WIPRO_JAVA_SELENIUM_BATCH8

DAY-4 ASSIGNMENT

QUESTION-1

1) create multilevel inheritance for

//Vehicle

//Four_wheeler

//Petrol_Four_Wheeler

//FiveSeater_Petrol_Four_Wheeler

//Baleno_FiveSeater_Petrol_Four_Wheeler

Ans)

```
package DAY4 Assignment;
class IsVehicle {
   void noOfVehicle(int vehicleNo) {
      System.out.println("Vehicle Number: " + vehicleNo);
   }
}
class FourWheeler extends IsVehicle {
   void wheels(int wheels) {
      System.out.println("Number of wheels: " + wheels);
   }
}
class PetrolFourWheeler extends FourWheeler {
   void fuelType(String fuel) {
      System.out.println("Fuel type: " + fuel);
```

```
    }
}
class FiveSeaterPetrol extends PetrolFourWheeler {
    void seating(int seats) {
        System.out.println("Seating capacity: " + seats);
    }
}
class BalenoFiveStarPetrolFourWheeler extends FiveSeaterPetrol {
    void modelName(String model) {
        System.out.println("Model name: " + model);
    }
}
public class Vehicle {
    public static void main(String[] args) {
        BalenoFiveStarPetrolFourWheeler veh = new
BalenoFiveStarPetrolFourWheeler();
        veh.noOfVehicle(3678);
        veh.wheels(4);
        veh.fuelType("petrol");
        veh.seating(22);
        veh.modelName("baleno");
    }
}
```

OUTPUT=

```
Vehicle Number: 3678
```

Number of wheels: 4

Fuel type: petrol

Seating capacity: 22

Model name: baleno

Question 2

2) Demonstrate the use of the super keyword

Ans)

1)It is used to call parent class variables, methods and constructors.

2)We cannot use super keyword inside a static area.

3)We cannot call private variables and methods of the parent class.

4)It supports runtime polymorphism.

5)super keyword can be used inside a subclass.

Question 3

3) Create Hospital super class and access this class inside the patient child class and access properties from Hospital class.

Ans)

```
package DAY1;


class Hospitall {
 String hospitalName = "Amma Hospital";
 String doctorname = "Ranjith";


 void displayHospitalInfo() {
```

```
    System.out.println("Hospital Name: " + hospitalName);
    System.out.println("doctorname: " + doctorname);
 }
}
class Patient1 extends Hospitall {
 String patientName = "Nikhitha";
 int weight = 50 ;

 void displayPatientInformation() {
    System.out.println("Patient Name: " + patientName);
    System.out.println("weight: " + weight);
    System.out.println("Hospital : " + super.hospitalName);
    System.out.println("doctorname : " + super.doctorname);
    //super.displayHospitalInfo();
 }
}

public class HospitalClass {
 public static void main(String[] args) {
    Patient1 p = new Patient1();
    p.displayPatientInformation();
 }
}
```

