BORANG PENGESAHAN STATUS TESIS*

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JUVENILE DETENTION CENTER MANAGEMENT SYSTEM

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This report is submitted in partial fulfillment of the requirements for the Bachelor of Computer Science (Database Management)

FACULTY OF INFORMATION COMMUNICATION AND TECHNOLOGY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA
2007

DECLARATION

I hereby declare that this project report entitled

JUVENILE DETENTION MANAGEMENT SYSTEM (JDCMS)

is written by me and is my own effort and that no part has been plagiarized without citations.

STUDENT _____ Date: 26 JUNE 2008

(NUR FIRDAUSA BINTI RASNAN)

SUPERVISOR : _____ Date: _____

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DEDICATION

To my beloved parents,
Maznah binti Mohd Shariff and
Rasnan bin Arbi

To my dearest siblings,
N, Ojja, Nicha and Izzat.

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ABSTRACT

This project contains of the development phases of JDCMS (Juvenile Detention Management System). JDCMS includes of 8 modules and 6 of the modules will operate in the JDCMS interface environment. Among the 8 modules are; Record Management, Database Triggers, Stored Procedures, Backup and Recovery, Dynamic DDL, Dynamic Report Generation, User Control, and Transaction Logging. The modules are brainstormed based from the identified problems faced by the current system such as separate environment for database administration and system management and are represented as the specifications and requirements in the development of JDCMS. The development approach for JDCMS is Structured System Analysis and Design Method (SSADM) which implemented the Software Development Life Cycle (SDLC); the iterative waterfall model. JDCMS applies two-tier architecture since the application will be used in an intranet environment. The server part is categorized into two, database and application server, both resides in the same computer. The application server used in the development of JDCMS is Oracle9i Application Server and the database is Oracle9i. As for the development tool, JDCMS is developed using components of the Oracle9i Developer Suite, Forms Developer and Reports Developer.

ABSTRAK

Projek ini mengandungi fasa pembangunan JDCMS (*Juvenile Detention Center Management System)*. JDCMS terdiri daripada 8 modul keseluruhan dan 6 daripadanya akan beroperasi melalui antaramuka. Modul JDCMS adalah terdiri daripada yang tersebut; *Record Management, Database Triggers, Stored Procedures, Backup and Recovery, Dynamic DDL, Dynamic Report Generation, User Control* dan *Managing Transaction Logging.* Modul-modul tersebut dihasilkan setelah mengkaji masalah-masalah sistem yang sedia ada seperti pengasingan pengurusan pangkalan data dan pengurusan sistem dan seterusnya diambil sebagai spesifikasi di dalam pembangunan JDCMS. Pendekatan pembangunan yang digunakan untuk membangunkan JDCMS adalah *Structured System Analysis and Design Method* (SSADM) melalui *Software Development Life Cycle* (SDLC). JDCMS mengaplikasikan senibina *2-tier* memandangkan system ini akan digunakan di dalam persekitaran intranet. Bahagian pelayan dibahagikan kepada dua, iaitu pangkalan data dan pelayan sistem dan kedua-duanya terletak di dalam sebuah computer yang sama. Pelayan sistem yang digunakan di dalam pembangunan JDCMS ialah Oracle9i Application Server dan pangkalan data yang digunakan ialah Oracle9i. Sebagai medium pembangunan, JDCMS dibangunkan dengan menggunakan komponen Oracle9i Developer Suite, di antaranya ialah Forms Developer dan Reports Developer.

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LIST OF ABBREVIATIONS

JDCMS	Juvenile Detention Center Management System
JCMS	Juvenile Center Management System
JMIS	Juvenile Monitoring Management System
OOAD	**Object Oriented and Analysis Design**
SSADM	Structured System Analysis and Design Method
SMPP	Sistem Maklumat Pengurusan Pesalah
SDLC	Software Development Life Cycle

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CHAPTER I

INTRODUCTION

1.1 Project background

The system that is to be developed is Juvenile Detention Center Management System (JDCMS) for the use of the juvenile center such as Henry Gurney School and other juvenile facilities which are managed by the Malaysian Prison Department under the Ministry of Internal Security. JDCMS can be used to manage the administration and the management processes all in a user-friendly interface environment.

