



AOU

الجامعة العربية المفتوحة

Arab Open University

Faculty of Computer Studies

TM354: Software Engineering

Tutor-Marked Assignment (TMA) Fall 24/25

All Branches EXCEPT KSA

Cut-Off Date: Based on the Published Deadline.

Total Marks: 90 marks turned to 15 marks

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Plagiarism Warning:

As per AOU rules and regulations, all students are required to submit their own TMA work and avoid plagiarism. The AOU has implemented sophisticated techniques for plagiarism detection. You must provide all references in case you use and quote another person's work in your TMA. You will be penalized for any act of plagiarism as per the AOU's rules and regulations.

Declaration of No Plagiarism by Student (to be signed and submitted by student with TMA work):

I hereby declare that this submitted TMA work is a result of my own efforts and I have not plagiarized any other person's work. I have provided all references of information that I have used and quoted in my TMA work.

Name of Student:.....

Signature:.....

Date:.....

Question 1		10 Marks
Use a Generative AI tool (such as ChatGPT, Gemini, etc...) and check its answer by giving the following prompt:		
<i>“give me one non-functional requirement for a Virtual Learning Environment system”</i>		
1.1	State the requirement that the tool provided and comment on its quality (Completeness, Ambiguity, etc...). What assumptions did the tool make?	4 Marks
1.2	Restate the requirement provided to make it clearer and more specific.	6 Marks
<i>Note: Make sure to use the course material and your own words for answering the questions above in order not to be penalized for plagiarism!</i>		

Questions 2, 3, 4 are all based on the following in the Virtual Learning Environment Domain

A new Company “Specialized Skills” is planning to launch a Virtual Learning Environment (VLE) soon and start accepting content creators and learners and offering services to learners. You can imagine the rest of the requirements as you find suitable! Your task is to submit the requirements of Questions 2 to 4.

Note: the system to be developed should not exceed a budget of \$70,000.

Question 2		40 Marks
Answers to all the parts of question 2 must be based on the VLE domain.		
2.1	List one possible mandated constraint.	2 Marks
2.2	Prepare using your own knowledge a list of 4 functional requirements and list the type for each one.	4 Marks
2.3	Prepare using your own knowledge a list of 4 non-functional requirements and list the type for each one. Note: each non-functional requirement should be of a different type.	4 Marks
2.4	Prepare a Volere template (Just list a minimum of 8 sections of the template, no need for the layout) for 1 of the requirements that you have identified using the sections of the snowcard used in Block 1 – Unit 2 – Section 6.	4 Marks
2.5	Draw a use case diagram with a minimum of 3 different actors, 8 use cases, at least 1 <<include>> stereotype, and at least 1 <<extend>> stereotype	8 Marks
2.6	Write a brief discussion about the stereotypes that you have used and justify the reasons for adding them and at least 2 benefits <u>you</u> obtained from using them.	2 Marks
2.7	Choose any of the Use Cases that you have used and write the use case textual description for it with all the main sections (Identifier and name, Initiator, Goal, Precondition, Postcondition, Assumptions, Main Success Scenario, Extensions)	8 Marks

2.8	Develop an Activity Diagram for the Main Success Scenario and its Extensions that you have listed in 2.7 above and make sure to have at least 10 activities. Note: for a good grade, you need to make good use of the different design symbols (Such as Decision nodes, Merge Node, Swimlane, Synchronization bar) if possible.	8 Marks
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Question 3		20 Marks
You are required to develop one Class diagram for parts 3.1, 3.2, 3.3, and 3.4 and one respective Object diagram (in part 3.5). The main classes you should consider are: Visitor, Learner, ContentCreator, Module, Assessment, Certificate.		
<i>Note: You can add classes in case you find them necessary for your design.</i>		
3.1	Draw the classes and their associations.	4 Marks
3.2	Add the multiplicities to the associations.	4 Marks
3.3	Make sure that the diagram has at least 6 role names.	4 Marks
3.4	Make sure to use at least one additional design detail (Navigability, Qualified Association, Aggregation/Composition, Generalization, etc...)	4 Marks
3.5	Develop an object diagram for a specific instance of time as you find suitable and make sure to include at least 6 object instances.	4 Marks

Question 4		20 Marks
Develop a sequence diagram for the process of applying for a certificate, where after a learner completes a selected set of modules successfully can apply for a certificate.		
<i>Note: The above guidelines are provided just as a help so that you can develop a good sequence diagram. You can imagine the remaining functionality yourself!</i>		
4.1	Create instances (objects) for the classes involved and make sure to add an instance for the User Interface to start the process. The diagram must have a minimum of 4 objects (including the User Interface instance).	8 Marks
4.2	Create a minimum of 8 messages and represent the message calls between all the objects. 2 of the messages must be self-messages (a message from the object to itself).	8 Marks
4.3	Make sure the object lifelines and the activations are well represented and clear.	4 Marks
<i>Note: Assume that there are no complex interactions that need to be displayed. Hence the diagram can be based on the material learnt in Unit 6 only. No need for "alt" or "opt" fragments.</i>		