DAY 18 ASSIGNMENT
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Q1. What is the use of XML

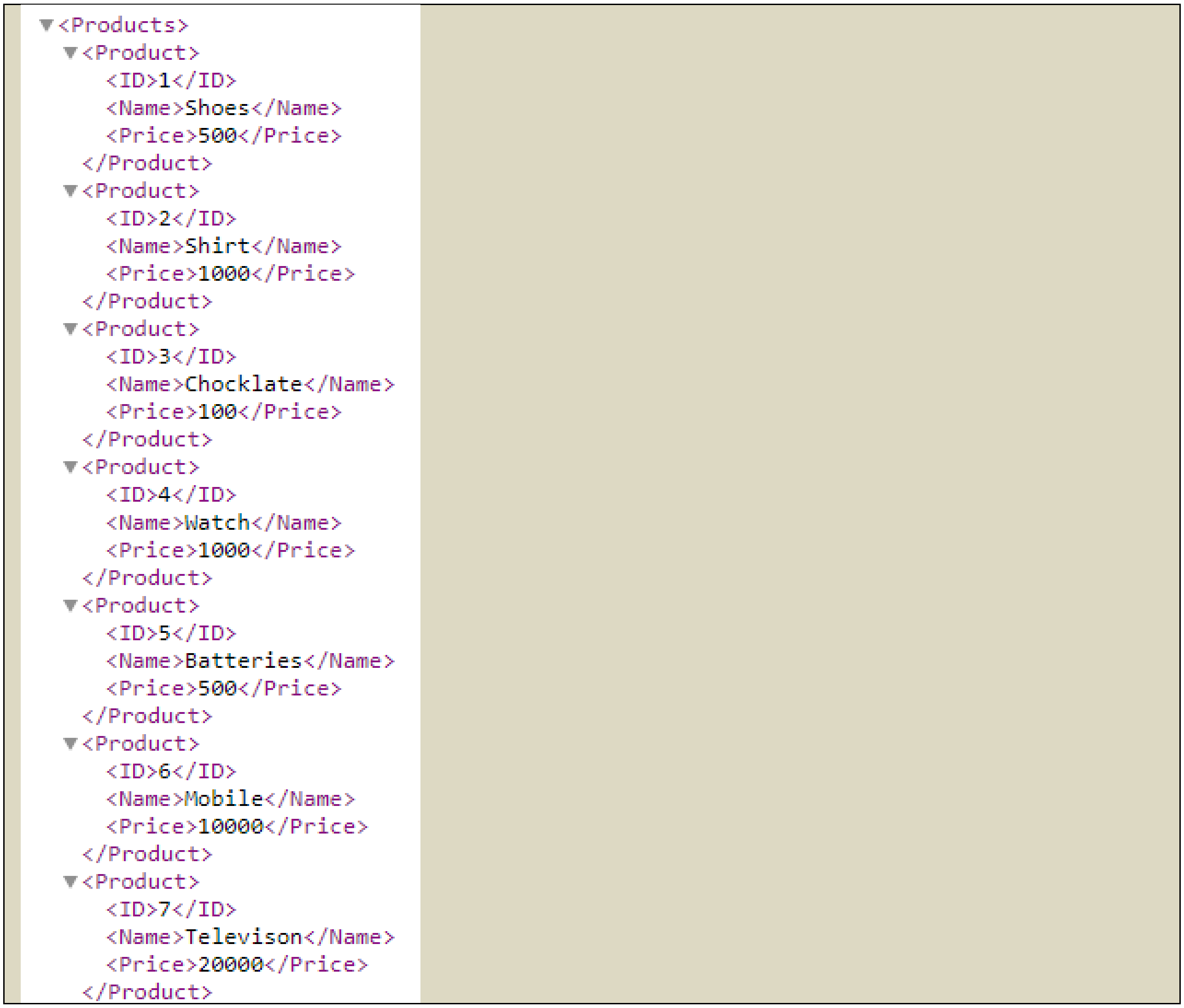
XML is used for universal data transfer mechanism to send data across different platform