OUTPUT=

```
Patient Name: Nikhitha
```

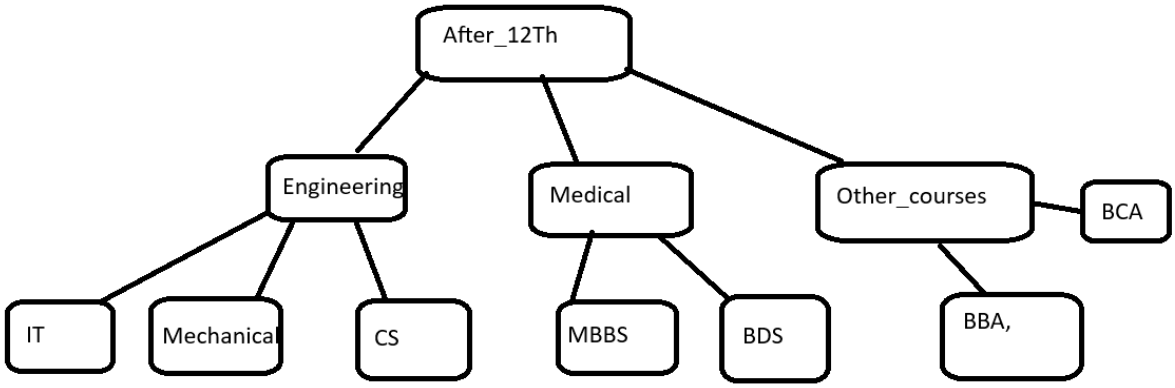
weight: 50

Hospital : Amma Hospital

doctorname : Ranjith

---

4) Create Hierarchical inheritance




```
package DAY4;


class After12th {

        void Streams() {

            System.out.println("Available Streams after 12th: Engineering, Medical, Other Courses");

        }

    }

    class Engineering extends After12th {

        void Engineeringoptions() {

            System.out.println("Engineering stream options: IT, Mechanical, CS");

        }

    }

    class IT extends Engineering {
```

```
    void showIT() {
        System.out.println("IT: Information Technology");
    }
}
class Mechanical extends Engineering {
    void showMechanical() {
        System.out.println("Mechanical stream");
    }
}
class CS extends Engineering {
    void showCS() {
        System.out.println("CS: Computer Science stream.");
    }
}
class Medical extends After12th {
    void Medicaloptions() {
        System.out.println("Medical stream : MBBS, BDS");
    }
}
class MBBS extends Medical {
    void showMBBS() {
        System.out.println("MBBS: Bachelor of Medicine and Bachelor of
Surgery.");
    }
}
```

```
class BDS extends Medical {
    void showBDS() {
        System.out.println("BDS: Bachelor of Dental Surgery.");
    }
}
class OtherCourses extends After12th {
    void showOtherCourses() {
        System.out.println("Other courses : BBA, BCA");
    }
}
class BBA extends OtherCourses {
    void showBBA() {
        System.out.println("BBA: Bachelor of Business Administration.");
    }
}
class BCA extends OtherCourses {
    void showBCA() {
        System.out.println("BCA: Bachelor of Computer Applications.");
    }
}
public class hierarical_inheritance {
    public static void main(String[] args) {
        IT it = new IT();
        it.Streams();
        it.Engineeringoptions();
```

```
        it.showIT();
        System.out.println("---------------------------");
        Mechanical mech = new Mechanical();
        mech.showMechanical();
        System.out.println("---------------------------");
        CS cs = new CS();
        cs.showCS();
        System.out.println("-----------------------------");
        MBBS mbbs = new MBBS();
        mbbs.Streams();
        mbbs.Medicaloptions();
        mbbs.showMBBS();
        System.out.println("---------------------------");
        BDS bds = new BDS();
        bds.showBDS();
        System.out.println("-------------------------------");
        BCA bca = new BCA();
        bca.Streams();
        bca.showOtherCourses();
        bca.showBCA();
        System.out.println("---------------------------");
        BBA bba = new BBA();
        bba.showBBA();
    }
}
```

Output=

Available Streams after 12th: Engineering, Medical, Other Courses

Engineering stream options: IT, Mechanical, CS

IT: Information Technology

Mechanical stream

CS: Computer Science stream.

Available Streams after 12th: Engineering, Medical, Other Courses

Medical stream : MBBS, BDS

MBBS: Bachelor of Medicine and Bachelor of Surgery.

BDS: Bachelor of Dental Surgery.

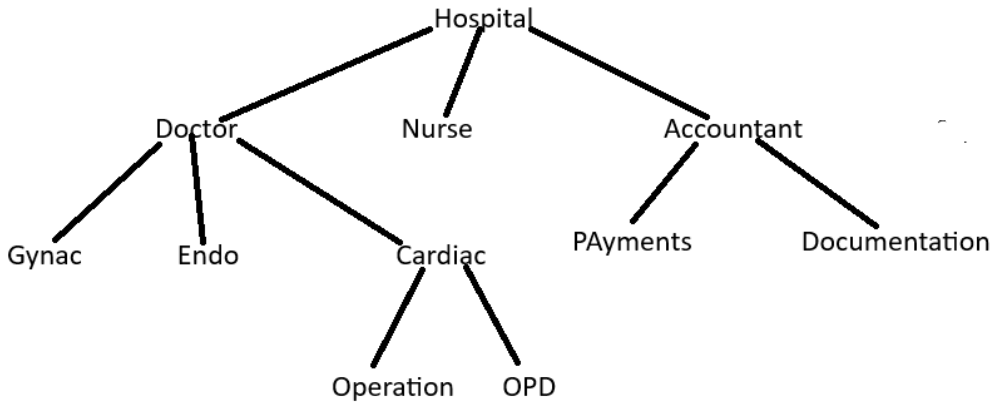
Available Streams after 12th: Engineering, Medical, Other Courses

Other courses : BBA, BCA

BCA: Bachelor of Computer Applications.

