

***SOFT255SL - Software Engineering for the Internet using Java***

**Coursework2019–2020**

Term: Term 1

Submission Deadline: 13th January 2020

Coursework Type: Group assignment

Element of Assessment: C1

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# **SOFT225SL Software Engineering for the Internet Using Java**

**Assignment Brief**

Assignment Title: Object Oriented Design and Implementation

Submission Deadline: To be announced

Submitted at: online through the Plymouth DLE (Maximum Capacity: 8M)

Contribution to Final Grading: **SOFT255SL– C1-35% and P1- 40%**

Group assignment: **Maximum of 5 members per group** (you may create your own groups based on your preference)

# **Assessed learning outcomes:**

1. Identify and explain techniques used in object-oriented analysis and design at a basic level.

2. Apply some simple object-oriented modelling techniques in the exploration of a problem domain and the documentation of a program.

3. Develop an object-oriented program to solve a given problem.

# **Grading:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Final Contribution to Core Elements (As per DMR)** | **Element** | **Marks Awarded** | **Assessed Learning Outcome** | **Criteria** |
| Implementation | Analysis and Design | 40% | 1, 2 | Produce high-quality OO solutions to the given problem, documented using UML diagrams |
| Implementation   * Data Model * GUI | 60% | 3 | Produce high-quality, working Java code that adheres to conventions for good coding style. (Refer the Evaluation Criteria mentioned in page no. 04 for more details) |
| Presentation | Evaluation | 100% | 1, 3 | Display insight into strengths and weaknesses of the structure and performance and final product and into personal development practices |

# **Specification:-**

This coursework requires you to use UML and Java/NetBeans to design and implement an object-oriented system according to the selected specification. **The solution must include both a data model and a graphical user interface** (GUI) and *needs* to cover learnt core concepts within the module. You also need to evaluate the quality of your final product and your personal practice throughout this assignment.

**You can select any scenario / topic according to your preference.**

## **Deliverable:**

1. First, you must analyze the selected scenario. The analysis must include an object oriented (OO) model. Based on your model, you must also produce an OO design for the system to be implemented.

***Note:*** *The design will be evaluated based on how well it limits the complexity of the given scenario and how well it enables reuse of code.*

1. You must produce a NetBeans project containing the Java code required to implement your design. You are encouraged to make use of NetBeans facilities such as code reformatting, code generation, etc., to help you produce high quality code.

***Note:*** *Your implementation will be evaluated in terms of how well it reflects your design and how well it realizes the functionality required by the given scenario.*

1. On top of the data model you must implement a GUI to support functionality of your system. The GUI must be task-based and should allow the re-use of information already recorded in the system. Your analysis of the user interaction described in the selected scenario must be documented through a set of use-cases.

***Note:*** You’re required to store the data in a database and retrieve data where necessary.

Based on the user interaction analysis, you must design a GUI that allows the user to perform all the required tasks with a minimum of cognitive and physical effort. Your GUI design section of the final report must include illustrations (sketches or screen shots) of the GUI.

***Note:*** *Your UI will be evaluated in terms of how well it supports the user interaction requirements identified in your design.*

***NOTE!*** *There are no implementation marks available for setting up the GUI using the visual design tools provided. Implementation marks will only be awarded when the GUI interacts with the objects in the data model.*

There will be a DLE link to upload your assignment so make sure everything is bundled to your zip folder. Rename the zip folder using the team leader’s index number. Your zip file contains: design document and implementation plus individual reports.

## At the viva Date:

You’re required to present at the location 30min prior to the scheduled time. You need to be well prepared for the viva. No extra time will be given to setup your machines.

* First you need to discuss the design you have document; OO Model, OO Design and Use case diagram developed for the GUI generation.
* Then you need to demonstrate your system emphasizing identified functionalities.
* Finally, you need to do a critical analyze your system in terms of functionality, quality and personal reflection.
* Question and answer session.

## Evaluation Criteria:

Please find below criteria:

## Analysis and Design: OO Model and OO Design (40%)

* Ability to identify outstanding entities, associations, and attributes and record them in a conceptual model using the UML notation (OO Model/ GUI Design Use Cases)
* Ability to summarize class definitions, relationship and interaction between entities in a UML design class diagram (OO Model)
* Ability to develop the UML class diagram describing the classes to be implemented and any links between these classes in terms of creation, aggregation or inheritance as well as any abstractions. (OO Design)
* Whether the resultant design will limit the complexity of the given scenario and enables reuse of code.

## Implementation: Data Model and GUI (60%)

* + Student’s ability to make use of NetBeans facilities such as code reformatting, code generation, etc., to produce high quality code.
  + Student’s ability to follow Java coding conventions when implementing their code base.
  + Whether the developed code well reflects the design and improve the code reusability.
  + Whether the implementation cover all the functionalities identified at selected scenario.
  + Student’s ability to practiced learnt concept like Polymorphism, Encapsulation, inheritance and abstraction inside the code base.
  + Student’s ability practiced learnt concept like thread and exception handling, File/Database handling within their code base.
  + Student’s ability to make use of versioning controlling tools like BitBucket.
  + Whether the developed GUI allows the user to perform all the required tasks with a minimum of cognitive and physical effort.
  + Whether the GUI interacts with the objects in the data model and cover all the functionalities identified within the design section.
  + Student’s overall ability to map design artifacts into class definitions in an object-oriented programming language.

## Evaluation: Functionality, Quality and Personal Reflection (100%) -Presentation

* Student’s ability to describe how the stakeholders would use their application to achieve their requirement.
* Student’s ability evaluates the quality of their solution in terms of completeness, functionality, code complexity and code reuse.
* Student has well identified and justified what worked well and what went wrong within the process.
* Student has his own suggest on how they could improve their design and implementation practices in their next project. Student has evidence of background reading (referenced) to gather required details in order to achieve the task.
* Student has well presented their work. In terms of formality, readiness and time management.

# **Assessment Offences:**

For this assignment you may be using information from differing sources:

* + Books, journal articles
  + Course/module handouts
  + Web-pages

Thus, if you:

1. Use text verbatim, i.e. word-for-word.

2. Copy and / or amend figures / diagrams.

Then material used this way must be referenced: The text must be in quotes and referenced, and source of the figure/diagram must be placed under the figure/ diagram. Please refer module handbook for Harvard reference guide.

And also, you’re advised not to present system which are freely available. All work should be original effort. The University treats plagiarism very seriously and you are advised to read the relevant sections in your student handbook.

# **Evaluation Document: Work Breakdown Structure**

Please fill the following responsibility matrix based on individual contribution to the project activities. You may indicate “R” for the responsible member and “S” for those who have supported for the task. Total contribution shows the contribution of each member on the whole project (*Based on your evaluations*). One is done for your reference.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Member  Activity | Member 01 ID: | Member 02 ID: | Member 03 ID: | Member 04 ID: | Member 05 ID: |
| Describe your activity 01 | S | S | R | S | R |
| Describe your activity 02 | R | S | R | S | S |
| E.g. Class Diagram | R | S | S | S | S |
| Total Contribution- (100%) | 30% | 10% | 30% | 5% | 25% |

***Please note that you need to bring this form when you come for your viva session.***