PSM/PTA Asset Management System (PAMS)

Nurul Hafizah Binti Johar

CB11003

TECHNICAL REPORT SUBMITTED IN
FULFILMENT OF THE DEGREE OF COMPUTER
SCIENCE

FACULTY OF COMPUTER SYSTEM AND
SOFTWARE ENGINEERING

2013
ABSTRACT

Asset management system is a system that manages asset information. The information of the asset is inserting into the system, updating and deleting by the person or group that in charge for the asset management. PSM/PTA Asset Management system (PAMS) is developed to ease the workload. The development process of PAMS is partitioned into phase such as planning, user design, construction and cutover, based on the Rapid Application Development (RAD) methodology. By implementing PAMS, the PSM/PTA asset and borrowing records were able to be dynamically updated and access by all parties at any time. For future enhancements, the notification is sent to the supervisor and technician when the borrow application is sent by student.
ABSTRAK

This interface is the interface for FSKKP Technician and coordinator get customize report from PAMS.

3.8. NOTES ............................................................................................................. 80

4. SOFTWARE TEST REPORT (STR)......................................................................... 81

4.1. DOCUMENT APPROVAL .............................................................................. 81

4.2. INTRODUCTION ............................................................................................ 82

4.2.1. Purpose ....................................................................................................... 82

4.2.2. Abbreviations and Glossary ................................................................. 82

4.3. Document Overview ..................................................................................... 83

4.4. References ..................................................................................................... 83

4.5. OVERVIEW OF TEST RESULTS .................................................................. 84

4.5.1. Test Log .................................................................................................... 84

4.5.2. Rational for decision .............................................................................. 84

4.5.3. Overall Assessment of Test .................................................................. 84

4.5.4. Impact of Test Environment .................................................................. 85

4.6. DETAILED TESTS RESULTS ...................................................................... 85

4.6.1. Unit Testing .............................................................................................. 85

4.6.2. Unit Testing 1: Login ............................................................................. 86
4.6.3. Unit Testing 2: Import Item Picture Unit Testing ............................................. 87
4.6.4. Unit Testing 3: Submit New asset Information Unit Testing .................................. 88
4.6.5. Unit Testing 4: Approve Activities .......................................................................... 89
4.6.6. Unit Testing 5: Barcode generating activities .......................................................... 90

Table 27: Generate student’s Record .................................................................................. 90

4.6.7. Unit Testing 6: Borrowing activities ........................................................................ 91

Table 28: Borrowing activities .......................................................................................... 91

4.7. Functional Testing ....................................................................................................... 92

4.7.1. Functional Testing 1: Login with different users ....................................................... 92
4.7.2. Functional Testing 2: New Asset Entry and generate barcode Process ..................... 93
4.7.3. Functional Testing 3: Asset Borrowing Process ....................................................... 95

Table 31: Asset Borrowing Process .................................................................................... 95

4.7.4. Functional Testing 4: Asset Borrowing and return Process ..................................... 96

4.8. User Acceptance Test ................................................................................................. 97

5. CONCLUSION AND FUTURE WORKS ....................................................................... 98

5.1. Conclusion ..................................................................................................................... 98

5.2. Results .......................................................................................................................... 98

5.3. Limitations and advantages of the findings ................................................................. 99

5.4. Limitations ................................................................................................................... 99

5.5. Advantages .................................................................................................................. 99

5.6. Judgment / Evaluation ............................................................................................... 99

5.7. Suggestion and Further Enhancement ......................................................................... 100
LIST OF FIGURES

