UTP ONLINE GRADUATION AUDIT SYSTEM
(GAS)

By

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TRONOH, PERAK

CERTIFICATION OF ORGINALITY

This is to certify that I am responsible for the work submitted in this project, that the original work is my own except as specified in the references and acknowledgements, and that the original work contained here have not been undertaken or done by unspecified sources or persons.

_____

(CESAR AUGUSTO DE ANTONIO PESSANE)

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Finally and not least I thank god.

Contents

[2.]   Negash, S., Ryan, T., & Igbaria, M. (2003). Quality and effectiveness in Web-based customer support systems. Information & Management, 40(8), 757-768. doi: http://dx.doi.org/10.1016/S0378-7206(02)00101-5 31

[3.]   Silveira, M. S. G. (2009). Online Course Registration System for Faculty of Law in Timor Lorosa'e National University..31

[4.]   Yahuza, N. b. (2009). UTP Co-Curriculum Unit Web Based System (CCWBS). Universiti Teknologi PETRONAS. 31

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Key Words

UTP: Universiti Teknologi Petronas

GAS: Graduation Audit System

Abstract

The UTP student graduation process is currently done manually, before a student graduate. Final Year students have to fill up manually a form that contains the student academic records. The form is submitted to the examination unit which then redirects the form to the respective faculty to be audited. This process consumes times and involves usage of paper. This method is prompt to a higher rate of human errors during the process.

The main objective of this project is to develop a working web based system capable of handling and solving the problem above mentioned. This system will allow all the intervenient to interact and perform their work online, thus increasing the productivity of everyone involved and reducing paper usage.

The system will also solve other minor problems, for instance it helps to save the students grades from the first semester until their last semester, will also serves as an online student handbook and keep track of the subjects taken and subjects not taken.

The scope of this project is limited to Universiti Teknologi Petronas and in a first stage and because of the time constrain only the Faculty of Computer & Information Science will be covered by this project.

CHAPTER 1

1.0 Introduction

The world nowadays is moving fast, with technology advances in all fields and coming from all the corners of the world. It is imperative for any organization that wishes to succeed to use electronic systems in favor of manually and paper based systems for their business process and daily activities. Electronic systems save time and money.

Universiti Teknologi Petronas being a top rated institution does not stay behind the rest of the world and embraces all this technologically advances. However the number of business process done manually is still very high.

1.1 Problem Statement

Universiti Teknologi Petronas students doing final year need to go through a verification process before graduation. This process is done manually because the current systems that the students use every semester to registry for subjects taken lacks a function that allows students to perform this verification process electronically.

This process is time and paper consuming because the students have to fill up a form with their academic records, this form is then submitted to the examination unit which checks and validates the form before sending the forms to each respective faculty for another verification and data validation.

This method is also frustrating to the student and to the staff especially when there is a human error in the process of filling up or reading the forms.

Other issues faced by Universiti Teknologi Petronas students is the lack of system to manage and save keep the subjects taken and subjects to be taken by them. The available system allows students to register every semester but does not tell the student which subjects the student needs to take and which ones he or she has taken before nor does the system reminds the students of failed subjects.

The system used in the moment only saves the latest results transcripts obliging the students to request manually for their results if needed.

1.2 Objectives

The main objectives of this project is to develop a web based system that will:

- Provide a simple yet friendly web page for final year students to submit their graduation forms online.
- Provide a system that will manage students graduation forms electronically

The above mentioned objectives are the main objectives. The system will also have other sub-objectives such as:

- Provide a system that will aid new Universiti Teknologi Petronas students regarding the subjects they have to take each semester.
- Develop a system that will keep track of the grades of the students from the first semester until they graduate.

1.3 Scope of the study

The scope of this project is limited to Universiti Teknologi Petronas and in a first stage and because of the time constrain only the Faculty of Computer & Information Science will be covered by this project.

1.4 Relevancy of the Project

This project aims to overcome the problems faced by students and staff during the graduation verification process.

In this moment the graduation audit system is a manual process that consumes time and paper. The fact of the system being manual prompts to a higher rate of human mistake.

By developing a web page to automate this process, the author expects to reduce the time taken in allowing the staff and the students complete the process faster, also reduce the human error rate and paper consumption.

CHAPTER 2

2.0 Literature Review

Information technology has pervaded our work and home lives in the last decade. One cannot do anything without it touching some aspect of our life - going shopping, telephoning interstate, doing the banking, or borrowing a book, etc. It has changed and continues to change the world our parents knew.(Horsfall) Since its shifting from industrial process to a service based economy the information technology have changed our lives.

Information technology systems have proven to be useful in our lives, many organizations have realized this and they are shifting their business process to web based systems. A survey of 350 information systems (IS) executives revealed that connecting to customers and suppliers is one of their top 10 priorities. Among this same group, 60% of the respondents indicated that developing applications to support their customers was the most important focus for their system development efforts.**(Negash, Ryan, & Igbaria, 2003).**

Information systems promises potential benefits for firms, including reduced transaction costs, reduced time to complete transactions, reduced clerical errors, faster responses to new market opportunities, improved monitoring of customer choices, improved market intelligence, more timely dissemination of information to stakeholders, and more highly customized advertising and promotion. (Negash et al., 2003) The improvements in science and technology has made a remarkable development and changed all daily activities of present society. Every organization needs that wants to provide a great service to their customer base need to migrate from old systems to new systems. Bill Gates of Microsoft said that he believes that customer service is destined to become the primary value added function in every business.(Negash et al., 2003)

In the recent time, the web has changed our lives and works at every day level, and this trend will continue for the foreseeable future as we can see nowadays that many organizations such as government, non-governmental organization and many more depend heavily on Web systems and applications to enhance and improve their business operations.(Silveira, 2009)

Web Based Systems

A web system is by definition a system that provides a service or controls a process online and interacts with the user through a web browser.

A web-based system is one in which the primary user interface is provided through web pages which are accessed on a standard web browser. A web based system provides high in efficiency in handling business processes.

Benefits of using a web based system are it provides more access, flexibility, interoperability, wider area integration and not more cost.(Yahuza, 2009)

This project will apply this system because in the moment the system that is being used is not automated and is not electronic. Horsfall during her research found out that electronic systems are important because:

- Using web based technology replaces human effort, skill, and knowledge to perform a process at lower cost.
- Higher job satisfaction
- An increase in the variety of tasks.

