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PERSONALIZED PLANNING FOR DIRECT ENTRY STUDENT'S SUBJECT REGISTRATION

Supervisor's Name:

PROFESOR DR. AZAH KAMILAH BINTI DRAMAN@MUDA

Prepared By:

NO	NAME	MATRIC NO
1	NURUL HANIM BINTI ABDUL HALIM@HALIM	B032010218
2	NURUL SYAMMIMI BINTI SAMAON	B032010249
3	NURUL FASIHA BINTI MOHD JAMAL	B032010276
4	RUSYDI NASUTION BIN RIDUAN	B032010215

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ABSTRACT

Personalized Planning for Direct Entry Student's Subject Registration is a web based system that will be mainly used by the direct entry students when they want to register for their subject for the upcoming semester. This allows them to transfer their credit easily rather than the traditional way where students need to find the subject that they can apply based on their transfer credit themselves. The system will also lessen the time the direct entry students in arranging their subject that they have to take throughout their years of study. Therefore, when their time on arranging the subject is reduced they can focus more on their studies. The academic advisor will also be beneficial when using this system. The system can make their work easier in arranging and preparing their assigned direct entry students' appropriate subject based on the university requirement and their transfer credit. Transfer credit problems will mainly be reduced when using this system. Student administration will also gain the benefit from the system. It is because when the student uses the system their data will automatically be in the university database so the administration does not have to do extra work to save the students data and their transfer credit in order to prevent bigger problems that will happen due to data loss. The administration can also access the students data everytime and everywhere since the data have been stored in the system. Lastly, this system was built to lessen the burden of the direct entry students, academic advisor and the administration. This will help them to undergo the process smoothly and efficiently.

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CHAPTER 1 : INTRODUCTION

1.1 Introduction

Keeping up with the rapid pace of technological change in today's world can be difficult. Personalized Direct Planning for Direct Entry Student's Registration is used to formulate the idea of reducing administrations' workload in managing direct entry students' information. In essence, it streamlines the necessary data, including subject planning for the upcoming semester, tracing for direct entry students and generating schedules. It incorporates data from the administration and students to lighten the load on education management. Utilizing the programme would make it much simpler to manage and track student data and performance.

Personalized Planning for Direct Entry Student's Registration is a web-based system that will be primarily used by direct entry students to register for their subjects for the upcoming semester. This enables them to transfer their credits more easily than the conventional method which requires students to identify the subject in which they can apply based on their own transfer credits. The system will also cut down on the time it takes direct entry students to choose the courses they will take over the course of their academic careers. As a result, when they spend less time organising the subject, they have more time for their studies.

Using this system will also be advantageous for the academic advisor. The system can make their job easier by planning and assigning direct entry students the right subject based on transfer credit and university requirements. The main benefit of using this system is a reduction in the transfer credit problem. The system will also be useful to student administration. The administration won't have to put in extra effort to save the students' data and transfer credit because when they use the system, their information will automatically be in the university database, preventing bigger problems from arising from data loss. Due to the fact that the student data has been stored in the system, the administration has access to it whenever and wherever it is needed. Last but not least, this system was created to ease the workload for the administration, academic advisor, head of department and direct entry students. This will make the process go smoothly for them.

1.2 Problem Statement

Problem statement is a detailed description of an issue that can be improved. A well defined problem statement can be used to understand the problem and figuring out the best solution to overcome it. This project embarks on the following problem statement:

Personalized Planning for Direct Entry Student's Subject Registration System was introduced and not all educational institutions have it even today. Many of them still depended solely on paper and pen to run their students' management and didn't even have a management system. The common issue faced by many educational institutions in handling plans for direct entry students' subject registration is the data loss, manual monitoring of students' performance and others. These activities create loads of tasks to be done by the institution administrators. Their records were also prone to losses due to a lack of security. Consequently, every educational institution will need at least a universal, one-and-done solution to manage all the processes as it would save their time.

1.3 Objectives

Objectives are statements that describe the purpose that the project will deliver. The objectives show the main reason for the project. This project embarks on the following objectives:

- i. To develop a system that can plan the subject for direct entry students based on the students' transfer credit and based on the university requirements.
- ii. To design a system that can smooth the subject registration for direct entry students.
- iii. To develop a system that may reduce the students' time spend when registering the subject.

1.4 Project Scope

1.4.1 Target User

The system's target users are students, academic advisors and heads of department. All users can manage operations such as user management, credit transfer, pre-requisite subject tracking and generate subject modules. Lastly, the records will be automatically inserted into the database.

1.4.2 System Module

User management module

Users will enter their username and password when login into the system. There will be three user login for this system which are the direct entry students, academic advisor and head of department. First time user direct entry students must register themselves first to log in to the system while for academic advisor and head of department, they will just log in to the system with the fixed username and password. Lastly, all users can choose the "logout" to exit from the system.

Credit transfer module

Users specifically for students need to enter their subject code from their previous university such as diploma and enter the subject code for the subject in the current university that they want to transfer the credit.

Pre-requisite subject tracking module

This process will go through the academic advisor and heads of department. Once the students pass the pre-requisite, the student will be approved to transfer the credit for their studies.

Generate subject module

Subject structure table will appear for this module. The table has already shown the students on what subject they have to take throughout their whole studies so that they have some guidance in registering their subject.

1.5 Software and Hardware Requirement

Software Requirements

We use Hypertext Markup Language (HTML) that provides the structure of the page, Cascading Style Sheets (CSS) for layout of the page and Hypertext Preprocessor (PHP) to dynamically generate HTML markup.

Hardware Requirements

We use the laptop which consists of Intel core i5, 512GB of SSD and 16GB of RAM to conduct this project faster and more effectively. We spend lots of time on our laptops, so a high quality and comfortable keyboard is important.

1.6 Project Significance

The significance of this project highlights the value that the project outcomes may provide in the field or real world practice. Whereas the problem statement discussed the negative consequences of not conducting this project, this section highlights the positive contribution of completing this project. The development of this project will bring a great contribution to the following:

The system will be beneficial for direct entry students as they are able to transfer credit when registering courses. In the past the direct entry student needed to find the subject that they can apply the transfer credit themselves. The system is also capable of reducing the time they spend in arranging their subject that they have to take throughout their years of study. With the time reduced, the student can spend more time on their study. Other than that, the system can ease their work for arranging and preparing their assigned direct entry student. Especially while managing their transfer credit problem.

1.7 Summary

This chapter discusses in depth the introduction of the project, which is the context of the project that plays an important role in deciding the current challenges and ways of solving them. This chapter also outlines the priorities and scope of this project to evaluate the target users and modules involved in the project. This study will further expand on the methodology of the project for the next chapter. It introduced the intelligent system development methodology and intelligent system development technique. The system context is defined in such a way that any process or method.

CHAPTER 2: METHODOLOGY

2.1 Intelligent System Development Methodology

One of the aspects of development that needs to be considered in the system development process is the methodology aspect. There are many types of software development methodologies. For instance, there are scrum, prototyping, waterfall, extreme programming and Rational Unified Process (RUP) models. Developmental research will be employed in this study because it is a study of designing, developing and evaluating instructional programs, processes and products that must meet criteria of internal consistency and effectiveness. Developmental research also involves situations in which the product-development process is analyzed and described and the final product is evaluated. A software engineering model known as waterfall will be used to create the system to achieve the objectives of the research. The waterfall model consisted of six phases: requirements, analysis, design, coding, testing and acceptance. In developing the system, it must follow several steps for building the proposed system and these are the following; requirements, analysis, design, coding, testing and acceptance.

