MCKV INSTITUTE OF ENGINEERING

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PAPER CODE: - PC-CS(AM)491 **PAPER NAME: - Object Oriented Programming Lab**

Stream: - CSE(AI&ML) **Session: - 2023-24**

Assignment on Java

Unit-1 Background Basic Programming

1. WAP to check whether a number is even or odd.

Test Case: - Even: - 36, 70, 100

Odd: - 3, 33,11, 13

Check what will be the output for 0?

2. Write a Java program to create and display a unique three-digit number using 1, 2, 3, 4. Also count how many three-digit numbers are there.

Expected Output

123

124

...

431

432

Total number of the three-digit-number is 24

3. Write a Java program to print the area and perimeter of a circle.

Test Data:

Radius = 7.5

Expected Output

Perimeter is = 47.12388980384689

Area is = 176.71458676442586

4. Write a Java program to add two binary numbers.

Input first binary number: 10

Input second binary number: 11

Expected Output

Sum of two binary numbers: 101

5. Write a Java program to swap two variables.

6. Write a Java program to convert a decimal number to a hexadecimal number.

Input Data:

Input a decimal number: 15

Expected Output

Hexadecimal number is: F

7. Write a Java program to create a string taking the first three characters from a given string. If the string length is less than 3 use "#" as substitute characters.

Test Data: Str1 = " "

Sample Output: ###

8. Write a Java program to create a string taking the first and last characters from two given strings. If the length of each string is 0 use "#" for missing characters.

Test Data: str1 = "Python"

str2 = " "

Sample Output: P#

9. Write a Java program to check if a string starts with a specified word.

Input: - Enter the starting word: - Hello

Sample Data: string1 = "Hello how are you?"

Sample Output: true

10. Design the following pattern with the aid of a Java Code

.....
.....
.....
.....
.....
.....
....
...
..
.

Unit-2 Classes, Constructor, Overloading and Overriding

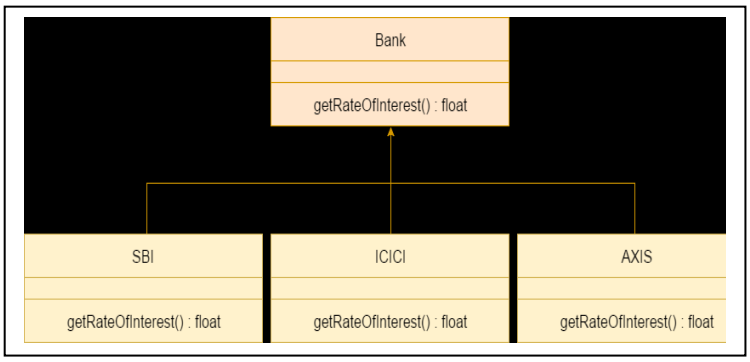
11. Write a Java program to create a class called "School" with attributes for students, teachers, and classes, and methods to add and remove students and teachers, and to create classes.

12. Write a Java program to create an enum called "Weekend" with constants representing the days of the weekend.

13. Write a Java recursive method to find the sum of the digits of a given integer.

14. Design a class named Circle. Construct three circle objects with radius 2.0, 12, and 24 and displays the radius and area of each. A no-arg constructor set the default value of radius to 1. A getArea() function is used to return the area of circle. Now implement the class.

15. Consider a scenario where Bank is a class that provides functionality to get the rate of interest. However, the rate of interest varies according to banks. For example, SBI, ICICI and AXIS banks could provide 8%, 7%, and 9% rate of interest. Implement method overriding for this scenario.



16. Write a method sum which may perform addition of integers and addition of floating-point numbers. Implement the scenario with method overloading.

Unit-3 Assignment on Wrapper Classes and Arrays

17. WAP to show that Wrapper class allows primitive data types to be accessed as object and object as a primitive data type.

18. Write a program in to read n number of values in an array and display it in reverse order

Sample Output

Enter the Array Size = 5

Element of a[0] = 1

Element of a[1] = 2

Element of a[2] = 3

Element of a[3] = 4

Element of a[4] = 5

Display Reverse Order 5 4 3 2 1

19. Write a program in to copy the elements of one array into another array

Sample Output

Array = {1, 2, 3, 4, 5}

Copy Array Elements one to Another Array = {1, 2, 3, 4, 5}

20. Write a program to merge two arrays' elements to store third array

Sample Output

First Array = {1, 2, 3, 4, 5}

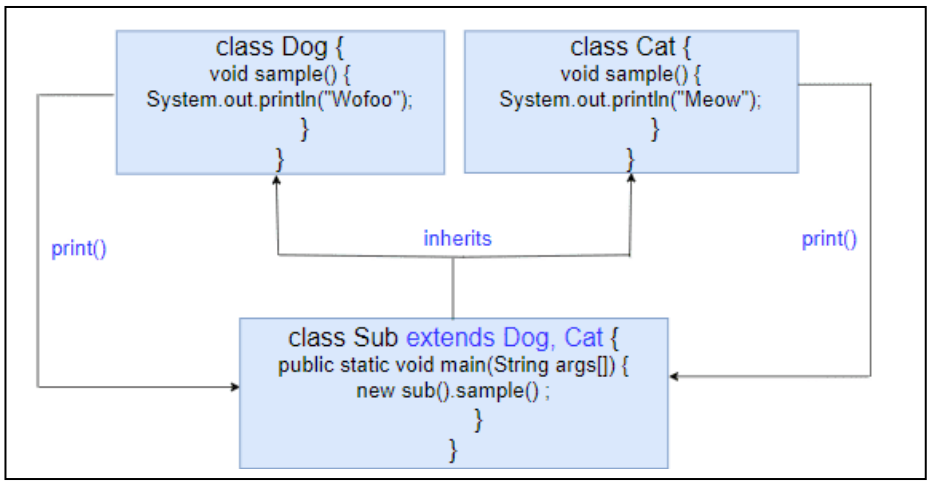
Second Array = {6, 7, 8, 9, 10}

Merge two Array Elements = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}

Unit-4 Assignments on developing interfaces- multiple inheritance, extending Interfaces

21. Design an Interface polygon with a method get Area (int length, int breadth). There is a class named Rectangle which implements the Interface and find out the area of rectangle with length=5 and breadth=6.

22. For the following use case Diagram implement multiple inheritance with interfaces.



Unit 5 Assignment on Packages

23. Create a Package first.java with a method that will find the factorial of a number. Create another package second.java with a method that will find gcd of 2 numbers now use Test.java to call these two methods and print values.

Unit-6 Assignment on Multithread Programming

24. Write a program that creates three threads and each thread prints values upto 10 and then exits. Run it 5 times how many times the program execution takes place sequentially? For example, first thread1 then thread2 and then thread3.

25. Can we start a thread twice? Justify it with the aid of an example**.**

Unit-7 Assignment on Generic Class and Array List

26. Create an array list of fruits and display all the fruits that has been inserted into the list.

27. Create a Generic class to store different data types and display them. Use constructor and print () function for storing and display.

28. Use Array List to store 10 numbers randomly and then sort it.

29. With a Java Array List create a student record with Roll No., Name, Age and display the students record. Use user defined class objects in Java Array List.

30. Create a Generic Method to set a string and integer and display them.

Unit -8 Assignment on Applet

31. Write an Applet code to print "Hello World".

(Signature of Faculty) **(Signature of HOD-CSE)**