C# and .NET Framework – Lab sheet 05

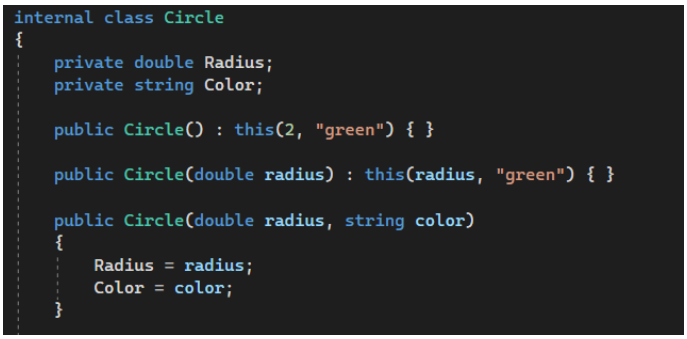
Create a class Circle which represent a real circle object with the data

Radius – double type

Color – string type

Include three types of Constructors in the class.

a) Create three different object with the help of three constructors defined in the class



```
internal class Circle
{
    private double Radius;
    private string Color;

    public Circle() : this(2, "green") { }

    public Circle(double radius) : this(radius, "green") { }

    public Circle(double radius, string color)
    {
        Radius = radius;
        Color = color;
    }
```

b) Add methods getRadius() and getColor() to return the radius and color respectively

```
public double getRadius()
{
    return Radius;
}

public string getColor()
{
    return Color;
}
```

c) Add methods setRadius(double d) and setColor(String c) to set the value of radius and color respectively.

```
public void setRadius(double radius)
{
    Radius = radius;
}

public void setColor(string color)
{
    Color = color;
}
```

d) Test the class in main method.

```
Circle circle = new Circle();
Console.WriteLine("Circle 1: Radius = " + circle.getRadius() + ", Color = " +
circle.getColor());
circle = new Circle(4.0);
Console.WriteLine("Circle : Radius = " + circle.getRadius() + ", Color = " +
circle.getColor());
circle = new Circle(6.0, "blue");
Console.WriteLine("Circle : Radius = " + circle.getRadius() + ", Color = " +
circle.getColor());

circle.setRadius(3);
circle.setColor("Orange");

Console.WriteLine("update Circle : Radius = " + circle.getRadius() + ", Color = " +
circle.getColor());
```

C# and .NET Framework – Lab sheet 05

Define a class Holiday which representing holidays during the year.

There is three instance variables

Name – String, name of the holiday

Day – int, day of the month of the holiday

Month - string, the month in which the holiday in.

a) Define parametrized constructor

```
public Holiday(string name, int day, string month)
{
    Name = name;
    Day = day;
    Month = month;
}
```

b) Define method InSameMonth() – compare two instance of the class Holiday and returns the Boolean value “true” if they have same month and “false” if they do not.

```
public bool InSameMonth(Holiday other)
{
    return Month == other.Month;
}
```

c) Define a method to display the holiday details as Day: 26 Month : January Description : today is republic day

```
public void DisplayHolidayDetails()
{
    Console.WriteLine($"Day: {Day}  Month: {Month}  Name: {Name}");
}
```

d) Create Holiday instance as array to store holidays in a month and test the class

```
Holiday[] holidays = new Holiday[3];
holidays[0] = new Holiday("May Day", 1, "May");
holidays[1] = new Holiday("New Year", 1, "January");
holidays[2] = new Holiday("Republic Day", 26, "January");

Console.WriteLine("Are Republic Day and NEW YEAR in the same month? " +
holidays[2].InSameMonth(holidays[1]));

Console.WriteLine("Holiday Details:");
foreach (var holiday in holidays)
{
    holiday.DisplayHolidayDetails();
    Console.WriteLine();
}
```

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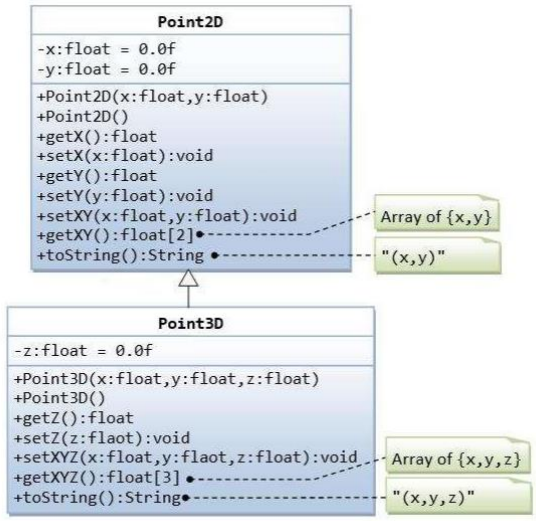
Given the structure of two classes. Implement the given inheritance and test the class. Methods and its return types are specified in the diagram. toString() method both in the class will display the value of its data members.




Point2D.cs


Point3D.cs


Program.cs

```
Creating new instance of 2D point without parameters
2D point using toString method 0 0
2D point using getX & getY method 0 0
2D point using getXY method 0 0

setting x=6 & y=7 through setXY
2D point using toString method 6 7
2D point using getX & getY method 6 7
2D point using getXY method 6 7

Creating new instance with x=9.9867 & y=30.539 through setXY
2D point using toString method 9.9867 30.539
2D point using getX & getY method 9.9867 30.539
2D point using getXY method 9.9867 30.539

----------------3D point example----------------
Creating new instance of 3D point without parameters
3D point using toString method 0 0 0
3D point using getX, getY & getZ method 0 0 0
3D point using getXY method 0 0 0

setting x=76 & y=19 through setXY (not z)
3D point using toString method 76 19 0
3D point using getX, getY & getZ method 76 19 0
3D point using getXY method 76 19 0

setting z=43 through setZ (to same object)
3D point using toString method 76 19 43
3D point using getX, getY & getZ method 76 19 43
3D point using getXY method 76 19 43

Creating new instance with x=98.6 , y=68.9 & z=32.37 through setXY
3D point using toString method 98.6 68.9 32.37
3D point using getX, getY & getZ method 98.6 68.9 32.37
3D point using getXY method 98.6 68.9 32.37
```