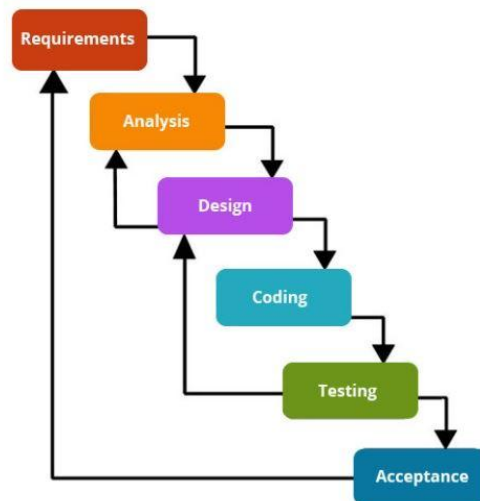


Figure 1: Waterfall model

The first phase is the requirements in which the problem was recognized and diagnosed. In this stage, the requirement which the software is going to satisfy is specified. The main purpose of this step was to gain a thorough understanding of the project as well as the clientele.

Second phase is analysis. During this stage, the design of the activity diagram was created in order to analyze what was the flow of the information in the whole system. An overall view to the system was also considered and a critical analysis of the traditional system. Program designs are constructed using a top-down approach. Major links of the program components and interfaces then expanded the design layouts into smaller subsystems or modules.

Next is the design. System Design helps in specifying hardware and system requirements and also helps in defining overall system architecture. The system design specifications serve as input for the next phase which is the coding phase.

The fourth phase is coding. During this stage, systems are developed or acquired based on detailed design specifications that are reflected on the flowcharts presented. The objective of this phase is to ensure that the system functions as expected.

After the program has been developed, it will be tested thoroughly. Debugging is the fifth phase that involves checking of errors as well as identification of erroneous steps. Debugging stage checks out if there are any flaws in the designed software and if the software has been designed as per the specifications.

Acceptance is the last stage of the software development using the waterfall model. A proper execution of all the preceding stages ensures that the software developed is in accordance with the requirements.

2.2 Intelligent System Development Technique

The use of knowledge-based or Artificial Intelligence techniques are rapidly increasing in various types of the industries such as education field, agriculture, engineering, healthcare, etc., to model the environment system. The examples of intelligence techniques are rule-based systems, machine learning, artificial neural networks, fuzzy models, genetic algorithms, etc. Each of the intelligence techniques are used in different kinds of function requirements. In this project, our Personalized Subject Planning will use Rule-based System to develop the intelligence system.

Rule-based System is a system that applies human-made rules to store, sort and manipulate data. In doing so, it mimics human intelligence. To work, rule-based systems require a set of facts or source of data and set of rules for manipulating that data. These rules are sometimes referred to as 'if statements' as they tend to follow the line of 'IF X happens THEN do Y'. In short, we use rules to tell a machine what to do and the machine will do exactly as we tell it. From there, rule-based systems will execute the actions until we tell it to stop. But remember that if we tell it to do something incorrectly, it will do it incorrectly.

2.3 Summary

The methodology of the project method has been presented and analyzed in this chapter. The intelligent system development methodology explains the method used to develop this project and the intelligent system development technique demonstrates the techniques used to design this project. We will speak more about the analysis of the proposed project in the next chapter

CHAPTER 3: ANALYSIS

3.1 Analysis of Current Application

To create a system, prerequisites are required. The requirements of this system are determined through online surveys of UTeM staff. From the surveys, we learned the details of the process, how they deal with the management for direct-entry students and what requirements are necessary to implement the system.

Students who wish to personalize planning their schedule for the upcoming semester. After the schedule is completed, students must meet their academic advisor for comments and approval. The activity cannot continue if the academic advisor rejects the approval. After the schedule has been approved by the academic advisor, it will notify the student through SMP.

3.2 Analysis of proposed intelligent system

The system will replace the traditional ways for direct entry students to register their subject or courses. With the system being a web base people can access it anytime and anywhere. The direct entry student first needs to register their information to use the system.

After that, they will know whether they are allowed to transfer credit or not. If they are allowed to transfer, what subject can they take to transfer the credit. Next, they also can know what subject they need to take for each semester because it will be suggested by the system for them.

By using the system all of these complicated and traditional ways for the direct entry student to register their subject can be easy and simple for them and their academic advisor.

3.3 Structure Chart of Proposed Intelligent System

Structured chart is the breakdown of the system to the lowest manageable levels. This structure chart consists of three modules which are student module, academic advisor module and head of department module. The function of each modules is shown in the chart below :

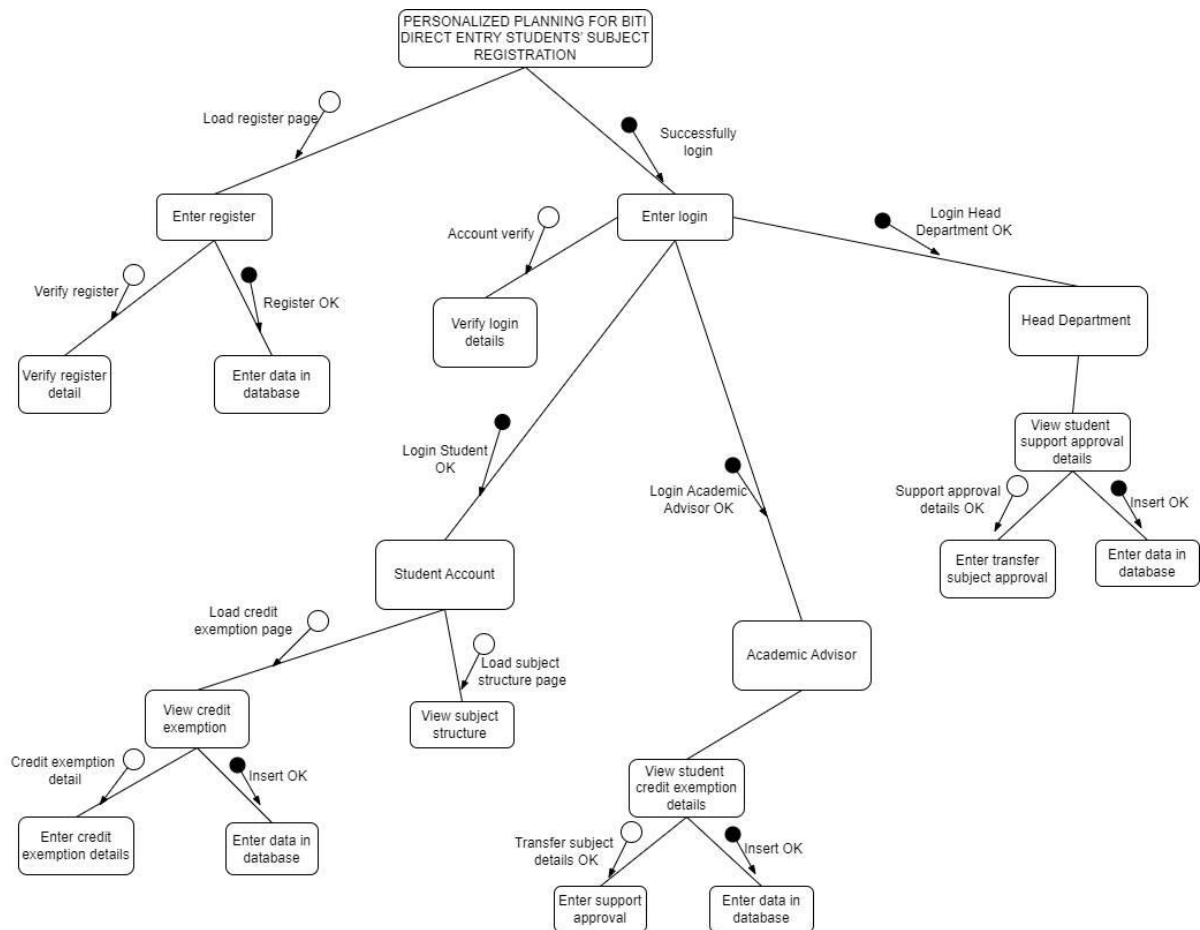


Figure 2: Structure Chart

3.4 Work Allocation

NAME	WORK ALLOCATION
Nurul Hanim binti Abdul Halim@Halim	Data Collection
	System design
	User management module
Nurul Syammimi binti Samaon	Data Collection
	System design
	Credit transfer module
Nurul Fasiha binti Mohd Jamal	Data analysis
	Report manager
	Pre-requisite subject tracking
Rusydi Nasution bin Riduan	Data analysis
	Report manager
	Generate subject module

