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B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

October 2024 Supplementary Examinations

Programme: B.E. **Semester: IV**
Branch: Information Science and Engineering **Duration: 3 hrs.**
Course Code: 23IS4PCJAV **Max Marks: 100**
Course: Java Programming

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

		UNIT - I	CO	PO	Marks
1	a)	Create a class named Invoice that contains fields for an item number, name, quantity, price and totalcost. Use a constructor to initialize the values for Item number, name, quantity, price and totalcost which should be set to zero. Create a method to set the item name, quantity and price. Create another method called compute_method to calculate total cost based on quantity and price. Display() method displays the details. Create a class named InvoiceDriver whose main() method declares three Invoice items and invokes the methods.	CO2	PO1	07

	b)	**Complete the given Javacode snippet**
		Class weight{
		int kg;
		int gms;
		write your code here
		}
		Class test
		{
		weight w1=new weight();
		w1.display();
		weight w2=new weight(2,500);
		w2.display();
		weight w3=new weight(2);
		w3.display();
		weight w4=new weight(w2);
		w4.display();
		}
			CO3	PO2	08

	c)	**i) Predict the output of the given code and justify your answer.** class Test { int a; int b; Test()	CO3	PO2	05

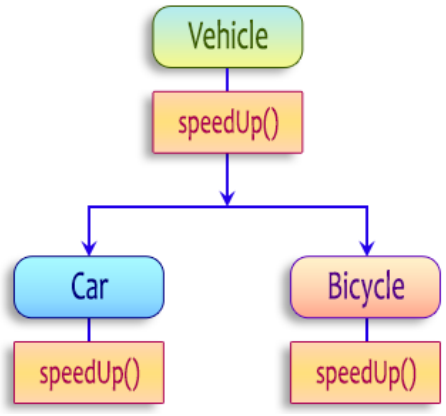
```
    {
       this(10, 20);
       System.out.println("Inside  default constructor \n");    }
  Test(int a, int b)
    {
       this.a = a;
       this.b = b;
       System.out.println("Inside parameterized constructor");
       System.out.println( a + b);

    }
     public static void main(String[] args)
    {
       Test object = new Test();
    }
```

ii) Complete the code.

```
class Test {

     Write your code here
}
     public static void main(String[] args)
    {
       Test object = new Test();
       object.display();
       object.display("Hello");
       object.display(10);
       object.display(5.5,6.5F);
     }
```

			UNIT - II			
2	a)	Write a Java program to create a class called "Building" with attributes for address, number of floors, and total area. Create subclasses "ResidentialBuilding" and "CommercialBuilding" that add specific attributes like number of apartments for residential and office space for commercial buildings. Create a driver class with the main method and display the details.	*CO2*	*PO1*	**08**
	b)	Develop a program to implement the diagram given below demonstrating runtime polymorphism. 	*CO2*	*PO1*	**05**

		c)	Write a Java program to create an Abstract class BankAccount with abstract methods deposit() and withdraw(). Create subclasses: SavingsAccount and CurrentAccount that extend the BankAccount class and implement the respective methods to handle deposits and withdrawals for each account type.	*CO2*	*PO1*	**07**
			OR			
	3	a)	Create an interface called Moveable, which contains four abstract methods moveUp(), moveDown(), moveLeft() and moveRight(). Write the implementation classes called MovablePoint and MovableCircle. By using appropriate member variables and methods.	*CO2*	*PO1*	**07**

		b)	**Predict the output of the given code and justify your answer.**
			i)Interface X
			{
			void method();
			}
			class Y
			{
			public void method()
			{
			System.out.println("CLASS Y");
			}
			}
			class Z extends Y implements X
			{
			}
			public class MainClass
			{
			public static void main(String[] args)
			{
			X x = new Z();
			x.method();
			}
			}
			
