DAY18 ASSIGNMENT

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NB HAELHCARE TECHNOLOGIES

1. What is the use of XML?

- XML used for universal data transfer mechanism to send data across different platforms.
- XML uses human language, but not computer language. XML is usable and understandable.
- XML is extendable.
- XML uses user defined tags.

2. Write the points discussed about xml in the class.

- XML stands for Extensible Markup Language.
- XML uses user defined tags.
- XML can have only one root tag.
- XML used for universal data transfer mechanism to send data across
- different platforms.
- Types of XML
    1. Tag based XML
    2. Attribute based XML

3. Create a simple xml to illustrate:
a. Tag based xml with 10 products
b. Attribute based xml

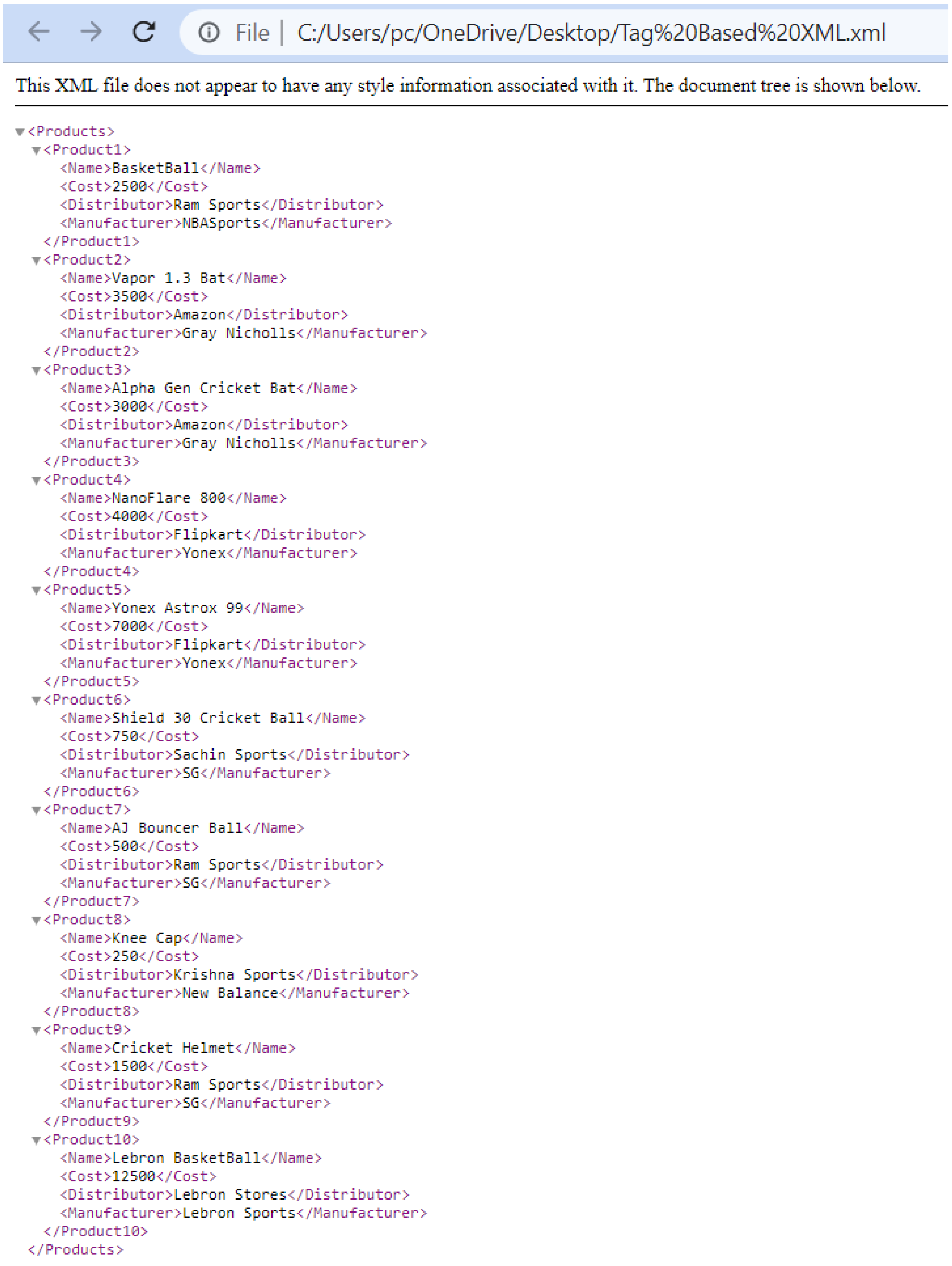
<u>Tag based XML:</u>

```
<Products>
  <Product1>
    <Name>BasketBall</Name>
    <Cost>2500</Cost>
    <Distributor>Ram Sports</Distributor>
    <Manufacturer>NBASports</Manufacturer>
  </Product1>
  <Product2>
```

```xml
    <Name>Vapor 1.3 Bat</Name>
    <Cost>3500</Cost>
    <Distributor>Amazon</Distributor>
    <Manufacturer>Gray Nicholls</Manufacturer>
</Product2>
<Product3>
    <Name>Alpha Gen Cricket Bat</Name>
    <Cost>3000</Cost>
    <Distributor>Amazon</Distributor>
    <Manufacturer>Gray Nicholls</Manufacturer>
</Product3>
<Product4>
    <Name>NanoFlare 800</Name>
    <Cost>4000</Cost>
    <Distributor>Flipkart</Distributor>
    <Manufacturer>Yonex</Manufacturer>
</Product4>
<Product5>
    <Name>Yonex Astrox 99</Name>
    <Cost>7000</Cost>
    <Distributor>Flipkart</Distributor>
    <Manufacturer>Yonex</Manufacturer>
</Product5>
<Product6>
    <Name>Shield 30 Cricket Ball</Name>
    <Cost>750</Cost>
    <Distributor>Sachin Sports</Distributor>
    <Manufacturer>SG</Manufacturer>
</Product6>
<Product7>
    <Name>AJ Bouncer Ball</Name>
    <Cost>500</Cost>
    <Distributor>Ram Sports</Distributor>
    <Manufacturer>SG</Manufacturer>
</Product7>
<Product8>
    <Name>Knee Cap</Name>
    <Cost>250</Cost>
    <Distributor>Krishna Sports</Distributor>
    <Manufacturer>New Balance</Manufacturer>
</Product8>
<Product9>
    <Name>Cricket Helmet</Name>
    <Cost>1500</Cost>
    <Distributor>Ram Sports</Distributor>
    <Manufacturer>SG</Manufacturer>
</Product9>
<Product10>
    <Name>Lebron BasketBall</Name>
    <Cost>12500</Cost>
    <Distributor>Lebron Stores</Distributor>
    <Manufacturer>Lebron Sports</Manufacturer>
```

```
  </Product10>
</Products>
```