Q2. Write the points discussed about xml in the class

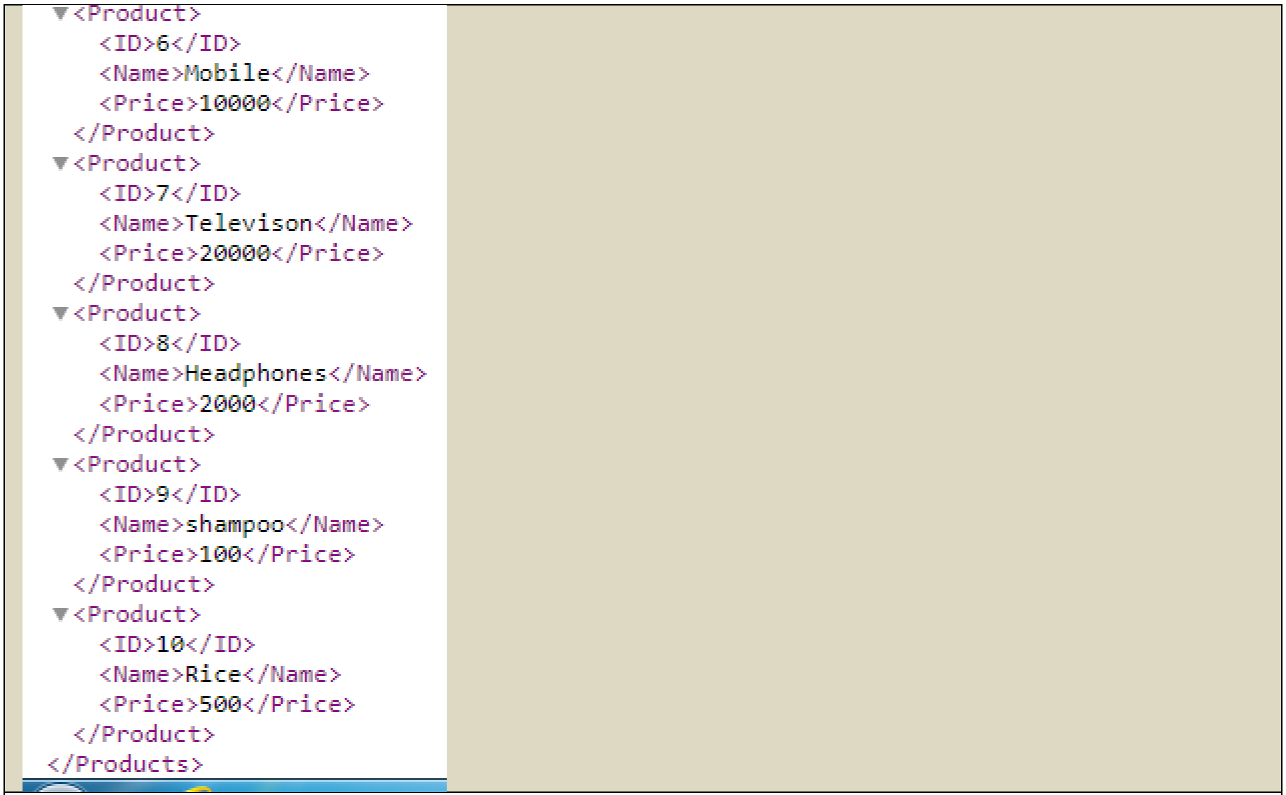
- XML stands for **Extensible Markup Language**
- XML will have user defined
- Xml is case sensitive
- It has only one route Tag
- xml is just like a text it is not a platform dependent.