CHAPTER 3

3.0 METHODOLOGY & PROJECT WORK

Because of the time frame and the limited resources available to develop this project and in order to maximize the resources a **Rapid Application development** (RAD) methodology will be used. RAD is very useful when there is a need to come up with a good prototype.

- Faster delivery time
- better quality
- lower costs
- lower maintenance
- greater stakeholders satisfaction
- better project management
- reduced risk

RAD is a great methodology because it uses minimal planning resources in favor of rapid prototyping.
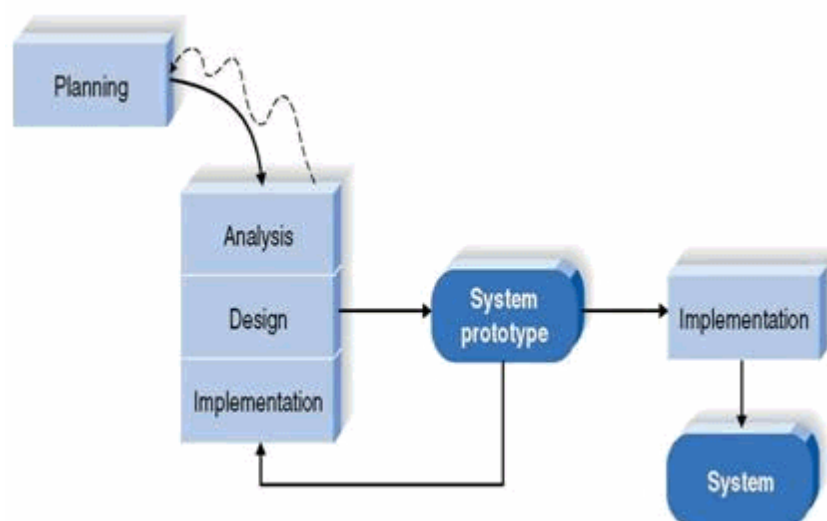

Figure 1 Prototyping Methodology

3.1Requirement Phase

During this stage of the system the all the studies related to planning and gathering of problems related to the systems is done. A good planning is important because it will decide how the system will be developed. Also at the end of this stage the author need to be able to have a detailed list of key milestones, project scope and constrains. This stage is divided into Planning and Analysis.

3.1.1Planning

Steps Taken

1. **FYP** title approval from **FYP committee and supervisor**
2. Information Gathering Process
   a. The data and information related to the process will be gather through meetings with all the main stakeholders, during this first stage no questionnaire or survey was used.
   b. During the second stage and after successfully insolating the problem interviews where done with students and Registration Department staff
3. Preliminary Study
   a. After gathering all the preliminary and basic information related to the project the next step is to decide or define what are relevant and what are not.
   b. Define the project scope and constraint in terms of times
   c. Identify project deliverables
4. Complete the preliminary report and move to the next stage

3.1.2 Analysis

In this section all the information gathered during the planning stage is analyzed. These information is used to come up with user and system requirements. Besides the requirement, the information will also be used to decide the best steps to be taken during the development of the system.

For this project the main requirements of the system are:

- User should be able to login and logout
- User should be able to view and edit their information
- User should be able to submit their graduation forms through the system
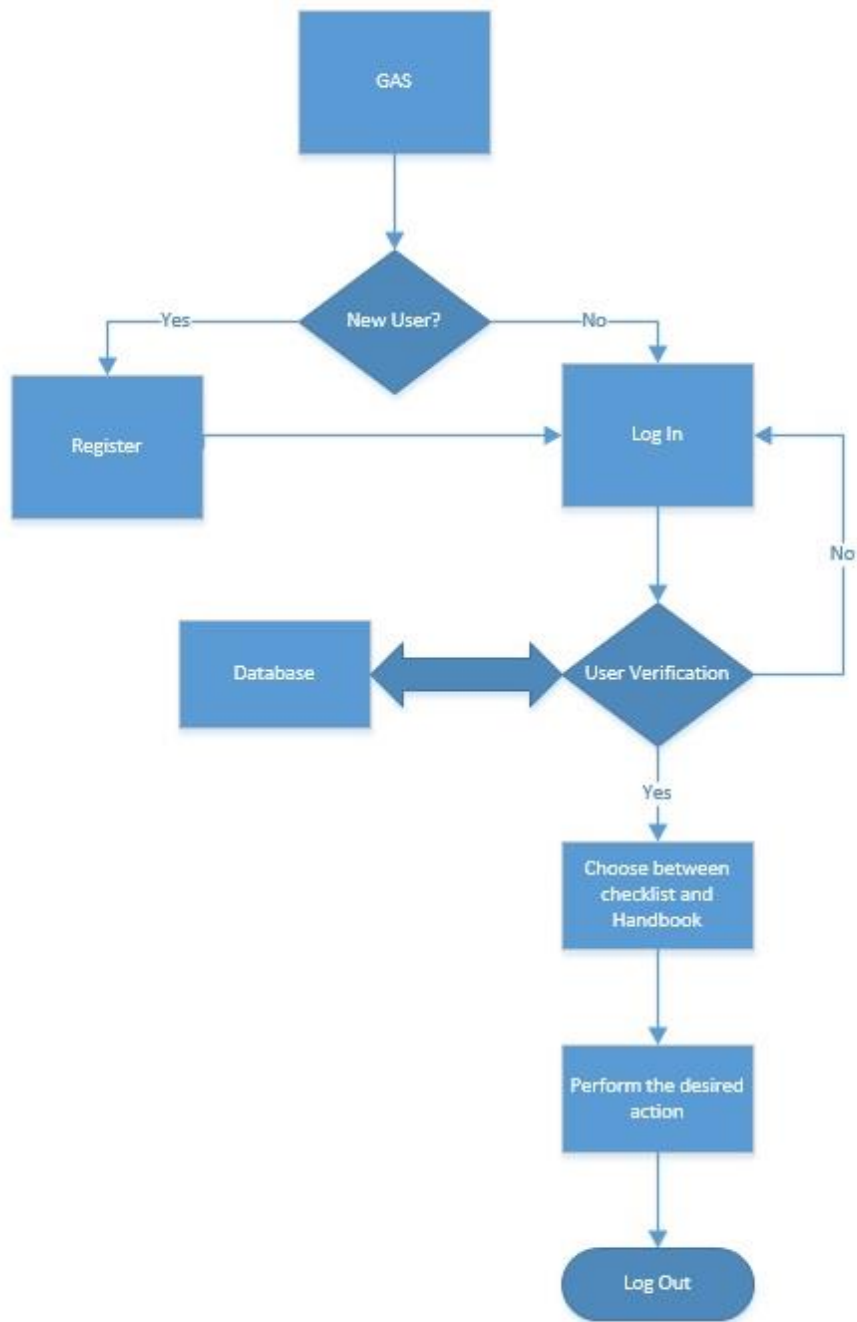- Admin should be able to enter and edit required data or information in the system.

