RESEARCH GROUP MANAGEMENT SYSTEM FOR APPLIED COMPUTING GROUP

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RESEARCH GROUP MANAGEMENT SYSTEM FOR
APPLIED COMPUTING GROUP

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DEGREE OF BACHELOR
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DECLARATION

I hereby declare that the material in this thesis is my own except for quotations, excepts, equations, summaries and references, which have been duly acknowledged.

20 JUN 2015

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Dr Lau Hui Keng
SUPERVISOR
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HEW POH TENG
20 JUNE 2015
ABSTRACT

In universities, researchers are generally attached to one or a few research groups, units, or institutes. In University Malaysia Sabah (UMS), these researchers are the academic staff and postgraduate students. Each researcher is involved in many activities such as working on research projects, supervise students, produce research publications and involve in charity work. UMS has CV-Online for the academic staff to store and managed their resume and Postgraduate Information System (PPPS) to store academic details of the postgraduate students. These two systems are not designed to manage researchers under a centralized management system. Thus, they are not linked and no statistics of the researchers and research group can be produced. To produce annual statistics for individual researcher or the research group, someone has to manually calculate and produce the reports. Since data of individual researchers are kept by themselves, it is time-consuming and requires significant effort to collect all data to generate the reports. Therefore, Applied Computing Group requested to have a system developed to centralize the management of data and to automate the generation of desired reports. This project is on the development of a web-based research management system for the group. The development methodology is Prototyping. A researcher from the research group is involved in the development by giving feedbacks on the prototypes. Software tests including unit, integration, system and user acceptance tests were carried out at different phases of the development to make sure that the system developed work accordingly and in accordance to the requirements. The system will be hand-over to the research group for installation and deployment.
ABSTRAK

SISTEM PENGURUSAN KUMPULAN PENYELIDIKAN

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CHAPTER 1

INTRODUCTION

1.1 Problem Background

In universities, researchers are generally attached to one or a few research groups, units, or institutes. Here, the groups, units or institutes are collectively referred to as research groups. In each group, researchers are involved in many activities including producing research publications, work on research projects, supervise students, participate in competitions, and involve in charity work. Often, these data are kept only by individual researchers and whenever a summary of a group’s achievement is needed, the group leader will ask everyone to submit their performance data such as publication of journal.

In University Malaysia Sabah (UMS), these researchers are the academic staff and postgraduate students. For each academic staff, he or she has an account on the CV-Online website. After logged into the website, the staff can update their profile, publication data, supervision data, conference data, community service, and so on. This system is sufficient to store all data related to staff. However, as this system is not designed for research group, no functionalities of specifying which research group the researcher belongs to or to produce annual statistics on the performance of the individual or the research group.

For each researcher, to generate statistics on annual achievement is not possible from the CV-Online as the system is only to store the data without generating the statistics. Therefore, when such information such as publication records is required, the staff has to manually process them. This is time consuming and prone to human
errors. To make matter worse, the CV-Online is not accessible all the time especially during the promotion period when it will be deactivated.

Lastly, the Postgraduate Student Information System (PPPS) is not linked to CV-Online. The two systems are separated. To access data regarding postgraduate students under supervision, the researcher has to log into the PPPS. The PPPS has not functionality of storing student’s publications and awards from competition. Similarly, no summary statistics are available.

From the above mentioned situations, it is clear that the existing systems in UMS are not suitable for central management of research groups. The reason for the need for a research group management system is because every year, each research group has to produce a report on the status of the group. In order to generate the required information, there is a need for a system that allows the researchers to centrally store all data and generate required statistics. Such a system not only can minimize the hassle of collecting the required data from all researchers, which is often time consuming, it also facilitate the generation of required statistics as needed and with less error prone as in manual process.

Based on the problem background, the problems of current systems are:

i. There is no centralized platform for researchers to store all data related to the research group;

ii. CV-Online does not provide the functionalities such as centrally data management needed by research groups and it is not always accessible.

iii. Postgraduate Information system UMS is not linked to CV-Online and does not keep a record of student’s publications and awards.

iv. It is time consuming and require significant effort for researchers to generate statistics report by themselves;

1.2 Problem Statement

Although UMS has CV-Online and PPPS system to store data of researchers, these systems are not linked. The data on the researchers and postgraduate students are not centrally managed. Moreover, there are no functionalities in the systems to allow
researchers to print summary statistics on individual researcher’s achievements as well as group’s achievements. Therefore, the Applied Computing Group requested a web-based system to be built to centrally manage the data related to the group.

1.3 Objectives

Due to the problems stated in Section 1.2, the Applied Computing Group requested a web-based research group management system to be developed. Therefore, the objectives of the project are:

i. To implement a web based research group management system;

ii. To implement the research group management system for Applied Computing Group;

iii. To test and verify the developed system for user acceptance.

1.4 Project Scope

Research Group Management System is a system for researcher to store data on activities and details related to research group, and to produce required reports. From the interview with the user, there are 9 important modules in this system which included profile management, publication management, research grant management, conference/workshop/seminar, consultation, external relations, awards, audit log and reporting.

