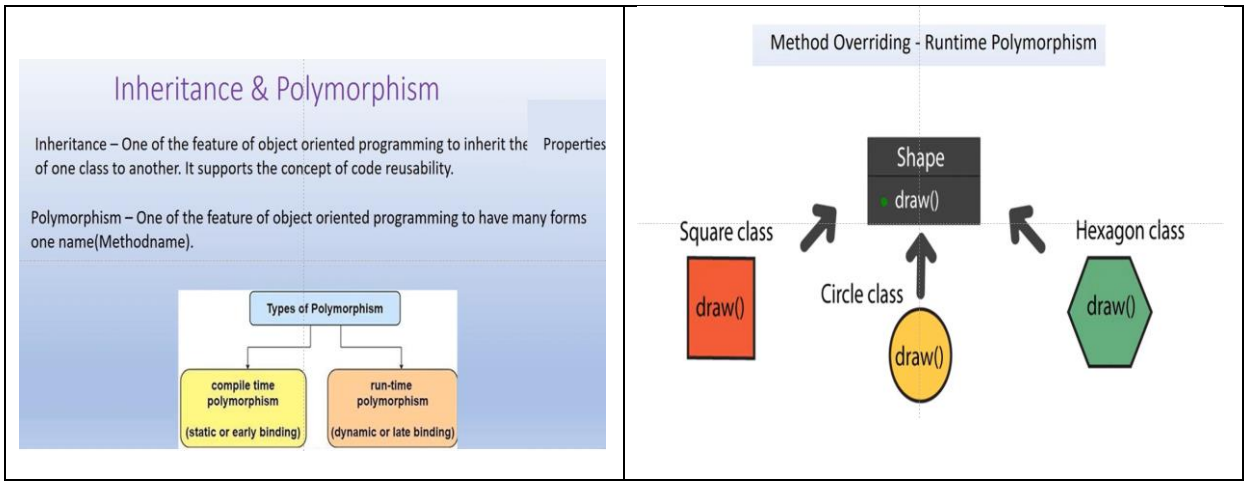
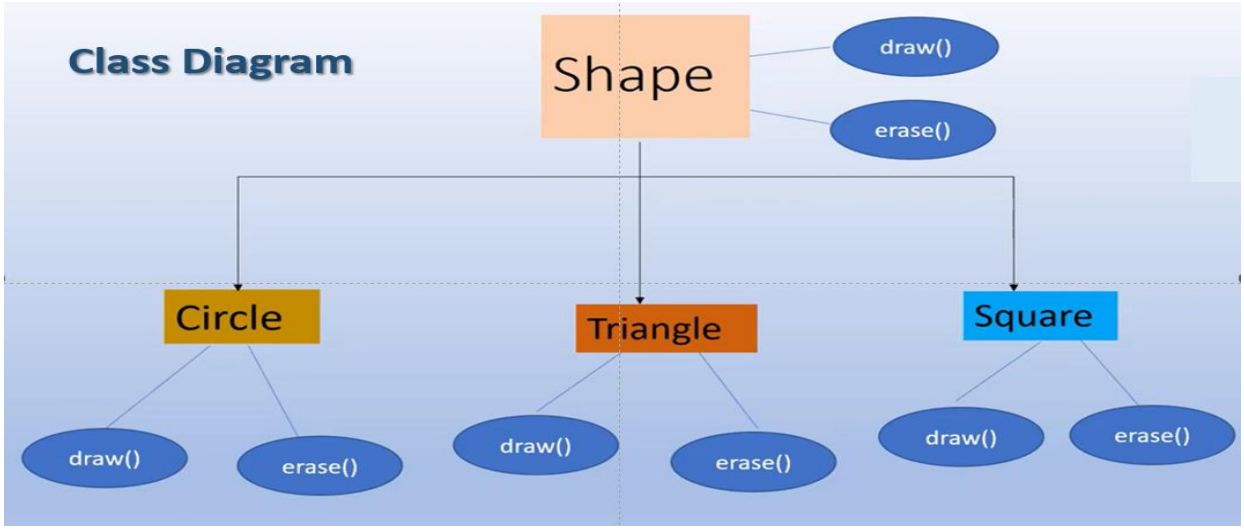
5. Develop a JAVA program to create a class named shape. Create three sub classes namely: circle, triangle and square, each class has two member functions named draw () and erase (). Demonstrate polymorphism concepts by developing suitable methods, defining member data and main program.

Here's a Java program that demonstrates polymorphism using a base class **Shape** and three subclasses **Circle**, **Triangle**, and **Square**, each with **draw()** and **erase()** methods:

Solution:






```
class Shape {
   protected String name;

   public Shape(String name)
  {
      this.name = name;
   }
```

```
    public void draw()
   {
       System.out.println("Drawing a " + name);
    }

    public void erase()
   {
       System.out.println("Erasing a " + name);
    }
}

class Circle extends Shape {
    private double radius;

    public Circle(String name, double radius) {
       super(name);
       this.radius = radius;
    }

    @Override
    public void draw() {
       System.out.println("Drawing a circle with radius " + radius);
    }

    @Override
    public void erase() {
       System.out.println("Erasing a circle with radius " + radius);
    }
}

class Triangle extends Shape {
    private double base;
    private double height;

    public Triangle(String name, double base, double height) {
       super(name);
       this.base = base;
       this.height = height;
    }

      @Override
    public void draw() {
       System.out.println("Drawing a triangle with base " + base + " and height " + height);
    }

    @Override
    public void erase() {
       System.out.println("Erasing a triangle with base " + base + " and height " + height);
```

```
    }
}

class Square extends Shape {
    private double side;

    public Square(String name, double side) {
        super(name);
        this.side = side;
    }

    @Override
    public void draw() {
        System.out.println("Drawing a square with side length " + side);
    }

    @Override
    public void erase() {
        System.out.println("Erasing a square with side length " + side);
    }
}

public class ShapeDemo {
    public static void main(String[] args) {
        Shape[] shapes = new Shape[3];

        shapes[0] = new Circle("Circle", 5.0);
        shapes[1] = new Triangle("Triangle", 4.0, 6.0);
        shapes[2] = new Square("Square", 3.0);

        for (Shape shape : shapes) {
            shape.draw();
            shape.erase();
            System.out.println();
        }
    }
}
```

OUTPUT:

```
Drawing a circle with radius 5.0
Erasing a circle with radius 5.0

Drawing a triangle with base 4.0 and height 6.0
Erasing a triangle with base 4.0 and height 6.0

Drawing a square with side length 3.0
Erasing a square with side length 3.0
BUILD SUCCESSFUL (total time: 0 seconds)
```