Q3. Create a simple xml to illustrate:

a. Tag based xml with 10 products

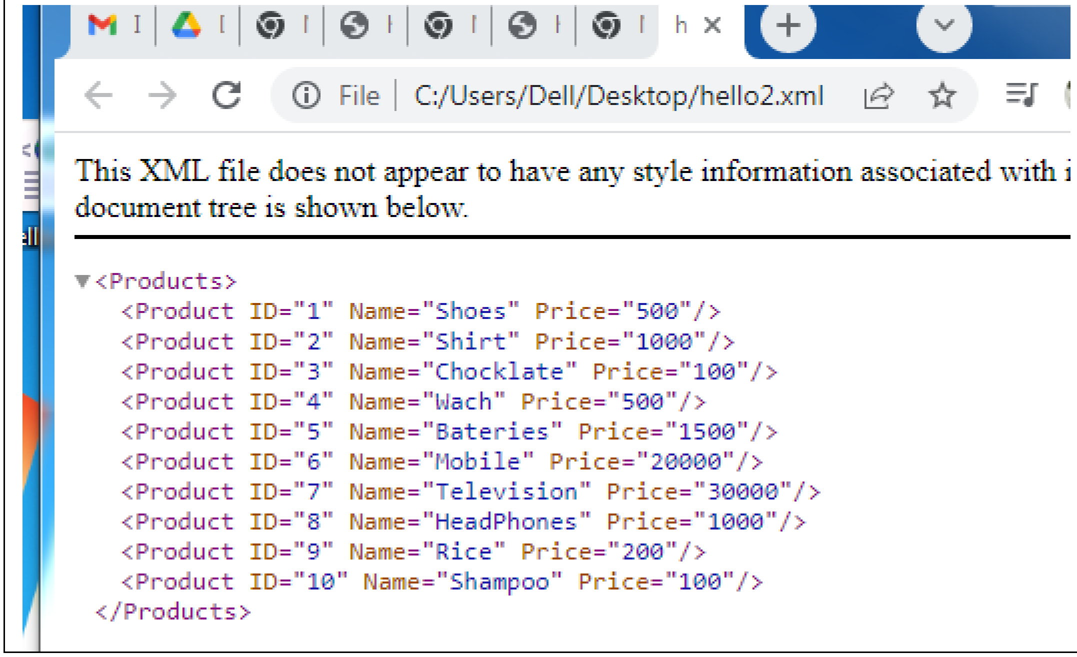


```
▼<Products>
  ▼<Product>
     <ID>1</ID>
     <Name>Shoes</Name>
     <Price>500</Price>
   </Product>
  ▼<Product>
     <ID>2</ID>
     <Name>Shirt</Name>
     <Price>1000</Price>
   </Product>
  ▼<Product>
     <ID>3</ID>
     <Name>Chocklate</Name>
     <Price>100</Price>
   </Product>
  ▼<Product>
     <ID>4</ID>
     <Name>Watch</Name>
     <Price>1000</Price>
   </Product>
  ▼<Product>
     <ID>5</ID>
     <Name>Batteries</Name>
     <Price>500</Price>
   </Product>
  ▼<Product>
     <ID>6</ID>
     <Name>Mobile</Name>
     <Price>10000</Price>
   </Product>
  ▼<Product>
     <ID>7</ID>
     <Name>Televison</Name>
     <Price>20000</Price>
   </Product>
```



```
▼<Product>
    <ID>6</ID>
    <Name>Mobile</Name>
    <Price>10000</Price>
  </Product>
▼<Product>
    <ID>7</ID>
    <Name>Televison</Name>
    <Price>20000</Price>
  </Product>
▼<Product>
    <ID>8</ID>
    <Name>Headphones</Name>
    <Price>2000</Price>
  </Product>
▼<Product>
    <ID>9</ID>
    <Name>shampoo</Name>
    <Price>100</Price>
  </Product>
▼<Product>
    <ID>10</ID>
    <Name>Rice</Name>
    <Price>500</Price>
  </Product>
</Products>
```