The administration processes involved are the Multi-level User Control, Backup and Recovery, Stored Procedures, Dynamic Database Creation, Dynamic Reports Creation and Triggers Creation. The management processes involved are managing the juvenile information, their guardians, keeping records of their offenses, assigning counseling sessions and keep track of their plea petition status.

Currently, juvenile institutions like Henry Gurney School have already had a computer-based system which is called *Sistem Maklumat Pengurusan Pesalah* (SMPP). SMPP handles the management processes and is connected to the main headquarters. The management processes will be done in the institution itself but the administration processes will be done in the headquarters. JDCMS on the other hand will allow the administration processes to be done in each institution by an authorized user.

Database Management System (DBMS) used to develop JDCMS is the Oracle9i. The system also will keep the transaction logging of the user logging the system. With this feature, the user entering the system can be monitored and temperament against data can be tracked. The interface of JDCMS will be developed using Oracle Developer Suite component, Oracle Forms Developer.

1.2 Problem statement

The following are the problems faced by the current system that can be overcome by the existence of the JDCMS.

i. **Administration/maintenance processes done in the DBMS environment.**

The simple administration tasks such as performing DDL (Data Definition Language) in creating a new user and DCL (Data Control Language) in granting privileges to the new user currently have to be done in the DBMS environment. Even though there is no problem to do so, it is just a bothersome to run the DBMS environment just because there a new staff employed and the administrator needs to assign username and password to him.

ii. **Production of Static Reports instead of Dynamic Reports.**

The current system today produce reports just by printing the static reports therefore the reports' contents are exactly like what is displayed on the interface, which sometimes does not fulfill the users' needs especially when the users need extra information concerning other tables in the database.

iii. **Stored Procedures are not supported.**

Stored procedures usually contain batches of SQL statements which are needed in performing complicated operations. Using the current system, it does not support the stored procedures therefore the administrators have to run the batches of SQL statements one by one every time the operation needs to be performed.

1.3 Objective

The objectives in developing JDCMS are:

i. **To include a user-interface administration/maintenance section in the system for the database administration tasks.**

Administration tasks can be done in a user-interface environment instead of using the conventional ways of performing the administration processes that is to manually log in to the DBMS. This way, for simple administration tasks, there is no need for the administrators manually log in as they can perform from the system interface.

ii. **To provide users with user-friendly environment in performing management tasks.**

Management tasks can be done in a friendly user interface to ease the management processes and therefore, the management processes can be done smoothly. As the system will be develop with user-friendly environment, even a novice user may learn how to operate the system easily.

iii. **To perform logical and physical back up of the data in the database and recovery process successfully.**

Backup and recovery processes are done to ensure the security and availability of data in the system. With JDCMS, the process can be done by clicking a button on the interface to perform backup. The backup file will overwrite the previous file each time and during the recovery, the backup data will be loaded into the database.

iv. **To produce dynamic reports.**

Dynamic reports are different from static reports as they are produced dynamically, for example, the report produced concerning number of juvenile will always have the updated number of juvenile in the center itself. This way, any ad-hoc queries on reports regarding the juvenile are the updated reports as the reports may be critical for analysis purposes or decision making situation. As an added feature, the reports will also be produced as .pdf file to ease the user to save or to print the report.

v. **To manage transaction logging.**

The transactions made in the system can be traced by performing transaction logging to avoid unnecessary data temperament. This way, the confidentiality and integrity of the information can be preserved and any unnecessary changes made by any of the authorized personnel to the data can be tracked.

vi. **To control multi-level user.**

Multi-level user control needs to be applied in JDCMS because the data kept in the system are critical and confidential, therefore access to the system should be

restricted to authorized personnel only and the authorized personnel also have their own limitations to which extent they can operate the system.

1.4 Scopes

The scope will explain the boundaries of users who are allowed to operate the system, the functions of each module created in the development of JDCMS and the technologies used in the development process of JDCMS.

1.4.1 Target User

The target users of JDCMS are the database administrator and the staff manager of the Juvenile Detention Center.