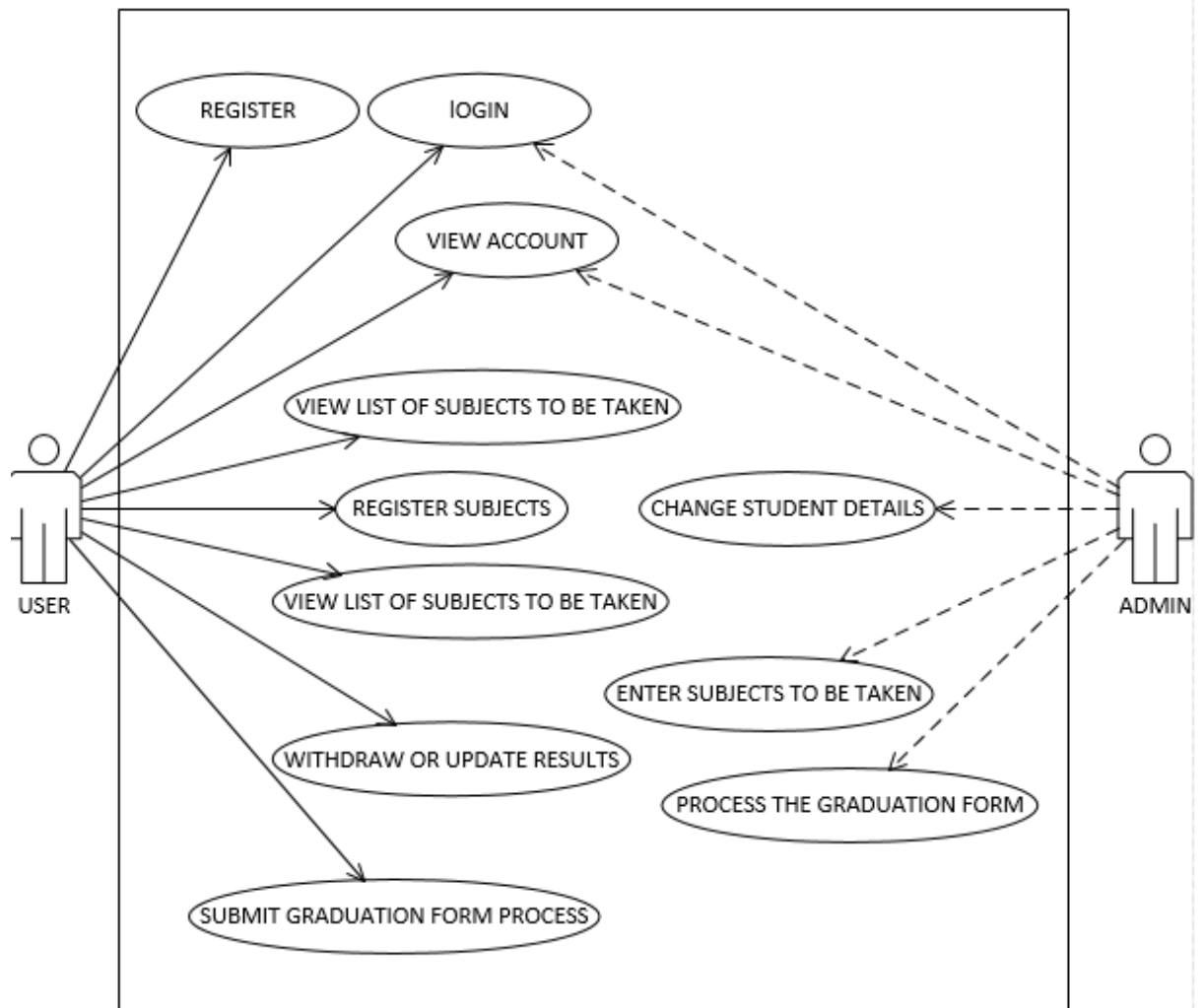*Figure 2 System Flow Diagram For GAS*

Figure 3 Use Case Diagram

The above use case diagram explain the different roles of each of the actor or users of the system.

For instance the **ADMIN** who in this case will be a staff from examination unit will be responsible for monitoring the system and changing all pertinent data related to it. They will provide and update the list of subjects to be taken by each student according to the student intake or batch, they can change and update student's details and at the end of the user studies they will be able to process the student graduation verification process online.

User in the case of this system users means students from University Teknologi Petronas, students will be able to register to the system, after registering to the

