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/*List 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.*/
class shape{  //base class
void draw()
{
  System.out.println("Drawing a General Shape");
}
void erase()
{
  System.out.println("Erasing a General  Shape");
}
}
class Circle extends shape{
void draw()
{
  System.out.println("Drawing a Circle");
}
void erase()
{
  System.out.println("Erasing a Circle");
}
}
class Triangle extends shape{
void draw()
{
  System.out.println("Drawing a Triangle");
}
void erase()
{
  System.out.println("Erasing a Triangle");
}
}
class Square extends shape{
void draw()
{
  System.out.println("Drawing a Square");
}
void erase()
{
  System.out.println("Erasing a Square");
}
}
```

```
class Poly{

public static void main(String args[]){
shape c1=new Circle();
shape t1=new Triangle();
shape s1=new Square();
System.out.println("Methods called using respective objects");
c1.draw();
c1.erase();
t1.draw();
t1.erase();
s1.draw();
s1.erase();
System.out.println("Demonstration of Polymorphism");
displayShape(c1);
displayShape(t1);
displayShape(s1);
}
static void displayShape(shape sh) {
sh.draw();
sh.erase();
}
}
```

```
/*List 6: Develop a JAVA program to create an abstract class
Shape with abstract methods calculateArea() and
calculatePerimeter(). Create subclasses Circle and Triangle that
extend the Shape class and implement the respective methods to
calculate the area and perimeter of each shape.*/
abstract class abShape{
     public abstract void calculateArea();
     public abstract void calculatePerimeter();
}
class Circle1 extends abShape {
     double area,radius,perimeter;
     public Circle1(double radius) {
          this.radius=radius;
     }
     public void calculateArea() {
     area=Math.PI*radius*radius;
     System.out.println("Area of the Circle=> "+area);
     }
     public void calculatePerimeter() {
     perimeter=2*Math.PI*radius;
     System.out.println("Perimeter of the Circle=> "+perimeter);
     }
     }
class Triangle1 extends abShape{
     double area,perimeter,side1,side2,side3,s;
     public Triangle1(double side1,double side2,double side3) {
          this.side1=side1;
          this.side2=side2;
          this.side3=side3;
     }

public void calculateArea() {
     // Heron's formula used to calculate the area of a triangle
     s = (side1 + side2 + side3) / 2;
     area= Math.sqrt(s * (s - side1) * (s - side2) * (s -
side3));
     System.out.println("Area of the Triangle=> "+area);
     }
     public void calculatePerimeter() {
     perimeter=side1+side2+side3;
     System.out.println("Perimeter of the Triangle=>
"+perimeter);
     }
     }
```

```
class mainMethod{
     public static void main (String args[]) {
     Circle1 c1=new Circle1(6.0);
     Triangle1 t1=new Triangle1(4.0,6.0,8.0);
     c1.calculateArea();
     c1.calculatePerimeter();
     t1.calculateArea();
     t1.calculatePerimeter();
     }
}
```