Table 1: Work Allocation

3.5 Summary

From the surveys, we learned the details of the process, how they deal with the management for direct-entry students and what requirements are necessary to implement the system. After the schedule is completed, students must meet their academic advisor for comments and approval. After the schedule has been approved by the academic advisor, it will notify the student through SMP. The system will replace the traditional ways for direct entry students to register their subject or courses. The direct entry student first needs to register their information to use the system. Next, they also can know what subject they need to take for each semester because it will be suggested by the system for them. By using the system all of these complicated and traditional ways for the direct entry student to register their subject can be easy and simple for them and their academic advisor.

CHAPTER 4 : DESIGN

4.1 Introduction

This chapter will describe the design concept for the system in detail. This chapter includes the intelligent system architecture, system for module1, module2 and module3 and their system interface design.

4.2 Intelligent System Architecture

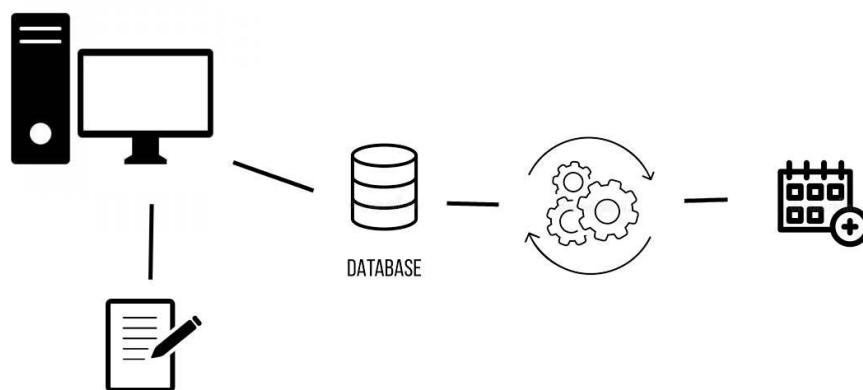


Figure 3 : Design of the system.

4.3 Module 1 - USER MANAGEMENT MODULE

The screenshot shows the registration form for the Faculty of Information & Communication Technology (Fakulti Teknologi Maklumat & Komunikasi). The form includes a search bar, login and register buttons, and a registration section with the following fields:

- Name:
- Student ID:
- Username:
- Email:
- Password:
- Confirm Password:

Below the registration fields is a 'REGISTER' button. The form also includes a 'RESOURCES' section with links to various academic documents and a 'CONTACT US' section with contact information for the faculty.

Figure 4: Student registration form

FAKULTI TEKNOLOGI MAKLUMAT & KOMUNIKASI
PERSONALIZED PLANNING FOR DIRECT ENTRY STUDENT'S SUBJECT REGISTRATION

LOGIN PAGE

Login Register
Email / Id Pengguna:
demo@gmail.com
Password:
Level:
Student
LOGIN

RESOURCES

ACADEMICS CALENDAR (UG)
ACADEMICS CALENDAR (PG)
ACADEMIC HANDBOOK
ACADEMIC ADVISORY GUIDE BOOK
PG ACADEMIC TIME TABLE

CONTACT US

Faculty of Information & Communication Technology UTeM
E-mail: ftkm@utem.edu.my
Telephone: +606 2702411

Figure 5: Student,academic advisor and head of department login form

4.4 Module 2 - CREDIT TRANSFER MODULE

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PEMINDAHAN/PENGECUALIAN KREDIT

ARAHAN KEPADA PELAJAR:

- PERMOHONAN INI HENDAKLAH DIBUAT PADA SEMASA PERTAMA DALAM PENGAJIAN (1 MINGGU SELEPAS PENDAFTARAN).
- PERMOHONAN PERLU HEPJAT NAIK DOKUMEN SOKONGAN SEPERTI KANDUNGAN MATAPELAJARAN.

MATEPELAJARAN YANG DIPONON DI UTEM	MATAPELAJARAN YANG INGIN DIPINDAHKAN/DIKECUALIKAN KREDIT				
KOD MATAPELAJARAN	KOD MATAPELAJARAN	NAMA MATAPELAJARAN	JAM KREDIT	GRED DIPEROLEH	PELAN PELAJARAN
Add new Row					

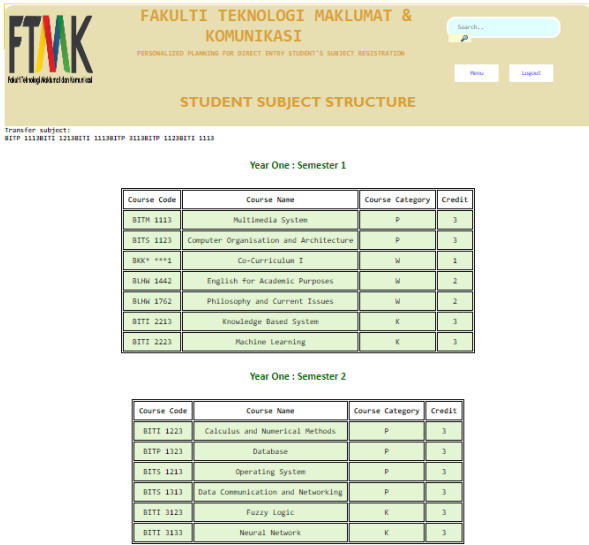
☐ SAYA MENYAKU BAHAWA KETERANGAN GIBERIKAN DIATAS ADILAH BENAR :

Submit

Figure 6: Student credit exemption form

4.5 Module 3 - PRE-REQUISITE SUBJECT TRACKING

Module 4 - GENERATE SUBJECT MODULE



Transfer subject:
BTTP 1110BTS 1110BTS 1110BTP 1110BTP 1110BTS 1110

Year One : Semester 1

Course Code	Course Name	Course Category	Credit
BTM 1113	Multimedia System	P	3
BTS 1123	Computer Organisation and Architecture	P	3
BK* ***1	Co-Curriculum I	W	1
BLW 1442	English for Academic Purposes	W	2
BLW 1762	Philosophy and Current Issues	W	2
BTS 1213	Knowledge Based System	K	3
BTT 2223	Machine Learning	K	3

Year One : Semester 2

Course Code	Course Name	Course Category	Credit
BTT 2223	Calculus and Numerical Methods	P	3
BTP 1323	Database	P	3
BTS 1213	Operating System	P	3
BTS 1313	Data Communication and Networking	P	3
BTS 1123	Fuzzy Logic	K	3
BTT 1113	Neural Network	K	3

Figure 7: Student schedule structure

4.6 Summary

As for the overview of this chapter, the design process is a vital part of the development of a system. Design is the start of how the system works, where the programmer can provide a schematic. The overall phase of the system can be represented in flowcharts. It shows the connection between all the pages between the three users for each of the interface designs. Finally, we can assume that the design phase plays an important role in creating a system. As this is the starting point, it should be well written and described and serve as a guideline for improvement and can be used in future development. The implementation of the system will be explained in more detail in the next chapter.

