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| Logo  Description automatically generated  **Faculty of Mathematics & Data Science**   |  | | --- | |  | | | |  | Assignment | | |
| **STUDENT NAME:** |  | |
| **STUDENT ID. NO.:** |  | |
| **COURSE NAME:** | **CSC2400 SOFTWARE ENGINEERING** | |
| **BATCH:** |  | |
| **Computer Science** | | **ISSUE DATE:** | **15 Nov 2024** | |
| **LAST SUBMISSION DATE:** | **15 Oct 2024** | |
| **ASSIGNMENT COVER SHEET** | | | | | |
| **LEARNING OUTCOMES** | | | | | |
| **LO1** | Create complete requirements for a given system, based on the client and stakeholders need. | | | | |
| **LO2** | Apply software design principles and patterns to implement a distributed system based on reusable technology. | | | | |
| **LO3** | Create UML class diagrams to demonstrate the domain and software architecture. | | | | |
| **LO4** | Create UML sequence and state machines diagrams to model system behavior. | | | | |
| **LO5** | Design a graphical user interface (GUI) based on a given system. | | | | |
| **LO6** | Apply simple measurement techniques to software | | | | |
| **RESULT** | | | | | |
| **Submission requirement:** | | | | | **OVERALL** |
| **1** | **Signed cover sheet** | | | |  |
| **2** | **This word file completed with all requirements and answers submitted on Turnitin** | | | |
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| **Assessors feedback:** | | | | | |
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| I certify that the work contained within this Assignment is all my own work and referenced where required.  Student Signature: Date: | | | | Feedback Received:  Student Signature:  Date: | |

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| **Unit Code:** | | CSC2400 | |
| **Unit Title:** | | **SOFTWARE ENGINEERING** | |
| **Assessment Details and Submission Guidelines** | | | |
| **Assessment Type** | | Individual assignment | |
| **Assessment Title** | | **Software Project Plan** | |
| **Purpose of the assessment (with CLO Mapping)** | | This assignment is designed to assess students’ knowledge and skills related to the following learning outcomes:   1. Create complete requirements for a given system, based on the client and stakeholders need. 2. Apply software design principles and patterns to implement a distributed system based on reusable technology. 3. Create UML class diagrams to demonstrate the domain and software architecture. 4. Create UML sequence and state machines diagrams to model system behavior. 5. Design a graphical user interfaces (GUI) based on a given system. 6. Apply simple measurement techniques to software | |
| **Weight** | | 20% of the total assessments | |
| **Total Marks** | | 100 | |
| **Word limit** | | NA | |
| **Submission Guidelines** | | * All work must be submitted on Moodle by the due date along with the cover page. * The assignment must be in MS Word format, 1.5 spacing, 12-pt Times New Roman font and 2.54 cm margins on all four sides of your page with appropriate section headings. * Reference sources must be cited in the text of the report and listed appropriately at the end in a reference list using IEEE referencing style. * Submit your answers in this word file by renaming it in the format **“**   **CSC 2400\_SE\_Assignment\_StudentID”** and uploading on **Moodle** in the appropriate submission link. | |
| **Due Date** | | * **23:00, 15 Oct 2024**– submit all required files on Moodle (Turnitin) | |
| **Late submission** | | * Late project submissions will result in a penalty. Up to two days late submission results in a 10% deduction on the marks obtained in assignment; while an assignment submitted between 3-7 days late will be subject to a 20% deduction on the marks obtained in the assignment. Submissions after 7 days of the deadline will be not be considered for grading. | |
| **Academic Misconduct and Plagiarism** | | * Plagiarism is defined as the presentation of another person’s work as your own. This includes copying from books without referencing the material or copying from another student’s work. | |
| **Instructor Name** | | Dr. Mahmoud Alkhouli | |
| **Moderated by** | |  | |

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# Assignment Description

Software engineering is an engineering discipline that is concerned with all aspects of software production from the early stages of system specification through to maintaining the system after it has gone into use.

It is an approach to the production of software that takes into account client requirements, organization of the software development, the type of software, and the people involved in the development process. For this assignment, you have to utilize the concepts studied in this course and develop a complete software development plan choosing one from the following types of systems:

1. **Decision support information system:** A decision support system (DSS) is a computerized information system used to help in decision-making activities in an organization or a business by analyzing large datasets. Issues in information systems include  [Security, Technical Advances and](https://www.sciencedirect.com/journal/decision-support-systems/vol/92) ethical issues. An example of a DSS is used in sales projection, for [inventory](https://corporatefinanceinstitute.com/resources/knowledge/accounting/inventory/) and operations-related data, and to present information to customers in an easy-to-understand manner.

1. **A Biometric based data collection system** this is a system whose primary purpose is to collect data from a set of biometric devices which can scan the retina of an eye, of individuals and store data. The key requirements of such systems are reliability, even in hostile environmental conditions, and maintainability. An example of a data collection system is a student biometric identification system.

