxxxxx	100
Travel_Trans	Travel transport	Text	Xxxxxx	20
Travel_Distance	Travel distance	Number	###	0-999

Table : PUBLICTRANSPORT				
Attribute's name	**Description**	**Type**	**Format**	**Range**
Claim_Code	Uniquely identifies a claim	Text	xxxxxxxxx	10
PTaxi_Cost	Taxi cost	Currency	####.##	Single
PTaxi_Rec_No	Taxi receipt number	Text	Xxxxxx	50
PBas_Cost	Bas cost	Currency	####.##	Single
PBas_Rec_No	Bas receipt number	Text	Xxxxxx	50
PVan_Cost	Van cost	Currency	####.##	Single
PVan_Rec_No	Van receipt number	Text	Xxxxxx	50
PBoat_Cost	Boat cost	Currency	####.##	Single
PBoat_Rec_No	Boat receipt number	Text	Xxxxxx	50
POthers_Cost	Others cost	Currency	####.##	Single
POthers_Rec_No	Others receipt number	Text	Xxxxxx	50

Table : MHLCLAIM

Attribute's name	Description	Type	Format	Range
Claim_Code	Uniquely identifies a claim	Text	xxxxxxxxxx	10
M_Duration	Meal duration	Number	##	Integer
L_Duration	Lodging duration	Number	##	Integer
DAY_Duration	Daily duration	Number	##	Integer

Table : HOTEL

Attribute's name	Description	Type	Format	Range
Claim_Code	Uniquely identifies a claim	Text	xxxxxxxxxx	10
H_Duration	Hotel duration	Number	##	Integer
H1_Rec_No	Hotel receipt number	Text	Xxxxx	50
H1_Cost	Hotel cost	Currency	####.##	0.00-9999.00
H2_Rec_No	Hotel receipt number	Text	Xxxxx	50
H2_Cost	Hotel cost	Currency	####.##	0.00-9999.00
H3_Rec_No	Hotel receipt number	Text	Xxxxx	50
H3_Cost	Hotel cost	Currency	####.##	0.00-9999.00

Table : MISCELLANEOUS

Attribute's name	Description	Type	Format	Range
Claim_Code	Uniquely identifies a claim	Text	xxxxxxxxxx	10
MTol_Rec_No	Tol receipt number	Text	Xxxxx	50
MTol_Cost	Tol cost	Currency	####.##	Single
MParking_Rec_No	Parking receipt number	Text	Xxxxx	50
MParking_Cost	Parking cost	Currency	####.##	Single
MDobi_Rec_No	Dobi receipt number	Text	Xxxxx	50

MDobi_Cost	Dobi cost	Currency	####.##	Single
MPos_Rec_No	Pos receipt number	Text	Xxxxxx	50
MPos_Cost	Pos cost	Currency	####.##	Single
MTel_Rec_No	Tel receipt number	Text	Xxxxxx	50
MTel_Cost	Tel cost	Currency	####.##	Single
MAsing_Rec_No	Foreign currency receipt number	Text	Xxxxxx	50
MAsing_Cost	Foreign currency cost	Currency	####.##	Single
MOthers_Rec_No	Others receipt number	Text	Xxxxxx	50
MOthers_Cost	Others cost	Currency	####.##	Single

APPENDIX H   INPUT INTERFACE

1. User login input design

Claim V. 5.0
(Sistem Tuntutan Perjalanan Guru)

Nama

No. Fail Peribadi

Kata Laluan

Masuk   Batal

2. User registration input design

Pendaftaran Pengguna Baru

Nama

No. Fail Peribadi

Kata Laluan   * 6 huruf sahaja

Pengesahan Kata Laluan

OK   Batal

3. User change password input design

Menukar Kata Laluan

Nama:

Kata Laluan Baru

Pengesahan Kata Laluan Baru

Tukar   Batal

4. Main page design

4.1 Teacher Login

Keluar   Perihal   Tukar Kata Laluan   Bantuan

Membuat Tuntutan Baru

Edit Borang Tuntutan

Tukar Kata Laluan

Keluar

4.2 Administrator/Clerk Login

5. Making claim input design: Claimant Information

6. Making claim input design: Claim detail

Fail   Bantuan

Simpan | Kira | Cetak | Keluar

Umum | Perjalanan | Tuntutan

KENYATAAN TUNTUTAN

Tujuan Perjalanan

Butiran Perjalanan

Bil	Tarikh			Waktu Bertolak		Waktu Sampai		Tempat Asal	Tempat Tuju	Jenis Kenderaan	Jarak
	Hari	Bulan	Tahun	Jam	Minit	Jam	Minit				
1											K.M
2											K.M
3											K.M
4											K.M
5											K.M
6											K.M
7											K.M
8											K.M
9											K.M
10											K.M
11											K.M
12											K.M

