Screen short

Shape.java: It is Parent class.

Rectangle.java: It is a child which is extended by ites parent class Shape

```
🖹 😸 🐉 🖁 🗖 🗓 Shape.java
Package Explorer X

    Rectangle.java 
    X

✓ □ Geometric Calculator

                                                      package geometry;
  > M JRE System Library [JavaSE-21]
                                                      public class Rectangle extends Shape {
 private double length;

→ ⊕ geometry

                                                   5
                                                          private double width;
      > 🗾 Rectangle.java
      >  Shape.java
                                                   70
                                                          public Rectangle(double length, double width) {
                                                   8
                                                              this.length = length;
    > I module-info,java
                                                              this.width = width;
                                                   9
> A Phase_1_JavaProgram
                                                  10
                                                  11
                                                          public void calculateArea() {
                                                  120
                                                  13
                                                              double area = length * width;
                                                  14
                                                              System.out.println("Area of Rectangle: " + area);
                                                  15
                                                  16
                                                  17 }
                                                18
```

Circle.java: It is a child which is extended by ites parent class Shape

```
Package Explorer X
                                                    Shape.java
                                                                    Rectangle.java
                                                                                       ☑ Circle.java X
☑ Triangle.java
                                                                                                                         Geometry Main. java

▼ B Geometric_Calculator

                                                         package geometry;
  > NRE System Library [JavaSE-21]
                                                         public class Circle extends Shape {
                                                      3
 ∨ 🕭 src
                                                              private double radius;

→ ⊕ geometry

                                                     5
      > 🚺 Circle.java
                                                      60
                                                                 public Circle(double radius) {
                                                                      this.radius = radius;
      > J GeometryMain.java
                                                     8
       > 🛭 Rectangle.java
      > 🗾 Shape.java
                                                                 public void calculateArea() {
    double area = Math.PI * Math.pow(radius, 2);
                                                     10⊖
      > 🚺 Triangle.java
                                                     11
    > 1 module-info.java
                                                                      System.out.println("Area of Circle: " + area);
> A Phase_1_JavaProgram
                                                     13
                                                   __15 }
```

Triangle.java: It is a child which is extended by ites parent class Shape

```
🗏 💲 🖁 🗖 🗓 Shape.java

☐ Package Explorer 

X

                                                                Rectangle.java
                                                                                  Circle.java
                                                                                                  ☑ Triangle.java X ☑ GeometryMain.java
package geometry;
 > A JRE System Library [JavaSE-21]
                                                      public class Triangle extends Shape {
 private double base;
    5
                                                          private double height;
      > D Circle.java
                                                   79
                                                          public Triangle(double base, double height) {
      > J GeometryMain.java
                                                              this.base = base;
       >  Rectangle.java
                                                              this.height = height;
      >    Shape.java
                                                  10
       > 🚺 Triangle.java
                                                  11
    > I module-info.java
                                                          public void calculateArea() {
    double area = 0.5 * base * height;
                                                  120
> > Phase_1_JavaProgram
                                                  13
                                                              System.out.println("Area of Triangle: " + area);
```

GeometryMain.java:

Make sure to run <code>GeometryMain.java</code> as the main class. This program demonstrates the basic structure you can use for your project and meets the specified requirements. You can customize and expand it according to your specific needs.

```
J Rectangle.java
                                 J Circle.java
                                                ☑ Triangle.java

    ■ Shape.java

 1 package geometry;
 2 import java.util.ArrayList;
 4 public class GeometryMain {
 50
        public static void main(String[] args) {
 6
            ArrayList<Shape> shapes = new ArrayList<>();
 7
            shapes.add(new Rectangle(5, 10));
 8
 9
            shapes.add(new Circle(7));
 10
            shapes.add(new Triangle(4, 6));
 11
            try {
 12
 13
                for (Shape shape : shapes) {
14
                    shape.displayArea();
 15
                    if (shape instanceof Rectangle) {
 16
                         ((Rectangle) shape).calculateArea();
 17
                    } else if (shape instanceof Circle) {
 18
                         ((Circle) shape).calculateArea();
                    } else if (shape instanceof Triangle) {
19
20
                         ((Triangle) shape).calculateArea();
 21
                    System.out.println("----");
 22
 23
 24
            } catch (Exception e) {
 25
                System.out.println("An error occurred: " + e.getMessage());
 26
 27
                System.out.println("Finally block executed.");
 28
29
        }
30
31 }
32
```

OUTPUT:

