**Logo

Description automatically generated**

**FACULTY OF COMPUTING**

**UNIVERSITI TEKNOLOGI MALAYSIA**

**DATA STRUCTRUE & ALGORITHM**  
(MECS0023)

SEMESTER 2 2023/2024

Mini Project Documentation

**Student Course Management System**

**By**

1. **Pang Siew La – MECS235008**

**Section 52**

**Lecturer:**

**Pang Yee Yong**

**For Lecturer Use:**

|  |  |  |
| --- | --- | --- |
| **Description** | **Mark Distribution** | **Mark** |
| Project Report   * System Analysis * Design * Program Code | 10  15  25 |  |
| Presentation & Demo | 25 |  |
| System Prototype | 25 |  |
| Total | 100 |  |

**MECS0023 DSA - MINI PROJECT SPECIFICATION**

**PART 1: INTRODUCTION**

1.1 Synopsis Project

The project aims to develop a text-based application in C++ that manages course and student registrations using various data structures.

Linked list – to add

Queue – to do

1.2 Objective of the project

The objective is to implement a system that efficiently handles student enrolments and course registrations, while utilizing fundamental data structures such as linked lists and queues.

**PART 2: SYSTEM ANALYSIS AND DESIGN (USE CASE, FLOWCHART AND CLASS DIAGRAM)**

2.1 System Requirements

The system must allow users to:

1. Register a student.
2. Register a course (with a limited number of slots).
3. Enrol a student in a course (if slots are available, otherwise add to a waiting list).
4. De-enrol a student (if there are students on the waiting list, enrol the first student in the queue).
5. Display available courses.
6. Display registered students.

The system has 6 use cases: -

|  |  |
| --- | --- |
| Use Case | Purpose |
| Register a student |  |
| Register a course |  |
| Enrol a student in a course |  |
| De-enrol a student from a course |  |
| Display available courses |  |
| Display registered students |  |

2.2 System Design

The system will be menu-driven, offering options for each functionality mentioned above.

The class diagram represents the structure of the system in terms of classes, their attributes, methods, and relationships. It illustrates how different entities such as students, courses, and registrations are modelled in the system.

Overall Flow Chart

A diagram of a project

Description automatically generated

Flow Chart: Register a student.

Flow Chart: Register a course

Flow Chart: Enrol a student in a course

Flow Chart: De-enrol a student from a course

Flow Chart Display available courses

Flow Chart: Display registered students

**PART 3: SYSTEM PROTOTYPE**

A prototype will be developed to demonstrate the core functionalities of the system.

**A screen shot of a computer

Description automatically generated**

**Screen 1: Menu Item**

Screen 1: The user must insert an integer value in the range 1-6. If the user enter other number, the system will prompt error message and the screen is displayed again

Prepared By: Siew La

A screen shot of a computer

Description automatically generated

**Screen 2: Register A Student**

Screen 2: The user will be prompted to enter 3 input, student ID (int), student email (string) and student name (string)

Prepared By: Siew La

A screenshot of a computer

Description automatically generated

**Screen 3: Register A Course**

Screen 3: The user will be prompted to enter 4 input, course name (string), course code (string), course slots (int), and credit hours (int).

Prepared By: Siew La

A screen shot of a computer

Description automatically generated

A screen shot of a computer

Description automatically generated

**Screen 4: Enrol or de-enrol student**

Screen 4: The list of courses will be shown to user, user to input the course code

Prepared By: Siew La

A screen shot of a computer

Description automatically generated

A screen shot of a computer code

Description automatically generated

**Screen 5: Enrol or de-enrol student Menu**

Screen 5: The user must insert an integer value in the range 1-4. If the user enter other number, the system will prompt error message and the screen is displayed again

Prepared By: Siew La

A screen shot of a computer

Description automatically generated

**Screen 6: List of Available Course**

A screenshot of a computer

Description automatically generated

**Screen 7: List of All Registered Students**

**PART 4: DEVELOPMENT ACTIVITIES**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Meeting Date | Members Participate in Meeting | Activity | Task for each member | Task Achieved (Yes/No) |
| 5 June 2024 | Siew La | Idea Generation | Get the idea approval from Prof | Yes |
| 6 June 2024 | Siew La | Do Flow Generation | Complete the overall workflow | Yes |
| 8 June 2024 | Siew La | Basic File Structure of the Code | Complete the basic file structure | Yes |
| 9 June 2024 | Siew La | Complete the MVP | Complete the MVP | Yes |
| 9 June 2024 | Siew La | Draft the initial report | Complete Initial Report Structure | Yes |
| ? | ? | Fine Turning the Report | ? | ? |
| ? | ? | User Testing | ? | ? |