

```

package Assignment_Day4;

class Vehicle {
String name="Vehicle";
void start() {
System.out.println("Starts with key/Kick");
}
void stop() {
System.out.println("Stops with key or brakes");
}
}
class Bike extends Vehicle{
void name() {
System.out.println("Name =" +super.name);
}
@Override
void start() {
super.start();
System.out.println("Bike starts with kick");
}
}

```

```

public class Day_4Assignment {

public static void main(String[] args) {
Bike b=new Bike();

b.start();
b.name();
b.stop();
}

}

```

```

Starts with key/Kick
Bike starts with kick
Name =Vehicle
Stops with key or brakes

```

```

package Assignment_Day4;

class Calculator{
void add(int a,int b) {
System.out.println("Addition is " +(a+b));
}
}

```

```

void add(int a,int b,int c) {
System.out.println("Addition is "+(a+b+c));
}
void add(double a,double b) {
System.out.println("Addition is "+(a+b));
}
}
public class Polymorphism_p1 {

public static void main(String[] args) {
Calculator c=new Calculator();
c.add(2, 5);
c.add(1,2,3 );
c.add(20000, 30.67);
}

}

```

```

Addition is 7
Addition is 6
Addition is 20030.67

```

```

package Assignment_Day4;
class Shape{
void area() {
System.out.print("Area ");
}
}
class Circle extends Shape{
final float pi=3.14f;
@Override
void area() {
System.out.println("Area of circle is pi*r*r");
}
void area(float r) {
System.out.println("Ara of circle is "+(pi*r*r));
}
}
class Rectangle extends Shape{
@Override
void area() {
System.out.println("Area of Rectangle is l*b");
}
}
public class Polymorphism_p2 {

```

```

public static void main(String[] args) {
    Circle c=new Circle();
    c.area();
    c.area(2.3f);
    Rectangle r=new Rectangle();
    r.area();
}

```

```

}

```

```

Area of circle is pi*r*r
Ara of circle is 16.6106
Area of Rectangle is l*b

```

```

package Assignment_Day4;
class Bank{
    void getInterestrates() {
        System.out.println("Interest Rates");
    }
}
class SBI extends Bank{
    void getInterestrates() {
        System.out.println("Interest Rate in SBI is 6.7%");
    }
}
class ICICI extends Bank{
    void getInterestrates() {
        System.out.println("Interest Rate in ICICI is 7.0%");
    }
}
class HDFC extends Bank{
    void getInterestrates() {
        System.out.println("Interest Rate in SBI is 7.5%");
    }
}
public class Polymorphism_p3 {

```

```

    public static void main(String[] args) {

```

```

        SBI s=new SBI();
        s.getInterestrates();

```

```

        ICICI i=new ICICI();
        i.getInterestrates();

```

```
HDFC h=new HDFC();  
h.getInterestrates();  
}
```

```
}
```

```
Interest Rate in SBI is 6.7%  
Interest Rate in ICICI is 7.0%  
Interest Rate in SBI is 7.5%
```

```
package Assignment_Day4;  
class Vehicle1{  
Vehicle1(){  
System.out.println("Vehicle Created");  
}  
void start() {  
System.out.println("Vehicle started");  
}  
}  
class Bike1 extends Vehicle1{  
Bike1(){  
  
super();  
System.out.println("Bike Created");  
  
}  
@Override  
void start() {  
super.start();  
System.out.println("Bike Started");  
}  
}  
public class Polymorphism_p4 {  
  
public static void main(String[] args) {  
Bike1 b=new Bike1();  
b.start();  
  
}  
  
}
```

```
Vehicle Created  
Bike Created  
Vehicle started  
Bike Started
```

```
package Assignment_Day4;
```

```
abstract class SmartDevice{  
    abstract void turnon();  
    abstract void turnoff();  
    abstract void performsFunction();  
  
}  
class SmartPhone extends SmartDevice{  
    void turnon() {  
        System.out.println("Smartphone on");  
    }  
    void turnoff() {  
        System.out.println("Smartphone off");  
    }  
    void performsFunction() {  
        System.out.println("Smartphone has features calling and browsing");  
    }  
  
}  
class SmartWatch extends SmartDevice{  
    void turnon() {  
        System.out.println("SmarWatch on");  
    }  
    void turnoff() {  
        System.out.println("SmartWatch off");  
    }  
    void performsFunction() {  
        System.out.println("Smartwatch has features tracks fitness and time");  
    }  
  
}  
class SmartSpeaker extends SmartDevice{  
    void turnon() {  
        System.out.println("SmarSpeaker on");  
    }  
    void turnoff() {  
        System.out.println("SmartSpeaker off");  
    }  
    void performsFunction() {
```

```
System.out.println("SmartSpeaker has features plays music and responds to voice commands");
}
```

```
}
```

```
public class Polymorphism_p5 {
```

```
    public static void main(String[] args) {
        SmartDevice[] devices=new SmartDevice[3];
        devices[0]=new SmartPhone();
        devices[1]=new SmartWatch();
        devices[2]=new SmartSpeaker();
        for(SmartDevice d:devices) {
            d.turnon();
            d.turnoff();
            d.performsFunction();
        }
    }
}
```

```
}
```

```
Smartphone on
Smartphone off
Smartphone has features calling and browsing
SmarWatch on
SmartWatch off
Smartwatch has features tracks fitness and time
SmarSpeaker on
SmartSpeaker off
SmartSpeaker has features plays music and responds to voice commands
```

```
package Assignment_Day4;
class Vehicle2{
    void start() {
        System.out.println("Vehicle started");
    }
}
class car extends Vehicle2{
    void start() {
        System.out.println("Car starts with key ");
    }
}
```

```

class Bike2 extends Vehicle2{
void start() {
System.out.println("Bike starts with kick ");
}
}
class Truck extends Vehicle2{
void start() {
System.out.println("Truck starts with keys ");
}
}
public class Polymorphism_p6 {
public static void vehstaart(Vehicle2 vehicle) {
vehicle.start();
}
public static void main(String[] args) {

Vehicle2 car=new car();
Vehicle2 bike=new Bike2();
Vehicle2 truck=new Truck();

vehstaart(car);
vehstaart(bike);
vehstaart(truck);

}

}