system they will be able to login, register for subjects according to their semester, they will also be able to update their results at the end of each semester, mostly importantly the system will allow the student to perform his graduation verification process online.
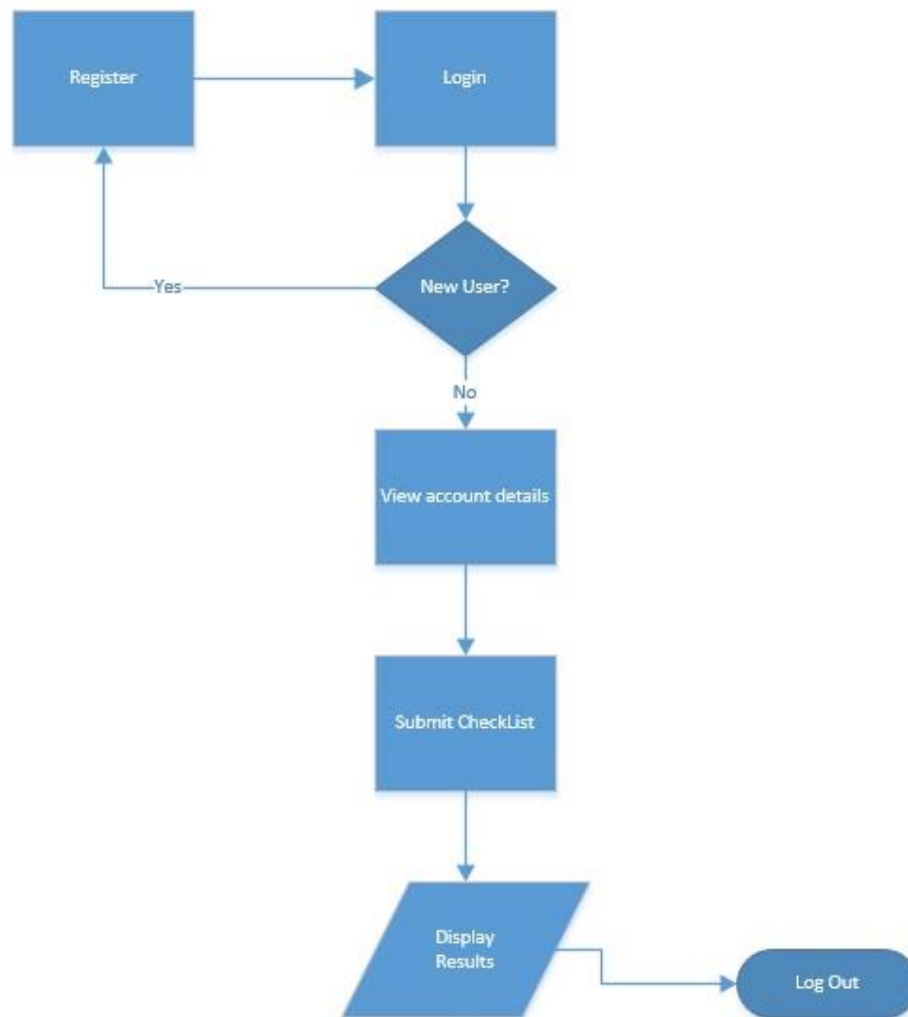

