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Day-24

**Problem Statement:-Finding the area and perimeter for various Shapes using Problem solving**

**Algorithm:-**

**Step1:** Start

**Step2:**Define an interface ShapePlan with two abstract methods are area() and perimeter()

**Step3:**Create an abstract class Shape that implements an ShapePlan interface

**Step4:**In a abstract class that define a common properties and create variables for Radius , Length , Breadth , Side , Width , and , Height and use a getter and setter method to get the inputs from the user

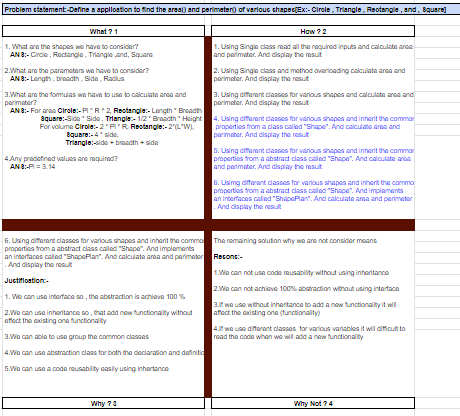
**Step5:**Create a concrete class for Circle , Rectangle , Triangle , and , Square that inherit from the abstract class and call the constructors from the super class for all the concrete class

**Step6:**They implements their own area() , and , perimeter() method that is specific to each shapes

**Step7:**Then in the main class by using object creation we are able to get the specific area() , and , perimeter() of particular shape

**Step8:**Stop

**W3H:-**



**Program:-**

***//Using Problem solving for finding the shapes***

***package com.pravinkumar.day24;***

***//Finding the Shapes like Circle , Rectangle , Triangle , and , Square***

***interface ShapePlan {***

***void area();***

***void perimeter();***

***}***

***abstract class Shape implements ShapePlan {***

***float Radius;***

***float Length;***

***float Breadth;***

***float Side;***

***float Width;***

***float Height;***

***public float getHeight() {***

***return Height;***

***}***

***public void setHeight(float height) {***

***Height = height;***

***}***

***Shape(float Radius, float Length, float Breadth, float Side, float Width, float Height) {***

***this.Radius = Radius;***

***this.Length = Length;***

***this.Breadth = Breadth;***

***this.Side = Side;***

***this.Width = Width;***

***this.Height = Height;***

***}***

***public float getRadius() {***

***return Radius;***

***}***

***public float getWidth() {***

***return Width;***

***}***

***public void setWidth(float width) {***

***Width = width;***

***}***

***public void setRadius(float radius) {***

***Radius = radius;***

***}***

***public float getLength() {***

***return Length;***

***}***

***public void setLength(float length) {***

***Length = length;***

***}***

***public float getBreadth() {***

***return Breadth;***

***}***

***public void setBreadth(float breadth) {***

***Breadth = breadth;***

***}***

***public float getSide() {***

***return Side;***

***}***

***public void setSide(float side) {***

***Side = side;***

***}***

***abstract public void area();***

***abstract public void perimeter();***

***}***

***class Circle extends Shape {***

***Circle(float Radius, float Length, float Breadth, float Side, float Width, float Height) {***

***super(1, 2, 3, 4, 5, 6);***

***this.Radius = Radius;***

***this.Length = Length;***

***this.Breadth = Breadth;***

***this.Side = Side;***

***}***

***public void area() {***

***System.out.println(3.14 \* (Radius \* Radius));***

***}***

***public void perimeter() {***

***System.out.println(2 \* 3.14 \* Radius);***

***}***

***}***

***class Rectangle extends Shape {***

***Rectangle(float Radius, float Length, float Breadth, float Side, float Width, float Height) {***

***super(2.0f, 3.0f, 1.0f, 5.0f, 4.0f, 8.0f);***

***this.Radius = Radius;***

***this.Length = Length;***

***this.Breadth = Breadth;***

***this.Side = Side;***

***this.Width = Width;***

***}***

***public void area() {***

***System.out.println(Length \* Breadth);***

***}***

***public void perimeter() {***

***System.out.println(2 \* (Length \* Width));***

***}***

***}***

***class Triangle extends Shape {***

***Triangle(float Radius, float Length, float Breadth, float Side, float Width, float Height) {***

***super(1.0f, 2.0f, 3.0f, 4.0f, 5.0f, 9.6f);***

***this.Radius = Radius;***

***this.Length = Length;***

***this.Breadth = Breadth;***

***this.Side = Side;***

***this.Width = Width;***

***this.Height=Height;***

***}***

***public void area() {***

***System.out.println(1 / 2 \* Breadth \* Height);***

***}***

***public void perimeter() {***

***System.out.println(Side + Breadth + Side);***

***}***

***}***

***class Square extends Shape {***

***Square(float Radius, float Length, float Breadth, float Side, float Width, float Height) {***

***super(1.0f, 2.0f, 3.0f, 4.0f, 5.0f, 1.1f);***

***this.Radius = Radius;***

***this.Length = Length;***

***this.Breadth = Breadth;***

***this.Side = Side;***

***this.Width = Width;***

***this.Height = Height;***

***}***

***public void area() {***

***System.out.println(Side \* Side);***

***}***

***public void perimeter() {***

***System.out.println(4 \* Side);***

***}***

***}***

***public class Interface\_Exs\_1 {***

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

***// TODO Auto-generated method stub***

***Circle obj = new Circle(1.0f, 2.0f, 3.0f, 4.0f, 5.0f, 6.0f);***

***obj.area();***

***obj.perimeter();***

***Rectangle obj1 = new Rectangle(1.0f, 2.0f, 3.0f, 4.0f, 5.0f, 6.0f);***

***obj1.area();***

***obj1.perimeter();***

***Triangle obj2 = new Triangle(1.0f, 2.0f, 3.0f, 4.0f, 5.0f, 6.0f);***

***obj2.area();***

***obj.perimeter();***

***Square obj3 = new Square(1.0f, 2.0f, 3.0f, 4.0f, 5.0f, 6.0f);***

***obj3.area();***

***obj3.perimeter();***

***}***

***}***