Your project plan should include the following:

1. **Problem Description:**

Select a project, write a description of the project, and list project objectives. **(LO-1)**

1. **Software Requirements:**

Include a complete list of the functional and non-functional requirements of the project. Add use cases and use cases description. **(LO-1)**

1. **Process Model:**

Discuss the software process models to be used to implement the project. **(LO-2)**

1. **System Behavior:**

Create UML sequence and state machine diagrams to model system behavior. **(LO-4)**

1. **System Architecture:**

Discuss the proposed architectural design model for the project and create UML class diagrams. **(LO-3)**

1. **Implementation:**

Explain the implementation plan: tools to be used (software and hardware), measurement techniques and testing techniques. **(LO-2 and LO-6)**

1. **Design:**

Design a graphical user interface (GUI) using Balsamiq. **(LO-5)**

# Answer: Your report should start here.

# Marking criteria:

Marking criteria is shown in following table. Marks are allocated as follows:

|  |  |  |
| --- | --- | --- |
| **Sections to be included in**  **the report** | **Description of the section** | **Marks** |
| Problem Description | As explained in the template in the assignment Description | 10 |
| Software Requirements | As explained in the template in the assignment Description | 15 |
| Process Model | As explained in the template in the assignment Description | 10 |
| System Behavior | As explained in the template in the assignment Description | 15 |
| System Architecture | As explained in the template in the assignment Description | 15 |
| Implementation | As explained in the template in the assignment Description | 15 |
| Design | As explained in the template in the assignment Description | 10 |
| Conclusion | Write a conclusion of the report | 05 |
| Reference style | Follow IEEE reference style | 05 |
|  | **Total** | **100** |

**Marking Rubric for Assignment*:*** Total Marks 100 (Each component graded out of 100 and scaled to max marks in that component)

| **Mark** | **85-100** | **75-84** | **70-74** | **65-69** | **60-64** | **55-59** | **50-54** | **<50 or Zero** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Question** | **A** | **B+** | **B** | **C+** | **C** | **D+** | **D** | **F** |
| Project Description / 10 | Demonstrated excellent understanding of necessary concepts | Demonstrated very good understanding of necessary concepts | Demonstrated good understanding of necessary concepts | Demonstrated fair understanding of necessary concepts | Demonstrated limited understanding of necessary concepts | Demonstrated very limited understanding of necessary concepts | Demonstrated poor understanding of necessary concepts | Demonstrated unsatisfactory understanding of necessary concepts |
| Software Requirements / 15 | Demonstrated excellent understanding of necessary concepts | Demonstrated very good understanding of necessary concepts | Demonstrated good understanding of necessary concepts | Demonstrated fair understanding of necessary concepts | Demonstrated limited understanding of necessary concepts | Demonstrated very limited understanding of necessary concepts | Demonstrated poor understanding of necessary concepts | Demonstrated unsatisfactory understanding of necessary concepts |
| Process Model / 10 | Demonstrated excellent understanding of process models | Demonstrated very good understanding of process models | Demonstrated good understanding of process models | Demonstrated fair understanding of process models | Demonstrated limited understanding of process models | Demonstrated very limited understanding of process models | Demonstrated poor understanding of process models | Demonstrated unsatisfactory understanding of process models |
| System Behavior / 15 | Demonstrated excellent understanding of system behavior | Demonstrated very good understanding of system behavior | Demonstrated good understanding of system behavior | Demonstrated fair understanding of system behavior | Demonstrated limited understanding of system behavior | Demonstrated very limited understanding of system behavior | Demonstrated poor understanding of system behavior | Demonstrated unsatisfactory understanding of system behavior |
| System Architecture / 15 | Demonstrated excellent understanding of system architecture | Demonstrated very good understanding of system architecture | Demonstrated good understanding of system architecture | Demonstrated fair understanding of system architecture | Demonstrated limited understanding of system architecture | Demonstrated very limited understanding of system architecture | Demonstrated poor understanding of system architecture | Demonstrated unsatisfactory understanding of system architecture |
| Implementation / 15 | Demonstrated excellent understanding of implementation | Demonstrated very good understanding of implementation | Demonstrated good understanding of implementation | Demonstrated fair understanding of implementation | Demonstrated limited understanding of implementation | Demonstrated very limited understanding of implementation | Demonstrated poor understanding of implementation | Demonstrated unsatisfactory understanding of implementation |
| Design / 10 | Design is beyond expectations | Design is according to expectations | Design is according to expectations to much extent | Design is according to expectations to an acceptable extent | Design is according to expectations to some extent | Design has few issues | Design has many issues | Design doesn’t meet the expectation/Design is not there (Zero Grade) |
| Conclusion / 05 | Demonstrated excellent understanding of necessary concepts | Demonstrated very good understanding of necessary concepts | Demonstrated good understanding of necessary concepts | Demonstrated fair understanding of necessary concepts | Demonstrated limited understanding of necessary concepts | Demonstrated very limited understanding of necessary concepts | Demonstrated poor understanding of necessary concepts | Demonstrated unsatisfactory understanding of necessary concepts |
| Reference Style / 05 | Clear styles with excellent source of references. | Clear referencing style with good source of referencing | Clear referencing style | Generally good referencing  style | Sometimes clear referencing  style | Lacks consistency with major errors | Lacks consistency with many errors | No proper referencing style followed /  No referencing done or incorrect referencing style (Zero Grade) |

**END OF ASSIGNMENT – GOOD LUCK**