Output:



C:/Users/pc/OneDrive/Desktop/Tag%20Based%20XML.xml

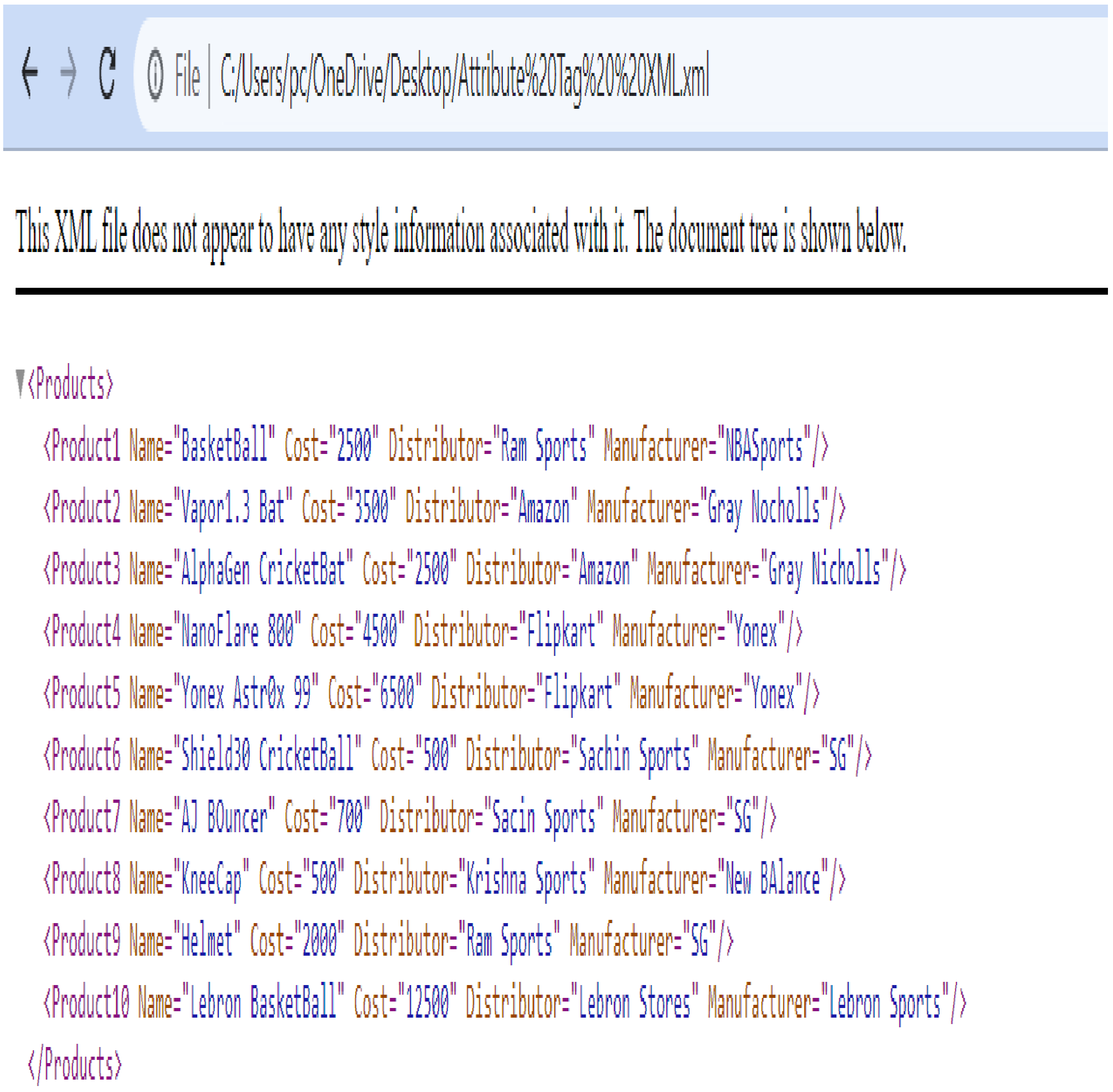
This XML file does not appear to have any style information associated with it. The document tree is shown below.

```
▼<Products>
  ▼<Product1>
     <Name>BasketBall</Name>
     <Cost>2500</Cost>
     <Distributor>Ram Sports</Distributor>
     <Manufacturer>NBASports</Manufacturer>
   </Product1>
  ▼<Product2>
     <Name>Vapor 1.3 Bat</Name>
     <Cost>3500</Cost>
     <Distributor>Amazon</Distributor>
     <Manufacturer>Gray Nicholls</Manufacturer>
   </Product2>
  ▼<Product3>
     <Name>Alpha Gen Cricket Bat</Name>
     <Cost>3000</Cost>
     <Distributor>Amazon</Distributor>
     <Manufacturer>Gray Nicholls</Manufacturer>
   </Product3>
  ▼<Product4>
     <Name>NanoFlare 800</Name>
     <Cost>4000</Cost>
     <Distributor>Flipkart</Distributor>
     <Manufacturer>Yonex</Manufacturer>
   </Product4>
  ▼<Product5>
     <Name>Yonex Astrox 99</Name>
     <Cost>7000</Cost>
     <Distributor>Flipkart</Distributor>
     <Manufacturer>Yonex</Manufacturer>
   </Product5>
  ▼<Product6>
     <Name>Shield 30 Cricket Ball</Name>
     <Cost>750</Cost>
     <Distributor>Sachin Sports</Distributor>
     <Manufacturer>SG</Manufacturer>
   </Product6>
  ▼<Product7>
     <Name>AJ Bouncer Ball</Name>
     <Cost>500</Cost>
     <Distributor>Ram Sports</Distributor>
     <Manufacturer>SG</Manufacturer>
   </Product7>
  ▼<Product8>
     <Name>Knee Cap</Name>
     <Cost>250</Cost>
     <Distributor>Krishna Sports</Distributor>
     <Manufacturer>New Balance</Manufacturer>
   </Product8>
  ▼<Product9>
