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

Autonomous Institute Affiliated to VTU

SEP – 2021 Semester End Make Up Examinations

Programme: B.E. **Semester : III**
Branch : Computer Science and Engineering **Duration: 3 hrs.**
Course Code: 19CS3PCOOJ **Max Marks: 100**
Course: Object Oriented Java Programming **Date: 14.09.2021**

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

UNIT - I

1. a) Describe the three OOP principles **06**

   b) Write a Java program illustrating type promotion in expression. Justify your answer. **06**

   c) Write a Java program to swap two floating point numbers **08**
   - Using a temporary variable
   - Without using a temporary variable

UNIT-II

2. a) Develop a Java program for the following specification **06**
   Create a class Circle. It contains:
   - Two private instance variables: radius (type double) and color (type String), with default value of 1.0 and "red", respectively.
   - Two overloaded constructors - a default constructor with no argument, and a constructor which takes a double argument for radius. Let the parameter passed for radius be also named as radius.
   - Two public methods: getRadius() and calArea(), which return the radius and area of this instance, respectively.
   - Test the class by creating a Circle object.

   b) Derive the output of the following code snippet. Justify your answer. **06**

i.
```
class Test1 {
public static void main(String[] args)
{ int x = 20;
  System.out.println(x);
}
static
{
  int x = 10;
  System.out.print(x + " ");
} }
```

ii.

```
class Demo {
 public void show(int x)
 {   System.out.println("In int" + x);      }
 public void show(String s)
 {    System.out.println("In String" + s);   }
 public void show(byte b)
 {   System.out.println("In byte" + b);   }
}
class UseDemo {
   public static void main(String[] args)
   {
      byte a = 25;
      Demo obj = new Demo();
      obj.show(a);
      obj.show("hello");
      obj.show(250);
      obj.show('A');
      obj.show("A");
      obj.show(7.5); }
}
```

c) Create a class Student with following specifications. **08**

- Members: Student_Name and Student_USN
- Use constructors to initialize student objects.
- Display method to display student details.
- Search for a given student based on Student_USN and display the details of the student searched.

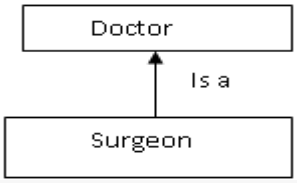
Test the class by creating two student objects and displaying the student details.

UNIT - III

3. a) A superclass reference variable can reference a subclass object. Justify with an example program. **06**

b) Create a class called Animal with member defined as Color and member function as eat().Create another class Dog which extends Animal. Additionally, class Dog redefines the same member Color and method eat(). Demonstrate how to access member and method of both Animal and Dog from Dog. Test both classes by creating another class Verify. **06**

c) Write a Java program to implement the following inheritance concept. Create a method print_Details( ) in both the classes in which salary should be calculated by assuming suitable values. Test the classes by creating objects in another class called Hospital. Demonstrate dynamic dispatch method. **08**



UNIT – IV

4. a) Illustrate access protection mechanism provided by Java when packages are used. **06**

   b) Demonstrate how Java handles the situation when more than one exception is raised by a single piece of code with a suitable example. **06**

   c) Write a Java program to create classes Triangle and Rectangle which implements the following interface. **08**

```
interface Polygon{
void getArea();
void getSides(); }
```

   Create an object of the classes created and test the implemented interface.

OR

5. a) Demonstrate Generics with an example program. **06**

   b) Write an interactive program to compute the square root of a number. The input values must be tested for validity. If it is negative, the user-defined method Mysqrt( ) should raise an exception. **06**

   c) Write a Java program to create classes Bicycle and Bike which implements the following interface. **08**

```
interface Vehicle {
    void changeGear(int a);
    void speedUp(int a);
    void applyBrakes(int a);
}
```

   Create an object of the classes created and test the implemented interface.

UNIT - V

6. a) Write a Java program with following specifications: **06**

   Program consists of only one thread. Obtain a reference to this thread using the method currentthread( ) and assign it to thread variable. Set the name of thread to PANDEMIC. Display this name on the screen by passing the thread variable to println( ) method. Let the thread sleep for five seconds. When the thread wakes up, program should display the message “Bye Bye” on the screen. Finally, program should terminate.

   b) Write a Java program to draw a filled oval and a filled rectangle by setting the color of oval to red and setting the color of rectangle to **06**

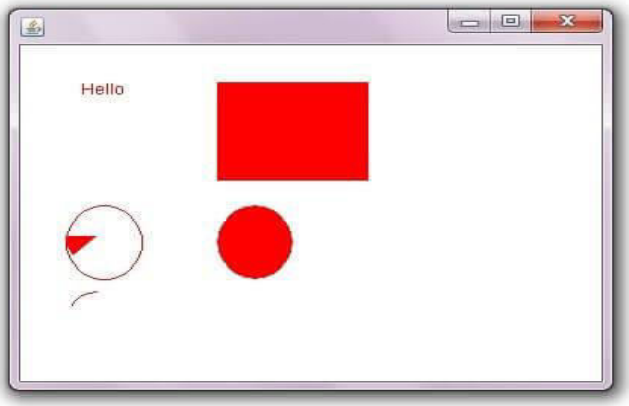
blue.

c) Write a Java program to handle mouse events. For mouse pressed and mouse clicked events, the number of clicks should be obtained and displayed. Each time the mouse button is released, the phrase "Button Released" is shown. As the mouse enters or exits the window, a message is displayed that indicates what happened. When dragging the mouse, "Mouse Dragged" message should be displayed. **08**

OR

7. a) Define Event and discuss when can an event be generated. Explain Delegation Event Model. **06**

b) Write a Java program to produce the following output using graphics method **06**



c) Write a Java program to create two classes Car_Owner and Car_Mechanic . Make them threads. The two threads tries to access an object of Car_queue class. Car_queue involves get and put function based on the availability of mechanic. Car_owner should put the request for car service and Car mechanic should get the request posted by car owner one at a time. **08**

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