CSC1024 Programming Principles

A Python Based Classroom Management System

1.0 Assignment Description

EduHub University is a prestigious institution that aims to enhance the learning experience for both students and faculty members. The university needs a robust Classroom Management System to efficiently handle **attendance tracking**, **timetables**, and **assignment submission status** for its various courses. The project will be implemented using the Python 3 programming language.

A) Attendance Conditions The conditions for attendance tracking are as follows:

- Students are required to mark their attendance for each class.
- Attendance must be recorded within the first 15 minutes of the class.
- The system should support the calculation of attendance percentages for each student.

B) Timetable Conditions The timetable management component should include:

- Creation and maintenance of course timetables.
- Timetables should include information such as course code, course name, instructor, room number, and time slots.
- Updates and modifications to timetables based on changes in the academic schedule.

C) Assignment Submission Conditions The assignment submission tracking system should cover:

- Recording and tracking assignment submissions for each course (Show the status).
- Students should be able to check their submission status.
- Faculty members should have the ability to update the status of submitted assignments.

2.0 Programming Requirements

A) Initial Data Preparation The system will require three text files containing initial data:

- **attendance_StudentID.txt**: Contains initial data of student attendance for at least 10 classes.
- **timetables_StudentID.txt**: Contains initial data of course timetables for at least 5 courses.
- **assignments_StudentID.txt**: Contains initial data of assignment submissions for at least 5 assignments.

B) Program Functionality The Classroom Management System should provide the user with a menu of action items:

(a) **Mark Attendance**

- Record attendance for each student in a specific class.
- Calculate and display attendance percentages.

(b) **Manage Timetables**

- Create, update, or delete course timetables.
- Display the current timetables for all courses.

(c) **Submit/Check Assignments**

- Submit assignments for a specific course.
- Check the status of submitted assignments.
- Update assignment status as a faculty member.

(d) **Display**

- Display attendance records, timetables, and assignment submission statuses.
- Data from respective text files must be read and stored in the program upon starting.

(e) **Exit**

- Stop the execution of the program.
- The program will write the updated data to the respective text files.

c) Programming Techniques The Classroom Management System project should demonstrate the following programming techniques using Python:

- Input and display data.
- Lists and file processing.
- Conditional statements and logical operators.
- Loops for repetitive tasks.
- User-defined functions for modular code organization.

3.0 Project Presentation and Demonstration Requirements

This programming project presentation and demonstration session will be held at the University.

- You must explain the computational implementation and problem-solving techniques of these programming methods in the presentation and document your explanation in the presentation slides.
- The components that will be assessed for the project presentation and demonstration are as follows:
  - ❖ Content and Preparation
  - ❖ Slides: Content and Preparation
  - ❖ Presentation flow
  - ❖ Language proficiency and voice
  - ❖ Technical correctness
  - ❖ Audience engagement

This is the group project, but the presentation and demonstration are based on individual performance. Each student will be given not more than 5 minutes to conduct their programming project presentation and demonstration. Students have the opportunity to make their own group by choosing minimum 5 member and maximum 7 members in a group.

4.0 Assessment Criteria

This programming project has a total of **100 Marks**. A brief overview of the assessment criteria and their allocated marks are as follows. [Kindly refer to Appendix A for the detailed marking rubric]:

Code Presentation [Total: 8 Marks]

- **Code Comment. [Allocated Marks: 3 Marks]**
  This criterion assesses the details and informativeness of commenting on the computer source code with appropriate comments.
- **Identifier Names. [Allocated Marks: 3 Marks]**
  This criterion assesses the appropriateness of the identifier names used in the program.
- **Code Readability. [Allocated Marks: 2 Marks]**
  This criterion assesses the coding style adopted when writing the code.

Overall Program Functionality and Completion [Total: 12 Marks]

- This criterion assesses the classroom management system's operational and functional completeness described in Sections 1.0 and 2.0.
- The breakdown of the total allocated 12 marks is as follows:

Programming Techniques	Allocated Marks
Mark Attendance	2
Manage Timetable	2
Submit Assignment	2
Check the status of submitted assignments	2
Display attendance records, timetables, and assignment submission statuses	2
Exit	2

Program Technical Considerations [Total: 56 Marks]

- **User Interface/User Interaction. [Allocated Marks: 10 Marks]**

This criterion assesses the user interface design of the class management system's user-friendliness and ease of interaction.