     <Name>Cricket Helmet</Name>
     <Cost>1500</Cost>
     <Distributor>Ram Sports</Distributor>
     <Manufacturer>SG</Manufacturer>
   </Product9>
  ▼<Product10>
     <Name>Lebron BasketBall</Name>
     <Cost>12500</Cost>
     <Distributor>Lebron Stores</Distributor>
     <Manufacturer>Lebron Sports</Manufacturer>
   </Product10>
 </Products>
```

Attribute Based Tag:

```xml
<Products>
        <Product1    Name="BasketBall"            Cost="2500"    Distributor="Ram
Sports"      Manufacturer="NBASports"/>
        <Product2    Name="Vapor1.3 Bat"           Cost="3500"
Distributor="Amazon"          Manufacturer="Gray Nocholls"/>
        <Product3    Name="AlphaGen CricketBat"     Cost="2500"
Distributor="Amazon"          Manufacturer="Gray Nicholls"/>
        <Product4    Name="NanoFlare 800"          Cost="4500"
Distributor="Flipkart"        Manufacturer="Yonex"/>
        <Product5    Name="Yonex Astr0x 99"        Cost="6500"
Distributor="Flipkart"        Manufacturer="Yonex"/>
        <Product6    Name="Shield30 CricketBall"    Cost="500"
Distributor="Sachin Sports"    Manufacturer="SG"/>
        <Product7    Name="AJ BOuncer"            Cost="700"     Distributor="Sacin
Sports"     Manufacturer="SG"/>
        <Product8    Name="KneeCap"               Cost="500"
Distributor="Krishna Sports"   Manufacturer="New BAlance"/>
        <Product9    Name="Helmet"                Cost="2000"    Distributor="Ram
Sports"      Manufacturer="SG"/>
        <Product10   Name="Lebron BasketBall"      Cost="12500"
Distributor="Lebron Stores"    Manufacturer="Lebron Sports"/>
</Products>
```