Figure 1: MyHome Inventory System Demo (Zamzuna, 2007) ........................................................................4
Figure 2: InExSy Security Form (Zamsuna, 2007) ..................................................................................6
Figure 3: System Inventory AVA (Wazir, 2006) ....................................................................................7
Figure 4: UMP ICT Equipment Booking .................................................................................................8
Figure 5: Flowchart of Asset Management for Current System .............................................................11
Figure 6: Flowchart of Asset Borrowing for Current System ................................................................12
Figure 7: System Interfaces ....................................................................................................................26
Figure 8: Context Diagram for PAMS .....................................................................................................27
Figure 9: DFD level 0 for PAMS ..............................................................................................................34
Figure 10: PAMS Management System Usecase ................................................................................36
Figure 11: Activity Diagram for login ....................................................................................................42
Figure 12: Activity Diagram for update PSM/PTA assets availability ...................................................43
Figure 13: Activity Diagram for View Available PSM/PTA Asset ..........................................................43
Figure 14: Activity Diagram for Borrow PSM/PTA Asset .....................................................................44
Figure 15: Activity Diagram for Approve Borrowing Form ....................................................................45
Figure 16: Activity Diagram for Borrow Status ....................................................................................45
Figure 17: Activity Diagram for view borrow Status ............................................................................46
Figure 18: Activity Diagram for Manage Asset Borrowing .................................................................46
Figure 19: Activity Diagram for View all System(Borrowing and Asset) .................................................47

Figure 20: DFD level 1 for Manage PSM/PTA asset .............................................................................48
Figure 21: DFD for manage PSM/PTA asset borrowing ........................................................................49

Figure 22: DFD for Generate PSM/PTA Asset and borrow report .......................................................51

Figure 23: Entity Relationship Diagram for PAMS ..............................................................................54
Figure 24: General Architecture ...........................................................................................................65
Figure 25: PAMS Context Diagram ....................................................................................................66
Figure 26: PAMS Data Flow Diagram 0 ................................................................................................67
Figure 27: DFD level 1 for Manage PSM/PTA asset ..........................................................................72
Figure 28: DFD level 2 Insert PSM/PTA asset insert ............................................................................74
Figure 29: DFD for manage PSM/PTA asset borrowing ......................................................................76
Figure 30: DFD for Generate PSM/PTA Asset and borrow report ....................................................78
LIST OF TABLES

Table 1: Comparisons between PAMS with existing system for asset management ................. 9
Table 2: List of terminology .................................................................................................. 14
Table 3: Comparison between Methodologies ......................................................................... 15
Table 4: Hardware Interfaces ................................................................................................... 29
Table 5: Software Interface ...................................................................................................... 30
Table 6: Use Case Description for Manage PSM/PTA Asset ....................................................... 37
Table 7: Use Case Description PSM/PTA Asset Borrowing ....................................................... 39
Table 8: Student Relational Data .............................................................................................. 55
Table 9: Lecturer Relational Data ............................................................................................. 56
Table 10: Asset Relational Data ............................................................................................... 56
Table 11: AssetBorrowing Relational Data ............................................................................... 57
Table 12: Login Relational Data ............................................................................................... 59
Table 13: FSKKP_Technician .................................................................................................. 60
Table 14: References document ............................................................................................... 64
Table 15: Student Data Dictionary ............................................................................................ 68
Table 16: Lecturer Data Dictionary ........................................................................................... 68
Table 17: Asset Data Dictionary ............................................................................................... 69
Table 18: AssetBorrowing Data Dictionary ................................................................................. 70
Table 19: Login Data Dictionary ............................................................................................... 71
Table 20: FSKKP_Technician Data Dictionary ............................................................................ 71
Table 21: Definition .................................................................................................................. 80
Table 22: Abbreviations and Glossary ....................................................................................... 82
Table 23: Login Unit Testing ..................................................................................................... 86
Table 24: Import Item Picture Unit Testing .................................................................................. 87
Table 25: Submit new asset Information Unit Testing ................................................................. 88
Table 26: Approve Activities ..................................................................................................... 89
Table 27: Generate student's Record ......................................................................................... 90
Table 28: Borrowing activities .................................................................................................. 91
Table 29: Login Unit Testing ..................................................................................................... 92
Table 30: Approve Activities .................................................................................................. 93
Table 31: Asset Borrowing Process ........................................................................................... 95
Table 32: Asset Borrowing and Return Process ......................................................................... 96
1. Introduction

Asset management system is a system that manages asset information. The information of the asset is inserting into the system, updating and deleting by the person or group that in charge for the asset management.

