

POKHARA UNIVERSITY

Level: Bachelor

Semester: Spring

Year: 2024

Programme: BE

Full Marks: 100

Course: Advance Programming with Java

Pass Marks: 45

Time: 3hrs.

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Attempt all the questions.

1. a) Define ClassPath? Write a program with custom exception handler that handle arithmetic exception. 7

b) Explain the architecture of Java, including the role of the JVM, JRE, and JDK. 8

OR

Define collection framework in java. Explain the different components of java collection framework.

2. a) What are the implications in Java when defining a variable, method, and class as final? Explain the various access modifiers in Java and their significance. 8

b) Define abstraction. Write Java program that override methods (getUserValue() and displayUserDetail()). Where getUserValue() is defined to get user detail(name, address, age) and displayUserDetail() to display user detail. 7

3. a) Pros and Cons of JavaFx. Create GUI application with two buttons "RED" and "Green". When clicking "RED" button change background of "GREEN" button to red and clicking "GREEN" button change background of "RED" button to green. Also, console button clicked message. 8

b) Define stage and scene in JavaFX. Explain any two JavaFX layout managers. 7

4. a) Explain RMI architecture. Develop RMI application where client request to identify given number is Odd or Even. 8

b) Write a TCP client server program, where a client sends an integer value and server responds by sending the squared value of that integer. 7

5. a) Differentiate between Statement and PreparedStatement. Consider db_college and tbl_student as database name and table respectively where a tbl_student has columns name, faculty and batch. Write Console application with CREATE, READ, UPDATE and DELETE queries only using Prepared Statement. 8

b) What is a JDBC driver? Explain the different JDBC drive types and configuration 7

OR

Write all steps to connect Java Application with any Database. Insert student detail (roll, name, address, age) into table "student_tbl"

6. a) Describe the life cycle of a servlet. Explain the use of doGet() and doPost() methods of the Servlet with an example. 7

b) Create a Servlet application to showcase the concept of session and cookies. 8

7. Write short notes on: (Any two) 2x5

a) Design patterns

b) Over view of ORM

c) RMI vs. CORBA

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Attempt all the questions.

1. a) Explain the Java architecture and significance of class path. Differentiate between error and exception. 8
b) Define package. Explain the types of access modifiers in Java. 7
 2. a) Define interface. Write Java program that override methods (`getUserValue()` and `displayUserDetail()`), where `getUserValue()` is defined to get user detail (name, address, age) and `displayUserDetail()` to display user detail. 8
b) Define subclass and super class. How can we achieve multiple inheritance in Java? Explain. 7

OR

Differentiate between Java abstract class and interface with a sample program

3. a) Write a program to create a Frame that has two TextField components, one Label, and a Button. When the user clicks on the button, calculate the sum of the values entered in the first and second TextField and display the result on the third Label. 8
b) What are the pros and cons of JavaFX. Explain any two JavaFX layout managers. 7
 4. a) Create a TCP client server application where the client sends a string and the server responds by echoing the same string in upper case. 8

- b) What is JavaMail API? Explain type of protocol used in JavaMail API. 7

OR

Define RMI stubs and skeleton. Create an RMI application where a client can remotely invoke a method that sends the sum of any two given integers.

5. a) A table `tbl_student` consists of `id`, `name` and `program`. Write a program that asks users to enter a program name and displays all the student's records enrolled in that program. 8
b) Differentiate between GET and POST methods. Write java program that depict Sessions and Cookies. 7

6. a) Explain life cycle methods of servlet. Write a servlet program that accept input string from user through form and then check if it is palindrome or not. 8
b) Why do we need design patterns? Explain Singleton Pattern and Factory Method Pattern in detail. 7

7. Write short notes on: (Any two) 2x5

 - SQL Injection
 - ORM
 - CORBA