

# Software Construction & Development (SE3001)

## Sessional-II Exam

Date: November 4, 2024

Course Instructor(s)

Dr. Farooq Ahmed, Mr. Waqas Ali

Total Time: 1 hour

Total Marks: 30

Total Questions: 3

22i-2505

Roll No

SE-SA

Section

TKS

Student Signature

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

[10 marks]

Consider the UI mock-up provided above for the Exam Department at FAST NUCES Lahore. The form prompts the user to enter the exam name, allow selection of the exam day from a drop-down list displaying the names of the week (Monday, Tuesday, ...), and input the exam date in the format (dd/mm/yy). Invigilator names are hardcode as "Invigilator One" "Invigilator Two" and "Invigilator Three" in the dropdown. Additionally, the Level field should allow the user to select "PhD," "MS," or "BS" using radio buttons.

Exam Panel

Assign Exam Duty Form

Exam Name :

Exam Day :

Exam Date :

Invigilator Name :

Level : ☐ PhD ☐ MS ☒ BS

### CODE:

Implement Event Listener for ASSIGN button so that when user clicks on it, a record is inserted in the database to assign the duty of specified exam to selected invigilator on the mentioned date, if not assigned already. Assume that name of database is "exam\_db" and table is "exam\_table".

Organize the code properly using relevant architectural / design pattern.

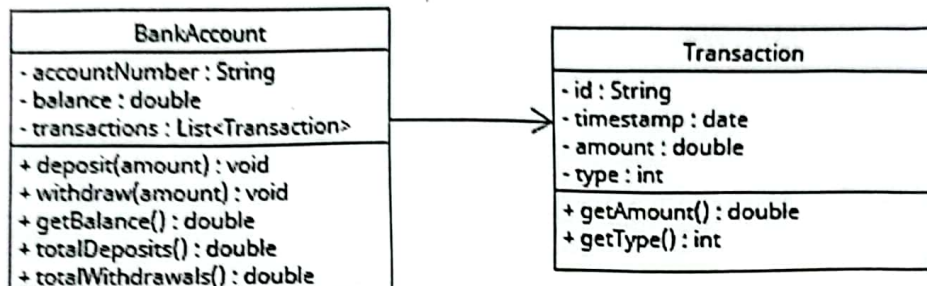
**NOTE:** No need to provide complete UI code as long as related event listener and necessary implementation is provided.

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

### Question 2

[10 marks]

Write unit tests (using JUnit) for the classes given in the diagram for a simple banking application:



Bank Account maintains a balance of amount that can be updated through deposit or withdraw transactions (type = 1 for deposit and type = -1 for withdraw), that are tracked. Deposit increases the balance and withdraw decreases the balance, appropriate to the transaction amount. Withdrawal transaction is rejected if the balance can become negative. Total deposits and total withdrawals, to and from the account, can be computed through respective functions using the transaction history.

## CLO 4: Use a version control system as part of software construction activity

### Question 3

[10 marks]

Consider that you are working on a new feature for a popular shopping store to predict customer retention. The feature is almost half-way through and you are well on track to complete it by the end of sprint. Meanwhile, your client requests an urgent fix for a security issue that is preventing the customers from signing into the application.

Making good use of Git Version Control System, answer the following questions precisely:

- What steps will you take to accommodate client's request (for the security issue) ?
- What steps will you take after completing the customer retention prediction feature at the end of sprint?
- How can Git help to bill the client for the services rendered (customer retention prediction feature as well as security issue) at the end of the sprint?