Figure 4 Student Flow chart for GAS

The above flow chart diagram describes actions taken by the user to log in and to perform the graduation audit function or to submit the checklist. This flow chart also gives the basic ways that the user will use in order to access the system.
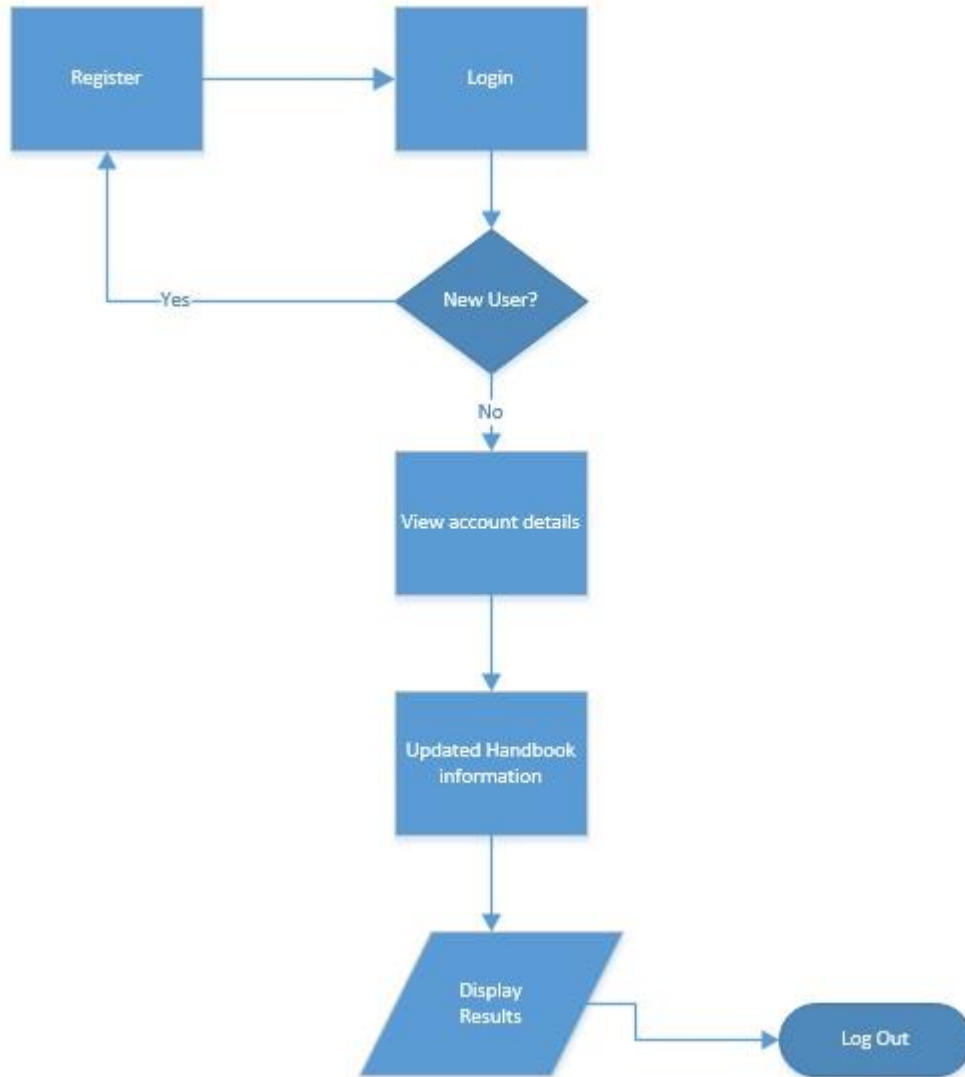
The above flow chart diagram describes actions taken by the user to log in and to update the list of subjects taken. This flow chart also gives the basic ways that the user will use in order to access the system.
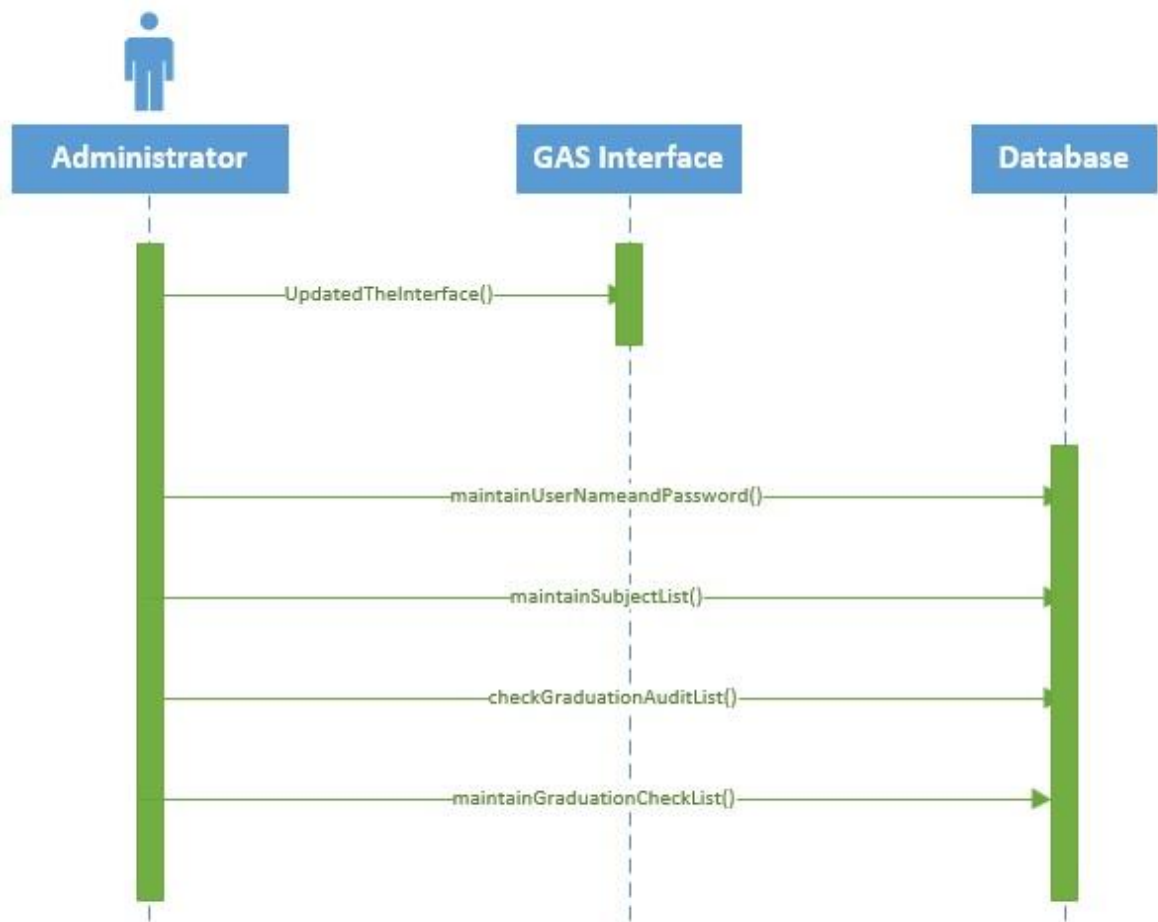
Description: The figure above shows the sequence diagram for the system administrator. He will be responsible for updating the page interface when necessary, he will also maintain the user accounts. The admin is also responsible for updating and maintaining the graduation checklist accordingly to the semester.
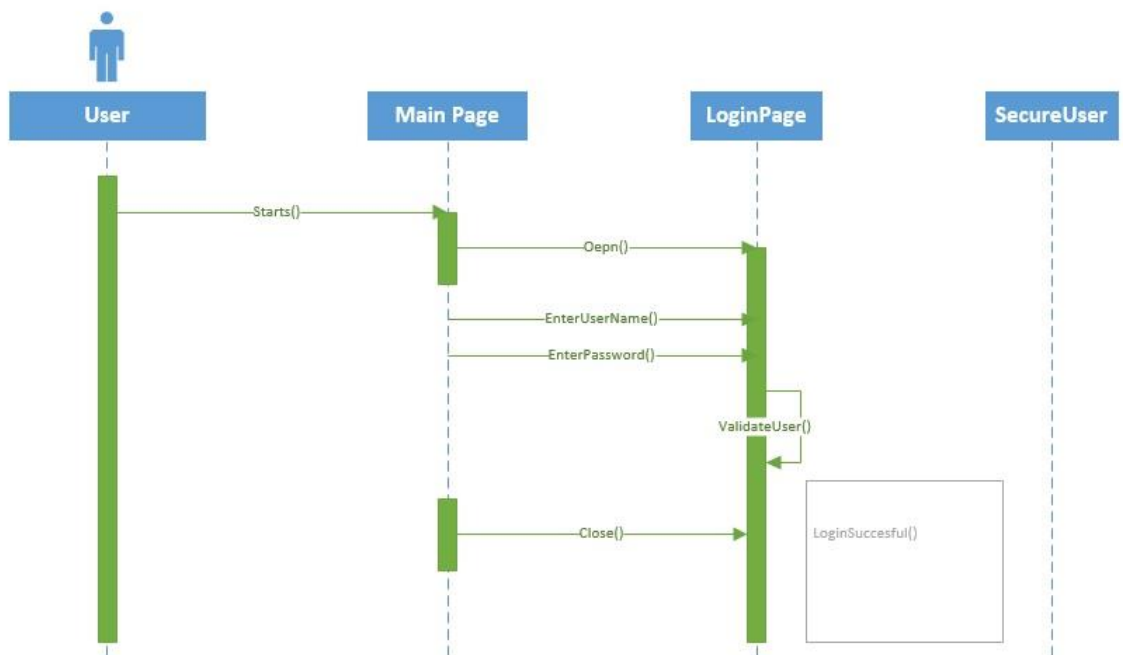
Figure 7 User Login Sequence Diagram

Description: Login sequence diagram above shows how the students logs in to the system. He starts from the home page of the system and then enters the required information in order to login to the system, in this case the username will be the matric number and then the password. This information is then validated.