Output:



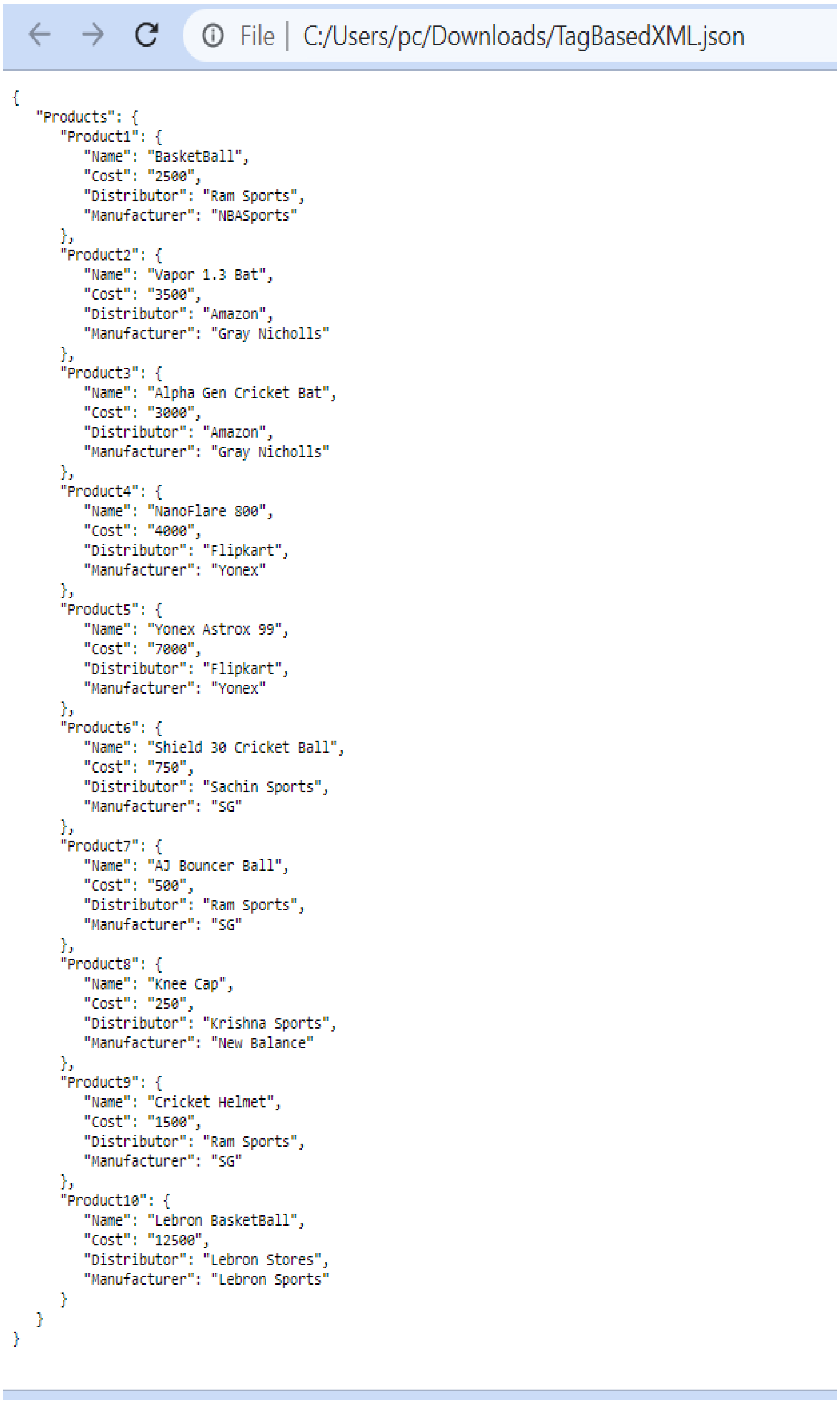
```
File | C:/Users/pc/OneDrive/Desktop/Attribute%20Tag%20%20XML.xml
```

