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Roll No. 2292109

TBC-303/TBI-303

B. C. A./B. SC. (IT)

(THIRD SEMESTER)

END SEMESTER

EXAMINATION, Dec., 2023

JAVA PROGRAMMING

Time : Three Hours

Maximum Marks : 100

Note : (i) All questions are compulsory.

(ii) Answer any two sub-questions among (a), (b) and (c) in each main question.

(iii) Total marks in each main question are twenty.

(iv) Each sub-question carries 10 marks.

1. (a) Explain JVM and its components with neat and clean diagram (CO1)

(b) Explain package in java. How can we create user define package ? Also explain static import using java program. (CO2)

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(c) Explain Object Serialization and Deserialization with java code. (CO3)

2. (a) Differentiate between throw and throws keywords. Ask a user to enter 6 digit integer. If the length of the number is less than 6 then throw user define exception "Too Short Number Exception ("Please enter valid 6 digit number")" and if the length of the number is greater than 6 then throw "TooLargeNumberException ("Please enter valid 6 digit number")" else print "valid number". (CO2)

(b) Explain how we can create the jagged array in Java. Create a 2D array with 3 rows and 3 columns. Ask a user to enter the elements using Scanner class. Now calculate the sum of each row and print the same. (CO1)

(c) Differentiate between Array List and Set. Write a java program to demonstrate the Union, Intersection operation on two Sets. (CO3)

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3. (a) Explain thread synchronization. Create a class "DrawPattern". Define a public method draw(char c). Suppose the value of c is "*" then draw(char c) method will draw the following pattern : (CO3)

```
* * * * *  
* * * *  
* * *  
* *  
*
```

Create two thread classes named "MyThread1" and "MyThread2". Now create thread "t1" of "MyThread1" and thread "t2" of "MyThread2". For the t1 thread draw(char c) will draw the pattern for the "*" symbol and for the thread t2 draw(char (c) method will print the pattern "#". Also, explain how thread synchronization helps in drawing two separate patterns in this program.

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- (b) Explain the join() and sleep(t) methods of Thread. Write a Java program to demonstrate join() and sleep() methods in which you have to create two threads "t1" and "main" threads. The job of the main thread is to print ten times the "parent thread" and the job for child thread "t1 is to print 10 times the "child thread". The child thread will wait till the main completes its execution(invoke join() method on the main thread). (CO3)
- (c) Explain the thread life cycle and also explain thread priorities. How we can get and set the thread priority ? (CO3)
4. (a) Differentiate between FileWriter and PrintWriter class. Assume two files "one.txt" and "two.txt" files with content. Write a Java code to merge the content of both the files into "three.txt". (CO3)

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(b) Assume a login table in mysql/oracle database with user name and password. Create a GUI application in Applet using awt components with two text fields for user name and password and one login button. On click login button match the text fields "t1" and "t2" values with login table record. If the record found then display valid user in label otherwise display invalid user. (CO4)

(c) Explain applet life cycle. Also explain how we can pass parameter in applet.

(CO4)

5. (a) Assume a table "cellphone" with the following fields. "product id", "brandname" and "price". Ask a user to enter five cell phone details using the Scanner class. Now create the object of PreparedStatement and enter these five details in "cellphone" table. (CO5)

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(b) Assume a table "cellphone" with the following fields. "product id", "brandname" and "price" with 10 records. Ask a user to enter the number of specific records. Now using absolute() method of ResultSet fetch the required record from the table and print all the details. (CO5)

(c) Assume a "student" table with roll, name, and fee. Create a procedure with IN and OUT parameter, fetchName(IN r int, OUT n VARCHAR(10)). The procedure will return the name of the specified roll number. Write a JDBC program to invoke fetchName() procedure using CallableStatement. (CO5)

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