b. Attribute based xml



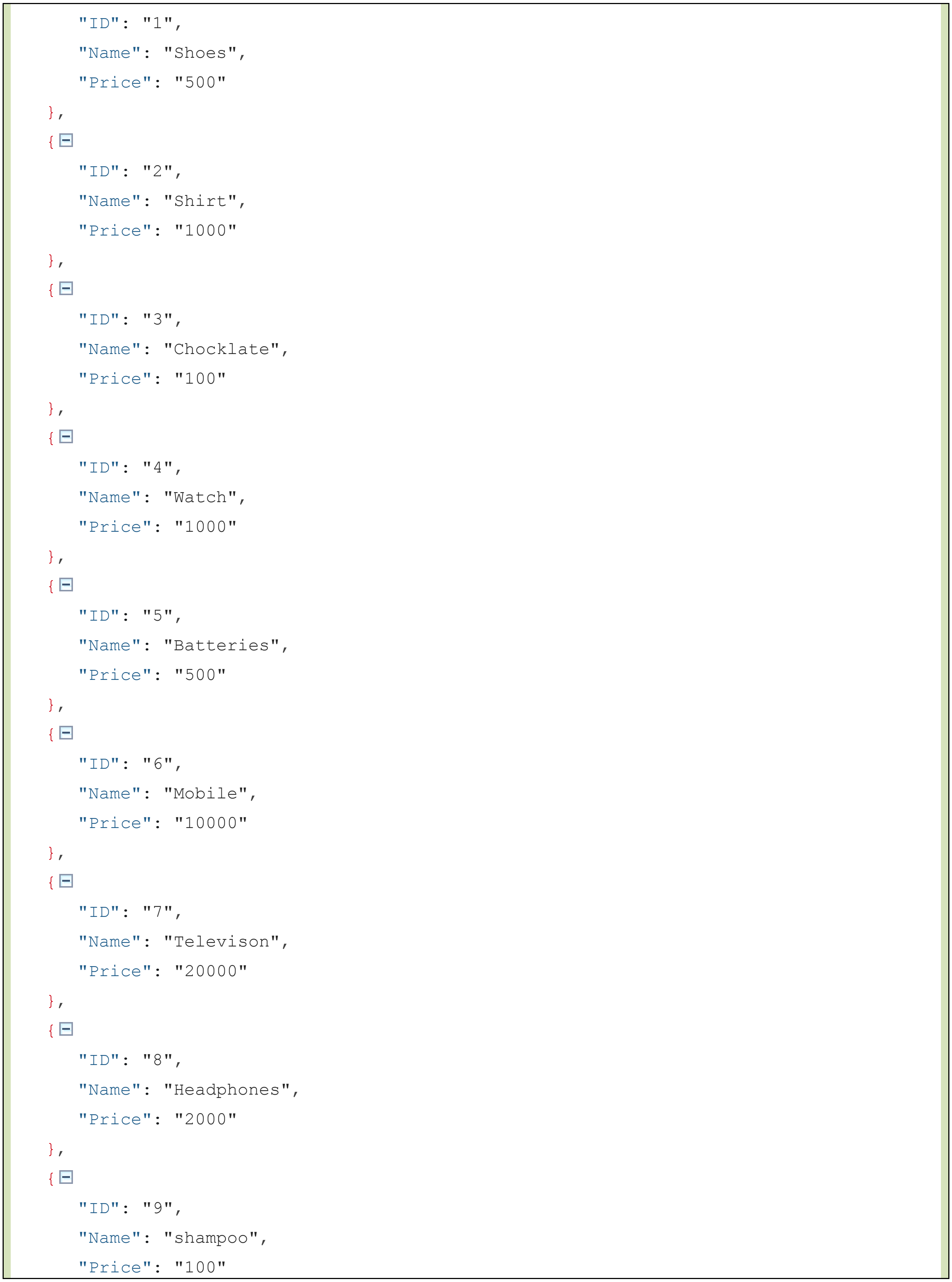
This XML file does not appear to have any style information associated with i
document tree is shown below.

```
▼<Products>
    <Product ID="1" Name="Shoes" Price="500"/>
    <Product ID="2" Name="Shirt" Price="1000"/>
    <Product ID="3" Name="Chocklate" Price="100"/>
    <Product ID="4" Name="Wach" Price="500"/>
    <Product ID="5" Name="Bateries" Price="1500"/>
    <Product ID="6" Name="Mobile" Price="20000"/>
    <Product ID="7" Name="Television" Price="30000"/>
    <Product ID="8" Name="HeadPhones" Price="1000"/>
    <Product ID="9" Name="Rice" Price="200"/>
    <Product ID="10" Name="Shampoo" Price="100"/>
  </Products>
```