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

```
▼<Products>
   <Product1 Name="BasketBall" Cost="2500" Distributor="Ram Sports" Manufacturer="NBASports"/>
   <Product2 Name="Vapor1.3 Bat" Cost="3500" Distributor="Amazon" Manufacturer="Gray Nocholls"/>
   <Product3 Name="AlphaGen CricketBat" Cost="2500" Distributor="Amazon" Manufacturer="Gray Nicholls"/>
   <Product4 Name="NanoFlare 800" Cost="4500" Distributor="Flipkart" Manufacturer="Yonex"/>
   <Product5 Name="Yonex Astr0x 99" Cost="6500" Distributor="Flipkart" Manufacturer="Yonex"/>
   <Product6 Name="Shield30 CricketBall" Cost="500" Distributor="Sachin Sports" Manufacturer="SG"/>
   <Product7 Name="AJ BOuncer" Cost="700" Distributor="Sacin Sports" Manufacturer="SG"/>
   <Product8 Name="KneeCap" Cost="500" Distributor="Krishna Sports" Manufacturer="New BAlance"/>
   <Product9 Name="Helmet" Cost="2000" Distributor="Ram Sports" Manufacturer="SG"/>
   <Product10 Name="Lebron BasketBall" Cost="12500" Distributor="Lebron Stores" Manufacturer="Lebron Sports"/>
 </Products>
```

```
4. Convert the above xml to JSON and display the JSON data.
```

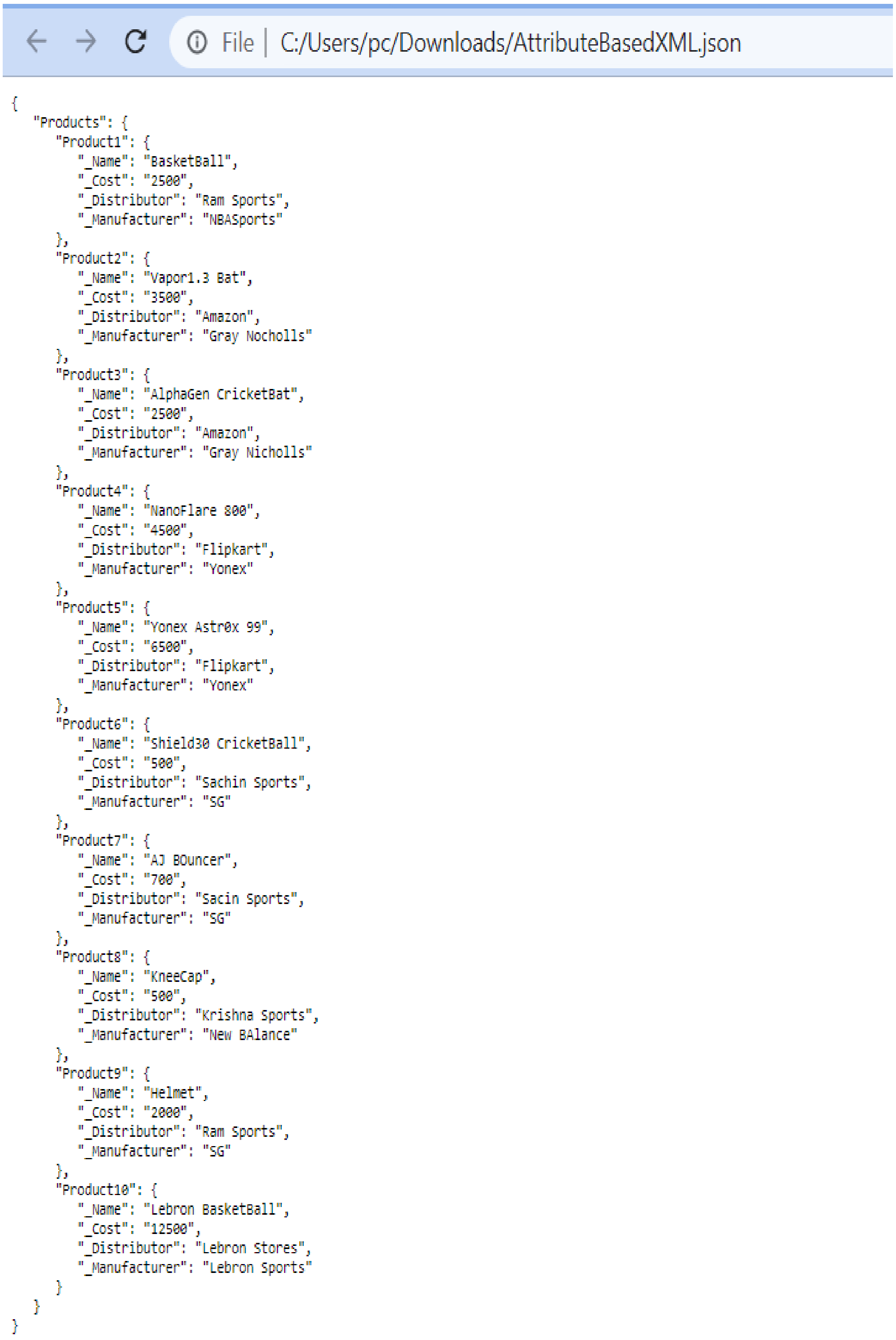
Tag Based XML to JSON:



File | C:/Users/pc/Downloads/TagBasedXML.json

```
{
   "Products": {
      "Product1": {
         "Name": "BasketBall",
         "Cost": "2500",
         "Distributor": "Ram Sports",
         "Manufacturer": "NBASports"
      },
      "Product2": {
         "Name": "Vapor 1.3 Bat",
         "Cost": "3500",
         "Distributor": "Amazon",
         "Manufacturer": "Gray Nicholls"
      },
      "Product3": {
         "Name": "Alpha Gen Cricket Bat",
         "Cost": "3000",
         "Distributor": "Amazon",
         "Manufacturer": "Gray Nicholls"
      },
      "Product4": {
         "Name": "NanoFlare 800",
         "Cost": "4000",
         "Distributor": "Flipkart",
         "Manufacturer": "Yonex"
      },
      "Product5": {
         "Name": "Yonex Astrox 99",
         "Cost": "7000",
         "Distributor": "Flipkart",
         "Manufacturer": "Yonex"
      },
      "Product6": {
         "Name": "Shield 30 Cricket Ball",
         "Cost": "750",
         "Distributor": "Sachin Sports",
         "Manufacturer": "SG"
      },
      "Product7": {
         "Name": "AJ Bouncer Ball",
         "Cost": "500",
         "Distributor": "Ram Sports",
         "Manufacturer": "SG"
      },
      "Product8": {
         "Name": "Knee Cap",
         "Cost": "250",
         "Distributor": "Krishna Sports",
         "Manufacturer": "New Balance"
      },
      "Product9": {
         "Name": "Cricket Helmet",
         "Cost": "1500",
         "Distributor": "Ram Sports",
         "Manufacturer": "SG"
      },
      "Product10": {
         "Name": "Lebron BasketBall",
         "Cost": "12500",
         "Distributor": "Lebron Stores",
         "Manufacturer": "Lebron Sports"
      }
   }
}
```

Attribute Based XML to JSON:



```
{
   "Products": {
      "Product1": {
         "_Name": "BasketBall",
         "_Cost": "2500",
         "_Distributor": "Ram Sports",
         "_Manufacturer": "NBASports"
      },
      "Product2": {
         "_Name": "Vapor1.3 Bat",
         "_Cost": "3500",
         "_Distributor": "Amazon",
         "_Manufacturer": "Gray Nocholls"
      },
      "Product3": {
         "_Name": "AlphaGen CricketBat",
         "_Cost": "2500",
         "_Distributor": "Amazon",
         "_Manufacturer": "Gray Nicholls"
      },
      "Product4": {
         "_Name": "NanoFlare 800",
         "_Cost": "4500",
         "_Distributor": "Flipkart",
         "_Manufacturer": "Yonex"
      },
      "Product5": {
         "_Name": "Yonex Astr0x 99",
         "_Cost": "6500",
         "_Distributor": "Flipkart",
         "_Manufacturer": "Yonex"
      },
      "Product6": {
         "_Name": "Shield30 CricketBall",
         "_Cost": "500",
         "_Distributor": "Sachin Sports",
         "_Manufacturer": "SG"
      },
      "Product7": {
         "_Name": "AJ BOuncer",
         "_Cost": "700",
         "_Distributor": "Sacin Sports",
         "_Manufacturer": "SG"
      },
      "Product8": {
         "_Name": "KneeCap",
         "_Cost": "500",
         "_Distributor": "Krishna Sports",
         "_Manufacturer": "New BAlance"
      },
      "Product9": {
         "_Name": "Helmet",
         "_Cost": "2000",
         "_Distributor": "Ram Sports",
         "_Manufacturer": "SG"
      },
      "Product10": {
         "_Name": "Lebron BasketBall",
         "_Cost": "12500",
         "_Distributor": "Lebron Stores",
         "_Manufacturer": "Lebron Sports"
      }
   }
}
```

```
5. Research and write the benefits of JSON over XML.
```