			ii) class Alpha
			{
			static String s = " ";
			protected Alpha()
			{
			s += "alpha ";
			}
			}
			class SubAlpha extends Alpha
			{
			private SubAlpha()
			{
			s += "sub ";
			}
			}
			public class SubSubAlpha extends Alpha
			{
			private SubSubAlpha()
			{
			s += "subsub ";
			}
			public static void main(String[] args)
			{
			new SubSubAlpha();
			System.out.println(s);
			} }
				CO3	*PO2*	**05**

		c)	Create a package called University which has one class Uniwelcome. The class has a method to display a welcome message. Create a subpackage Department within University that has a class Departmentgoal. The class has a method to display department goal message. Create a staff class with in Department subpackage. The staff class has following methods i) Addstaff() ii) remove staff().	*CO2*	*PO1*	**08**

			Write a driver class in Java's default package that invokes the methods of these packages by creating appropriate objects.			
			UNIT - III			
	4	a)	Write a Java program to create a method that takes an integer as a parameter and throws an exception if the number is odd.	*CO2*	*PO1*	**05**

		b)	i) Is the following code correct? Justify your answer.
			try {
			} finally {
			}
			
			ii) Is there anything wrong with the following exception handler? Will this code compile?
			try {
			}
			catch (Exception e) {
			} catch (ArithmeticException a) {
			}
			
			iii) what will be the ouput of the following code snippet
			try {
			throw new RuntimeException("Error");
			} catch (Exception e) {
			System.out.println(e.getMessage());
			}
			
			iv) What is the output of the following code snippet?
			try {
			throw new NullPointerException();
			} catch (RuntimeException e) {
			System.out.println("RuntimeException");
			} catch (Exception e) {
			System.out.println("Exception");
			}
			
			v)___ keyword will be used to specify that a method can potentially throw an exception
				CO3	*PO2*	**05**

		c)	Write a Java program to create a class called "Course" with attributes for course name, instructor and credits. Create a subclass "OnlineCourse" that adds attributes for platform and duration. Implement a method to display course details and raise an "InEligibleException" if the course is ineligible for a certificate based on duration. Assume minimum of 30 hours of duration for eligibility.	*CO2*	*PO1*	**10**
			OR			
	5	a)	Write a program to create threads extending the thread class. In one thread print even numbers from 1-100. In another thread print natural numbers from 1-100. In the main thread print the numbers divisible by 3 from 1-100.	*CO2*	*PO1*	**07**

		b)	Write a Java program to get the state of the currently executing thread.	*CO2*	*PO1*	**05**
		c)	Design a multithreaded based solution to avoid incorrect transactions, when two parties are performing different operations simultaneously on the same account in a banking system.	*CO2*	*PO1*	**08**
			UNIT - IV			
	6	a)	Write a program to Read the data of "current.jav" file and write it into another file.	*CO2*	*PO1*	**05**
		b)	Write a program to read data from keyboard using BufferedReader with proper comments.	*CO2*	*PO1*	**05**
		c)	i)String str="hello" String s= new String("hello"); **Differentiate the above two statements.** ii)**String s=new String("hello");** how many memory locations are allocated when this statement is executed.	*CO3*	*PO2*	**05**
		d)	Develop a program to perform the following tasks i) Assign a different char at position 4 in a string "Derhadun" ii) Convert the string "This is the world of digital transformation that has changed the entire world" to an array of characters iii)To search a sub string "good" in strings s1=" good morning" and s2=" morning is started". iv)Extract a substring good in the string s2="good morning"	*CO2*	*PO1*	**05**
			UNIT - V			
	7	a)	Explain Java Collection Frame work.	*CO1*	-	**05**

		b)	Identify the concept used in this program and explain with its importance
			i)class Demo
			{
			public static void main(String[] args)
			{
			Integer i = new Integer(12);
			System.out.println(i);
			modify(i);
			System.out.println(i);
			}
			private static void modify(Integer i)
			{
			i=i+1;
			}
			}
			ii) Write a program to illustrate a Generic class with two Type parameters
				CO3	*PO2*	**10**

		c)	Develop a program to create and perform operations on the Array List.	*CO3*	*PO2*	**05**

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