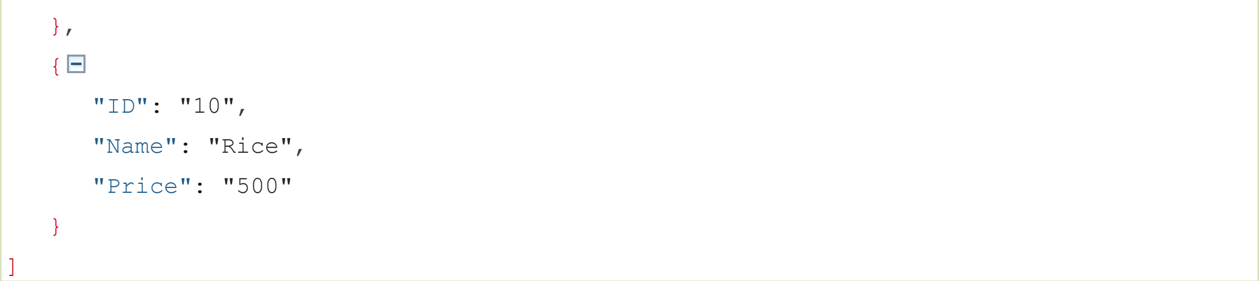
Q4. Convert the above xml to JSON and display the JSON data

XML TO JSON

```
[ ⊟
    { ⊟
```



```
        "ID": "1",
        "Name": "Shoes",
        "Price": "500"
    },
    {⊟
        "ID": "2",
        "Name": "Shirt",
        "Price": "1000"
    },
    {⊟
        "ID": "3",
        "Name": "Chocklate",
        "Price": "100"
    },
    {⊟
        "ID": "4",
        "Name": "Watch",
        "Price": "1000"
    },
    {⊟
        "ID": "5",
        "Name": "Batteries",
        "Price": "500"
    },
    {⊟
        "ID": "6",
        "Name": "Mobile",
        "Price": "10000"
    },
    {⊟
        "ID": "7",
        "Name": "Televison",
        "Price": "20000"
    },
    {⊟
        "ID": "8",
        "Name": "Headphones",
        "Price": "2000"
    },
    {⊟
        "ID": "9",
        "Name": "shampoo",
        "Price": "100"
```



```
    },
    {⊟
       "ID": "10",
       "Name": "Rice",
       "Price": "500"
    }
]
```

5. **Research and write the benefits of JSON over XML (2 or 3 points)**

- ➢ JSON is lightweight in comparison with XMX.
- ➢ JSON parses data faster than XML by using standard Javascript function. JSON is parsed into a ready-to use Javascript object.
- ➢ XML is much more difficult to parse than JSON by using XML parser.
- ➢ JSON has a beer ratio od data to markup.

Q6. **For the below requirement, create a layered architecture project with seperate class library for Business logic.**

create console application
create windows(or desktop) application

Business Requirement:

FIND FACTORIAL OF A NUMBER:

0 = 1

positive number (upto 7) = factorial answer

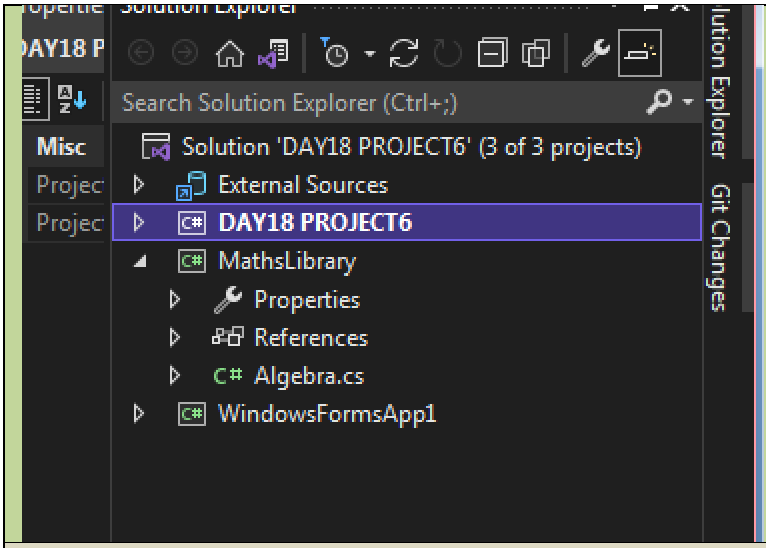
> 7 = -999 (as answer)