CHAPTER 5 : IMPLEMENTATION

5.1 Introduction

When the requirement has been obtained and the part has been configured to display the system's flow, project implementation is where the execution of the project takes place from the recorded data into a real program. The aim of this section is to explain the programming method used to build the system and the handling of errors. The programming technique is the method used to explain the process of development and the programming language code specifics used.

5.2 Intelligent System Development Environment

In this project, the intelligent system development environment will include the following tools which are Xampp, phpmyadmin, Visual Studio Code and Browser.

The directory for the file is also important since we use the localhost as the web base to run the project.

5.2.1 Xampp

XAMPP is a completely free, easy to install Apache distribution containing MariaDB, PHP, and Perl. The XAMPP open source package has been set up to be incredibly easy to install and to use. The project will run using apache and php. with this the project can run as a website like system.

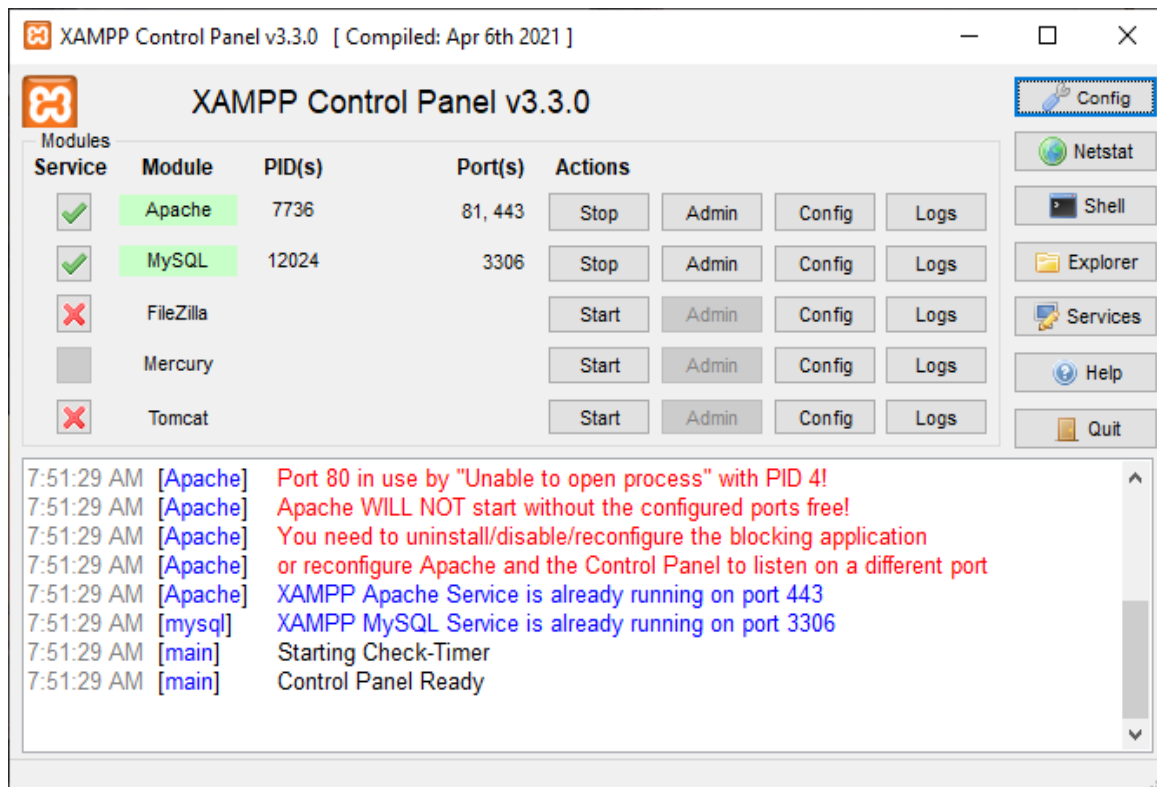


Figure 8: xampp

With xampp we can run the system in the browser. for how to install xampp see Appendix.

5.2.2 Phpmyadmin

Free PHP-coded program called phpMyAdmin is designed to manage MySQL administration on the Internet. Numerous MySQL and MariaDB operations are supported by phpMyAdmin. While you can still directly execute any SQL command, you may perform frequently used actions (managing databases, tables, columns, relations, indexes, users, permissions, etc.) via the user interface.

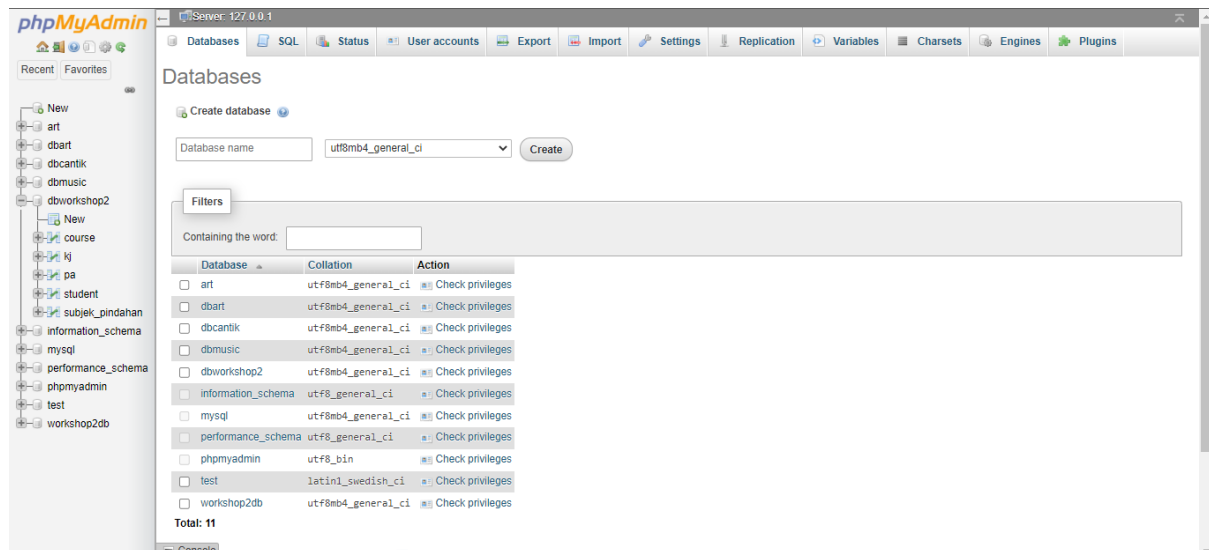


Figure 9: phpmyadmin

When we already install and have xampp in our device we can use phpmyadmin as a database to store the data we collect and to make the website working. The data that is stored is crucial to the website since our system relies on data from the student. when students fill in the form from the website. the data will automatically store in the phpmyadmin.

5.2.3 Visual Studio Code

On your desktop, Visual Studio Code is a lightweight yet effective source code editor that runs on Windows, macOS, and Linux. It has extensions for various languages and runtimes (including C++, C#, Java, Python, PHP, Go, and.NET) as well as built-in support for JavaScript, TypeScript, and Node.js.

