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**Title: Core Java Assessment Time: 2.30hrs**

**Set 1: Marks: 100**

**Section 1: MCQ - 10 questions-20 marks**

**Section 2: Java Coding- 6 programs -80 marks**

**Emp No: Emp Name:**

**Instructions:**

* Please write your name and employee Id in the answer sheet
* Answer the **MC**Q questions in the given answer sheet
* Please read the questions carefully and write the Java code in eclipse.
* In section 2, Question no 1,2,and 3 are carries 10 marks each and 4,5 are carries 15 marks each and question no 6 carries 20 marks.
* Use proper naming conventions for class name, package name, method name and variables name.
* Create a java project named SysArcJava\_yourname and create a package for each questions.
* We do not entertain any malpractice during assessment. Involved such activities will not be allowed to continue the assessment.

**Section 1: MCQ**

**1) What will be the output of following code?**

importjava.util.\*;

class I

{

public static void main (String[] args)

{

Object i = new ArrayList().iterator();

System.out.print((iinstanceof List)+",");

System.out.print((iinstanceof Iterator)+",");

System.out.print(iinstanceofListIterator);

}

}

1. Prints: false, true, false
2. Prints: true,false,true
3. Prints: null
4. All of the above
5. None of the above

**2) What will be the output of the program?**

**class MyThread extends Thread**

**{**

**MyThread() {}**

**MyThread(Runnable r) {super(r); }**

**public void run()**

**{**

**System.out.print("Inside Thread ");**

**}**

**}**

**class MyRunnable implements Runnable**

**{**

**public void run()**

**{**

**System.out.print(" Inside Runnable");**

**}**

**}**

**class Test**

**{**

**public static void main(String[] args)**

**{**

**new MyThread().start();**

**new MyThread(new MyRunnable()).start();**

**}**

**}**

1. Throws exception at runtime
2. Prints "Inside Thread Inside Thread"
3. Compile time error

**3) Consider the following code and choose the correct option:**

**public class Test {**

**public static void main(String[] args) {**

**String data="7882";**

**data+=32; System.out.println(data); }}**

1. 7882 b)788232 c)7912 d) compile time exception

**4) Consider the following code and choose the correct option:**

**class Cthread extends Thread{**

**Cthread(){start();}**

**public void run(){**

**System.out.print("Hi");}**

**public static void main (String args[]){**

**Cthread th1=new Cthread();**

**Cthread th2=new Cthread();**

**}}**

1. will create two child threads and display Hi twice
2. will not create any thread
3. will create three thread and display Hi only once

**5) Consider the following code and choose the correct option:**

**package aj; class S{ int roll =23;**

**private S(){} }**

**package aj; class T**

**{ public static void main(String ar[]){**

**System.out.print(new S().roll);}}**

1. compilation error
2. run time exception
3. prints 23

6) **Consider the following code and choose the correct output:**

**class Test{**

**public static void main(String args[]){**

**TreeMap<Integer, String>hm=new TreeMap<Integer, String>();**

**hm.put(2,"Two");**

**hm.put(4,"Four");**

**hm.put(1,"One");**

**hm.put(6,"Six");**

**hm.put(7,"Seven");**

**SortedMap<Integer, String>sm=hm.subMap(2,7);**

**SortedMap<Integer,String> sm2=sm.tailMap(4);**

**System.out.print(sm2);**

**}}**

**a)** {4=Four,1=one,6=Six}

**b)** {4=Four, 6=Six}

**C**) None of the above

|  |
| --- |
| **7) Given:**  **public static Collection get() {**  **Collection sorted = new LinkedList();**  **sorted.add("B"); sorted.add("C"); sorted.add("A");**  **return sorted;**  **}**  **public static void main(String[] args) {**  **for (Object obj: get()) {**  **System.out.print(obj + ", ");**  **}**  **}**  **What is the result?**  **a)** Compilation fails. b) B, C, A, c) A,B,C d)Runtime Exception  8) **Consider the following code and choose the correct output:**  **class Test{**  **public static void main(String args[]){**  **int a=5;**  **if(a=3){**  **System.out.print("Three");}else{**  **System.out.print("Five");}}}**  a) Three Five b)compilation error c)None of the above d)Five  9) **Consider the following code and choose the correct option:**  **abstract class Car{**  **abstract void accelerate();**  **}**  **class Lamborghini extends Car{**  **@Override**  **void accelerate() {**  **System.out.println("90 mph"); }**  **void nitroBooster(){**  **System.out.print("150 mph"); }**  **public static void main(String[] args) {**  **Car mycar=new Lamborghini();**  **Lamborghini lambo=(Lamborghini) mycar;**  **lambo.nitroBooster();}}** |

1. compilation error b) 90 mph c) 150 mph d)null

10) **class Test{**

**public static void main(String ar[]){**

**Set<Data> s=new TreeSet<Data>();**

**s.add(new Data(4));**

**s.add(new Data(2));**

**s.add(new Data(4));**

**s.add(new Data(1));**

**s.add(new Data(2));**

**System.out.print(s.size());}}**

1. 5 b) 3 c)4 d) None of the above

**Section 2: Java Coding**

1)Given an int array and a number as input, write a program to add all the elements in the array greater than the given number. Finally reverse the digits of the obtained sum and print it.