ProjekSarjanaMuda(PSM) or ProjekTahunAkhir(PTA) students can borrow the asset that provide by the faculty. The assets are like barcode reader, matrix card reader, iphone mobile and other asset that had been provide by faculty. They must fill the form manually and must get the approval from supervisor before send it to the person in charge.

A PSM/PTA asset management system using barcode is a system that manages the information of PSM/PTA asset and borrowing of the asset. First, person in charge fill the information system and the barcode for each asset.

Then, if PSM/PTA students want to borrowing the asset, they fill the online borrowing asset form and will be approve by supervisor and the will send to the person in charge. After that the students and supervisor will be have respond from person in charge about the borrowing by email. The person in charge also can check the asset borrow, the information of the borrower and able to list out the borrower. Other than that, the coordinator also can view all information of this system.
The software will be used to develop this system is Adobe Dreamweaver CS3. The language used is PHP. For the database we will use MySQL, Apache and web server XAMPP. With this system exists, the task of recording the asset and borrowing the asset for PSM and PTA will be more easily and quickly.

1.1. Problem Statement and Objectives

Nowadays, the management of PSM/PTA asset is done manually where the technicians of FSKKP have to fills up respective forms to record the assets. Apart from that, students and PTA/PSM supervisors have to get ‘BorangPinjamanPeralatan PSM FSKKP’ from the technicians and fill up the form to borrow asset or equipments from faculty and then submit the form to the technicians or PSM/PTA person in charge who will process the request. Therefore a computerized system will built to replace the current system. The system is web-based system to ease the lecturer to make the request or borrowing and technician to process the request.

Other than that, the assets not have a proper tagging and sometime there is some case, that the assets not have tagging. So when the technician need to track the asset it is difficult to do because not all the asset has proper tagging.

Other issue is difficulty to trace the availability of the asset. In inventory, asset tracking is one of the important tasks. With the current system is it difficult to locate the asset since technicians have to refer to certain form and the availability of the asset (status) is difficult to check because the technicians need to go to the cabinet to check the asset availability.
The current system have problem in maintaining the inventory record. With the current system maintaining the inventory record is a tedious task since the technicians have to refer to many forms from different files. Hence lead to inefficient in data management. When the technician need to update the inventory record it is difficult because need to search the file that keep all the forms.

The aim of the project is to develop PSM/PTA Asset Management System. The aim will be supported by 3 objectives. The objectives are:

1) To manage the data using database.
2) To develop the barcode generator for the assets.
3) To generate customize report.
1.2. Previous work/research and relationship to current project

1) MyHome Inventory system (Zamzuna, 2007)

MyHome Inventory system (Zamzuna, 2007) demos the inventory management in business, office or home as shown in Figure 1.1. It involves the creation of vendor, product, receiving lists and invoices list. MIS system has simple intuitive interfaces involving multi-user and multi-location system. It has its advantage where the admin can set the appearance of invoice, receipt and report. Besides, it can perform backups and restore database by just clicking a button.

It also can import and export information from CSV (comma separated-value) files and Excel. It also has a feature of printing documents and reports, and also can send email from this MIS program. It also conduct a SQL queries of DML such as delete, add new, update and search function.

![MyHome Inventory System Demo (Zamzuna, 2007)](image)
2) Inventory Execution System (Zamzuna, 2007)

The features and functions in InExSy (Inventory Execution System) (Zamzuna, 2007) are just exactly same as MIS system but there are some advance features added in this InExSy system. For backup and restore database for InExSy system, it is advanced to be saved in Ms Access or Ms SQL.