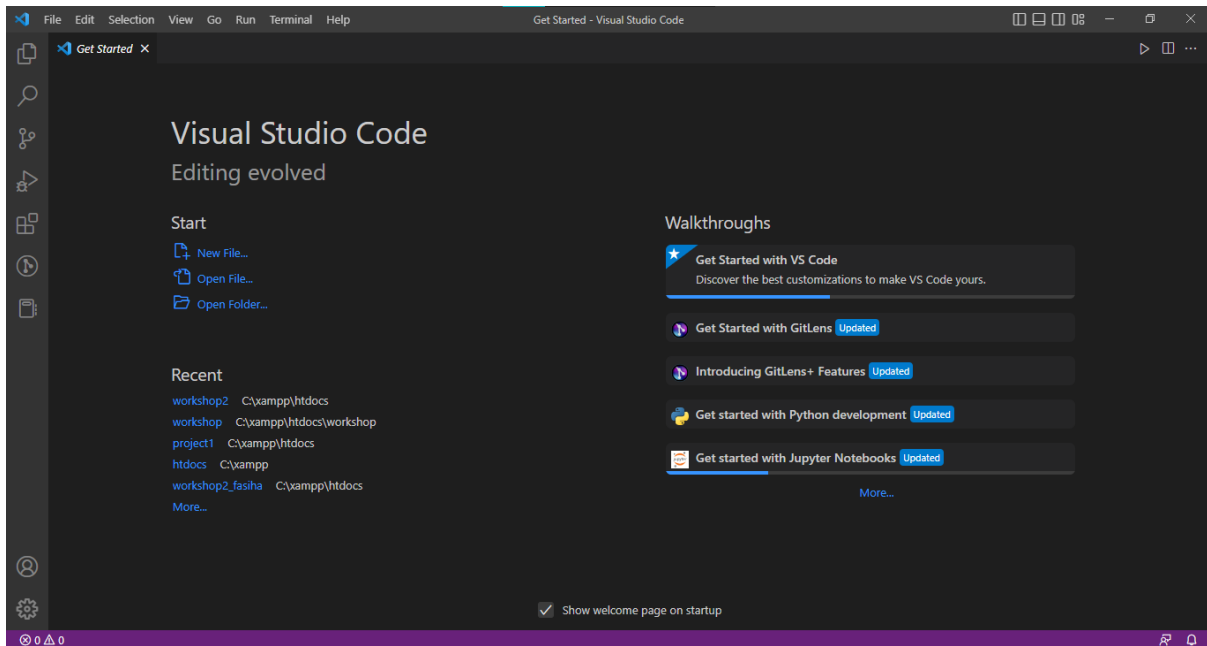


Figure 10: Visual Studio Code

We use Visual Studio Code to write the code for our project. The Visual Studio Code can be used in many programming languages. It is a good text editor since for writing the code for the project we use languages such as PHP, Javascript and Html. With this it eases our work and also saves our time since there are many amazing and great extensions that we can use in the Visual Studio Code.

5.2.4 Browser

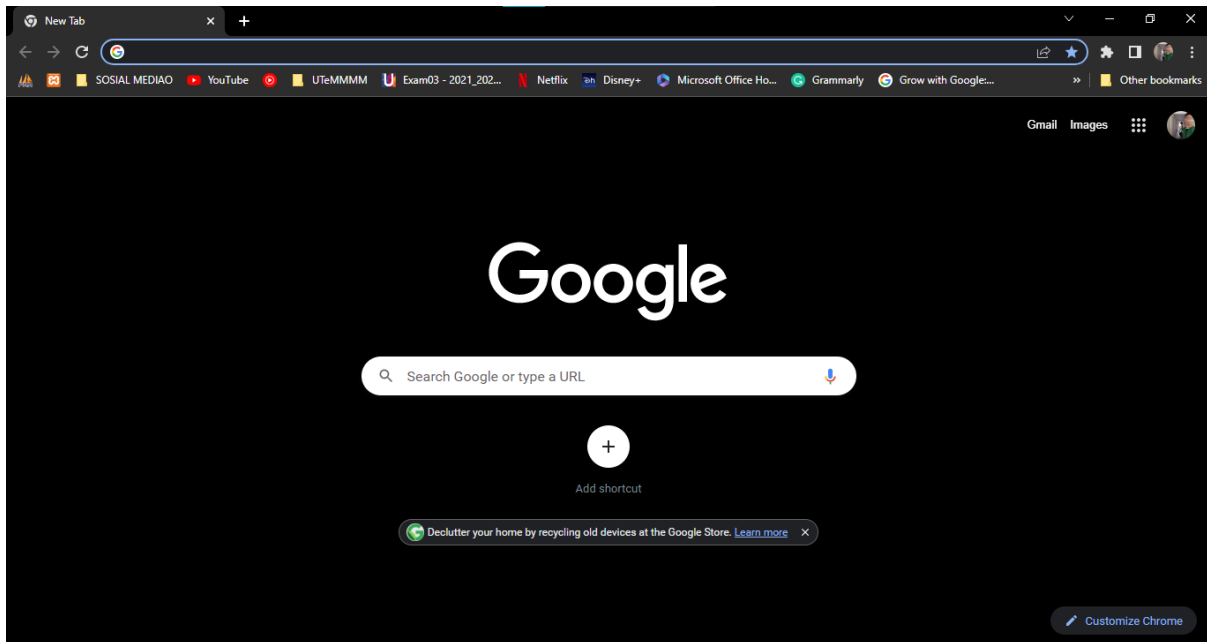


Figure 11: Browser (Chrome)

Since the project is a web base system we use browsers to run and execute the project. We can use many types of browsers. any available browser in the pc can be used to run the project.

5.2.5 Directory

C:\xampp\htdocs

This is the directory we need to store our file. This is important so that the localhost can access the code and run it smoothly. Also add more security features where the localhost can only access files in this directory.

5.3 Intelligent System Configuration Management

An intelligent system configuration management is a process to manage and maintain the performance of the system website, and also the four modules of the subject planning system. Configuration management's primary goal is to maintain consistency between a product's physical implementation and the documentation that outlines how to construct it and its intended uses. Configuration is used by producers while developing new products.management to monitor a product's and its design's development. This holds true regardless of whether the product is a tangible good or software. Manufacturers can start mass producing a product and package it for sale along with its instruction and maintenance manuals by keeping the product and all of its related paperwork coordinated throughout the development cycle.

With our system we can be sure to maintain the system to run perfectly on any device. Our project is used by many different usestudent, academic advisors, and head of department. That is why with the login function, we can have security on the system and to distinguish the user. they can also logout when they already finish using the system. with that our system can be secure and data of the user can be safe.

For the data storing we use phpmyadmin as the database for the website. We use it because it is capable of storing a lot of data at the same time. can access and fetch the data when needed with the password and username is needed when trying connecting to the database. with this the user data is safe and will be there as long as we want. making it good for storage especially for students and transfer subject information.

have the rule to generate the schedule based on the subject transfer. When the rule is true the website will generate respective results for the user on their schedule they can take in their year of study.

