class Program

{

static void Main(string[] args)

{

List<Figure> figureList = new List<Figure>();

Figure rectangle = new Figure()

{

Height = 3,

Width = 4,

Type = ShapeType.Rectangle

};

Figure square = new Figure()

{

Type = ShapeType.Square,

Height = 4,

Width = 4

};

Figure circle = new Figure()

{

Type = ShapeType.Circle,

Radius = 3.5

};

figureList.Add(rectangle);

figureList.Add(square);

figureList.Add(circle);

foreach (Figure figure in figureList)

{

Console.WriteLine(figure.CalculateArea());

figure.Save();

}

}

}

public class Figure

{

public double Height { get; set; }

public double Width { get; set; }

public double Radius { get; set; }

public ShapeType Type { get; set; }

public virtual void Save()

{

//save the object to a file

try{

using (Stream stream = File.Open("saveFile.bin", FileMode.OpenOrCreate))

{

BinaryFormatter formatter = new BinaryFormatter();

formatter.Serialize(stream, this);

}

}

}

catch(FileNotFoundException ex){

Console.WriteLine(e.ToString());

}

public virtual double CalculateArea()

{

return 0;

}

}

public class Rectangle : Figure

{

public override double CalculateArea(){

return Height \* Width;

}

}

public class Square : Figure

{

public override double CalculateArea(){

return Height \* Height;

}

}

public class Circle : Figure

{

public override void Save(){

throw new Exception("Circle cannot be saved!");

}

public override double CalculateArea(){

return Radius \* Radius \* Math.PI;

}

}

public enum ShapeType

{

Rectangle,

Circle,

Square

}