

# Software Construction & Development (SE3001,SE3005)

Date: November 4, 2025

Course Instructor(s)

Dr. Farooq Ahmed

## Sessional-II Exam

Total Time: 1 hour

Total Marks: 30

Total Questions: 2

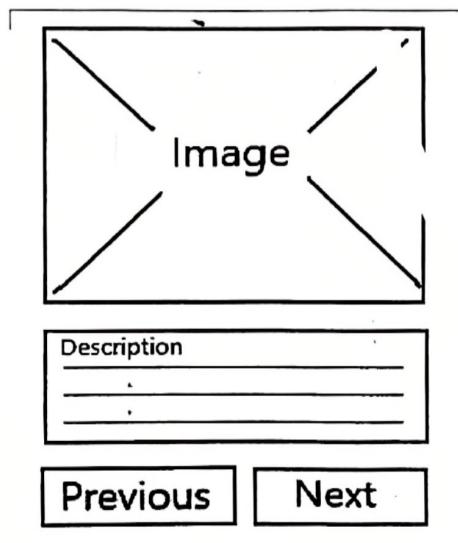
Do not write below this line

Attempt all questions on the answer sheet

**CLO 2: Implement software design patterns as part of software construction activity**

Question 1

[20 marks]



Consider the mock-up above for a simple image-gallery application:

1. Images are stored in a relational database table Image with columns: id, imagepath, description
2. UI shall show images and their description, after fetching from the database, one-by-one.
3. **Next** button shall move to (and display) the next image and its description
4. **Previous** button shall move to (and display) the previous image and its description

Implement the above UI (along with necessary event handling) using **Java Swing** and a **3-layered** architecture.

**Note:** **Image** can be read from a file using **ImageIO** (just like other IOStream operations) and drawn on a panel using **drawImage** of its graphic component

# National University of Computer and Emerging Sciences

## CLO 3: Design Test Cases for a Software System

Question 2

[10 marks]

TicTacToe
- board : char[][]
+ makeMove(i : int,j : int, player : int)
+ isDraw() : boolean
+ isWin() : int

Consider a TicToeGame on a 3x3 grid and played between 2 players where player 1 uses 'X' symbol and player 2 uses 'O'. Write unit tests using JUnit to determine:

1. Game ends in a draw
2. Game won by a player (either 1 or 2).