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| **Unit Code** | SEN 2010 |
| **Unit Title**  **Semester** | **Introduction to Software Engineering**  **Spring 2021** |

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| **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. LO-1: Create complete requirements for a given system, based on the client and stakeholders need. 2. LO-2: Apply software design principles and patterns to implement a distributed system based on reusable technology. 3. LO-3: Create UML class diagrams to demonstrate the domain and software architecture. 4. LO-4: Create UML sequence and state machines diagrams to model system behavior. 5. LO-5: Design a graphical user interfaces (GUI) based on a given system. 6. LO-6: Apply simple measurement techniques to software |
| **Weight** | 15% 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 a cover page. * The assignment must be in MS Word format, 1.5 spacing, 11-pt Calibri (Body) 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. |
| **Due Date** | 20th May 2021 - submit your report on Turnitin |
| **Late submission** | * late project submissions will result in a penalty. A one day late submission results in a 10% deduction on the project marking; while a project submitted two days late will be subject to a 20% deduction on the project marking. Submissions after two weeks will be considered a fail on the assignment. |
| **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 Abdul Mohammed |
| **Moderator Name** | **Dr. Haitham Yaish** |

*Spring 2021*

# 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. Following are three types of systems that you can pick from and develop a complete software development plan.

1. **An IoT system** this is a system where the software controls a hardware device and is embedded in that device. Issues in embedded systems typically include physical size, responsiveness, power management, etc. An example of an embedded system is a software system to control a smart TVs and smart sensors outfitted to conference rooms and assembly line machines.
2. **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.
3. **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. Select a project, write a description of the project, and list project objectives.
2. Include a complete list of the functional and non-functional requirements of the project. Add use cases and use cases description. **(LO-1)**
3. Discuss the software process models to be used to implement the project. **(LO-2)**
4. Create UML sequence and state machine diagrams to model system behavior. **(LO-4)**
5. Discuss the proposed architectural design model for the project and create UML class diagrams. **(LO-3)**
6. Explain the implementation plan: tools to be used (software and hardware), measurement techniques and license. **(LO-2 and LO-6)**
7. Design a graphical user interface (GUI) using Balsamiq. **(LO-5)**

# Submission Requirements:

Submit the final report with the cover sheet on Turnitin.

# Marking criteria:

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

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| **Sections to be included in**  **the report** | **Description of the section** | **Marks** |
| Project description and  objectives | As explained in the template in the assignment Description | 10 |
| Requirements and use cases | As explained in the template in the assignment Description | 15 |
| Software process models | As explained in the template in the assignment Description | 15 |
| sequence and state machines diagrams | As explained in the template in the assignment Description | 15 |
| architectural design model  and class diagrams | As explained in the template in the assignment Description | 15 |
| Tools and License | As explained in the template in the assignment Description | 5 |
| GUI | As explained in the template in the assignment Description | 10 |
| Conclusion | Write a conclusion of the report | 10 |
| Reference style | Follow IEEE reference style | 5 |
|  | **Total** | **100** |

**Marking Rubric for Assignment*-1:* Total Marks 100**

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| **Mark** | **80-100** | **70-79** | **60-69** | **50-59** | **<50** |
|  | **Excellent** | **Very Good** | **Good** | **Satisfactory** | **Unsatisfactory** |
| Project | Demonstrated | Demonstrated | Demonstrated | Demonstrate | Did not |
| description | excellent ability to | excellent ability | ability to think | d ability to | demonstrate |
| and objectives  /10 | think critically and  sourced reference material  appropriately | to think  critically but did not source  reference | critically and  sourced reference  material | think critically  and did not source  reference | ability to think  critically and did not source  reference |
|  |  | material | appropriately | material | material |
|  |  | appropriately |  | appropriately | appropriately |
| Requirement | All topics are | Topics are | Generally | Some | This is not |
| s and use | pertinent and | relevant and | relevant and | relevance | relevant to the |
| cases  /15 | covered in depth.  Ability to think  critically and | soundly  analysed. | analysed. | and briefly  presented. | assignment  topic. |
|  | source material is |  |  |  |  |
|  | demonstrated |  |  |  |  |
| Software process models  /15 | Demonstrated excellent understanding of the software process models. | Demonstrated very good understanding of defining the software process models. | Demonstrate d good understanding of defining the software process models.. | Demonstrate d satisfactory understanding g of the software process  models. | Demonstrated unsatisfactory understanding of the software process models.. |

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| sequence and state machines diagrams  /15 | Demonstrated excellent understanding of defining the sequence and state machines diagrams. | Demonstrated very good understanding of defining the sequence and state machines diagrams. Some not well defined | Demonstrated good understanding of defining the sequence and state machines diagrams.  Missing few | Demonstrate d satisfactory understanding g of defining  the sequence and state machines diagrams.  Few not  correct | Demonstrated unsatisfactory understanding of defining the sequence and state machines diagrams. |
| architectural design model and class diagrams  /15 | Demonstrated excellent understanding of the architectural design. | Demonstrated very good understanding of defining the architectural design. | Demonstrate d good understanding of defining the architectural  design. | Demonstrate d satisfactory understandin g of the architectural  design. | Demonstrated unsatisfactory understanding of the architectural design. |
| Tools and License  /5 | Demonstrated excellent understanding of defining the tools and license. | Demonstrated very good understanding of defining the tools and license. | Demonstrate d good understanding of defining the tools and license. | Demonstrate d satisfactory understandin g of  defining the tools and license.. Few  not correct | Demonstrated unsatisfactory understanding of defining the tools and license. |
| GUI  / 10 | Clear styles with excellent source of references. | Topics are relevant and  soundly analysed. | Generally relevant and analysed. | Some relevance  and briefly presented. | This is not relevant to the  assignment topic. |
| Testing plan  /10 | Complete plan is present and very well integrated. | Management plan is present with good cohesive | Management plan is present and mostly well  integrated | Most elements in the Management  plan present | unsatisfactory Management plan , lacks of structure. |
| Reference style  /3 | Clear styles with excellent source of references. | Clear referencing style | Generally good referencing  style | Sometimes clear referencing  style | Lacks consistency with many errors |

**END of ASSIGNEMENT – GOOD LUCK**