7.   Making claim input design: Claim Detail

Fail   Bantuan

Simpan | Kira | Cetak | Keluar

Umum | Perjalanan | Tuntutan

JUMLAH TUTUTAN

Elaun Makan/Harian/Logging

Elaun Makan ____ hari   Kadar : RM ____ /hari Jumlah ____
Elaun Harian ____ hari   Kadar : RM ____ /hari Jumlah ____
Elaun Lojin ____ hari   Kadar : RM ____ /hari Jumlah ____

Jumlah (RM) ____

Elaun Sewa Hotel

____ hari   Kadar : RM ____ /hari   RM ____
No. Resit ____   RM ____
No. Resit ____   RM ____
No. Resit ____   RM ____

Jumlah (RM) ____

Elaun Perjalanan Kenderaan Sendiri

Jenis Pengangkutan   Kereta
Kelas ____
Jarak   0   km

Jumlah (RM) ____

Tambang Pengangkutan Awam

	No. Resit	RM
Teksi		
Bas		
Van		
Feri/Bot		
Lain-lain		

Jumlah (RM) ____

Pelbagai

	No. Resit	RM
Tol		
Tempat Letak Kereta		
Dobi		
Pos		
Tel/Faks		
Kerugian Pertukaran Matawang Asing		
Lain-lain		

Jumlah (RM) ____

Jumlah Tuntutan (RM)   0.00

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8. Edit claim design

9. Retrieve claim information design

10. Add or edit salary grade input design

11. Add or edit rate input design

12. Add and edit transport rate input design

13. Search claim made input design

APPENDIX I   **OUTPUT DESIGN**

1. Claim made output design

<div align="center">

KENYATAAN TUNTUTAN ELAUN PERJALANAN DALAM NEGERI

</div>

Nombor Rujukan :

<div align="center">

MAKLUMAT PEGAWAI

</div>

Nombor Fail Peribadi   **:**
Nama   :
No. Kad Pengenalan   :
No. Telefon Pejabat   :
No. Telefon Rumah   :
Gred Gaji   :
Kategori   :
Kumpulan   :
Jawatan   :

Pendapatan
Gaji Pokok   : RM
Elaun-Elaun   : RM
Jumlah   : RM

Kenderaan
Model   :
No. Pendaftaran   :
Kuasa (c.c)   :
Kelas Tuntutan   :

Akaun Bank
Nama Bank   :
Nombor Akaun   :
Alamat   :

Alamat
Alamat Pejabat   :
Alamat Rumah   :

Tarikh Tuntutan   :
Tarikh Kelulusan Permohonan   :

<div align="center">

Muka surat 1

</div>

KENYATAAN TUNTUTAN

Butiran Perjalanan
Tujuan Perjalanan :

Bil	Tarikh	Waktu Bertolak	Waktu Sampai	Tempat Asal	Tempat Tuju	Jenis Kenderaan	Jarak (km)

Muka surat 2

_____

JUMLAH TUNTUTAN

Elaun Makan/Harian/Lojing

Elaun Makan	:	hari X RM	/hari	: RM
Elaun Harian	:	hari X RM	/hari	: RM
Elaun Lojing	:	hari X RM	/hari	: RM
				Jumlah :RM

Elaun Sewa Hotel

Sewa Hotel	:	hari X RM	/hari	:RM
				Jumlah :RM

Elaun Perjalanan Kenderaan Sendiri (Kereta)

Jarak	:	km	Jumlah : RM

Tambang Pengangkutan Awam

Teksi (No. Resit)	:	:RM
Bas (No. Resit)	:	:RM
Van (No. Resit)	:	:RM
Feri/Bot (No. Resit)	:	:RM
Lain-lain (No. Resit)	:	:RM
	Jumlah	:RM

TUNTUTAN PELBAGAI

Tol [Resit]	:	:RM
Tempat Letak Kereta (No. Resit)	:	:RM
Dobi (No. Resit)	:	:RM
Pos (No. Resit)	:	:RM
Telefon/Faks (No. Resit)	:	:RM
Kerugian P.M.A (No. Resit)	:	:RM
Lain-Lain (No. Resit)	:	:RM
	Jumlah	:RM

JUMLAH TUNTUTAN   :RM

Muka surat 3

_____
PENGAKUAN

Saya mengaku bahawa :

(a)   perjalanan pada tarikh-tarikh tersebut adalah benar dan telah dibuat atas urusan rasmi.

