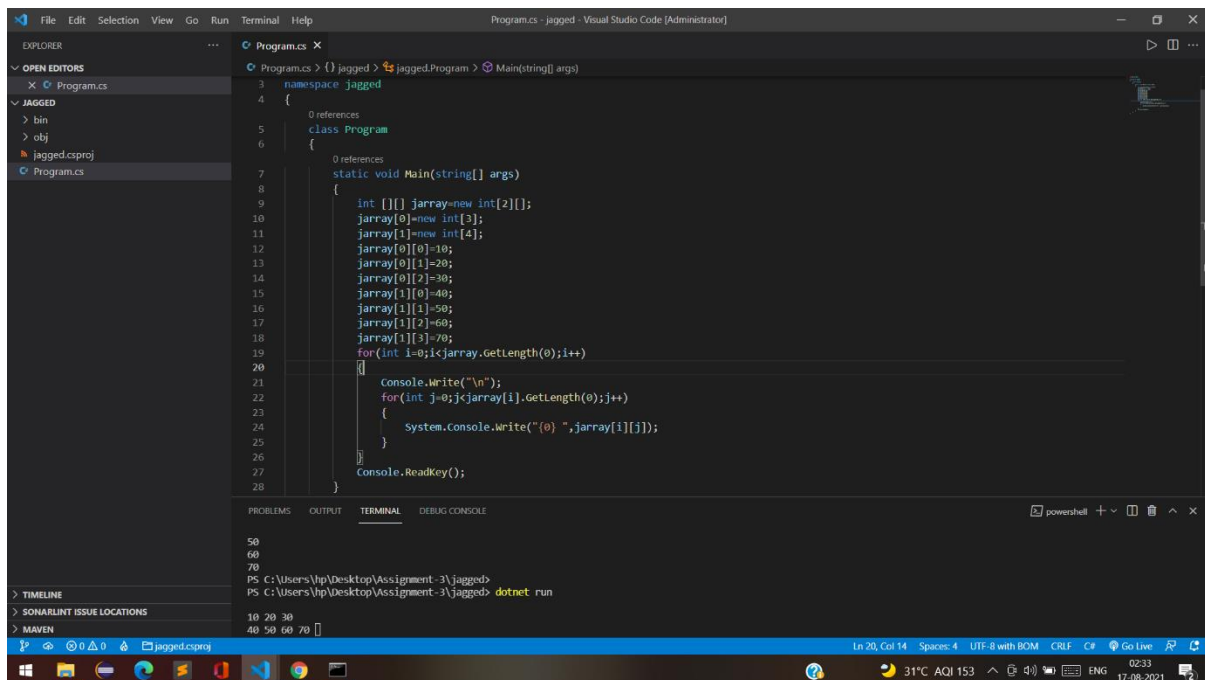


ALL SCREENSHOTS OF THIRD ASSIGNMENT

SUBMITTED BY DAS SUKHDEV



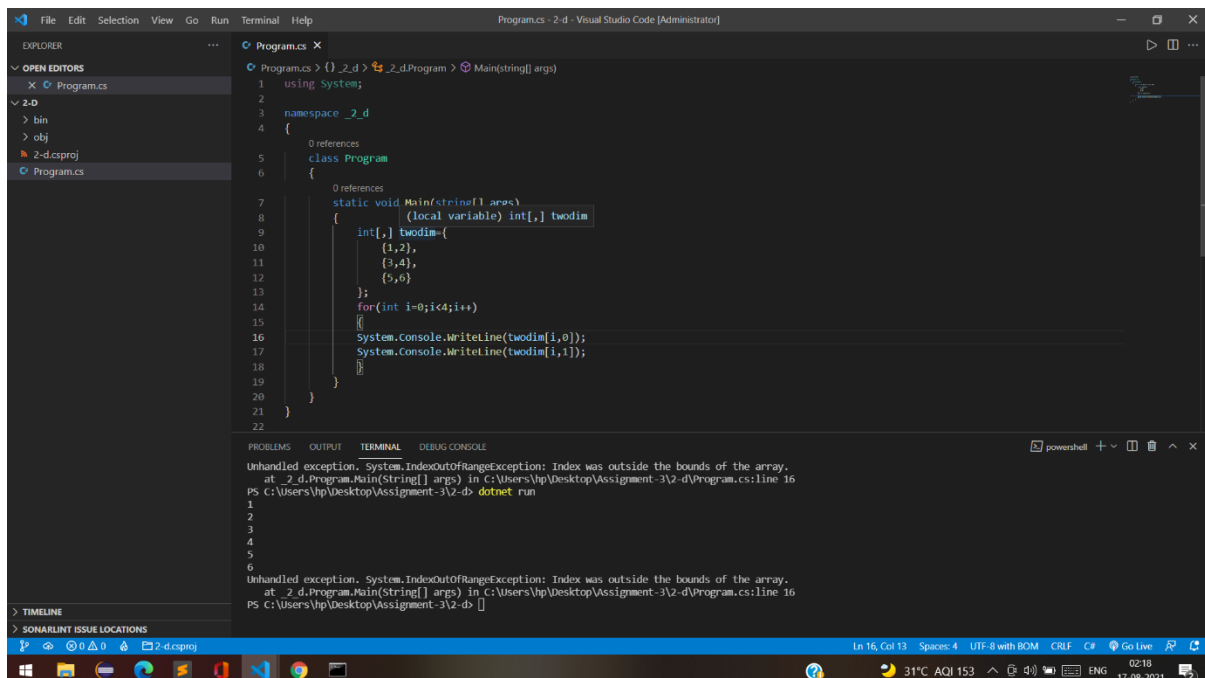
The screenshot shows a Visual Studio Code window with a C# file named `Program.cs`. The code defines a namespace `jagged` and a class `Program` with a `Main` method. The `Main` method creates a jagged array `jarray` of type `int[][]` with three rows. The first row has 2 elements, the second has 3, and the third has 4. Each element is assigned a value. A loop iterates over the first row, and another loop iterates over the first element of the first row, printing the values. The terminal shows the command `dotnet run` being executed, and the output shows the values of the array elements.

```
1 namespace jagged
2 {
3     0 references
4     class Program
5     {
6         0 references
7         static void Main(string[] args)
8         {
9             int [][] jarray=new int[2][];
10            jarray[0]=new int[3];
11            jarray[1]=new int[4];
12            jarray[0][0]=10;
13            jarray[0][1]=20;
14            jarray[0][2]=30;
15            jarray[1][0]=40;
16            jarray[1][1]=50;
17            jarray[1][2]=60;
18            jarray[1][3]=70;
19            for(int i=0;i<jarray.GetLength(0);i++)
20            {
21                Console.WriteLine("\n");
22                for(int j=0;j<jarray[i].GetLength(0);j++)
23                {
24                    system.console.write("{} ",jarray[i][j]);
25                }
26            }
27            Console.ReadKey();
28        }
29    }
30 }
```

Terminal Output:

```
PS C:\Users\hp\Desktop\Assignment-3\jagged> dotnet run
10 20 30
40 50 60 70
```

JAGGED ARRAY PROGRAM