BBA: Bachelor of Business Administration.

5)Create practice on this




```
package assignment_day4;


class Hospital
{
	void hospitalinformation(String info)
	{
		System.out.println("hospitalinfo:"+info);
	}
}
class Doctor extends Hospital
{
	void doctavailable(String available)
	{
		System.out.println("doctoravai:"+available);
	}
}
class  Gynac extends Doctor
{
```

```
        void gynacinf(String gynacologistspecialist)
        {
                System.out.println("gynacologist:"+gynacologistspecialist);
        }
}
class Endo extends Doctor
{
        void endoinfo(String endocardiagistspecialist )
        {
                System.out.println("endocardiagist:"+endocardiagistspecialist);
        }
}
class Cardiac extends Doctor
{
   void cardiacInfo(String cardiacDoctor) {
      System.out.println("Cardiologist: " + cardiacDoctor);
   }
}
class Operation extends Cardiac
{
   void operationInfo(String operationType) {
      System.out.println("Cardiac Operation Type: " + operationType);
   }
}
class OPD extends Cardiac
```

```
{
   void opdInfo(String opdDoctor) {
      System.out.println("Cardiac OPD : " + opdDoctor);
   }
}
class Nurse extends Hospital
{
   void nurseInfo(String nurseName) {
      System.out.println("Nurse Name: " + nurseName);
   }
}
class Accountant extends Hospital
{
   void accountantInfo(String accountantName) {
      System.out.println("Accountant Name: " + accountantName);
   }
}
class Payments extends Accountant
{
   void paymentInfo(double amount) {
      System.out.println("Payment processed:" + amount);
   }
}

class Documentation extends Accountant
```

```
{
    void documentationInfo(String fileName) {
        System.out.println("Document created for: " + fileName);
    }
}
public class Hospital_hierarchy_inheritance
{
    public static void main(String[] args) {
        Operation op = new Operation();
        op.hospitalinformation("Amma hospital");
        op.doctavailable("yes or no");
        op.cardiacInfo("Dr. Ram");
        op.operationInfo("Bypass Surgery");
        System.out.println("--------------------------------");
        OPD opd = new OPD();
        opd.hospitalinformation("Amma hospital");
        opd.doctavailable("yes or no");
        opd.cardiacInfo("Dr. Nikhitha");
        opd.opdInfo("Dr. Nikhitha");
        System.out.println("--------------------------------");
        Gynac g = new Gynac();
        g.hospitalinformation("Amma hospital");
        g.doctavailable("Dr. Priya");
        g.gynacinf("Dr. Priya");
        System.out.println(“---------------------------------");
```

```
        Nurse n = new Nurse();
        n.hospitalinformation("Amma hospital");
        n.nurseInfo("Nurse chinni");
        System.out.println("----------------------------");
        Payments p = new Payments();
        p.hospitalinformation("Amma hospital");
        p.accountantInfo("Mr.chintu");
        p.paymentInfo(4500.75);
        System.out.println("----------------------------");
        Documentation d = new Documentation();
        d.hospitalinformation("Amma hospital");
        d.accountantInfo("Mr. Rajesh");
        d.documentationInfo("PatientRecord_123");
    }
}
```

Output=

```
hospitalinfo:Amma hospital
doctoravai:yes or no
Cardiologist: Dr. Ram
Cardiac Operation Type: Bypass Surgery
----------
hospitalinfo:Amma hospital
doctoravai:yes or no
Cardiologist: Dr. Nikhitha
Cardiac OPD : Dr. Nikhitha
```

---

hospitalinfo:Amma hospital

doctoravai:Dr. Priya

gynacologist:Dr. Priya

hospitalinfo:Amma hospital

Nurse Name: Nurse chinni

hospitalinfo:Amma hospital

Accountant Name: Mr.chintu

Payment processed:4500.75

hospitalinfo:Amma hospital

Accountant Name: Mr. Rajesh

Document created for: PatientRecord_123

Polymorphism

QUESTION-1

6) Create a class Calculator with the following overloaded add()

1.add(int a, int b)

2.add(int a, int b, int c)

3.add(double a, double b)

Ans)

```
package DAY4;
class calculate{
	public void add(int a,int b)
	{
		System.out.println("sum(int,int) :"+(a+b));
```

```
    }
    public void add(int a,int b,int c)
    {
        System.out.println("sum(int,int,int) :"+(a+b+c));
    }
    public void add(double a,double b)
    {
        System.out.println("sum(double,double) :"+(a+b));
    }
}
public class Calculator_overloading {
    public static void main(String[] args) {
        calculate calc=new calculate();
        calc.add(1, 0);
        calc.add(1, 2, 3);
        calc.add(20.0, 30.0);
    }
}
```

Output:

```
sum(int,int) :1
sum(int,int,int) :6
sum(double,double) :50.0
```

2.Create a base class Shape with a method area() that prints a message. Then create two subclasses Circle→override area() to calculator and print area of circle Rectangle→ override area() to calculate and print area of a rectangle

Ans)

```
package DAY4;
class Shape {
    void area() {
        System.out.println("This is the area method of Shape.");
    }
}
class Circle extends Shape {
    double radius;
    Circle(double radius) {
        this.radius = radius;
    }
    void area() {
        double area = Math.PI * radius * radius;
        System.out.println("Area of Circle: " + area);
    }
}
class Rectangle extends Shape {
    double length, width;
    Rectangle(double length, double width) {
        this.length = length;
        this.width = width;
    }
    void area() {
        double area = length * width;
```

```
        System.out.println("Area of Rectangle: " + area);
    }
}
public class ShapeDemo {
    public static void main(String[] args) {
        Shape s = new Shape();
        s.area();
        Circle c = new Circle(5);
        c.area();
        Rectangle r = new Rectangle(4, 6);
        r.area();
    }
}
```

Output:

```
This is the area method of Shape.
Area of Circle: 78.53981633974483
Area of Rectangle: 24.0
```

3.Create a Bank class with a method getInterestRate()

create subclasses:

SBI→return 6.7%

ICICI→return 7.0%

HDFC→return 7.5%

Ans)

```
package DAY4;
class Bank {
```

```
    double getInterestRate() {
        return 0.0;
    }
}
class SBI extends Bank {
    double getInterestRate() {
        return 6.7;
    }
}
class ICICI extends Bank {
    double getInterestRate() {
        return 7.0;
    }
}
class HDFC extends Bank {
    double getInterestRate() {
        return 7.5;
    }
}
public class BankDemo {
    public static void main(String[] args) {
        Bank sbi = new SBI();
        Bank icici = new ICICI();
        Bank hdfc = new HDFC();
        System.out.println("SBI Interest Rate: " + sbi.getInterestRate() + "%");
```

```
        System.out.println("ICICI Interest Rate: " + icici.getInterestRate() + "%");
        System.out.println("HDFC Interest Rate: " + hdfc.getInterestRate() + "%");
    }
}
```

Output:

SBI Interest Rate: 6.7%

ICICI Interest Rate: 7.0%

HDFC Interest Rate: 7.5%

4.Runtime Polymorphism with constructor Chaining

create a class vehicle with a constructor that prints “Vehicle Created”

Create a subclass Bike that override a method and uses super() in constructor

```
package DAY4;
class Vehicle1 {
    Vehicle1() {
        System.out.println("Vehicle Created");
    }
    void run() {
        System.out.println("Vehicle is running");
    }
}
class Bike extends Vehicle1 {
    Bike() {
        super();
        System.out.println("Bike Created");
    }
```

```
    @Override
    void run() {
        System.out.println("Bike is running");
    }
}
public class VehicleDemo {
    public static void main(String[] args) {
        Vehicle1 v = new Vehicle1();
        v.run();
        Bike b = new Bike();
        b.run();
        Vehicle1 v2 = new Bike();
        v2.run();
    }
}
```

Output:

```
Vehicle Created
Vehicle is running
Vehicle Created
Bike Created
Bike is running
Vehicle Created
Bike Created
Bike is running
```

2.Design an interface Bank with methods deposit(), withdraw(), and getBalance().
Implement this in SavingsAccount and CurrentAccount classes.