- **Error Handling and Data Validation. [Allocated Marks: 10 Marks]**

This criterion assesses the error handling capability and data validation functionality of the class management system. The error handling capability and data validation functionality of the class management system must be tested and demonstrated in the video presentation.

- **Programming Techniques, Logic, and Control Flow**. **[Allocated Marks: 36 Marks]**

This criterion assesses the computational implementation and application of the programming techniques, as described in Section 2.0 (b). These programming techniques must be demonstrated and explained in the video presentation and document your explanation in the presentation slides. The problem-solving techniques, demonstration clarity, and explanation preciseness are the primary measurement for this assessment.
The breakdown of the total allocated 36 marks is as follows:

Programming Techniques	Allocated Marks
Input and display data	7
Lists and file processing	7
If statement, and relational and logical operators	8
Loops	7
User-defined function	7

Project Demonstration and Presentation [Total: 24 Marks]

- This criterion assesses the quality of the video presentation, slides preparation, presentation flow, language proficiency, technical correctness, voice, and excellent engagement in keeping the audience interested to follow through with the presentation.
- The breakdown of the total allocated 24 marks is as follows:

Presentation and Demonstration Skills	Allocated Marks
Video: Content and preparation	4
Slides: Content and preparation	4
Presentation flow	4
Language proficiency and voice	4
Technical correctness	4
Audience engagement	4

5. Submission Details

General Information

- This programming project has a total of **100 marks**.
- This programming project is a **final examination**.
- This programming project is a **group project but individual presentation and demonstration.**

Important Dates

- Distribution Date: **23 February 2024 (Friday).**
- Submission Date: **24 March 2024 (Sunday), before 5.00 PM.**

Submission Procedure: Students are required to prepare the following materials for submission:

- A copy of the program source code with appropriate comments being written to describe the programming techniques, program flow and logic, and user defined functions.
- Name the program source file as: **python_StudentID.py**
- A copy of the presentation slide. Save the presentation slide in the **PDF format.**
- Name the presentation slide file as: **presentation_ StudentID.pdf**

Zip all the files python_StudentID.py, and presentation_ StudentID.pdf, into a Zip file, then name the Zip file StudentID.zip. Each student is required to submit the Zip file **StudentID.zip** to Elearn.

Individual presentation and demonstration. Although students are working in groups, the marks obtained may be different based on their contribution and understanding of the project.

The following is a sample of the 1st page of your presentation slides.

CSC1024 Programming Principles

A Python Based Classroom Management System

Student Name and ID

18 March 2024

Presentation Video Web Link:

https://www.youtube.com/video.mp4

Presentation and Demonstration Video

The video's length of the programming project presentation and demonstration video should not be more than **5 minutes**. The marking will stop on the dot at the end of the 5th minute.

You are required to host your presentation video on **YouTube**. **You need to turn on your computer video camera to show your face during the 5 minutes of the video presentation session.**

DO NOT email the presentation video to me. Put down the video's YouTube link on the 1st page of your presentation slides. I will access your video through the YouTube link. An example of the 1st page of the presentation slides is given above.

DO NOT set your video as "Private". That would prevent me from accessing the video.

Your responsibility is to ensure the video's YouTube link is active for 60 days, starting from the submission due date on 16 March 2023. The reason is for post-examination moderation.

- **Late submission is not permitted.**

Appeal for late submission must abide by a valid reason, as described in the Sunway University Academic Regulations.

Some clarification

1. There are **at least 10 classes,** containing multiple students. It means that it should be at **least 3 students** in a class. As for the user, one faculty member and 3 students are sufficient for this project. It can be more if you want.
2. For the program menu, it would be better if you have two different menus for different types of users, but the same menu with restricted access is also acceptable.
3. Again, it would be better if the user can filter out the results that they want. For the attendance, you can either show the percentage or the whole attendance lists.

You can develop the whole system from the user point of view. There will be dedicated marks for your user experience and creativity.