



Daffodil International University
Department of Software Engineering
Faculty of Science & Information Technology
Midterm Examination , Summer 2025

Course Code: SE323; Course Title: Software Architecture & Design

Sections & Teachers: AE(A,B), FRR(C-E), ZZM(F,G),MMN(H),DDK(I)

Time: 1 Hour 30 Mins

Marks: 25

Answer ALL Questions

*[The figures in the right margin indicate the full marks and corresponding course outcomes.
All portions of each question must be answered sequentially.]*

<p>You are a software architect assigned to design the Rural Health Management System (RHMS) for a government initiative aimed at improving healthcare accessibility in remote and rural areas. The system will support services such as: Patient Registration and Medical Records, Telemedicine Consultations, Doctor and Health Worker Scheduling, Vaccination and Immunization Tracking, Mobile Health Unit Tracking, Health Awareness Notifications via SMS. The system must operate in areas with intermittent internet connectivity, integrate with national health databases, and ensure data security and patient privacy. It should support both online and offline functionalities, with local caching and synchronization when connected. The architecture must allow frequent updates, modular deployments, and interoperability with other e-health systems. Both web-based dashboards for healthcare providers and mobile applications for field workers and patients will be needed.</p>			
1.	a) Explain the key architectural stakeholders involved in the RHMS development, with their concerns and how the architecture addresses them.	[Marks-5]	CLO-1 Level-2
	b) Explain how a broker architecture facilitates communication between distributed components in the RHMS system.	[Marks-6]	CLO-1 Level-2
2.	a) Interpret the different types of architectural structures and explain how each helps in system design.	[Marks-4]	CLO-2 Level-3
	b) Construct a 4+1 view model for the RHMS system and demonstrate each view with suitable examples from the scenario.	[Marks-5]	CLO-2 Level-3
3.	Analyze how layered architecture supports system organization, the risks posed by layer bridging and sinkhole anti-patterns, and suggest strategies to avoid these issues while ensuring scalability and maintainability with proper examples.	[Marks-5]	CLO-3 Level-4