< 0 = -9999 (as answer)

put the screen shots of the output and project (solution explorer) screen shot

MathsLibrary:

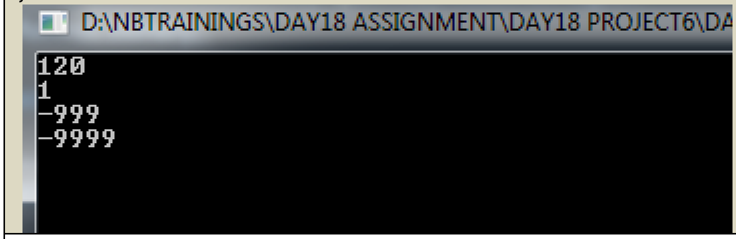
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace MathsLibrary
{
    public class Algebra
    {

      public static int  Factorial(int n)
        {
            if (n==0)
            {
                return 1;
            }
            else if (n>7)
            {
                return -999;
            }
            else if (n<0)
            {
                return -9999;
            }
            else
            {
                int fact = 1;
                for (int i = 1; i <= n; i++)

                    fact = fact * i;
                return fact;
            }

        }



    }
}
```



```
Solution 'DAY18 PROJECT6' (3 of 3 projects)
  External Sources
  DAY18 PROJECT6
  MathsLibrary
    Properties
    References
    Algebra.cs
  WindowsFormsApp1
```

Console App:

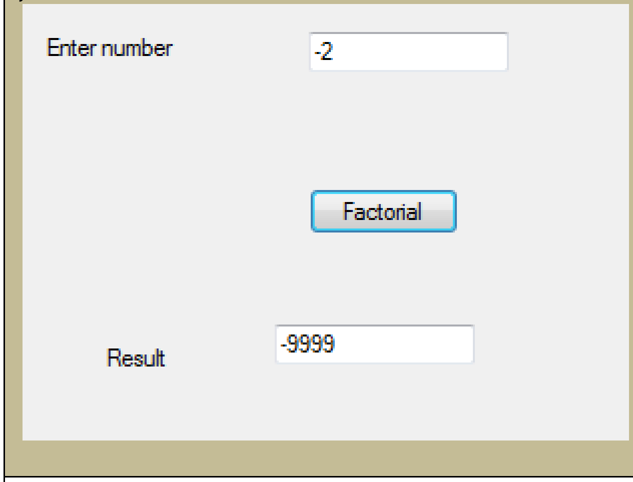
```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using MathsLibrary;

namespace DAY18_PROJECT6
{
    public class Program
    {
        static void Main(string[] args)
        {
            Console.WriteLine(Algebra.Factorial(5));
            Console.WriteLine(Algebra.Factorial(0));
            Console.WriteLine( Algebra.Factorial(8));
            Console.WriteLine(Algebra.Factorial(-5));

            Console.ReadLine();
        }
    }
}
```



```
120
1
-999
-9999
```

DesktopApp:

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Linq;
using System.Text;
using System.Threading.Tasks;
using System.Windows.Forms;
using MathsLibrary;

namespace WindowsFormsApp1
{
    public partial class Form1 : Form
    {
        public Form1()
        {
            InitializeComponent();
        }

        private void button1_Click(object sender, EventArgs e)
        {
            int n = Convert.ToInt32(textBox1.Text);
            int result =Algebra.Factorial(n);
            textBox2.Text = result.ToString();
        }
    }
}
```



Enter number -2

Result -9999

Q7 For. the above method, Implement TDD and write 4 test cases and put the code in word document. put the screen shot of all test cases failing.