5.4 Completing Task via Intelligence

In the subject planning system we first make the connection with the database that is phpmyadmin. since our subject planning system depends on the data that the user , student, academic advisor, and head of department have given. We then use the data with the help of

the rule base system and sql statement to retrieve the data base on the description and rule that we have set. with that the subject planning for the student will be generated also do not forget the pre-requisite tracker for the subject that have pre requisite.

```
$user = 'root';
$password = '';
$databse = 'dbworkshop2';

// Server is localhost with
// port number 3306
$servername='localhost:3306';
$mysqli = new mysqli($servername, $user,$password, $databse);

$code_pindah = [];
$i = 0;
$sem1y1tr = false;
$sem2y1tr = false;

// Checking for connections
if ($mysqli->connect_error) {
    die('Connect Error (' .
        $mysqli->connect_errno . ') '.
        $mysqli->connect_error);
}
?>
```

Figure 12: code for connection to the database

```
// SQL query to check the pre requisite subject
$sql = "SELECT EXISTS (SELECT p.kod_subjek, p.no_matrik, p.status2
FROM subjek_pindahan p
WHERE p.kod_subjek = 'BITI 1113' AND p.no_matrik = '$matrik_no') AS test";
$result = $mysqli->query($sql);
$rows=$result->fetch_assoc();
$ai_sub = $rows['test'];

if($ai_sub == '0')
{
    $sql = " SELECT c.course_code, c.course_name, c.course_category, c.credit, c.year, c.sem
FROM course c
WHERE NOT EXISTS (SELECT p.kod_subjek, p.no_matrik, p.status2 FROM subjek_pindahan p WHERE p.kod_subjek = c.course_code AND p.no_

$result = $mysqli->query($sql);
// LOOP TILL END OF DATA
$a =0;
while($rows=$result->fetch_assoc())
{
    $a = $a + $rows['credit'];
}
}
```

Figure 13: code for checking the pre requisite subject

```

if($ai_sub == '0')
{
    $sql = " SELECT c.course_code, c.course_name, c.course_category, c.credit, c.year, c.sem
    FROM course c
    WHERE NOT EXISTS (SELECT p.kod_subjek, p.no_matrik, p.status2 FROM subjek_pindahan p WHERE p.kod_subjek = c.course_code
    AND p.no_matrik = '$matrik_no' AND p.status2 = 'BERJAYA') AND c.sem = 1 AND c.year = 1;";

    $result = $mysqli->query($sql);
    // LOOP TILL END OF DATA
    $a =0;
    while($rows=$result->fetch_assoc())
    {
        $a = $a + $rows['credit'];
    }
}

```

Figure 14: rule to do when the pre requisite is false

```

if($a > 12){
    $sql = " SELECT c.course_code, c.course_name, c.course_category, c.credit, c.year, c.sem
    FROM course c
    WHERE NOT EXISTS (SELECT p.kod_subjek, p.no_matrik, p.status2 FROM subjek_pindahan p WHERE p.kod_subjek = c.course_code
    AND p.no_matrik = '$matrik_no' AND p.status2 = 'BERJAYA') AND c.sem = 1 AND c.year = 1;";

    $result = $mysqli->query($sql);

    while($rows=$result->fetch_assoc())
    {

```

Figure 15: sql statement if the credit is bigger than 12

```

else{
    $sql = " SELECT c.course_code, c.course_name, c.course_category, c.credit, c.year, c.sem
    FROM course c
    WHERE NOT EXISTS (SELECT p.kod_subjek, p.no_matrik, p.status2 FROM subjek_pindahan p WHERE p.kod_subjek = c.course_code
    AND p.no_matrik = '$matrik_no' AND p.status2 = 'BERJAYA') AND c.sem = 1 AND c.year = 1;";

    $result = $mysqli->query($sql);

    while($rows=$result->fetch_assoc())
    {
        <!-- FETCHING DATA FROM EACH
        ROW OF EVERY COLUMN -->
        <td><?php echo $rows['course_code'];?></td>
        <td><?php echo $rows['course_name'];?></td>
        <td><?php echo $rows['course_category'];?></td>
        <td><?php echo $rows['credit'];?></td>
    }
}

    $sql = " SELECT c.course_code, c.course_name, c.course_category, c.credit, c.year, c.sem, c.pre_requisite
    FROM course c
    WHERE NOT EXISTS (SELECT p.kod_subjek, p.no_matrik, p.status2 FROM subjek_pindahan p WHERE p.kod_subjek = c.course_code
    AND p.no_matrik = '$matrik_no' AND p.status2 = 'BERJAYA') AND c.sem = 1 AND c.year = 2 AND c.pre_requisite IS NULL;";

    $result = $mysqli->query($sql);

    while($rows=$result->fetch_assoc())
    {

```

Figure 16: sql statement if the credit is less than 12 and pre requisite is no

```

else{

    $sql = " SELECT c.course_code, c.course_name, c.course_category, c.credit, c.year, c.sem
    FROM course c
    WHERE NOT EXISTS (SELECT p.kod_subjek, p.no_matrik, p.status2 FROM subjek_pindahan p WHERE p.kod_subjek = c.course_code
    AND p.no_matrik = '$matrik_no' AND p.status2 = 'BERJAYA') AND c.sem = 1 AND c.year = 1;";

    $result = $mysqli->query($sql);
    // LOOP TILL END OF DATA
    $a =0;
    while($rows=$result->fetch_assoc())
    {
        $a = $a + $rows['credit'];
    }

    if($a > 12){
        $sql = " SELECT c.course_code, c.course_name, c.course_category, c.credit, c.year, c.sem
        FROM course c
        WHERE NOT EXISTS (SELECT p.kod_subjek, p.no_matrik, p.status2 FROM subjek_pindahan p WHERE p.kod_subjek = c.course_code
        AND p.no_matrik = '$matrik_no' AND p.status2 = 'BERJAYA') AND c.sem = 1 AND c.year = 1;";

        $result = $mysqli->query($sql);

        while($rows=$result->fetch_assoc())

```

Figure 17: sql statement if the pre requisite is true and subject credit bigger than 12

```

else{

    $sql = " SELECT c.course_code, c.course_name, c.course_category, c.credit, c.year, c.sem
    FROM course c
    WHERE NOT EXISTS (SELECT p.kod_subjek, p.no_matrik, p.status2 FROM subjek_pindahan p WHERE p.kod_subjek = c.course_code
    AND p.no_matrik = '$matrik_no' AND p.status2 = 'BERJAYA') AND c.sem = 1 AND c.year = 1;";

    $result = $mysqli->query($sql);

    while($rows=$result->fetch_assoc())
    {

?>
<tr>

        <!-- FETCHING DATA FROM EACH
        ROW OF EVERY COLUMN -->
        <td><?php echo $rows['course_code'];?></td>
        <td><?php echo $rows['course_name'];?></td>
        <td><?php echo $rows['course_category'];?></td>
        <td><?php echo $rows['credit'];?></td>

    </tr>
<?php

    }

    $sql = " SELECT c.course_code, c.course_name, c.course_category, c.credit, c.year, c.sem
    FROM course c
    WHERE NOT EXISTS (SELECT p.kod_subjek, p.no_matrik, p.status2 FROM subjek_pindahan p WHERE p.kod_subjek = c.course_code
    AND p.no_matrik = '$matrik_no' AND p.status2 = 'BERJAYA') AND c.sem = 1 AND c.year = 2 LIMIT 2;";

    $result = $mysqli->query($sql);

    while($rows=$result->fetch_assoc())

```

Figure 18: sql statement if the pre requisite is true and subject credit less than 12

The system uses the rule base system where every possibility has each own rule that will generate the subject planning for the student. With this the student can see and use what has been recommended to them from the system to register in their studies.

5.5 Summary

This chapter elaborates the implementation of the project, which involves the implementation of intelligent system development environment and intelligent system configuration management, in detail. As for the implementation of coding, all methods and techniques used for future reference in troubleshooting were illustrated in this chapter. For the next part, we will talk more about device testing and outcomes.