- **Use inheritance to create a base Account class.**
- **Demonstrate method overriding with customized logic for withdrawal (e.g., minimum balance in SavingsAccount).**

Ans)

```
package DAY4;

interface Bank1 {
    void deposit(double amount);
    void withdraw(double amount);
    double getBalance();
}

class Account {
    protected double balance;
    Account(double initialBalance) {
        balance = initialBalance;
    }
}

class SavingsAccount extends Account implements Bank1 {
    private static final double MIN_BALANCE = 500;
    SavingsAccount(double initialBalance) {
        super(initialBalance);
    }
    public void deposit(double amount) {
        balance += amount;
```

```
        System.out.println(amount + " deposited. New balance: " + balance);
    }
    public void withdraw(double amount) {
        if (balance - amount >= MIN_BALANCE) {
            balance -= amount;
            System.out.println(amount + " withdrawn. New balance: " + balance);
        } else {
            System.out.println("Withdrawal denied! Minimum balance of " +
MIN_BALANCE + " must be maintained.");
        }
    }
    public double getBalance() {
        return balance;
    }
}
class CurrentAccount extends Account implements Bank1 {
    CurrentAccount(double initialBalance) {
        super(initialBalance);
    }
    public void deposit(double amount) {
        balance += amount;
        System.out.println(amount + " deposited. New balance: " + balance);
    }
    public void withdraw(double amount) {
        if (balance >= amount) {
```

```
            balance -= amount;
            System.out.println(amount + " withdrawn. New balance: " + balance);
        } else {
            System.out.println("Withdrawal denied! Insufficient funds.");
        }
    }
    @Override
    public double getBalance() {
        return balance;
    }
}
public class Bank_exam {
    public static void main(String[] args) {
        Bank1 savings = new SavingsAccount(1000);
        Bank1 current = new CurrentAccount(2000);
        savings.deposit(500);
        savings.withdraw(800);
        savings.withdraw(300);
        System.out.println();
        current.deposit(1000);
        current.withdraw(2500);
        current.withdraw(1000);
    }
}
```

Output:

500.0 deposited. New balance: 1500.0

800.0 withdrawn. New balance: 700.0

Withdrawal denied! Minimum balance of 500.0 must be maintained.

1000.0 deposited. New balance: 3000.0

2500.0 withdrawn. New balance: 500.0

Withdrawal denied! Insufficient funds.

3.Create a base class Vehicle with method start().
Derive Car, Bike, and Truck from it and override the start() method.

- **Create a static method that accepts Vehicle type and calls start().**
- **Pass different vehicle objects to test polymorphism.**

Ans)

```
package DAY4;
class AutoVehicle {
   void start() {
      System.out.println("AutoVehicle is starting");
   }
}
class AutoCar extends AutoVehicle {
   void start() {
      System.out.println("AutoCar is starting");
   }
}
class AutoBike extends AutoVehicle {
   void start() {
      System.out.println("AutoBike is starting");
```

```
    }
}
class AutoTruck extends AutoVehicle {
    void start() {
        System.out.println("AutoTruck is starting");
    }
}
public class AutoVehicleTest {
    static void testStart(AutoVehicle v) {
        v.start();
    }
    public static void main(String[] args) {
        AutoVehicle car = new AutoCar();
        AutoVehicle bike = new AutoBike();
        AutoVehicle truck = new AutoTruck();
        testStart(car);
        testStart(bike);
        testStart(truck);
    }
}
```

Output:

```
AutoCar is starting
AutoBike is starting
AutoTruck is starting
```

4.Design an abstract class Person with fields like name, age, and abstract method getRoleInfo().
Create subclasses:

- **Student: has course and roll number.**
- **Professor: has subject and salary.**
- **TeachingAssistant: extends Student and implements getRoleInfo() in a hybrid way.**
- **Create and print info for all roles using overridden getRoleInfo().**