The screenshot shows a Visual Studio Code window with a C# file named `Program.cs`. The code defines a namespace `_2_d` and a class `Program` with a `Main` method. The `Main` method creates a 2-D array `twodim` of type `int[,]` with dimensions (4, 2). The array is initialized with values: `{ {1,2}, {3,4}, {5,6} }`. A loop iterates over the first row, and another loop iterates over the first element of the first row, printing the values. The terminal shows the command `dotnet run` being executed, and the output shows the values of the array elements.

```
1 using System;
2
3 namespace _2_d
4 {
5     0 references
6     class Program
7     {
8         0 references
9         static void Main(string[] args)
10        {
11            (local variable) int[,] twodim
12            {
13                int[,] twodim={
14                    {1,2},
15                    {3,4},
16                    {5,6}
17                };
18                for(int i=0;i<4;i++)
19                {
20                    System.Console.WriteLine(twodim[i,0]);
21                    System.Console.WriteLine(twodim[i,1]);
22                }
23            }
24        }
25    }
26 }
```

Terminal Output:

```
PS C:\Users\hp\Desktop\Assignment-3\2-d\Program.cs:line 16
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```

The screenshot shows a Visual Studio Code window with a project named 'Program.cs - interfaceconcept'. The Explorer pane on the left shows the project structure with files 'Program.cs' and 'interfaceconcept.csproj'. The main editor displays the code for 'Program.cs', which defines an interface 'Ifirst' with a method 'fun1()', a class 'first:Ifirst' that implements 'Ifirst' and overrides 'fun1()' to print 'Hey I'm from interfacell!', and a 'Program' class with a 'Main' method that creates an instance of 'first' and calls 'fun1()'. The terminal at the bottom shows the command 'dotnet run' being executed, resulting in the output 'Hey I'm from interfacell!'.