Figure 8 GAS Sequence diagram

Description: From the Graduation audit system sequence diagram we can see how the process of a student submitting the graduation checklist. The student starts from GAS page where he opens the subject list according to the program that he is taking, insert the grades and submit the list. The information submitted by the students will be saved and updated to the data base and a message of confirmation will be sent to the student.
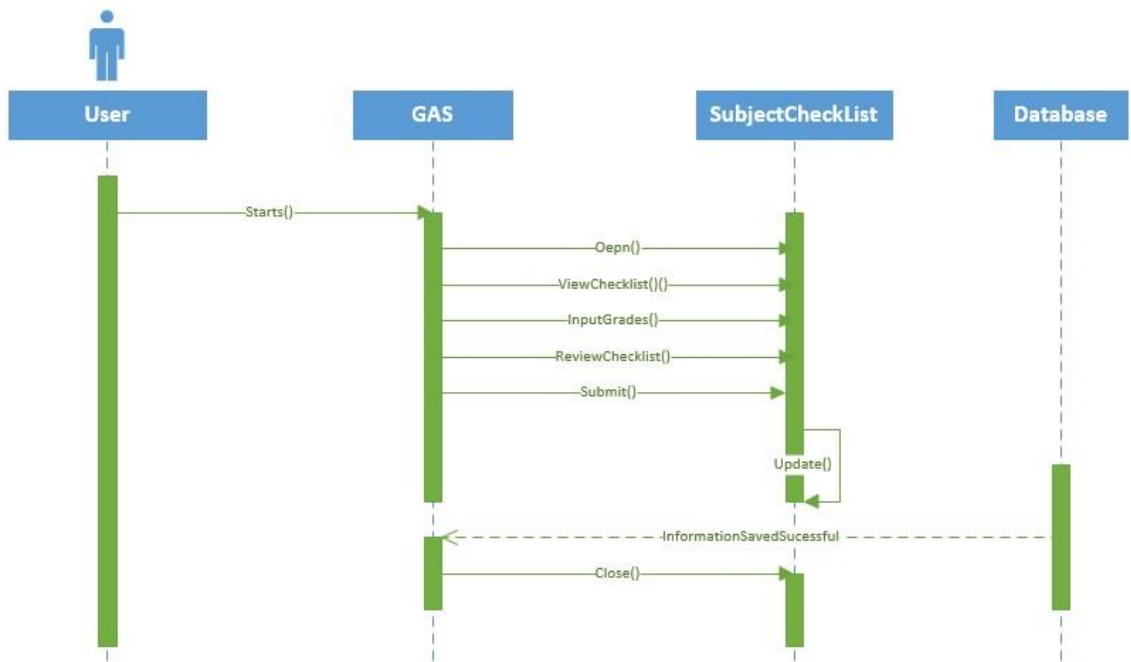
Figure 9 online HandBook Sequence Diagram

Description: From the Handbook system sequence diagram we can see how the process of a student submitting and updating is handbook information is performed. The student starts from the landing page and then proceeds to Handbook page where he opens the semester he is taking, insert the necessary information and then submits the form. The information submitted by the students will be saved and updated to the data base and a message of confirmation will be sent to the student.
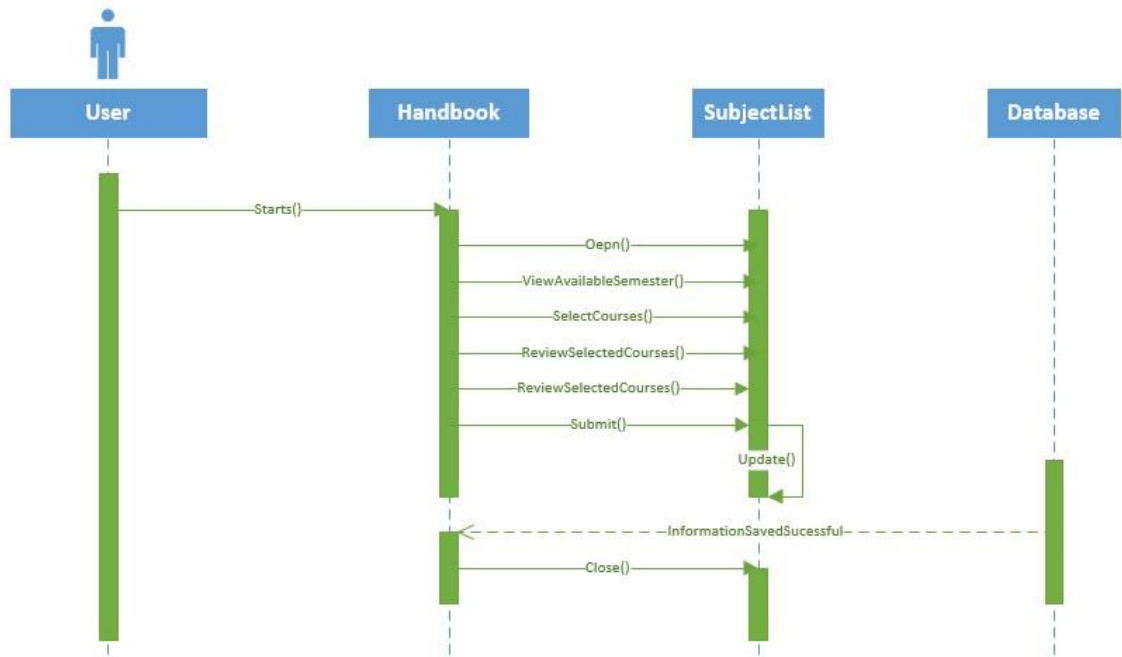
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3.2 Design

The design stage of the prototype is done in this stage, this is continuous and interactive. This process allows the developers and all the stakeholders to understand and modify the prototype before a working model is finalized. In the section the work was divided into modules, being each module a main functionality of the system.

3.2.1: Design Module 1

This module will allow the user to view his account information.

- **Function:**
  - View account details
- **Description:**
  - This module will allow the students to view their account information
- **Inputs:**
  - None
- **Outputs:**
  - User Details:
    - Student ID
    - Name
    - Year and Semester
    - Programme
- **Sources:**
  - Database server
- **Processes:**
  - Sign in to the system
  - Click on user information
- **Requirements:**
  - User need to be registered to the system first in order to view is details.

3.2.2 Design Module 2

This module will allow the student to submit his graduation checklist.

- **Function:**
    - Submit Graduation Checklist
- **Description:**
    - This module will allow the students to view the subject check list and to submit their information.
- **Inputs:**
    - Subjects grades
- **Outputs:**
    - Confirm successful registration process
- **Sources:**
    - Database server
    - Student
- **Processes:**
    - Sign in to the system, click on "Gas"
    - Select the desired program
    - Confirm the information inserted to the system and submit.
- **Requirements:**
    - User need to be registered to the system and doing is final year in order to perform this action.