Ans)

```
package DAY4;

abstract class Person {
    String name;
    int age;
    Person(String name, int age) {
        this.name = name;
        this.age = age;
    }
    abstract String getRoleInfo();
    void printInfo() {
        System.out.println("Name: " + name + ", Age: " + age);
        System.out.println(getRoleInfo());
        System.out.println();
    }
}
class Student extends Person {
    String course;
```

```
    int rollNumber;
    Student(String name, int age, String course, int rollNumber) {
        super(name, age);
        this.course = course;
        this.rollNumber = rollNumber;
    }
    String getRoleInfo() {
        return "Role: Student, Course: " + course + ", Roll Number: " + rollNumber;
    }
}
class Professor extends Person {
    String subject;
    double salary;
    Professor(String name, int age, String subject, double salary) {
        super(name, age);
        this.subject = subject;
        this.salary = salary;
    }
    String getRoleInfo() {
        return "Role: Professor, Subject: " + subject + ", Salary: $" + salary;
    }
}
class TeachingAssistant extends Student {
    String supervisor;
```

```
    TeachingAssistant(String name, int age, String course, int rollNumber, String supervisor) {
        super(name, age, course, rollNumber);
        this.supervisor = supervisor;
    }
    String getRoleInfo() {
        return "Role: Teaching Assistant, Course: " + course + ", Roll Number: " + rollNumber +
                ", Supervisor: " + supervisor;
    }
}
public class PersonDemo {
    public static void main(String[] args) {
        Person student = new Student("Nikki", 20, "Computer Science", 101);
        Person professor = new Professor("Dr. Manasa", 45, "Electronics and Communication Engineering", 75000);
        Person ta = new TeachingAssistant("Shruthi", 23, "Mechanical", 102, "Dr. Manasa");
        student.printInfo();
        professor.printInfo();
        ta.printInfo();
    }
}
```

Output:

Name: Nikki, Age: 20

Role: Student, Course: Computer Science, Roll Number: 101

Name: Dr. Manasa, Age: 45

Role: Professor, Subject: Electronics and Communication Engineering, Salary: $75000.0

Name: Shruthi, Age: 23

Role: Teaching Assistant, Course: Mechanical, Roll Number: 102, Supervisor: Dr. Manasa

5.Create:

- **Interface Drawable with method draw()**
- **Abstract class Shape with abstract method area()**
  Subclasses: Circle, Rectangle, and Triangle.
- **Calculate area using appropriate formulas.**
- **Demonstrate how interface and abstract class work together.**

Ans)

```
package DAY4;

interface Drawable {
 void draw();
}

abstract class Shape11 implements Drawable {
 abstract double area();
}

class Circle11 extends Shape11 {
 double radius;
 Circle11(double radius) {
    this.radius = radius;
 }
 double area() {
```

```
    return Math.PI * radius * radius;
 }
 public void draw() {
    System.out.println("Drawing Circle with radius " + radius);
 }
}
class Rectangle11 extends Shape11 {
 double length, width;

 Rectangle11(double length, double width) {
    this.length = length;
    this.width = width;
 }
 double area() {
    return length * width;
 }
 public void draw() {
    System.out.println("Drawing Rectangle with length " + length + " and width "
+ width);
 }
}
class Triangle extends Shape11 {
 double base, height;
 Triangle(double base, double height) {
    this.base = base;
```

```
    this.height = height;
 }
 double area() {
    return 0.5 * base * height;
 }
 public void draw() {
    System.out.println("Drawing Triangle with base " + base + " and height " +
height);
 }
}
public class Shape_Demo {
 public static void main(String[] args) {
    Shape11[] shapes = {
       new Circle11(5),
       new Rectangle11(4, 6),
       new Triangle(3, 7)
    };
    for (Shape11 shape : shapes) {
       shape.draw();
       System.out.println("Area: " + shape.area());
       System.out.println();
    }
 }
}
```

Output:

Drawing Circle with radius 5.0

Area: 78.53981633974483

Drawing Rectangle with length 4.0 and width 6.0

Area: 24.0

Drawing Triangle with base 3.0 and height 7.0

Area: 10.5