



NATIONAL SCHOOL OF BUSINESS MANAGEMENT
BSc in Management Information Systems (Special) – 17.2/18.1
BSc (Hons) Software Engineering – 17.2/18.1
BSc (Hons) Computer Science – 17.2/18.1
4th Year 1st Semester Examination
29th May 2021
SE402.3 – Development of Enterprise Applications II

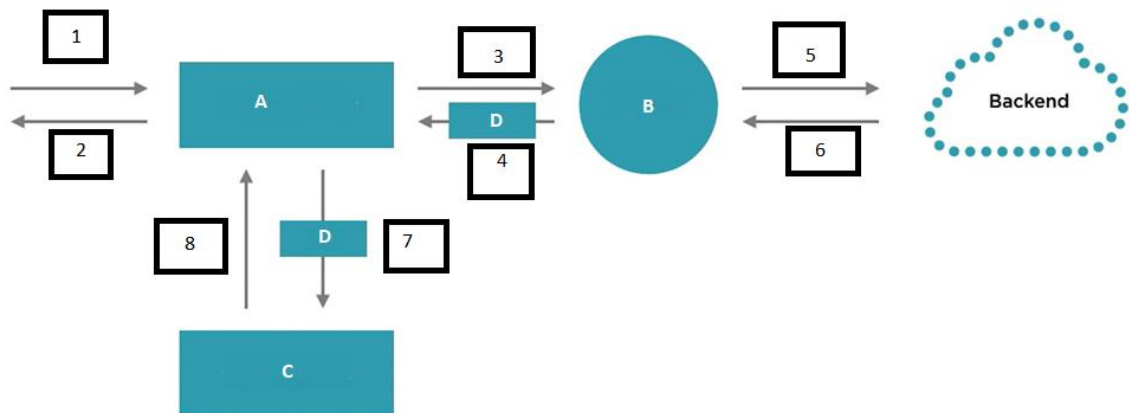
Instructions to Candidates

- 1) Answer all questions.**
- 2) Time allocated for the examination is three (03) hours and 30 minutes (Including downloading and uploading time)
- 3) Weightage of Examination: 60% out of final grade
- 4) Download the paper, provide answers to the selected questions in a word document.
- 5) Please upload the document with answers (Answer Script) to the submission link before the submission link expires
- 6) Answer script should be uploaded in PDF Format
- 7) Under any circumstances E-mail submissions would not be taken into consideration for marking. Incomplete attempt would be counted as a MISSED ATTEMPT.
- 8) The Naming convention of the answer script – Module Code_Subject name_Index No
- 9) You must adhere to the online examination guidelines when submitting the answer script to N-Learn.
- 10) Your answers will be subjected to Turnitin similarity check, hence, direct copying and pasting from internet sources, friend's answers etc. will be penalized.

Question 01

(20 Marks)

- a) What is a servlet and list its key responsibilities?
 b) Fill in the components and suitable operations for the following diagram of Front Controller Pattern



A. --

C.

B. --

D.

1.

5.

2.

6.

3.

7.

4.

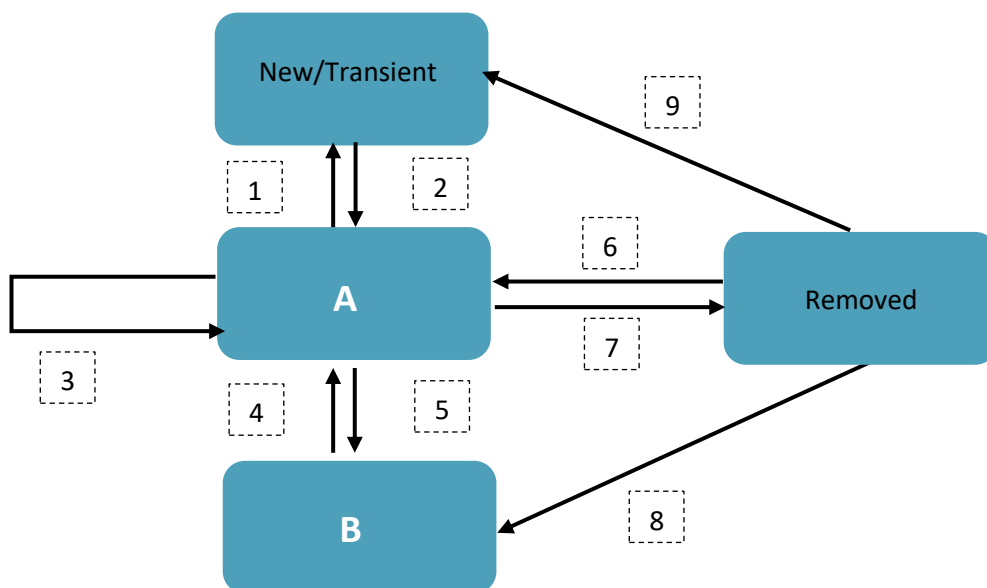
8.

