HIGHER EDUCATION PROGRAMMES

Academic Year 2025:	January - June
Summative Assessment 1:	Systems Analysis and Design 3 (HSAD300-1)
NQF Level, Credits:	6, 20
Weighting:	50%
Assessment Type:	Project
Educator:	Luvuyo Ngcobo
Examiner:	Ralph Mavhunga
Due Date:	2 June 2025
Total:	70 Marks
Time:	2 Hours

Instructions

1. This examination script includes 6 pages, including the cover sheet. Ensure that you have all the pages.
2. It is based on the following Courseware Materials:
   The Boston Study Guide and The Zweirs textbook.
3. All questions are compulsory
4. Submit as a single PDF document

Scenario

Zenith Software Solutions, a global software development company, has hired you as a senior software architect. As part of their new Global Community Outreach Program, you have been tasked with developing an innovative software solution. The project will be executed using the Systems Development Life Cycle (SDLC) methodology, requiring you to integrate advanced project management and software engineering practices.

Task:

You are required to **choose ONE** of the following options and design a comprehensive software application using systems analysis and design concepts, addressing the unique challenges each presents:

Option One: Sustainable Urban Farming Cooperative

The application will help residents collaborate in growing, maintaining, and distributing organic produce in urban spaces.

Key features: Real-time sensor integration for monitoring soil health, weather data analysis, community event planning, and cooperative management for produce distribution.

Option Two: Local Elderly Care Center

The application should assist caregivers in managing elderly care, scheduling appointments, tracking medication, and organising wellness activities.

Key features: Integration with wearable health devices, real-time alerts for critical health events, and family member access for elderly monitoring.

Rubric

Carry out the Systems Development Life Cycle process and create a report for management that includes the necessary documentation for the following phases.

- Investigation
- Feasibility Study

- Analysis
- Design
- Implementation

NOTE: USE THE RUBRIC TO COMPLETE THE ASSESSMENT.

Rubric for Diagrams:

Criteria	Excellent	Good	Fair	Poor	Total Marks
Investigation Phase					
Investigation	Comprehensively documents, giving examples of the following after conducting the process of investigation: • Why is the system being designed? • Who is going to use the system? • What kind of capabilities will the system provide?	Adequately documents giving at least 2 examples of the following after conducting the process of investigation: • Why is the system being designed? • Who is going to use the system? • What kind of capabilities will the system provide?	Documents some of the following without giving examples of the following after conducting the process of investigation: • Why is the system being designed? • Who is going to use the system? • What kind of capabilities will the system provide?	Documentation is not clear and vaguely addresses the three key questions that are addressed by Investigation.	
	6 marks	5 marks	3 marks	0-1 marks	
Feasibility Phase					
Feasibility Study	Comprehensively documents, giving examples of the following after conducting the process of feasibility study: • Statement of the problem • Preliminary Investigation and Summary of Findings • Timeline/Gannt chart must be included	Adequately documents giving at least 2 examples of the following after conducting the process of feasibility study : • Statement of the problem • Preliminary Investigation and Summary of Findings • Timeline/Gannt chart must be included	Documents some of the following without giving examples of the following after conducting the process of feasibility study: • Statement of the problem • Preliminary Investigation and Summary of Findings • No timeline/Gannt chart included	The description is not clear and vaguely addresses the statement of the problem and Summary of findings of the Preliminary Investigation.	
	6 marks	4 marks	2 marks	0 mark	
Analysis Phase					

Analysis	Comprehensive documents, giving examples of the following for the process of analysis: • The procedure for collecting data. – 7 marks • Defining the System Requirements – 6 marks • Prioritisation of Requirements – 1 marks	Adequate documents giving at least 2 examples of the following for the process of analysis: • The procedure for collecting data. – 4 marks • Defining the System Requirements – 4 marks • Prioritisation of Requirements – 1 marks	Documents some of the following without giving examples of the following for the process of analysis: • The procedure for collecting data. -3 marks • Defining the System Requirements – 2 marks • Prioritisation of Requirements – 1 marks	The description is not clear and vaguely addresses the process of Analysis, collection of data, and definition of the system	
	0 - 10 marks	0 - 6 marks	0-4 marks	0 marks	
Design Phase					
Context Diagram	The diagram contains the following symbols and component: 1 mark – entity 1 mark- data flow 1 mark – central process. Constructs process modeling diagrams that clearly fit the proposed system design.– 3 marks	The diagram contains the following symbols and component 1 mark – entity 1 mark- data flow 1 mark – central process. Constructs process modeling diagrams that mostly fit the proposed system design – 2 marks	The diagram contains the following symbols and component 1 mark – entity 1 mark- data flow 1 mark – central process. Constructs process modeling diagrams that somewhat fit the proposed system design. – 1 mark	The diagram contains the following symbols and component 1 mark – entity 1 mark- data flow 1 mark – central process. Constructs process modeling diagrams that do not fit the proposed system design.– 0 marks	
	3 - 6 marks	**3 - 5 marks**	**3 - 4 marks**	**0 - 3 marks**	
Flow Chart	The diagram contains the following symbols and component: 1 mark – events symbol 1 mark- decisions 1 mark – start and end nodes 1 mark – direction flow Constructs process modelling diagrams that clearly fit the proposed system design. – 6 marks	The diagram contains the following symbols and component 1 mark – events symbol 1 mark- decisions 1 mark – start and end nodes 1 mark – direction flow Constructs process modelling diagrams that mostly fit the proposed system design – 4 marks	The diagram contains the following symbols and component 1 mark – events symbol 1 mark- decisions 1 mark – start and end nodes 1 mark – direction flow Constructs process modelling diagrams that somewhat fit the proposed system design. – 2 mark	The diagram contains the following symbols and component 1 mark – events symbol 1 mark- decisions 1 mark – start and end nodes 1 mark – direction flow Constructs process modelling diagrams that do not quite fit the proposed system design – 0 marks	
	4 - 7marks	**4 - 6 marks**	**4 - 5 marks**	**0 - 4 marks**	
Use Case Diagram	The diagram contain following symbols and components: 1 mark – actor 1 mark- system boundary 1 mark – use case. 1 mark – case connectors/interactions Constructs process modelling diagrams that clearly fit the proposed system design. – 5/6 marks.	The diagram contains the following symbols and components 1 mark – actor 1 mark- system boundary 1 mark – use case. 1 mark – case connectors/interactions Constructs process modelling diagrams that mostly fit the	The diagram contains the following symbols and components 1 mark – actor 1 mark- system boundary 1 mark – use case. 1 mark – case connectors/interactions Constructs process modelling diagrams that somewhat fit the	The diagram contains the following symbols and components 1 mark – actor 1 mark- system boundary 1 mark – use case. 1 mark – case connectors/interactions Constructs process modelling diagrams that do not fit the	