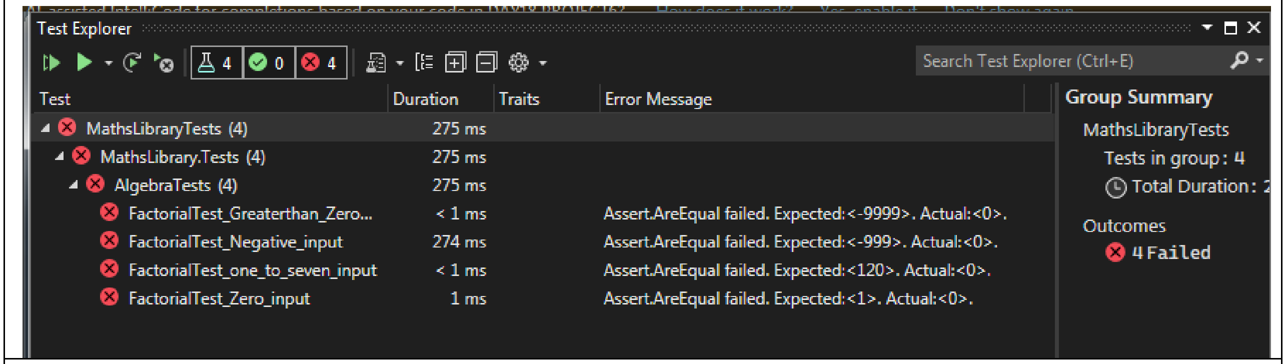
make the test cases pass.

put the screen shot

CODE:

```
using Microsoft.VisualStudio.TestTools.UnitTesting;
using MathsLibrary;
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace MathsLibrary.Tests
{
    [TestClass()]
    public class AlgebraTests
    {
        [TestMethod()]
        public void FactorialTest_Zero_input()
        {
            //Arrange
            int n = 0;
            int expected = 1;

            //Act

            int actual = Algebra.Factorial(n);

            //Assert
            Assert.AreEqual(expected, actual);
        }
        [TestMethod()]
        public void FactorialTest_one_to_seven_input()
        {
            //Arrange
            int n = 5;
            int expected = 120;

            //Act

            int actual = Algebra.Factorial(n);

            //Assert
            Assert.AreEqual(expected, actual);
        }
        [TestMethod()]
        public void FactorialTest_Negative_input()
        {
            //Arrange
            int n = -3;
            int expected = -9999;

            //Act

            int actual = Algebra.Factorial(n);
            //Assert
            Assert.AreEqual(expected, actual);
        }
        [TestMethod()]
        public void FactorialTest_Greaterthan_seven_input()
        {
            //Arrange
            int n = 8;
            int expected = -999;

            //Act

            int actual = Algebra.Factorial(n);

            //Assert
            Assert.AreEqual(expected, actual);

        }
    }
}
```

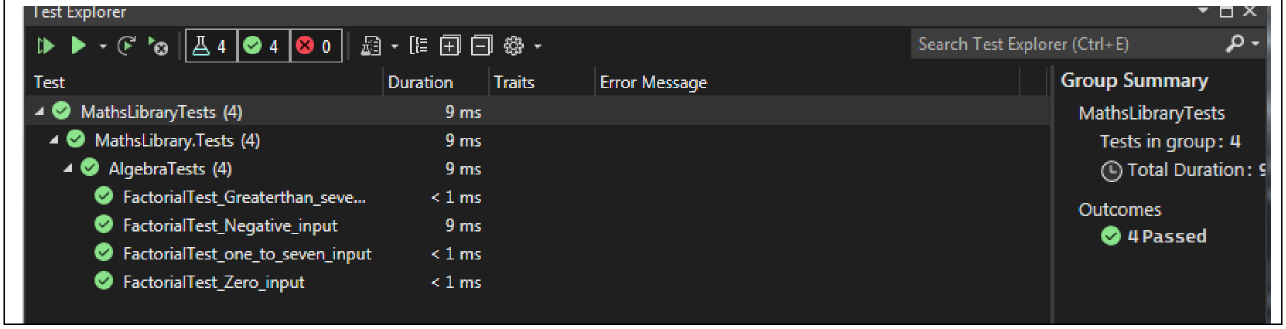
TESTCASES FAILED:



Test	Duration	Traits	Error Message
MathsLibraryTests (4)	275 ms		
MathsLibrary.Tests (4)	275 ms		
AlgebraTests (4)	275 ms		
FactorialTest_Greaterthan_Zero...	< 1 ms		Assert.AreEqual failed. Expected:<-9999>. Actual:<0>.
FactorialTest_Negative_input	274 ms		Assert.AreEqual failed. Expected:<-999>. Actual:<0>.
FactorialTest_one_to_seven_input	< 1 ms		Assert.AreEqual failed. Expected:<120>. Actual:<0>.
FactorialTest_Zero_input	1 ms		Assert.AreEqual failed. Expected:<1>. Actual:<0>.

Group Summary
MathsLibraryTests
Tests in group: 4
Total Duration: 2
Outcomes
4 Failed

TESTCASES PASS:



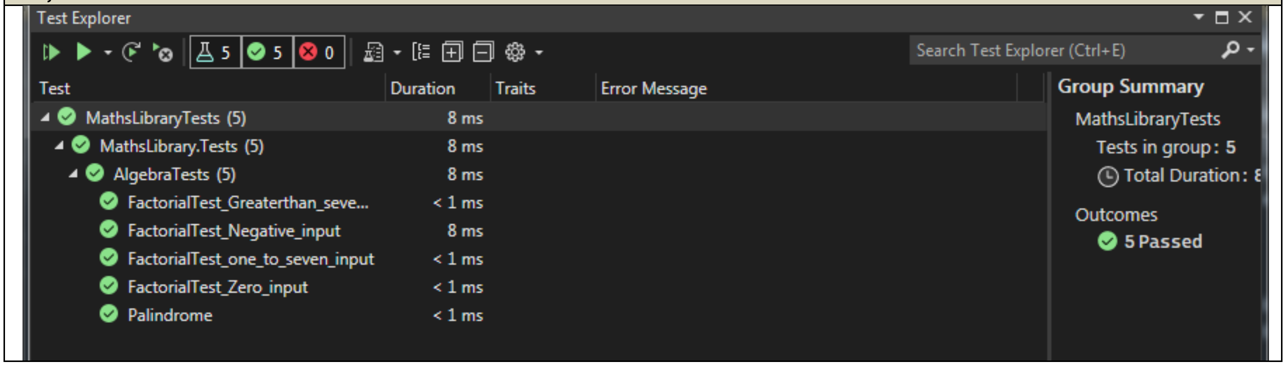
Test	Duration	Traits	Error Message
MathsLibraryTests (4)	9 ms		
MathsLibrary.Tests (4)	9 ms		
AlgebraTests (4)	9 ms		
FactorialTest_Greaterthan_seve...	< 1 ms		
FactorialTest_Negative_input	9 ms		
FactorialTest_one_to_seven_input	< 1 ms		
FactorialTest_Zero_input	< 1 ms		

Group Summary
MathsLibraryTests
Tests in group: 4
Total Duration: 9
Outcomes
4 Passed

Q8. Add one more method to check if the number is palindrome
or not in the above Algebra class and write
test case for the same.

CODE:

```
using Microsoft.VisualStudio.TestTools.UnitTesting;
using MathsLibrary;
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Threading.Tasks;

namespace MathsLibrary.Tests
{
    [TestClass()]
    public class AlgebraTests
    {

        [TestMethod()]
        public void Palindrome()
        {
            //Arrange
            int n = 121;
            string expected = "Palindrome";

            //Act

            string actual = Algebra.Palindrome(121);

            //Assert
            Assert.AreEqual(expected, actual);
        }

    }
    }
```



```
MathsLibraryTests (5)                      8 ms
  MathsLibrary.Tests (5)                   8 ms
    AlgebraTests (5)                       8 ms
      FactorialTest_Greaterthan_seve...  < 1 ms
      FactorialTest_Negative_input         8 ms
      FactorialTest_one_to_seven_input   < 1 ms
      FactorialTest_Zero_input           < 1 ms
      Palindrome                         < 1 ms
```

```
Group Summary
  MathsLibraryTests
    Tests in group: 5
    Total Duration: 8
  Outcomes
    5 Passed
```