1.4.2 Function

The modules included in the JDCMS are:

i. **Record Management Module**

The management process of JDCMS is performed here. The juvenile information, guardians' information, offenses, counseling session and petition status are managed here and can be viewed for reference. This module is accessible to both administrators and staff managers as it is the management process where the staff managers are responsible at and the administrators may perform some task not performable by the staff managers such as deleting records.

ii. User Control / Grant Privilege Module

The administrators perform user control in JDCMS is done by assigning different privileges to users according to their specified roles. There are some tasks that are not performable by the staff managers but can only be performed by the administrators as the tasks are critical tasks and any unnecessary changes or disturbance will affect the system.

iii. Backup and Recovery Module

The administrators can perform backup and recovery in a user-interface environment which is from JDCMS itself. The task can be done by pressing a button and a dump file and a log file of the database are stored in a specific location. For the recovery process, the files are loaded back to the database also by pressing the button on the interface.

iv. Dynamic Database Creation Module

The administrators can perform dynamic database creation in JDCMS for administration purposes for example create new table or new user. The tables created are dynamic which means the user can specify the name of the table, number of columns the table will have and they can change the name of the columns later on. As for the create new user, it will ease the administrators in assigning new username, passwords and roles to new user whether he is the administrator or staff manager.

v. Dynamic Reports Module

JDCMS can produce dynamic reports which mean that the reports produced are always up-to-date and reflects the changes made to the original table which is critical in case the reports are needed for analysis purposes or in decision-making

activities. Besides that, users can specify on what basis the report are to be generate, either it concerns on specific juvenile such as a report on juvenile's information, his guardian and his offenses which may be needed for petition plea or as a record for the counselors during the counseling session or reports on overall information such as number of juvenile offenders according to their race.

1.4.3 Technology

The following are the technologies used in developing JDCMS:

i. The Operating System (OS) used to operate JDCMS is Windows XP Professional.

ii. The database used is Oracle 9i.

iii. The interface is developed by using Oracle Forms Developer.

iv. The system operates in the existence of OC4J or HTTP Application Server.

1.5 Project significance

JDCMS is developed to provide advantages to both the administrators and the staff manager of the institution who will be operating the system. JDCMS will provide an administration/maintenance section for administrative tasks that can be performed by the authorized administrators only and another section that will be operated by the staff manager managing the institution all from the user interface environment which will ease the process of records management. JDCMS will focus more on the

administration/maintenance section and it will affect the access and authorization to the management section.

JDCMS is also developed with security features such as username and passwords so that the access to the data and critical information is secured from temperament. There will also be other security features such as transaction logging features which will keep track on users that log to the system and keep track of data changes that may be developed in time to ensure the integrity and confidentiality of data.

1.6 Expected output

The expected output of this project is Juvenile Detention Center Management System (JDCMS). This system is a system-based. JDCMS will be used by the administrators and staff managers of the institutions with authorized access.

The administrators are the only authorized person to be accessing the administration/maintenance section of JDCMS since it involves the accuracy and integrity of data. For backup and recovery process, the administrators will back up data from database into dump file and log file which will be saved in specific location on administrators' computer and recovery process can be done by loading the data from the files into the database. System trigger will be created to keep track of the input and to ensure that the input entered are the correct input for every functions while the database trigger will keep the transaction logging for the system. Other than that, dynamic reports are possible to be produced according to users' specifications and needs.

Since there will be series of literature reviews and interviews in collecting information related to the existing system and the methods to be implemented in developing each module, the expected output from these activities are the improvement version of the juvenile center management system which will overcome the problems

faced by the current system. The interview with the institution's officer will gather the problems faced by the existing system and also the requirements and specifications for JDCMS. The literature review which involve the sources from the internet and books will be helpful in programming the system and making sure the functions are working properly as desired by the user.

1.7 Conclusion

JDCMS is developed on specifications based on analysis made on the problems faced by current management system. This is to ensure that JDCMS conforms to the institutions' specifications and needs. The objectives are to be achieved by the completion of each and every module stated and ensuring every module works. The scope had stated the limitation of the user allowed in operating JDCMS and the functions can be performed by operating JDCMS.

The information gathered in this chapter works as a guide in completing the next chapter in the development of JDCMS that are Literature Review and Project Methodology. The methodology, requirements and project schedule in developing JDCMS will be further discussed in Chapter 2: Literature Review and Project Methodology.