(b)   tuntutan ini dibuat mengikut kadar dan syarat seperti yang dinyatakan di bawah peraturan-peraturan bagi pegawai bertugas rasmi dan/atau pegawai berkursus yang berkuatkuasa semasa;

(c)   perjalanan yang bertanda (*) berjumlah sebanyak RM _____ telah sebenarnya dilakukan dan dibayar oleh saya;

(d)   panggilan telefon sebanyak RM _____ dibuat atas urusan rasmi; dan

(e)   butir-butir seperti yang dinyatakan di atas adalah benar dan saya bertanggungjawab terhadapnya.

_____

Tandatangan

 Tarikh :

PENGESAHAN

Adalah disahkan bahawa perjalanan tersebut adalah urusan atas urusan rasmi.

Disemak oleh:

_____   _____
 (   )   (   )

 Tarikh : _____   b.p.Ketua Setiausaha/Pegawai Pengawal
          (Cop Dan Jawatan Rasmi)

Muka surat 4

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2. Report output design

Laporan Kelulusan Tuntutan Bagi Tahun _____
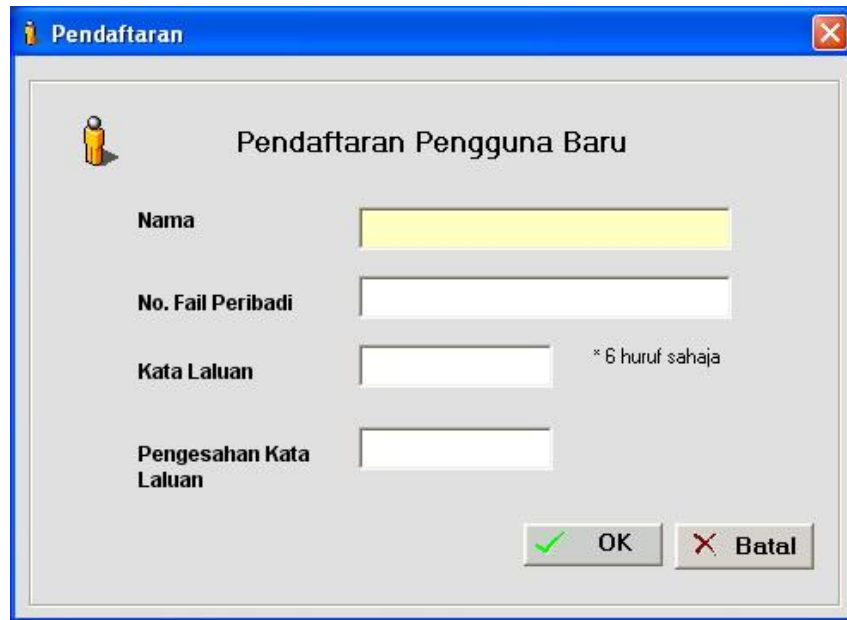
Rujukan	Nama	Nombor Fail Peribadi	Tarikh Permohonan	Tujuan	Jumlah Diluluskan
				Jumlah	**RM**

Laporan Permohonan Tuntutan Bagi Tahun _____

Rujukan	Nama	Nombor Fail Peribadi	Tarikh Permohonan	Tujuan	Jumlah Tuntutan
				Jumlah	**RM**

APPENDIX J   SCREEN SNAPSHOTS

1. Registration Form

2. Login Form

3. Change Password Form

4. Main page

a. Teacher login

b. Clerk login

5. New Claim Form: Claimant Information

6. New Claim Form: Travel Information

7. New Claim Form: Claim Detail

8. Edit Claim Form

9. Search Claim Made Form

10. Generate Report Form

11. Input Salary Form

12. Transport Rate Form

13. Daily, Meal and Lodging Rate Form

14. Transport Category

15. Form About

16.   Form Help

Panduan Pengguna

Sistem Tuntutan Perjalanan Guru adalah satu sistem yang dibangunkan untuk menolong guru dalam membuat tuntutan. Langkah-langkah menggunakan sistem adalah seperti berikut:

Login

Masukkan nama pengguna, nombor fail peribadi, kata laluan yang betul dan tekan Enter ataupun klik butang Masuk. Tekan Tab yang ada pada papan kekunci untuk pergi ke ruangan seterusnya. Klik butang Batal