```
1 using System;
2 namespace interfaceconcept
3 {
4     1 reference
5     interface Ifirst
6     {
7         1 reference
8         void fun1();
9     }
10    1 reference
11    class first:Ifirst
12    {
13        1 reference
14        public void fun1()
15        {
16            System.Console.WriteLine("Hey I'm from interfacell");
17        }
18    }
19    0 references
20    class Program
21    {
22        0 references
23        static void Main(string[] args)
24        {
25            var obj=new first();
26            obj.fun1();
27        }
28    }
29 }
```

Try the new cross-platform PowerShell <https://aka.ms/pscore6>

PS C:\Users\hp\Desktop\Assignment-3\interfaceconcept> dotnet run
Hey I'm from interfacell
PS C:\Users\hp\Desktop\Assignment-3\interfaceconcept>

INTERFACE IMPLEMENTATION

The screenshot shows a Visual Studio Code window with a project named 'Figure.cs - abstractimplementation'. The Explorer pane on the left shows the project structure with files 'Figure.cs' and 'abstractimplementation.csproj'. The main editor displays the code for 'Figure.cs', which defines an abstract class 'Figure' with properties 'width', 'height', and 'radius', a constant 'pi', and a method 'getArea()'. It also defines two concrete classes, 'Rectangle:Figure' and 'Circle:Figure', which inherit from 'Figure' and override the 'getArea()' method. The terminal at the bottom shows the command 'dotnet run' being executed, resulting in the output 'Area of Rectangle is214.64299999999997' and 'Area of Circle is490.6256163912773'.

```
1 using System;
2 namespace abstractimplementation
3 {
4     2 references
5     public abstract class Figure
6     {
7         2 references | 2 references | 3 references
8         public double width,height,radius;
9         1 reference
10        public const float pi=3.14f;
11        2 references
12        public abstract double getArea();
13    }
14    1 reference
15    public class Rectangle:Figure{
16        1 reference
17        public Rectangle(double width,double height)
18        {
19            this.width=width;
20            this.height=height;
21        }
22        2 references
23        public override double getArea()
24        {
25            return width*height;
26        }
27    }
28    1 reference
29    public class Circle:Figure{
30        1 reference
31        public Circle(double radius)
32        {
33        }
34    }
35 }
```

Area of Rectangle is214.64299999999997
Area of Circle is490.6256163912773
PS C:\Users\hp\Desktop\Assignment-3\abstractimplementation>

ABSTRACT IMPLEMENTATION

```
1 using System;
2
3 namespace boxing_unboxing
4 {
5     0 references
6     class Program
7     {
8         //process of converting value type to reference type is called boxing
9         //process of converting reference type to value type is called unboxing
10
11         0 references
12         static void Main(string[] args)
13         {
14             int i=100;
15             object obj=i;//boxing
16             int x=(int)obj;//unboxing
17             System.Console.WriteLine(i);
18             System.Console.WriteLine(obj);
19             System.Console.WriteLine(x);
20         }
21     }
22 }
```

100
PS C:\Users\hp\Desktop\Assignment-3\boxing_unboxing> dotnet run
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100
PS C:\Users\hp\Desktop\Assignment-3\boxing_unboxing> dotnet run
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PS C:\Users\hp\Desktop\Assignment-3\boxing_unboxing>

BOXING AND UNBOXING CONCEPT

```
6 {
7     0 references
8     public string name;
9     0 references
10    public int id;
11
12    1 reference
13    public void change(int i)
14    {
15        i=200;
16    }
17
18    1 reference
19    static void SomeFunction(ref int x)
20    {
21        x=x+50;
22    }
23
24    0 references
25    static void Main(string[] args)
26    {
27        int i=100;
28        var obj=new Program();
29        obj.change(1);//value type
30        System.Console.WriteLine(i);
31        //int j; we must initialize the value otherwise it will create an error
32        int j=20;
33        SomeFunction(ref j);
34        System.Console.WriteLine(j);
35    }
36 }
```

100
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PS C:\Users\hp\Desktop\Assignment-3\value_reference>

VALUE TYPE AND REFERENCE TYPE

PARAMETERS