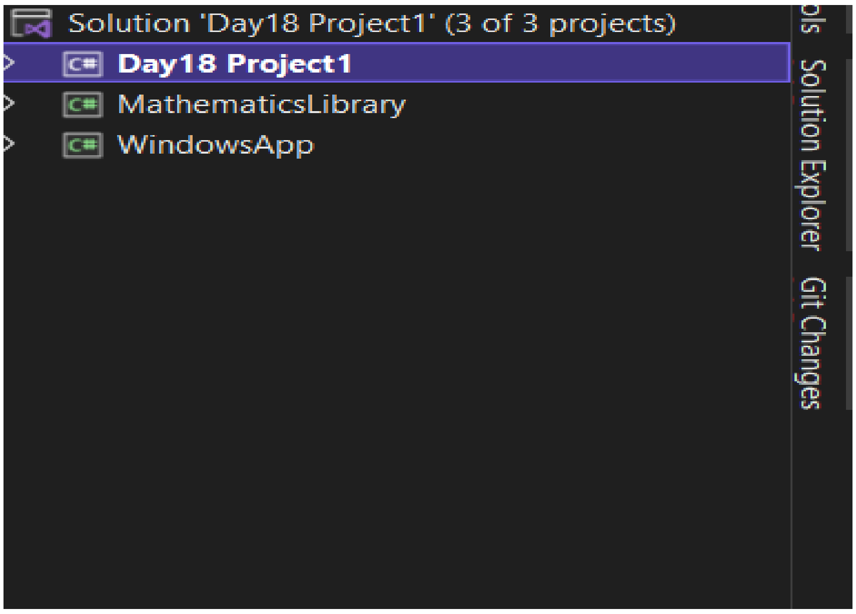
- JSON takes less memory.
- JSON requires less tags than XML.
- JSON is easier to read than the XML.
- JSON is simple text. This fact makes it suitable and safe for transferring across platforms and operating systems that do not readily share more complex document types. As text, JSON can also be readily displayed and edited in simple editors.
- JSON is compact. An average JSON string is about two thirds of the size of the same data in XML.

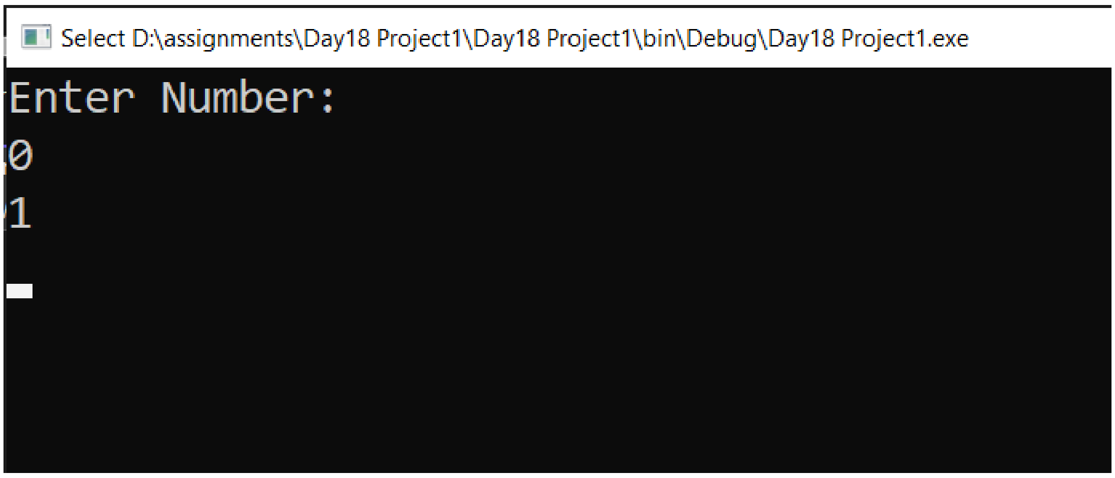
```
6. For the below requirement, create a layered architecture project
with separate class library for Business logic.

   create console application
   create windows (or desktop) application

   Business Requirement:

   FIND FACTORIAL OF A NUMBER:

       0 = 1

       positive number (up to 7) = factorial answer

       > 7 = -999 (as answer)

       < 0 = -9999 (as answer)

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

Code:

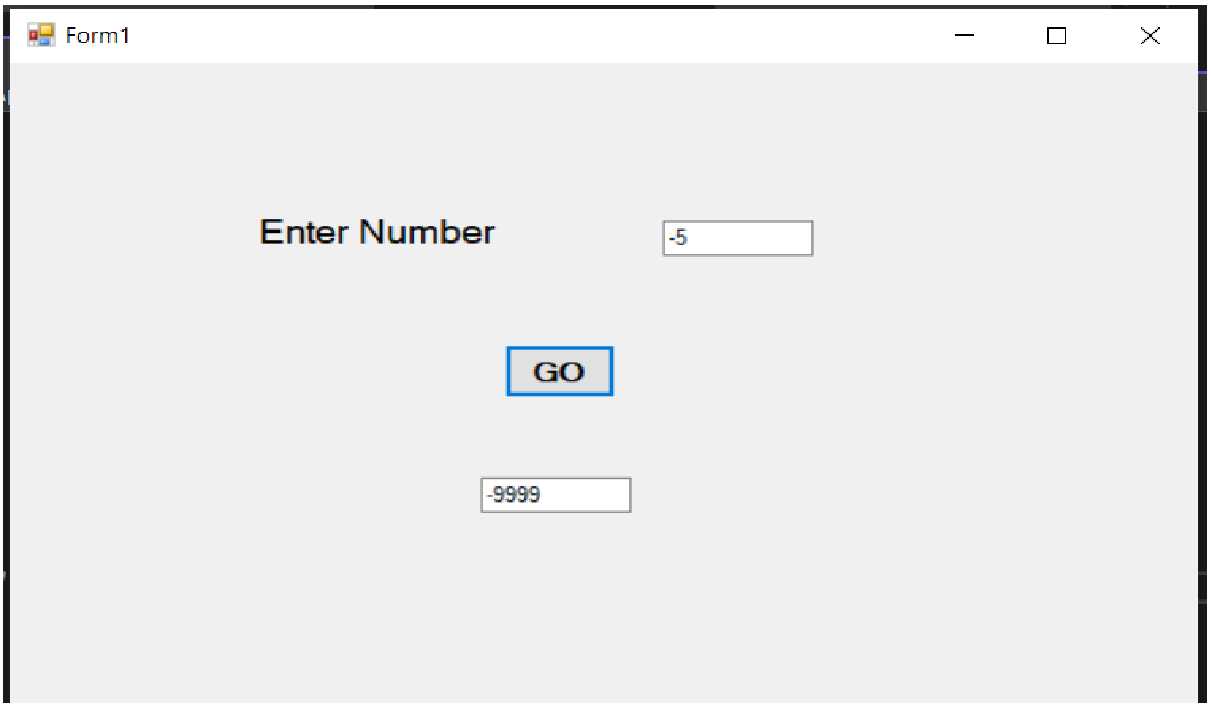
```
namespace MathematicsLibrary
{
    public class Algebra
    {
        public static int Factorial(int n)
        {
            int fact = 1;
            if (n == 0)
                return 1;
            else if (n > 7)
                return -999;
            else if (n < 0)
                return -9999;
            else
                for (int i = 1; i <= n; i++)
                    fact *= i;
            return fact;


