Question Bank

2 marks:

1. Define OOP.
2. What are the features of Object Oriented Programming
3. What is JVM? What is its purpose in java?
4. What are the components of a Java architecture?
5. How many types of datatypes available in java ? List them.
6. What is the additional operator that s available n java? What is its use?
7. How do you declare an array in java?
8. Give the rules to be followed for declaring a variable in java.
9. What are the operators used in java programming?
10. What is a class? How do you access the members of a class in java? Give an example.
11. What is a constructor in java? Give an example.
12. What are the various types of access specifiers available in java? Give their scope.
13. What do you mean by a static member?
14. Write a note on Java Doc.
15. What do you mean by a wrapper class? What wrapper class and its associated method is used in java for integer variable?
16. What do you infer from the following code:

    Scanner scanner = new Scanner(System.in);
17. What is the use of nextInt() in java?
18. Which package includes Scanner class?
19. How do you include a package in java?
20. How do you convert a string to integer in java?
21. int sum = java.util.Arrays.stream(new int[]{1, 2, 3, 4, 5}).sum();
    Identify the output:
    (a) 15   (b) 5   (c) error
22. What is the output of the following code:
    System.out.println(10 % 2 == 0 ? "Even" : "Odd");
    String reversed = new StringBuilder("Hello").reverse().toString();
    int randomNum = new java.util.Random().nextInt(100) + 1;
    int fact = java.util.stream.IntStream.rangeClosed(1, 5).reduce(1, (a, b) -> a * b);
    String binary = Integer.toBinaryString(25);
    int max = java.util.Arrays.stream(new int[]{10, 5, 20, 8}).max().getAsInt();
    long count = "hello world".chars().filter(c -> "aeiou".indexOf(c) >= 0).count();
    int a = 5, b = 10; a = a + b - (b = a);
    boolean isPalindrome = "madam".equals(new StringBuilder("madam").reverse().toString());
    String date = java.time.LocalDate.now().toString();
    String reversedWords = java.util.Arrays.stream
                    ("Hello World".split(" ")).reduce((a, b) -> b + " " + a).get();
23. Give output for the following.
    (1) class Parent { Parent(String msg) { System.out.println(msg); } }

class Child extends Parent { Child() { super("Hello from Parent!"); } }

(2) class Example { int x; Example() { this.x = 100; } }
(3) class A { void show() { System.out.println("A"); } }
    class B extends A { }
(4) class Parent { void show() { System.out.println("Parent"); } }
    class Child extends Parent { @Override void show() { System.out.println("Child"); } }
(5) class P { P() { System.out.println("P Constructor"); } }
    class C extends P { C() { System.out.println("C Constructor"); } }
(6) class A { void show() { System.out.println("A"); } }
    class B extends A { @Override void show() { super.show(); System.out.println("B"); } }

Sec B / Sec C

1. List and explain OOP features ?
2. With neat diagram explain the architecture of a java program.
3. With an example program explain control structures in java.
4. With an example program explain conditional statements in java.
5. Explain constructor overloading in java with an example program.
6. Give the difference between method overloading and method overriding. Give example for each.
7. Give the difference between static nested and inner class n java
8. What are the various types of inheritance available n java? Explain them.

Problems:

1. Given an array of integer's nums and an integer target, return indices of the two numbers such that they add up to target.You may assume that each input would have exactly one solution, and you may not use the same element twice. You can return the answer in any order.

   Input: nums = [2,7,11,15], target = 9

   Output: [0,1]

   Explanation: Because nums[0] + nums[1] == 9, we return [0, 1].

2. Given an integer array nums sorted in non-decreasing order, remove the duplicates in-place such that each unique element appears only once. The relative order of the elements should be kept the same. Then return the number of unique elements in nums. Consider the number of unique elements of nums to be k, to get accepted, you need to do the following things: Change the array nums such that the first k elements of nums contain the unique elements in the order they were present in nums initially. The remaining elements of nums are not important as well as the size of nums. Return k

   Input: nums = [0,0,1,1,1,2,2,3,3,4]

Output: 5, nums = [0,1,2,3,4,_,_,_,_,_]

Explanation: Your function should return k = 2, with the first two elements of nums being 1 and 2 respectively.

It does not matter what you leave beyond the returned k (hence they are underscores).

3. Given an integer num, repeatedly add all its digits until the result has only one digit, and return it.

   Input: num = 38
   Output: 2
   Explanation: The process is
   38 --> 3 + 8 --> 11
   11 --> 1 + 1 --> 2
   Since 2 has only one digit, return it.

4. You are given a positive integer array nums. The element sum is the sum of all the elements in nums. The digit sum is the sum of all the digits (not necessarily distinct) that appear in nums. Return the absolute difference between the element sum and digit sum of nums.
   Input: nums = [1,15,6,3]
   Output: 9
   Explanation:
   The element sum of nums is 1 + 15 + 6 + 3 = 25.
   The digit sum of nums is 1 + 1 + 5 + 6 + 3 = 16.
   The absolute difference between the element sum and digit sum is |25 - 16| = 9.

5. Given a positive integer n, find the sum of all integers in the range [1, n] inclusive that are divisible by 3, 5, or 7. Return an integer denoting the sum of all numbers in the given range satisfying the constraint.

Input: n = 7

Output: 21

Explanation: Numbers in the range [1, 7] that are divisible by 3, 5, or 7 are 3, 5, 6, 7. The sum of these numbers is 21.

6. Given an integer number n, return the difference between the product of its digits and the sum of its digits.

   Input: n = 234
   Output: 15
   Explanation:
   Product of digits = 2 * 3 * 4 = 24
   Sum of digits = 2 + 3 + 4 = 9
   Result = 24 - 9 = 15

7. You are given a large integer represented as an integer array digit, where each digits[i] is the ith digit of the integer. The digits are ordered from most significant to least significant in left-to-right order. The large integer does not contain any leading 0's. Increment the large integer by one and return the resulting array of digits.

   Input: digits = [1,2,3]
   Output: [1,2,4]
   Explanation: The array represents the integer 123.
   Incrementing by one gives 123 + 1 = 124.
   Thus, the result should be [1,2,4].

8. Given an integer x, return true if x is a palindrome, and false otherwise.

   Input: x = 121
   Output: true
   Explanation: 121 reads as 121 from left to right and from right to left.