3.2.3 Design Module 3

This module will allow the student to submit and edit his Handbook information.

- **Function:**
    - Updating HandBook
- **Description:**
    - This module will allow the students to save their academic records and also to keep track of the subjects taken and to be taken.
- **Inputs:**
    - Subjects taken list.

- o   Subjects grade.

- **Outputs:**
  - o   Confirm successful registration process

- **Sources:**
  - o   Database server
  - o   Student

- **Processes:**
  - o   Sign in to the system, click on "HandBook"
  - o   Select the desired program
  - o   Confirm the information inserted to the system and submit.

- **Requirements:**
  - o   User need to be registered to the system order to perform this action.

3.2.2 Construction

During this stage the developer shall focus on development of the application and integrate the major functions of the systems.

The main tasks during this stage are programming, coding and web development.

3.4 Testing

This is the last stage of the process, and the end result of this stage is a finalized product.

In this stage the new system is delivered and placed in operation. This stage include data conversion, full scale testing and user training. System prototype will be tested based on each module before the implementation of the final system. This testing methodology will allow the system to be developed in a very reliable manner. During this stage a group of 10 to 15 students will be asked to test the program and answer a survey regarding the system. Necessary changes will be made according to the results gathers during the testing of the system.

Tools required

1. **System Development**
   a. Host PC with Xampp
   b. Notepad++
   c. Google Chrome
   d. Microsoft Visual Studio

2. **Database**
   a. MySQL databse

3. **Programming language**
   a. HTML5 , XML
   b. JavaScript
   c. Java

4. **Others**
   a. Microsoft Visio and Microsoft Project
   b. Adobe Photoshop

CHAPTER 4

4.0 RESULTS & DISCUSSION

This chapter discusses the results and findings obtained during the research and initial stage of the research.

During this initial stage the author had the pleasure to meet with Mr Muhaiyudden Bin Shaik Allauddin, academic executive of Computer and Information Science Department. During this meeting Mr Muhaiyudden explained to the author the departments problems and why it's important to have a system that can manage graduation verification processes online as well as work as an online handbook for new student. He explained that the actual business process used by the university is old and frustrating to the staff and to the student because is time consuming when they have to submit and review the graduation process also the students do not have an online guide regarding the subjects to be taken by them.

The author also had a meeting with a sample of university student currently in the final year. In this meeting the author explained to the students his project and then auscultate the student's point of view regarding the project. Most students agreed that it's time to have a new system in order to help them with the graduation verification process because the one that is in use now is outdated and it consumes a lot of time and paper. They also said that because of the lack of a system to help them keep track of subjects taken, or not taken some students end up staying one more semester in the university because they only realize that problem at the end of their studies.

The above meetings managed to prove to the author that the creation of system that can solve this problem is important and vital to the students and staff as well.

Problems and Challenges Faced

With little knowledge on PHP coding, the author has managed to finish the PHP part of the system from the scratch, the connection between the data base and the system for log in and log out, submitting the GAS form and the Handbook information all required the use of PHP and MySql.

Although the system analysis, system requirements and design parts have been well understood the coding of the admin side of the system could not be completed due to unforeseen difficulties in dealing with PHP and MySql scripting code in order to manipulate the constrains.

CHAPTER 5

5.0 RESULTS AND DISCUSSION

User Acceptance Survey

Of the study population 20 respondents completed and returned the questionnaire. Out of this 15 are students who already used the current system and 5 are students who never used to current systems.

Level of Significance / Factors	No. and % of respondents chosen low	No. and % of respondents chosen medium	No. and % of respondents chosen high
Convenience	0	0	20, 100%
Easiness	0	0	20, 100%
Conciseness	0	0	20, 100%
Reliability	0	5, 25%	15, 75 %
Efficiency and Effectiveness	0	7, 35%	13, 65%
Accuracy of Output	0	7, 35 %	13, 65%

Table 1: Summary of User Acceptance Survey

Overall we can see from the figure above that the system meets the minimum requirements necessary. The sample population gave the system a higher mark when asked about it convenience, easiness and conciseness. This is due to the fact that the system is web based which means it can be accessed from anywhere with the presence of a device that can be connected to the internet, the system is easy to use and very straight forward and user can execute the desired function without major problems.

In other hand a few user gave the students a medium mark when asked about the efficiency and effectiveness, reliability and accuracy of output. This is due to the fact that some students can not submit grades from subjects that they have transferred credit or that they don't have to take. Also the fact that system crashed and sometimes gave an accurate output was the main reason for the user to give a medium mark regarding efficiency, effectiveness and accuracy of output. However all the user agree that the system is more efficient than the current one mainly because the user do not need to go to the registration office in person and manually fill in the forms.

Most users are more concerned with the accuracy of the information saved into the system.

5.1 CONCLUSION

This research aims to develop an online system that will provide a fast and reliable way of submitting graduation verification documents to UTP Students. The project is divided in 2 section, FYP1 and FYP2. The present report describes all the findings related to the first section of the stage. FYP1 focus on understanding the details of the system, its core functions and processes. The author did spend a huge amount of time analyzing and studying all the main business processes related to this system.

It can be said that this system is 75% completed, since the main modules which allow the student to submit is checklist and also allow the student to manage his handbook are all functional.

In addition the author was able to learn a lot during the project. The author gained in depth knowledge on how to plan, organize, research, analyze, develop and write down a report or develop a system in own. He managed to sharpened his programming skills in PHP and MySql that will help him in the future.

5.2 RECOMMENDATION

The fact that university student and staff use a lot of different software's in particular online or web based ones and since most of them are complement to each other the author would recommend the university to come up with only one system that manages and provides all the services provided by the other ones.

In order to maximize the impact of this program and to reduce the time used in the whole process I would recommend an integration between the new system and the system that is used to archive students' academic records. This would make the system more reliable and useful.

Apart from that functions like edit user information should be added to allow the user to edit is personal information without the need of the admin.

Reference

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[2.]   Negash, S., Ryan, T., & Igbaria, M. (2003). Quality and effectiveness in Web-based customer support systems. Information & Management, 40(8), 757-768. doi: http://dx.doi.org/10.1016/S0378-7206(02)00101-5

[3.]   Silveira, M. S. G. (2009). Online Course Registration System for Faculty of Law in Timor Lorosa'e National University.