The database also can be restored in either one of it, and so do the connection according the database used by the admin or developer. Here, there is a login process for admin identified where the admin can change the password from time to time. Through this system, the admin has the authority to grant any privileges to specified user to avoid them access private and important data as shown in Figure 1.2.
3) **System Inventory AVA (Wazir, 2006).**

Figure 1.3 is SIA (System Inventory AVA) (Wazir, 2006). The SIA is a system for user use to view the ICT item or asset that they can borrow. User need to fill up the borrowing form to borrow the item but SIA does not provide the requestor's status on their request and this makes the requesting process incomplete where users have to check their request status manually.
Figure 3: System Inventory AVA (Wazir, 2006)
4) UMP ICT Equipment Booking

The UMP ICT Equipment Booking is used for UMP staff and students to book the ICT equipment. The staff and students enter the details of the booking form and submit it to the system. The details of the equipment that have been booked are entered by the PTMK staff. The staff and students can view the status of booking online. After the booking is approved, staff and students should go to PTMK to take the equipment.

![Figure 4: UMP ICT Equipment Booking](image)

5) Free asset management Software

Free software that is used to manage IT assets including network devices, PC and software installations. Monitor the network, exchange, and licensing and it also can report on assets, inventory and network metrics.
### Table 1: Comparisons between PAMS with existing system for asset management

<table>
<thead>
<tr>
<th>System</th>
<th>PSM/PTA Asset Management System (PAMS)</th>
<th>MyHome Inventory System (MIS)</th>
<th>Inventory Execution System (InExSy)</th>
<th>UMP ICT Equipment Booking System</th>
<th>System Inventory AVA(SIA)</th>
<th>Free it asset management Software</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Have tagging or not</strong></td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td><strong>Type of application</strong></td>
<td>Stand-alone for barcode generator and web-based for borrowing.</td>
<td>Stand-alone</td>
<td>web-based</td>
<td>Web-based</td>
<td>Web-based</td>
<td>web-based</td>
</tr>
<tr>
<td><strong>Type of database</strong></td>
<td>MYSQL</td>
<td>Ms Access or Ms SQL.</td>
<td>Ms Access or Ms SQL.</td>
<td>-</td>
<td>MYSQL or Apache</td>
<td>-</td>
</tr>
<tr>
<td><strong>Feature of Generate Report</strong></td>
<td>Provide</td>
<td>Provide</td>
<td>Provide</td>
<td>Provide</td>
<td>Provide</td>
<td>Provide</td>
</tr>
<tr>
<td><strong>Asset Borrowing Function</strong></td>
<td>Provide</td>
<td>Not Provide</td>
<td>Not Provide</td>
<td>Provide</td>
<td>Provide</td>
<td>Not Provide</td>
</tr>
</tbody>
</table>
The PAMS is comparing to 4 others system based on the functionality of the system. For first function is the system is provide Feature of Generate Report or not. PAMS and others system provide this feature. This function is important because if the system not provide a function of generate report, it make process to manage the asset or item become difficult.

Others function is Asset Borrowing Function. Not all the system above provides this function. With this function, it can make the PAMS user easy to borrow the assets. Status of borrowing booking and asset availability function is also important. PAMS user not need to go to the lab for know the status of their borrowing, all the status will be by online. Other than that, PAMS user also can know the asset that they want to borrow is available or not by seeing the availability status of assets that had been provided by PAMS.