```

```

Car starts with key
Bike starts with kick
Truck starts with keys

```

```

package Assignment_Day4;
abstract class Person{
String name;
int age;
Person(String name, int age) {
this.name = name;
this.age = age;
}
abstract void getRoleInfo();
}
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;
}
void getRoleInfo() {
System.out.println("STUDENT: " + name + ", Age: " + age +
", Course: " + course + ", Roll No: " + 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;
}
@Override
void getRoleInfo() {
System.out.println("PROFESSOR: " + name + ", Age: " + age +
", Subject: " + subject + ", Salary: $" + salary);
}
}
class TeachingAssistant extends Student {
String assistingSubject;
TeachingAssistant(String name, int age, String course, int rollNumber, String
assistingSubject) {
super(name, age, course, rollNumber);
this.assistingSubject = assistingSubject;
}
@Override
void getRoleInfo() {
System.out.println("TEACHING ASSISTANT: " + name + ", Age: " + age +
", Course: " + course + ", Roll No: " + rollNumber +
", Assisting in: " + assistingSubject);
}
}
public class polymorphism_p7 {

public static void main(String[] args) {

Student student = new Student("Alice", 20, "Computer Science", 101);
Professor professor = new Professor("Dr. Smith", 45, "Algorithms", 85000);
TeachingAssistant ta = new TeachingAssistant("Bob", 25, "Data Structures", 205,
"Database Systems");

```



```

    student.getRoleInfo();
    professor.getRoleInfo();
    ta.getRoleInfo();
}

```

```

}

```

```

STUDENT: Alice, Age: 20, Course: Computer Science, Roll No: 101
PROFESSOR: Dr. Smith, Age: 45, Subject: Algorithms, Salary: $85000.0
TEACHING ASSISTANT: Bob, Age: 25, Course: Data Structures, Roll No: 205, Assisting in: Database Systems

```

```

package Assignment_Day4;
class After_12{
void display1() {
System.out.println("After 12th");
}

}

class Engineering extends After_12{
void display2() {
System.out.println("Engineering");
}
}

class IT extends Engineering{
void display3() {
System.out.println("IT");
}
}

class Mechanical extends Engineering{
void display4() {
System.out.println("Mechanical");
}
}

class ComputerScience extends Engineering{
void display5() {
System.out.println("ComputerScience");
}
}

class Medical extends After_12{
void display6() {
System.out.println("Medical");
}
}

class MBBS extends Medical{
void display7() {

```

```

System.out.println("MBBS");
}

}
class BDS extends Medical{
void display8() {
System.out.println("BDS");
}

}
class other_course extends After_12{
void display9() {
System.out.println("Other Courses");
}
}
class BBA extends other_course{
void display10() {
System.out.println("BBA");
}
}
class BCA extends other_course{
void display11() {
System.out.println("BCA");
}
}
public class Problem_4 {

public static void main(String[] args) {
System.out.println("*****IT Department*****");
IT it=new IT();
it.display1();
it.display2();
it.display3();
System.out.println("*****Mechanical Department*****");
Mechanical m=new Mechanical();
m.display1();
m.display2();
m.display4();
System.out.println("*****CS Department*****");
ComputerScience cs=new ComputerScience();
cs.display1();
cs.display2();
cs.display5();
System.out.println("*****MBBS*****");
MBBS mb=new MBBS();
mb.display1();

```

```

mb.display6();
mb.display7();
System.out.println("*****BDS*****");
BDS b=new BDS();
b.display1();
b.display6();
b.display8();
System.out.println("*****BBA*****");
BBA bba=new BBA();
bba.display1();
bba.display9();
bba.display10();
System.out.println("*****BCA*****");
BCA bca=new BCA();
bca.display1();
bca.display9();
bca.display11();

}

}

```

```

STUDENT: Alice, Age: 20, Course: Computer Science, Roll No: 101
PROFESSOR: Dr. Smith, Age: 45, Subject: Algorithms, Salary: $85000.0
TEACHING ASSISTANT: Bob, Age: 25, Course: Data Structures, Roll No: 205, Assisting in: Database Systems

```

```

package Assignment_Day4;

class Hospital{
String doctorname="Venkat";
void Hospital_name() {
System.out.println("Appolo Hospitals");
}
}

class Patient extends Hospital{
void doctorname() {
System.out.println("Doctor name =" +super.doctorname);
}
@Override
void Hospital_name() {
super.Hospital_name();
}
}

public class Problem3 {

```

```
public static void main(String[] args) {
```

```
    Patient p=new Patient();
```

```
    p.doctorname();
```

```
    p.Hospital_name();
```

```
}
```

```
}
```

```
    Doctor name =Venkat
```

```
    Appolo Hospitals
```