Include a class **UserMainCode** with a static method “**addAndReverse**” that accepts 2 arguments and returns an integer.The first argument corresponds to the integer array and the second argument corresponds to the number.

Create a class **Main** which would get the required input and call the static method **addAndReverse** present in the UserMainCode.

**Example:**

Input Array = {10,15,20,25,30,100}

Number = 15

sum = 20 + 25 + 30 + 100 = 175

output = 571

**Input and Output Format:**

The first line of the input consists of an integer that corresponds to the number of elements in the array.

The next n lines of the input consists of integers that correspond to the elements in the array.

The last line of the input consists of an integer that corresponds to the number.

Output consists of a single integer.

**Sample Input**

6

10

15

20

25

30

100

15

**Sample Output**

571

2)Write a program to read an integer array and remove all 10s from the array, shift the other elements towards left and fill the trailing empty positions by 0 so that the modified array is of the same length of the given array.

Include a class **UserMainCode** with a static method **removeTens**which accepts the number of elements and an integer array. The return type (Integer array) should return the final array.

Create a Class Main which would be used to read the number of elements and the input array, and call the static method present in UserMainCode.

**Input and Output Format:**

Input consists of n+1 integers, where n corresponds to size of the array followed by n elements of the array.

Output consists of an integer array (the final array).

Refer sample output for formatting specifications.

**Sample Input :**

5

1

10

20

10

2

**Sample Output :**

1

20

2

o

o

**3)Find common characters and unique characters in string**

Given a method with two strings as input. Write code to count the common and unique letters in the two strings.

Note:

- Space should not be counted as a letter.

- Consider letters to be case sensitive. ie, "a" is not equal to "A".

Include a class **UserMainCode** with a static method **commonChars** which accepts two strings as input.

The return type of the output is the count of all common and unique characters in the two strings.

Create a class **Main** which would get the inputs and call the static method **commonChars** present in the UserMainCode.

**Input and Output Format:**

Input consists of two strings.

Output is an integer.

Refer sample output for formatting specifications.

**Sample Input 1:**

a black cow

battle ship

**Sample Output 1:**

2  
  
[**Explanation** : b, l and a are the common letters between the 2 input strings. But 'a' appears more than once in the 1st string. So 'a' should not be considered while computing the count value.]  
  
**Sample Input 2:**

australia

sri lanka

**Sample Output 2: 4**

4)  **ArrayList to String Array**  
Write a program that performs the following actions:  
  
1.Read m strings as input (fruit names).  
2.Create an arraylist to store the above m strings in this arraylist.  
3.Read n strings as input (fruit names).  
4.Create an arraylist to store the above n strings in this arraylist.  
5.Write a function fruitSelector which accepts the arraylists as input.  
6.Remove all fruits whose name ends with 'a' or 'e' from first arrayList and remove all fruits whose name begins  with 'm' or 'a' from second arrayList then combine the two lists and return the final output as a String array.  
7.If the array is empty the program will print as “No fruit found”  
Include a class UserMainCode with the static method **fruitSelector** which accepts the two arraylists and returns an array.  
  
Create a Class Main which would be used to read n strings and call the static method present in UserMainCode.  
  
**Input and Output Format:**  
  
Input consists of an integer (m) denoting the size of first arraylist. The next m elements would be the values of the first arraylist. The next input would be n denoting the size of the second arraylist. The next n elements would be the values of the second arraylist.  
  
Output consists of an array as per step 6. Refer sample output for formatting specifications.  
  
**Sample Input 1:**  
3  
Apple  
Cherry  
Grapes  
4  
Orange  
Mango  
Melon  
Apple  
**Sample Output 1:**  
Cherry  
Grapes  
Orange

5) **IP Validator**

Write a program to read a string and validate the IP address. Print “Valid” if the IP address is valid, else print “Invalid”.

Include a class **UserMainCode** with a static method **ipValidator** which accepts a string. The return type (integer) should return 1 if it is a valid IP address else return 2.

Create a Class Main which would be used to accept Input String and call the static method present in UserMainCode.

**Input and Output Format:**

Input consists of a string that corresponds to an IP.

Output consists of a string(“Valid” or “Invalid”).

Refer sample output for formatting specifications.

**Note**: An IP address has the format a.b.c.d where a,b,c,d are numbers between 0-255.

**Sample Input 1:**

132.145.184.210

**Sample Output 1:**

Valid

**Sample Input 2:**

132.145.184.290

**Sample Output 2:**

Invalid

6)**States and Capitals**

Write a program that construts a hashmap with “state” as key and “capital” as its value. If the next input is a state, then it should return capital$state in lowercase.

Include a class UserMainCode with a static method **getCapital** which accepts a hashmap. The return type is the string as given in the above statement

Create a Class Main which would be used to accept Input string and call the static method present in UserMainCode.

**Input and Output Format:**

Input consists of 2n+2 values. The first value corresponds to size of the hashmap. The next n pair of numbers contains the state and capital. The last value consists of the “state” input.

Output consists of a string as mentioned in the problem statement.

Refer sample output for formatting specifications.

**Sample Input 1:**

3

Karnataka

Bangaluru

Punjab

Chandigarh

Gujarat

Gandhinagar

Punjab

**Sample Output 1:**chandigarh$punjab