<table>
<thead>
<tr>
<th>Status of borrowing/booking</th>
<th>PAMS</th>
<th>System 1</th>
<th>System 2</th>
<th>System 3</th>
<th>System 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability status of the Asset/Equipment</td>
<td>Provide</td>
<td>Not Provide</td>
<td>Not Provide</td>
<td>Not Provide</td>
<td>Not Provide</td>
</tr>
</tbody>
</table>

Online | Manual | Not Provided

Not Provided | Online | Manual | Not Provided

Not Provided | Online | Manual | Not Provided

Not Provided | Online | Manual | Not Provided

Not Provided | Online | Manual | Not Provided
Figure 5: Flowchart of Asset Management for Current System
Figure 6: Flowchart of Asset Borrowing for Current System
Currently all the PSM/PTA asset process is managed manually where the technicians of FSKKP have to fills up respective forms to record the assets. Apart from that, students and PTA/PSM supervisors have to get ‘BorangPinjamanPeralatan PSM FSKKP’ from the technicians and fill up the form to borrow asset or equipments from faculty and then submit the form to the technicians or PSM/PTA person in charge who will process the request. Therefore a computerized system will built to replace the current one. The system is online system to ease the lecturer to make the request or borrowing and technician to process the request.

The limitations for this current system are:

1) Process flow for borrow assets too complicated.
2) The asset tagging in improper way.
3) The data for asset and borrowing not proper kept.
### 1.4. Terminology

**Table 2: List of terminology**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>CSV</td>
<td>comma separated value</td>
</tr>
<tr>
<td>DML</td>
<td>Data Manipulate Language</td>
</tr>
<tr>
<td>FSKKP</td>
<td>‘FakultiSistemKomputerdanKejuruteraanPerisian’ or Faculty of Computer System and Software Engineering</td>
</tr>
<tr>
<td>ICT</td>
<td>1) <em>Information and Communication Technology</em></td>
</tr>
<tr>
<td>InExSy</td>
<td>Inventory Execution System</td>
</tr>
<tr>
<td>MIS</td>
<td>My Home Inventory system</td>
</tr>
<tr>
<td>PSM</td>
<td>ProjekSarjanaMuda</td>
</tr>
<tr>
<td>PTA</td>
<td>ProjekTahunAkhir</td>
</tr>
<tr>
<td>RAD</td>
<td>Rapid Application Development</td>
</tr>
<tr>
<td>SIA</td>
<td>System Inventory AVA</td>
</tr>
<tr>
<td>SQL</td>
<td>Structured Query Language</td>
</tr>
<tr>
<td>UMP</td>
<td>Universiti Malaysia Pahang</td>
</tr>
</tbody>
</table>
### 1.5. Method of Approach

**Table 3: Comparison between Methodologies**

<table>
<thead>
<tr>
<th>Model</th>
<th>Sources of method</th>
<th>Stages/phase</th>
<th>Scenario</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systems development life-cycle (SDLC)</td>
<td>(Wikipedia, 2013)</td>
<td>5 phase consist of requirement analysis, design, implementation, testing, evaluation</td>
<td>When want to build a high quality system that meets or exceeds customer expectations.</td>
</tr>
<tr>
<td></td>
<td>(Wiras, 2008)</td>
<td>4 phase consist of Planning, Analysis, Design, Implementation</td>
<td>If the system is not big and complex and have a fixed requirement.</td>
</tr>
<tr>
<td>Method</td>
<td>Stages</td>
<td>Conditions</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>(Abdoullia, 2013)</td>
<td>4 stages consist of System Planning and Selection, System Analysis, Systems Design, Systems Implementation and Operation.</td>
<td>If the system is not big and complex and have a fixed requirement.</td>
<td></td>
</tr>
<tr>
<td>RAD (Rapid Application Development)</td>
<td>4 stages that consist of requirement planning, user design, construction, implementation</td>
<td>When want to build a quality system in a fast time.</td>
<td></td>
</tr>
<tr>
<td>(Konstantinou, 2013)</td>
<td>4 stages that consist of requirement planning, user design, construction, implementation</td>
<td>When want to build a fast, efficient, accurate program and/or system development and delivery.</td>
<td></td>
</tr>
<tr>
<td>(Martin, 2013)</td>
<td>4 stages that consist of requirement planning, user design, construction, implementation</td>
<td>When want to build a fast, efficient, accurate program and/or system development and delivery.</td>
<td></td>
</tr>
</tbody>
</table>