

PACKETPREP FINAL ASSESSMENT

Time: 3 Hrs

Max.

Marks: 100

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A : consisting of TEN questions carrying TWO marks each.
2. SECTION-B : consisting of EIGHT questions carrying TEN marks each.

SECTION-A

1. Write Briefly:

(10*2M=10M)

- a) What is byte Code?
- b) What is Dynamic Binding?
- c) Write a Program to check given Number is Prime or Not.
- d) What are Wrapper Classes?
- e) What is the difference between instance and static variables?
- f)

```
for(int j=2;j==0;j--){  
    System.out.println("j= "+j);  
}
```
- Give the output of the above code.
- g) What is the List Interface?
- h) Difference between break and continue.
- i) Define STACK and Queue?
- j) What do you understand by throwing an exception?

SECTION-B

(8*10M=80M)

2. Write about Iterator, List Iterator, Enumerator Traversing methods with example?
3. Explain why Interfaces are needed? Write a Java program with an Interface?
4. Explain various kinds of operators available in java. Write a program to find greater of four given numbers.
5. Create a class Person which includes overloaded constructors. The first constructor is without any parameter and the second in accepting the name of the person as parameter. Further extend the Person class to Student class and explain the hierarchy of constructors being called.

6. Given an array `arr[]` of size `n` containing 0 and 1 only. Write a program to count the Subarrays having an equal number of 0's and 1's.

Examples:

Input: `arr[] = {1, 0, 0, 1, 0, 1, 1}`

Output: 8

Explanation: The index range for the 8 sub-arrays are: (0, 1), (2, 3), (0, 3), (3, 4), (4, 5), (2, 5), (0, 5), (1, 6).

Input: `arr = { 1, 0, 0, 1, 1, 0, 0, 1}`

Output: 12

7. Given an array of size `n`. Write a program to find the longest subsequence such that

Difference between adjacents is one. Time Complexity of $O(n)$ is required.

Examples:

Input : `arr[] = {10, 9, 4, 5, 4, 8, 6}`

Output : 3

As longest subsequences with difference 1 are, "10, 9, 8",

"4, 5, 4" and "4, 5, 6".

Input : `arr[] = {1, 2, 3, 2, 3, 7, 2, 1}`

Output : 7

As longest consecutive sequence is "1, 2, 3, 2, 3, 2, 1".

8. Write an efficient program in Java program to check if two

String is an anagram of each other. An anagram contains are of

The same length and contains the same character, but in a

Different order, for example, "Army" and "Mary" is the anagram.

Your program should return true if both Strings are the anagram,

False otherwise.

Sample Input: RACE

CARE

Output: true

9. Write an efficient program in java programming language to

Check if a Given a string is a palindrome, considering only

Alphanumeric characters and ignoring cases. For example, "121" is

A palindrome, but "123" is not. Your function should return true if

Given String is a palindrome, otherwise false

Sample input: HELLO

Output: FALSE

10 Write a Java program to get a key-value mapping associated with the

Greatest key strictly less than the given key. Return null if there is no such key.

Sample Input:

Tree_map1.put(10, "Red")

Tree_map1.put(20, "Green")

Tree_map1.put(40, "Black")

Tree_map1.put(50, "White")

Tree_map1.put(60, "Pink")

Sample Output: Original TreeMap content: {10=Red, 20=Green, 40=Black, 50=White, 60=Pink

}

Checking the entry for 10:

Key(s): null

Checking the entry for 20:

Key(s): 10=Red

Checking the entry for 70:

Key(s): 60=Pink