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Appendices

Appendix A: Project Time Frame
This project will be divide in 2 sections, the tables bellow explain the time line and the deliverables of the project.

Time line for FYP1

No.	Detail/ Week	1	2	3	4	5	6	7	Mid-semester break	8	9	10	11	12	13	14
1	Selection of Project Topic	■	■													
2	Preliminary Research Work		■	■	■	■										
3	Submission of Extended Proposal						●									
4	Proposal Defence									■	■					
5	Project work continues											■	■	■		
6	Submission of Interim Draft Report														●	
7	Submission of Interim Report															●

● Suggested milestone

■ Process

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Time Line for FYP2

No.	Detail/ Week	1	2	3	4	5	6	7		8	9	10	11	12	13	14	15
1	Project Work Continues	■	■	■	■	■	■	■									
2	Submission of Progress							●									
3	Project Work Continues									■	■	■	■	■			
4	Pre-SEDEX											●					
5	Submission of Draft Report												●				
6	Submission of Dissertation													●			
7	Submission of Technical													●			
8	Oral Presentation														●		
9	Submission of Project																●

(The column between weeks 7 and 8 is labeled "Mid-Semester Break")

● **Suggested milestone**

■ **Process**

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Appendix B: System Snap Shoots
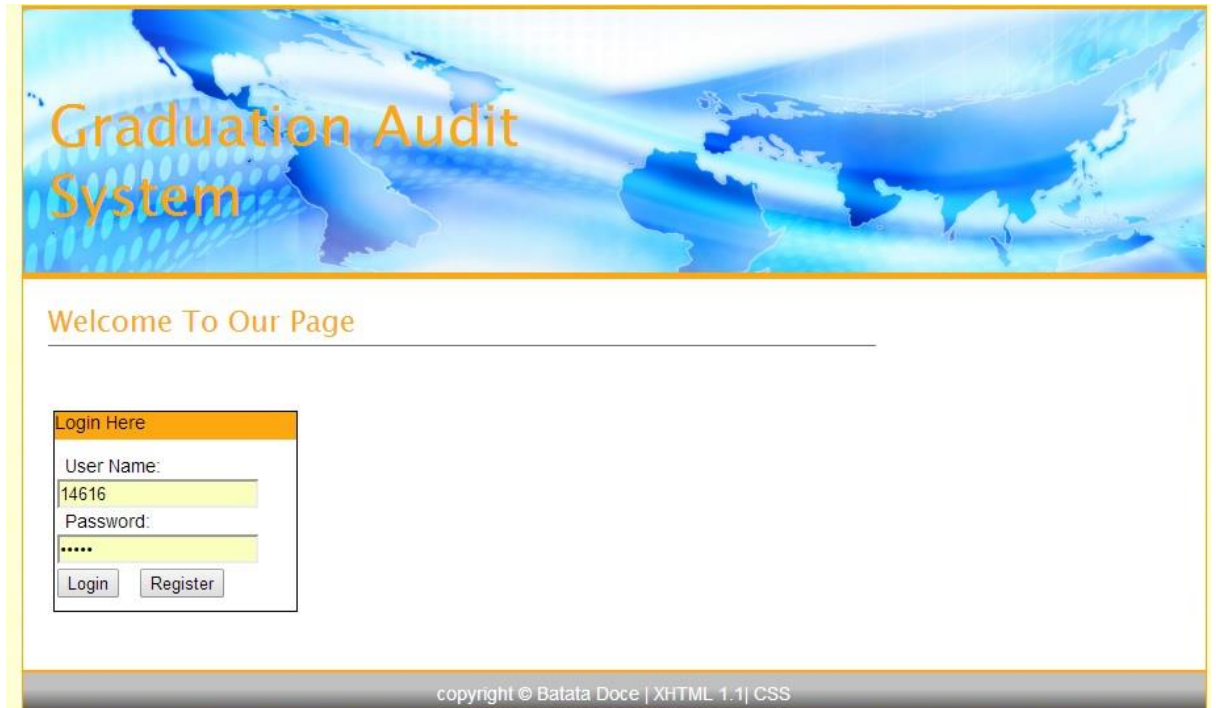
Figure 10 Snapshot of the Login Page

Figure 11 Snapshot of the GAS Form page

Semester 1

Code	Courses	Course Group	Credit Hours	Grade	Remarks
MPW2113 ▾	Bahasa Kebangsaab A ▾	National Requirement	3	A ▾	
KKB1011 ▾	Gamelan I ▾	University Requirement	1	A ▾	
LCB1042	Academic Writing	University Requirement	2	A ▾	
PCB1012	Introduction to Oil & Gas	University Requirement	2	A ▾	
FCM1013	Discrete Mathematics	Major	3	A ▾	
TCB1013	Structured Programming	Common Technology	3	A ▾	
TCB1043	Computer Organisation	Common Technology	3	A ▾	

Semester 2

Code	Courses	Course Group	Credit Hours	Grade	Remarks
MPW2113 ▾	Bahasa Kebangsaab A ▾	National Requirement	3	A ▾	
KKB1011 ▾	Gamelan I ▾	University Requirement	1	A ▾	
LCB1042	Academic Writing	University Requirement	2	A ▾	
PCB1012	Introduction to Oil & Gas	University Requirement	2	A ▾	
FCM1013	Discrete Mathematics	Major	3	A ▾	
TCB1013	Structured Programming	Common Technology	3	A ▾	
TCB1043	Computer Organisation	Common Technology	3	A ▾	

Semester 3

Code	Courses	Course Group	Credit Hours	Grade	Remarks
MPW2113 ▾	Bahasa Kebangsaab A ▾	National Requirement	3	A ▾	
KKB1011 ▾	Gamelan I ▾	University Requirement	1	A ▾	
LCB1042	Academic Writing	University Requirement	2	A ▾	
PCB1012	Introduction to Oil & Gas	University Requirement	2	A ▾	
FCM1013	Discrete Mathematics	Major	3	A ▾	
TCB1013	Structured Programming	Common Technology	3	A ▾	
TCB1043	Computer Organisation	Common Technology	3	A ▾	

Figure 12 Snapshot of Gas Form Outline

Figure 13 Snapshot of the Handbook Page