POLYMORPHISM

CONSTRUCTOR PROGRAMS

i)

CODE:

```
class Book {
    String title;
    int pages;
    Book(String t, int p) {
        title = t;
        pages = p;
    }
    Book(Book b) {
        title = b.title;
        pages = b.pages;
    }
    void display() {
        System.out.println("Book: " + title + ", Pages: " + pages);
    }
}
 public class ConstructorExample {
    public static void main(String[] args) {
        Book b1 = new Book("Java Programming", 500);
        Book b2 = new Book(b1);
        b1.display();
        b2.display();
    }
}
```

CONSTRUCTOR OVERLOADING PROGRAMS

i)

CODE:

```
class Employee {
    String name;
    int age;
    double salary;

    Employee() {
        name = "Unknown";
        age = 18;
        salary = 30000;
    }

    Employee(String n, int a) {
        name = n;
        age = a;
        salary = 40000;
    }

    Employee(String n, int a, double s) {
        name = n;
        age = a;
        salary = s;
    }

    void display() {
        System.out.println("Name: " + name + ", Age: " + age + ",
Salary: $" + salary);
    }
}

public class ConstructorOverloadingExample {
    public static void main(String[] args) {
        Employee e1 = new Employee();
        Employee e2 = new Employee("John", 25);
        Employee e3 = new Employee("Alice", 30, 60000);

        e1.display();
        e2.display();
        e3.display();
    }
}
```

METHOD OVERLOADING PROGRAMS

i)

CODE:

```
class Employee {
    private String name;
    private int id;
    private double salary;
    void setDetails(String name, int id) {
        this.name = name;
        this.id = id;
    }
    void setDetails(String name, int id, double salary) {
        this.name = name;
        this.id = id;
        this.salary = salary;
    }
    void setDetails(String name) {
        this.name = name;
    }
    void displayDetails() {
        System.out.println("Name: " + name + ", ID: " + id + ", Salary: " + salary);
    }
}
public class Main {
    public static void main(String[] args) {
        Employee emp1 = new Employee();
        emp1.setDetails("Alice", 101); // Calls first method
        emp1.displayDetails();
        Employee emp2 = new Employee();
        emp2.setDetails("Bob", 102, 50000.0); // Calls second method
        emp2.displayDetails();
        Employee emp3 = new Employee();
        emp3.setDetails("Charlie"); // Calls third method
        emp3.displayDetails();
    }
}
```

ii)

CODE:

```
class Shape {
    void draw(double radius) {
        System.out.println("Drawing a circle with radius: " + radius);
    }
 void draw(double length, double width) {
        System.out.println("Drawing a rectangle with length: " + length + " and width: " + width);
    }
    void draw(double side1, double side2, double side3) {
        System.out.println("Drawing a triangle with sides: " + side1 + ", " + side2 + ", " + side3);
    }
}
public class  Main2{
    public static void main(String[] args) {
        Shape shape = new Shape();
        shape.draw(5.0);
        shape.draw(4.0, 6.0);
        shape.draw(3.0, 4.0, 5.0);     }
}
```

METHOD OVERRIDING PROGRAMS

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i)

CODE:

```
class Vehicle {
   void speed() {
      System.out.println("Vehicle is moving");
   }
}

class Car extends Vehicle {
   void speed() {
      System.out.println("Car moves at 80 km/h");
   }
}

class Bike extends Vehicle {
   void speed() {
      System.out.println("Bike moves at 60 km/h");
   }
}

public class Main {
   public static void main(String[] args) {
      Vehicle v;
      v = new Car();
      v.speed();
      v = new Bike();
      v.speed();
```

```
    }
}
```

ii)

CODE:

```
class Bank {
    double getInterestRate() {
        return 0;
    }
}

class SBI extends Bank {
    double getInterestRate() {
        return 5.5;
    }
}

class ICICI extends Bank {
    double getInterestRate() {
        return 6.7;
    }
}

class HDFC extends Bank {
    double getInterestRate() {
        return 7.2;
    }
}

public class Main2 {
    public static void main(String[] args) {
        Bank b;

        b = new SBI();
        System.out.println("SBI Interest Rate: " +
b.getInterestRate() + "%");

        b = new ICICI();
        System.out.println("ICICI Interest Rate: " +
b.getInterestRate() + "%");

        b = new HDFC();
        System.out.println("HDFC Interest Rate: " +
b.getInterestRate() + "%");
    }
}
```