- c) Briefly explain the role of the Dispatcher Servlet as a front controller in Spring MVC.

Question 02

(20 Marks)

- a) Fill in the missing states and transitions of the JPA Entity lifecycle in the diagram below.



A. ---

B. ---

1.

2.

3.

4.

5.

6.

7.

8.

b) State the differences of an entity, when the entity is in between following states.

- i. New/Transient and Managed
- ii. Managed and Detached

Question 03

(20 Marks)

a) What is a **TYPE 4** JDBC driver? Why Type 4 drivers are the most commonly used drivers in enterprise applications?

b) Write a program to retrieve all columns from a table using JDBC. The JDBC driver must be registered through the driver manager. Use a database of your choice as the DataSource.

Question 04

(20 Marks)

a) Briefly describe dependency injection.

b) What methods are available for dependency injection in Spring Framework?

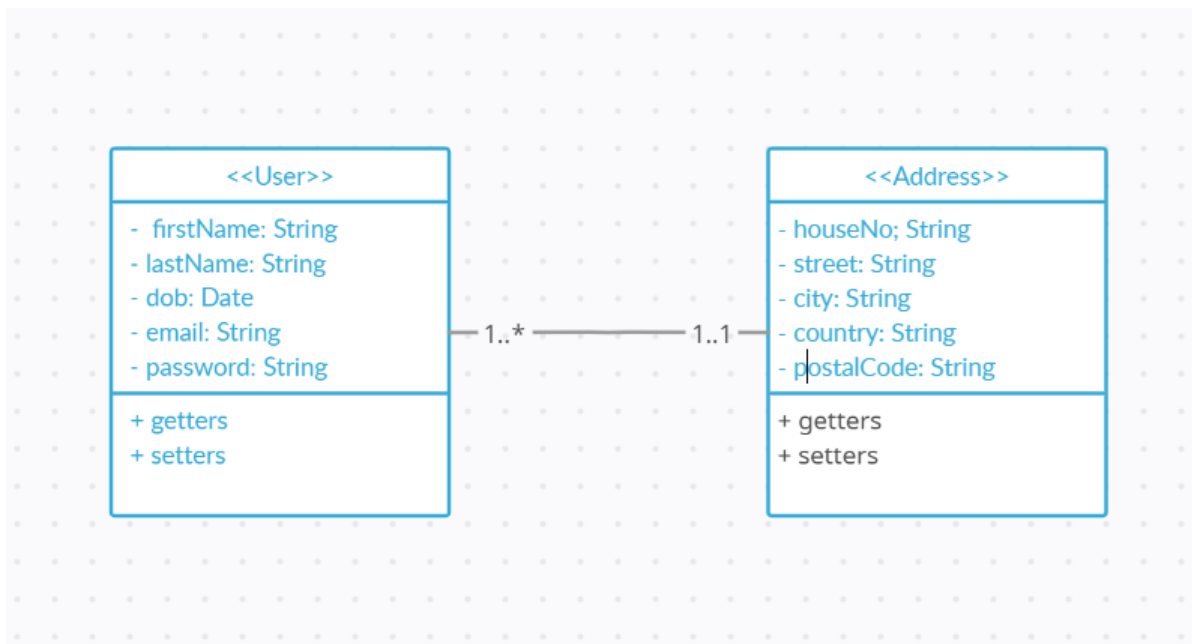
c) Elaborate the preferred method of dependency injection with a Java code snippet.

Question 05

(20 Marks)

Create a REST API using Spring MVC Framework for creating and deleting users.

Users have properties and relationships as depicted in the Class diagram below.



All three (controller, service and data) layers should be implemented, and domain objects annotated with proper JPA annotations.