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# TCS–501/TIT–501

## B. Tech. (CS/IT) (Fifth Semester)
## End Semester EXAMINATION, 2017
### JAVA PROGRAMMING

*Time : Three Hours* ]     [ *Maximum Marks : 100*

**Note :** (i) This question paper contains *five* questions.

    (ii) All questions are compulsory.

    (iii) Instructions on how to attempt a question are mentioned against it.

    (iv) Total marks assigned to each question are **twenty**.

1. Attempt any *two* parts of choice from (a), (b) and (c).     (10×2=20 Marks)

    (a) Can a java program run on any machine ? What is needed to run java program on a computer ?

    (b) Explain the following :

      (i) Import and Static import

      (ii) Command Line Arguments

(c) Briefly explain the following

    (i) Why main method is static ?

    (ii) Can we execute a program without main( ) method ?

2. Attempt any *two* parts of choice from (a), (b) and (c).    (10×2=20 Marks)

(a) Write the static Java int method, longest Run( ), which takes an array of numbers and returns the length of the longest run in the array. A run is a sequence of one or more occurrences of the same value all next to each other. An array with no elements has a longest run of 0.

Examples :

| | nums | longestRun (nums) |
|---|---|---|
| (i) | [4, 12, 4, 4] | 2 |
| (ii) | [10, 10, 10] | 3 |
| (iii) | [20, 20, 5, 10, 10, 18] | 2 |
| (iv) | [5, 5, 3, 3, 3, 3, 7, 7, 7] | 4 |
| (v) | [12, 8, 17] | 1 |
| (vi) | [32] | 1 |
| (vii) | [ ] | 0 |
| (viii) | public static int longest Run(int[ ] nums) | { } |

(b) Differentiate between the following

    (i) Boxing and Unboxing

    (ii) Abstract class and Interface

(c) Package act as a container for classes and other subordinate packages. Because of the interplay between packages and classes, JAVA addresses four categories of visibility (private, protected, default and public) for class members. Find the difference between public and default access specifier with suitable example.

3. Attempt any *two* parts of choice from (a), (b) and (c).    (10×2=20 Marks)

(a) What is Java Layout Manager ? Explain each with suitable example.

(b) Explain the following :

    (i) Anonymous Classes

    (ii) Adapter Classes

(c) Calculate shipment cost for an order which may either be placed by a wholesaler or a retailer. For a customer, the cost is calculated as :

| For units | Price for Wholesellers (per unit) | Price for Retailers (per unit) |
|---|---|---|
| 1—15 | ₹ 50 | ₹ 60 |
| 16—20 | ₹ 45 | ₹ 55 |
| 21—30 | ₹ 40 | ₹ 50 |
| 31—50 | ₹ 35 | ₹ 45 |
| > 50 | ₹ 30 | ₹ 40 |

Special customer are given a discount of 10%.
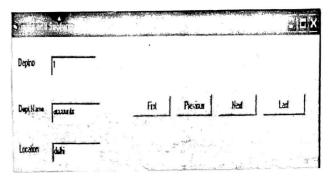
4. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

   (a) Write a program to demonstrate Producer-Consumer problem using the concept of inter thread communication (i. e. multi-threading).

   (b) Explain Multithreading. Also describe in detail about the thread priorities and thread synchronization.

   (c) Define an exception called "MyNation" that is thrown when a string is not equal to "jai hind" or "JAI HIND". Write a program that implements this exception.

5. Attempt any *two* parts of choice from (a), (b) and (c). (10×2=20 Marks)

   (a) Write a program in Java to demonstrate communication using TCP/IP i. e. using sockets :

   Write a separate code for a server and client program. The program should read and display the data passed back to it from the server.

   (b) What is JDBC Driver ? Explain the different types of JDBC driver with their pros and cons.

   (c) Design an application that displays the records of Department table (DEPT) by clicking on given navigational button. As per the snapshot given below :