APPENDIX K   SYSTEM FUNCTINALIITY TESTING

Instruction: Please complete the tasks below and stated the result

Module	Expected Result	Result		Remarks
Security Module				
User Login		**Yes**	**No**	
User login	User can login successfully	√		
	Pop up message if invalid login information given.	√		
Click on 'Masuk' button	Display the main page	√		
Click on 'Keluar' button	Exit the system.	√		
User Registration				
Click on 'Daftar' button	Can register the new user.	√		
	Pop up message register successfully.	√		
	Pop up message if invalid information given.	√		
Click on 'Batal' button	Cancel the action.	√		
User Change Password				
Click on 'Tukar' button	User can change password successfully.	√		
	Pop up message to indicate the process done.			
Click on 'Batal' button	Cancel the action	√		
Main page Module				
Click on 'Buat Tuntutan Baru' button	Go to create new claim page	√		
Click on 'Edit Tuntutan'	Go to edit the claim made	√		

button				
Click on 'Semak Senarai Tuntutan' button	Go to the search claim page	√		
Click on 'Edit Grade Gaji' button	Go to the edit grade page	√		
Click on 'Edit Kadar Elaun' button	Go to edit rate page	√		
Click on 'Edit Kadar Kenderaan' button	Go to edit the transport rate page	√		
Click on 'Menjana Laporan' button	Go to generate report page	√		
Click on 'Pengguna Baru' button	Go to register new user page	√		
Click on 'Tukar Kata Laluan' button	Go to change password page	√		
Click on 'Keluar' button	Exit the main page and back to standby login mode	√		
	Message pop up to confirm the action.			
Create Grade and Claim Rate Module				
Click on 'Tambah' button	Add new record to database.	√		
Click on 'Simpan' button	Save the record to database.	√		
Click on 'Ubah' button	Update record from the database.	√		
Click on 'Hapus' button	Delete record from the database.	√		
Click on 'Keluar' button	Go back to main page.	√		
Make Claim Module				
New Claim				
Click on 'Simpan' button	Save the record to database.	√		
Click on 'Cetak' button	Print the current record.	√		

Click on 'Keluar' button	Go back to main page.	√		
Edit Claim				
Click on 'Simpan' button	Save the record to database.	√		
Click on 'Cetak' button	Print the current record.	√		
Click on 'Keluar' button	Go back to main page.	√		
Search Claim Made Module				
Click on 'Cari' button	Search the record based on criteria.	√		
Click on 'Reset' button	Clear the fields and display the entire claim made	√		
Click on 'Exit' button	Go back to main page	√		
Click on 'Print' button	Print the selected claim made.	√		
Report Module				
Click on 'Print' button	Print the entire report.	√		
Select the option button	Display the claim made best on option chosen.	√		

APPENDIX L   USER ACCEPTANCE TEST

Please tick (√) on the appropriate grade. Your feedback and comment is highly appreciated.

Items	Excellent	Good	Acceptable	Poor
	4	3	2	1
Usability (Capability to make claim)				
Ease of use (Easy to use)				
Interface Design (Consistence layout)				
Attractiveness (Used of images, color, font size)				
System Features (Useful functions provided)				
System Reliability (Security)				

Overall Comments:

_____

_____

_____

_____

_____

_____

_____

APPENDIX M   HEURISTIC EVALUATION CHECKLIST

Instruction: Please respond to the following according to the scale set.

Scale: 1 = Very Poor 2 = Poor   3 = Fair   4 = Good   5 = Very good

ITEM	Scale					Comments
Interface	1	2	3	4	5	
Consistency user interface (including screen layouts, report layouts, messages, field labels and date display)						
Interactive interface (GUI)						
Provide appropriate default values for fields						
Consistency of font and color used						
Functionality						
Capability of generate report						
Capability of generate claim form						
Capability of keeping user information						
On Screen Help features.						
Make real time calculation.						
Calculate and display the amount claimed						
All reports printable, viewable on screen.						
Shortcuts provided for important function						
Appropriate feedback provided.						
Users' error is treated in positive and helpful manner						
Help is provided						
Security						
Security user login						
Secure access only on own data.						
Language						
Simple and natural language used.						
Consistency of language						

APPENDIX N   RATE

KADAR-KADAR ELAUN MAKAN, BAYARAN MAKSIMUM SEWA HOTEL DAN ELAUN LOJING

Kedudukan Mengikut Kategori/Gred/Gaji Pegawai	Makan	Hotel	Lojing
DGA41	33	96	48
DGA34/DGA32	30	66	33
DGA29	28	53	27

KADAR TUNTUTAN KENDERAAN

KELAS	A	B	C	D	E
Sen tiap-tiap km	sen	sen	sen	sen	sen
500 km pertama	60	50	40	25	20
501 – 1000 km	55	45	35	25	20
1001 – 1700 km	45	40	30	20	15
1701 km ke atas	40	35	25	15	10

Kelas	Gaji	C.C. Kenderaan
A	RM 2020.36 ke atas	1400 ke atas
B	RM1795 ke atas	1000 ke atas
C	RM1193.54 ke atas	Bawah 1000
D	Kurang RM1193.54	175 Ke atas
E	Kurang RM1193.54	Bawah 175