The functionalities of each module are shown in Table 1.1:
<table>
<thead>
<tr>
<th>Module</th>
<th>Sub-module</th>
<th>Description</th>
<th>Authority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile Management</td>
<td>Create new user</td>
<td>Admin create new user account.</td>
<td>Admin</td>
</tr>
<tr>
<td></td>
<td>User Profile</td>
<td>Display user profile</td>
<td>Admin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Update user profile.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>View all user</td>
<td>Display all user</td>
<td>All users</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Edit and update user role.</td>
<td>Admin</td>
</tr>
<tr>
<td></td>
<td>Search user</td>
<td>Search other user profile</td>
<td>All users</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Edit other user role/status.</td>
<td>Admin</td>
</tr>
<tr>
<td>Publication Management</td>
<td>Add publication</td>
<td>Add new publication</td>
<td>Researcher and</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Postgraduate</td>
</tr>
<tr>
<td></td>
<td>View all publication</td>
<td>Display users’ own publication listing.</td>
<td>Researcher and</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Postgraduate</td>
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<td></td>
<td>Edit, update or delete record.</td>
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<td></td>
<td></td>
<td>Display all users’ publication listing.</td>
<td>Admin</td>
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<tr>
<td></td>
<td>Search publication</td>
<td>Search own publication and also other users’ publication as well.</td>
<td>All users.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Note: admin does not have any publication record.</td>
<td></td>
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<tr>
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<td>Add research grant</td>
<td>Add new research grant</td>
<td>Researcher</td>
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<td></td>
<td>View all research grant</td>
<td>Display users’ own research grant listing.</td>
<td>Researcher</td>
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<td>Edit, update or delete record.</td>
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<td></td>
<td>Display all users’ research grant listing.</td>
<td>Admin</td>
</tr>
<tr>
<td></td>
<td>Search journal title</td>
<td>Search own journal title with grant and also other users’ publication with</td>
<td>Researcher and</td>
</tr>
<tr>
<td></td>
<td>with grant.</td>
<td>grant as well.</td>
<td>Admin</td>
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<tr>
<td></td>
<td></td>
<td>Note: admin does not have any research grant record.</td>
<td></td>
</tr>
<tr>
<td>Conference/ workshop/</td>
<td>Add conference/workshop/</td>
<td>Add new conference/ workshop/seminar</td>
<td>Researcher and</td>
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<tr>
<td>seminar Management</td>
<td>seminar</td>
<td></td>
<td>Postgraduate</td>
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<td></td>
<td>View all conference/</td>
<td>Display users’ own research conference/workshop/ seminar listing.</td>
<td>Researcher and</td>
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<td></td>
<td>workshop/seminar</td>
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<td>Display all users conference/workshop/seminar listing.</td>
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<td>Consultation Management</td>
<td>Add consultation</td>
<td>Add new consultation</td>
<td>Researcher</td>
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<td></td>
<td>View all consultation</td>
<td>Display users’ own research consultation listing.</td>
<td>Researcher</td>
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<td>Edit, update or delete record.</td>
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<td>Display all users’ consultation listing.</td>
<td>Admin</td>
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</table>
1.5 Organization of the Report

This report is divided into 7 chapters. They are Introduction, Literature Review, Methodology, System Analysis and Design, Implementation, Testing, Conclusion and Future Work.

Chapter 1: Introduction, it introduce to motivation, objectives, and project scope of the project. It also includes the description of modules identified for the system to be developed.

In chapter 2: Literature Review, it reviews existing systems that are similar to the project. A comparison between the existing systems in terms of user requirements is made in the end of the chapter.
In chapter 3: Methodology, it presents system development methodology. It covers reason for the chosen methodology and the activities involved in each phase in the methodology. It also included are the software and hardware for the system development.

In chapter 4: System Analysis and Design, it explains the system design which included interface design, database design, and functional design as well. Besides, it also included flowchart such as DFD, ERD, context diagram and others depending on the system development model used.

In chapter 5: Implementation, it presents the implementation of whole system. It covers software tools for coding and creating database involved in each user interfaces as well.

In chapter 6: Testing, it presents the testing by using test cases to ensure the success functionality of the system. It covers unit testing, integration testing, system testing and lastly acceptance testing.

In chapter 7: Conclusion and Future Work, it concludes and summarizes the six chapters of the report. Besides, it also presents the project limitations, advantage and recommendations for future work of this project.
CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter reviews existing systems that are similar to the project. Three systems have been reviewed. They are UMS CV-Online, UMS PPPS system, and Research Information Management System (InfoCenterFRIM). To motivate the reasons why a new system needs to be developed as requested by the Applied Computing Group, a comparison of functionalities requested by the users with those provided in the existing systems is also presented.

2.2 UMS CV-Online

UMS CV-Online system (https://hronline.ums.edu.my) is an online resume system. It allows UMS staff to manage data related to their career. UMS CV-Online has many modules such as research and publication, conference, seminar and workshop and so on as shown in Figure 2.2. In reviewing this system, the user of this system is a lecturer and the data provided is private and confidential.

Figure 2.1 shows the login page to UMS CV-Online. Each user is required to key in his/her login details to proceed.
REFERENCES