CHAPTER 6 : TESTING

6.1 Introduction

The testing of the system will be further clarified in this chapter. In designing a system, testing is important to identify and improvise the system in the future. First, what makes the method unique and useful is the strength of the testing method and the test result analysis obtained. Lastly, the system constraints are also discussed in this chapter. Constraints are necessary in order for the developer to know which aspect of the system lacks the most.

6.2 Testing Method

System testing is a process of testing and validating the completion and the integration of the system. There are a few parts that need to be tested before this Personalized Planning System is delivered to the customer.

6.2.1 Unit Testings

- Unit testing is a process that tests the individual software modules or components which will make up a system at the end of a project. In this part, we will test the database connections with xampp, Visual Studio Code and phpmyadmin.
- *Xampp*: To test the connections of the xampp with the MySQL database and phpmyadmin to see whether the inputs from the users can be sent to the database.
- *Visual Studio Code*: To test whether the software can be connected to the phpmyadmin via xampp.
- *Phpmyadmin*: To test the connections whether it can store the inputs entered by users into the database or not.

6.3 Test Result

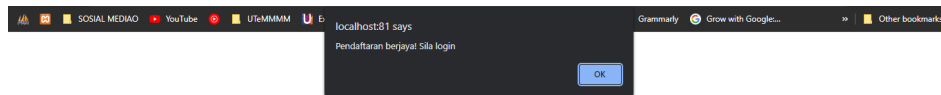


Figure 19: Test for student register

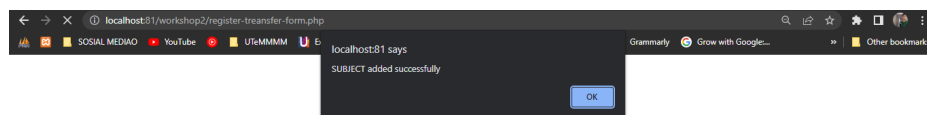


Figure 20: Test for filling the form

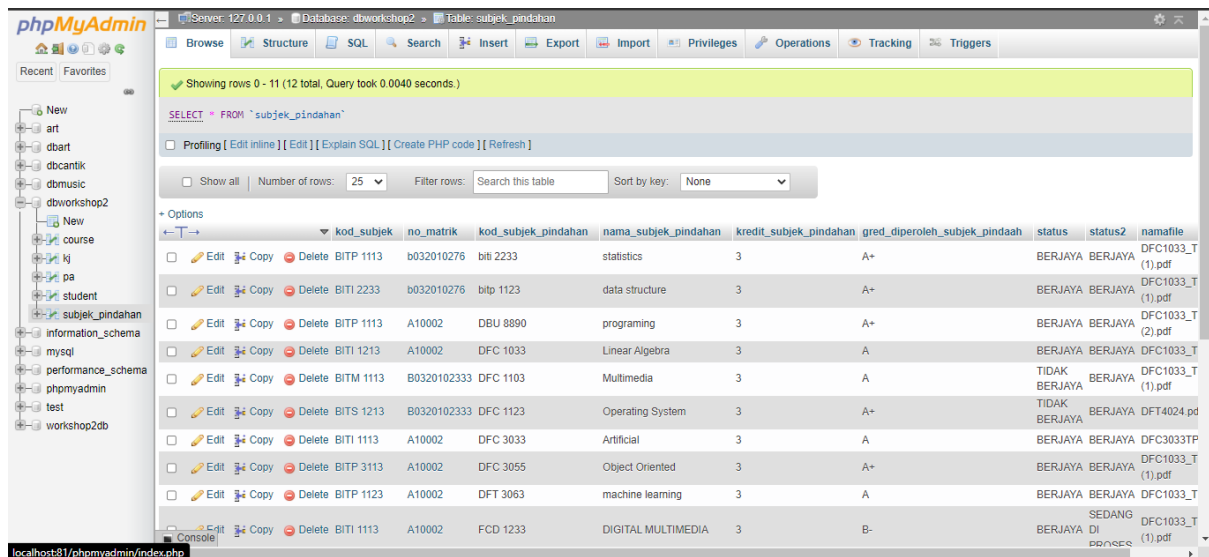


Figure 21: Test for connection

STUDENT SUBJECT STRUCTURE

Transfer subject:
BITP 1113BITI 1213BITI 1113BITP 1113BITI 1113

Year One : Semester 1

Course Code	Course Name	Course Category	Credit
BITM 1113	Multimedia System	P	3
BITS 1123	Computer Organisation and Architecture	P	3
BKK* ***1	Co-Curriculum I	W	1
BLHM 1442	English for Academic Purposes	W	2
BLHM 1762	Philosophy and Current Issues	W	2
BITI 2213	Knowledge Based System	K	3
BITI 2223	Machine Learning	K	3

Year One : Semester 2

Course Code	Course Name	Course Category	Credit
BITI 1223	Calculus and Numerical Methods	P	3
BITP 1923	Database	P	3
BITS 1213	Operating System	P	3
BITS 1313	Data Communication and Networking	P	3
BITI 3123	Fuzzy Logic	K	3
BITI 3133	Neural Network	K	3

Year Two : Semester 1

Course Code	Course Name	Course Category	Credit
BITI 2233	Statistics and Probability	P	3
BITU 2913	Workshop I	P	3
BLHM 2452	Academic Writing	W	2
BLHM 2772	Penghayatan Etika dan Peradaban	W	2
BITI 3413	Natural Language Processing	K	3
BITI 3523	Artificial Intelligence in Robotics and Automation	K	3

Year Two : Semester 2

Course Code	Course Name	Course Category	Credit
BITI 3143	Evolutionary Computing	K	3
BITI 3313	Image Processing and Pattern Recognition	E	3
BITM 2313	Human Computer Interaction	P	3
BITP 2213	Software Engineering	P	3
BITI 2513	Introduction to Data Science	E	3
BITI 3423	Information Technology Security	K	3

Year Three : Semester 1

Course Code	Course Name	Course Category	Credit
BITI 3533	Artificial Intelligence Project Management	K	3
BITP 3453	Mobile Application Development	E	3
BITU 3923	Workshop II	K	3
BKK* ***1	Co-Curriculum II	W	1
BLHM 3462	English for Professional Interaction	W	2

Year Three : Semester 2

Course Code	Course Name	Course Category	Credit
BITU 3973	Final Year Project I	P	3
BLHC 4832	Creative & Critical Thinking	E	2
BLHL ***2	Third Language	E	2
BTMU 4812	Technology Entrepreneurship	W	2

Figure 22: Test for result subject generated

6.4 System Constraints

This system obviously has its constraints such as computational resources which may require significant computational resources to analyze the data and generate personalized plans. The

system also may require a significant amount of time to generate personalized plans, especially if the data is complex. As for other constraints is privacy concerns which the system may require sensitive information about the individual, such as their details of personal information. This may raise privacy concerns and require strict data protection measures. The system also may not be able to handle a large number of users or may not be able to handle the complexity of the data if it is not designed to scale.

6.5 Summary

Testing is an essential part of the system development process and is used to identify and fix bugs and ensure that the system works as intended. The results of testing are documented in this chapter which includes unit testing, the results of the tests and any issues that were identified which are known as system constraints.

CHAPTER 7 : CONCLUSION

7.1 Intelligent System Advantages and Commercial Values

The intelligent system advantages of Personalized Planning for BITI Direct Entry Students' Subject Registration System compared to manual system:

Reduce Human Errors

Human errors can be minimized easily using this computerized system. By assigning the task to the system, errors such as duplicate data, incorrect calculation and so on can be avoided. When handling a long list of data records, humans might make silly mistakes, but this system is easy to manage. With very few errors, the system will be able to generate an accurate report.