		proposed system design –3/4 marks	proposed system design. – 1/2 marks	proposed system design – 0 marks	
	4 - 7marks	**4 - 6 marks**	**4 - 5 marks**	**0 - 4 marks**	
Sequence Diagram	The sequence diagram should contain the following symbols and components: 1 mark – actor 1 mark- lifeline 1 mark – activity bar 1 mark – message Constructs process modeling diagrams that clearly fit the proposed system design. – 5/6 marks	The sequence diagram should contain the following symbols and components 1 mark – actor 1 mark- lifeline 1 mark – activity bar 1 mark – message Constructs process modeling diagrams that mostly fit the proposed system design – 3/4marks	The sequence diagram should contain the following symbols and components 1 mark – actor 1 mark- lifeline 1 mark – activity bar 1 mark – message Constructs process modeling diagrams that somewhat fit the proposed system design – 1/2 mark	The sequence diagram should contain the following symbols and components 1 mark – actor 1 mark- lifeline 1 mark – activity bar 1 mark – message Constructs process modeling diagrams that do not fit the proposed system design – 0 marks	
	4 - 7 marks	**4 - 6 marks**	**4 - 5 marks**	**0 - 4 marks**	
Activity Diagram	The activity diagram should contain the following symbols and components: 1 mark – petri net 1 mark- start and end symbol 1 mark – action symbol. 1 mark – decision/junction point Constructs process modelling diagrams that clearly fit the proposed system design. – 5/6 marks	The activity diagram should contain the following symbols and components 1 mark – petri net 1 mark- start and end symbol 1 mark – action symbol. 1 mark – decision/junction point Constructs process modelling diagrams that mostly fit the proposed system design – 3/4 marks	The activity diagram should contain the following symbols and components 1 mark – petri net 1 mark- start and end symbol 1 mark – action symbol. 1 mark – decision/junction point Constructs process modelling diagrams that somewhat fit the proposed system design – 1/2 mark	The activity diagram should contain the following symbols and components 1 mark – petri net 1 mark- start and end symbol 1 mark – action symbol. 1 mark – decision/junction point Constructs process modelling diagrams that do not quite fit the proposed system design – 0 mark	
	4 - 7 marks	**4 - 6 marks**	**4 - 5 marks**	**0 - 4 marks**	
Class Diagram	The class diagram should contain the following symbols and components: 1 mark – class symbol 1 mark- attributes section 1 mark – operation section. Constructs process modelling diagrams that clearly fit the proposed system design. – 6/7 marks	The class diagram should contain the following symbols and components 1 mark – class symbol 1 mark- attributes section 1 mark – operation section. Constructs process modelling diagrams that mostly fit the proposed system design – 4/5 marks	The class diagram should contain the following symbols and components 1 mark – class symbol 1 mark- attributes section 1 mark – operation section. Constructs process modelling diagrams that somewhat fit the proposed system design. – 2/3 mark	The class diagram should contain the following symbols and components 1 mark – entity 1 mark- data flow 1 mark – central process. Constructs process modelling diagrams that do not quite fit the proposed system design – 0/1 mark	
	3 - 7 marks	**3 - 5 marks**	**3 - 4 marks**	**0 - 3 marks**	
User Interface Design	Documentation comprehensively describes, giving examples of the following: 1. Selected User Interface Design and Design considerations for the System 2. The External Input Metrics	Documentation adequately describes giving at least 2 examples of the following: 1. Selected User Interface Design and Design considerations for the System	The documentation describes some of the following without giving examples of the following: 1. Selected User Interface Design and Design considerations for the System	The documentation description is not clear and vaguely addresses the User Interface Design Considerations or External Input and External Output Metrics.	

	3. The External Output Metrics	**2.** The External Input Metrics **3.** The External Output Metrics	**2.** The External Input Metrics **3.** The External Output Metrics		
	4 marks	**3 marks**	**2 marks**	**0-1 marks**	
Build/ Implementation	Comprehensively describes, giving examples of the following; The IT Technology appropriate for developing the System.	Adequately describes giving at least 2 examples of the following,: The IT Technology appropriate for developing the System.	Describes some of the following without giving examples of the following: The IT Technology appropriate for developing the System.	The description is not clear and vaguely addresses recommending an appropriate IT Technology.	
	3 marks	**2 marks**	**1 mark**	**0 marks**	
Total Marks					

Learning Outcome:

The student must model a system and create adequate documentation for it.