Easy and Reliable

Computerized system is efficient and simple. When using the manual method, insert, update, delete and search are quite complicated to do. With a computerized system, it is easier and more effective. Reports can be produced easily and reliable to the admin.

Speed and Efficiency

This system can manage and organize information faster than the manual system. Computerized search is much faster than manual search. The creation of reports is also faster than the manual system. This system can also save the cost of the manual system that uses many of the documents and files.

7.2 Intelligent System Weaknesses

Internet Reliance

The system relies on the internet and without the internet, it is nothing because all the operations and features are required to access the internet such as the transfer credit or credit approval can only be generated when the internet is connected. If there is an internet connection or problem with the web browser, the student, academic advisor or head of department are inaccessible for the entire system.

7.3 Suggestions for System Improvement

As technology improves from time to time, a system can not always be in the same condition and version. A system must always be modified if an error or problem occurs. It must be well documented as it can be an outline for the system's future enhancement. This improvement has been planned, but it can be proposed for future improvement due to lack of time. In the future, there are few improvements that can be proposed to meet the users' requirements:

Multi Language

Since this system is in the english version, it is recommended that Bahasa Melayu (BM) version be introduced for potential improvement. This will allow users to learn in depth more about the single issue.

The Functionality and Structure

To have a clear understanding, particularly on the home page, the design can be enhanced. This requires the GUI to reach the opinion of the user and to conveniently manage the system for the user. To ensure the satisfaction of the end user and to build an effective way to handle data, changes are required in the future. In the future, for Personalized Planning for BITI Direct Entry Students' Subject Registration System is to manage and organize data, the system might become valuable. Because of end customer satisfaction, this change could lead to system success.

7.4 Summary

All in all, as an online Personalized Planning for BITI Direct Entry Students' Subject Registration as defined during the evaluation process, it has been accomplished and met the goals and requirements. As modernizing is taking over all the systems and digitalizing helps them improve in so many particular ways. The system is one of the systems which helps the student, academic advisor and head of department in speeding up the tasks at the same time reducing the complexity. The purpose or objective of this system is to digitalize and create an automated system. This creates a reliable system and easily keeps the correct track of the records. The information about the various things contained in the system are like students can get the generated schedule for upcoming semester by just a few clicks quicker unlike the paper documents required by the academic advisor and head of department for serious

reading of such information and need longer time to process the transfer credit approval. It also helps the users in reducing the carbon footprint as the amount of paper used in the company reduces. This also helps in keeping the standard width of the management system as if there is a case where the academic advisor involves more than one person to manage the student management. Last but not least, it will also give a layer of security to students, academic advisors and heads of department as that only authorized users can access by their credentials. This system does not only limit itself to one user but also helps the whole student direct entry management efficiently.

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APPENDIX

Install Xampp.

1. Download

<https://www.apachefriends.org/download.html>

2. Start the setup wizard



Figure 23: Start the setup wizard

3. Choose software component (recommend to use the standard setup)

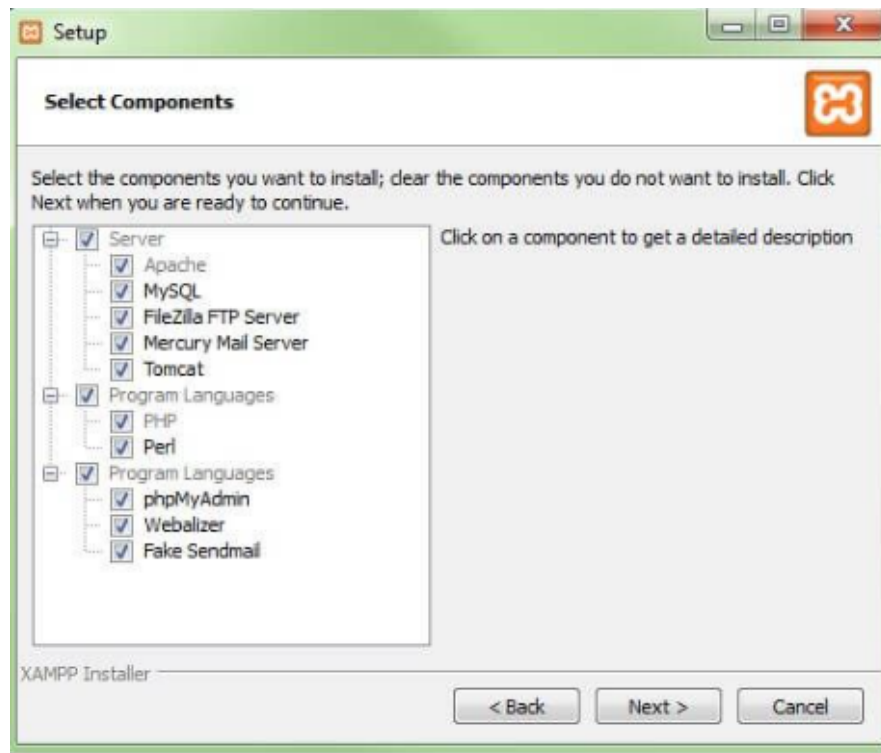


Figure 24: Choose software component

4. Choose the installation directory.

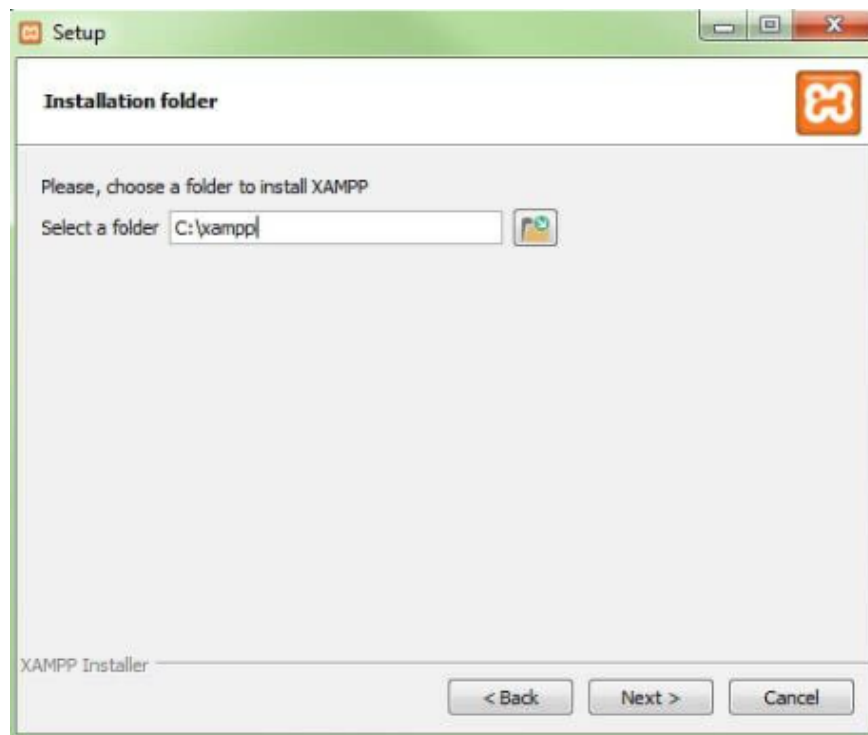


Figure 25: Choose installation directory

5. Start the installation process.



Figure 26: Start the installation process

6. Complete installation.



Figure 27: Complete installation