        }
    }
}

using MathematicsLibrary;

namespace Day18_Project1
{
    internal class Program
    {
        static void Main(string[] args)
        {
            int n;
            Console.WriteLine("Enter Number: ");
            n=Convert.ToInt32(Console.ReadLine());
            Console.WriteLine(Algebra.Factorial(n));

            Console.ReadLine();
        }
    }
}
using MathematicsLibrary;

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

        private void label1_Click(object sender, EventArgs e)
        {

        }

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

Output:




Select D:\assignments\Day18 Project1\Day18 Project1\bin\Debug\Day18 Project1.exe

```
Enter Number:
0
1
```

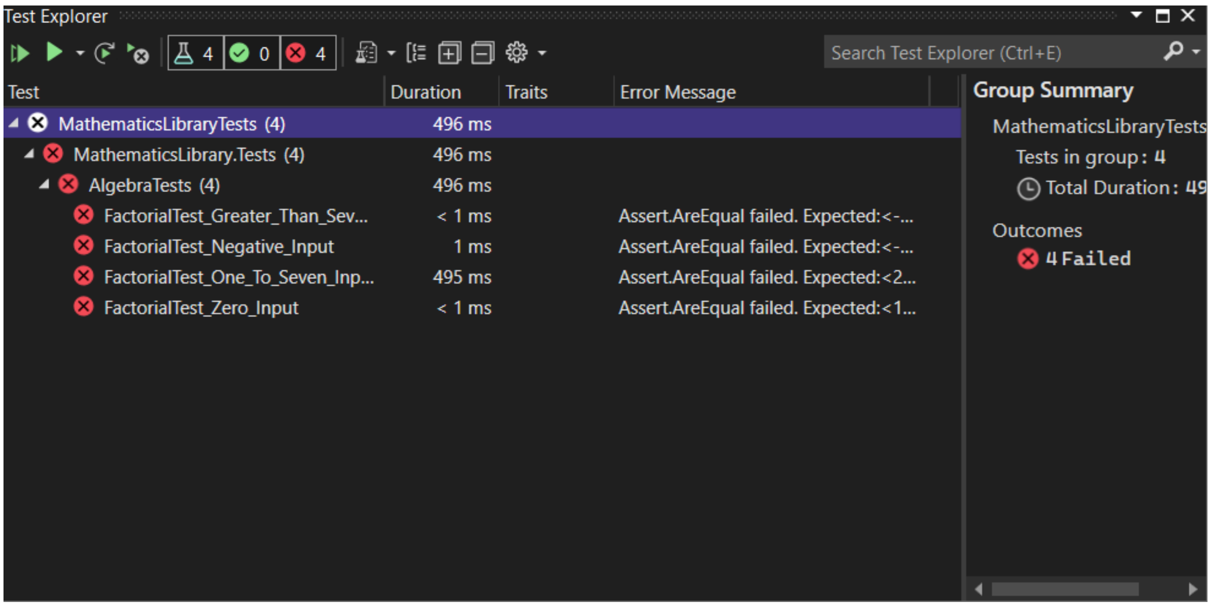


```
7. For the above method, Implement TDD
   and write 4 test cases and put the code in word document.
   put the screen shot of all test cases failing.

   make the test cases pass.

   put the screen shot.
```

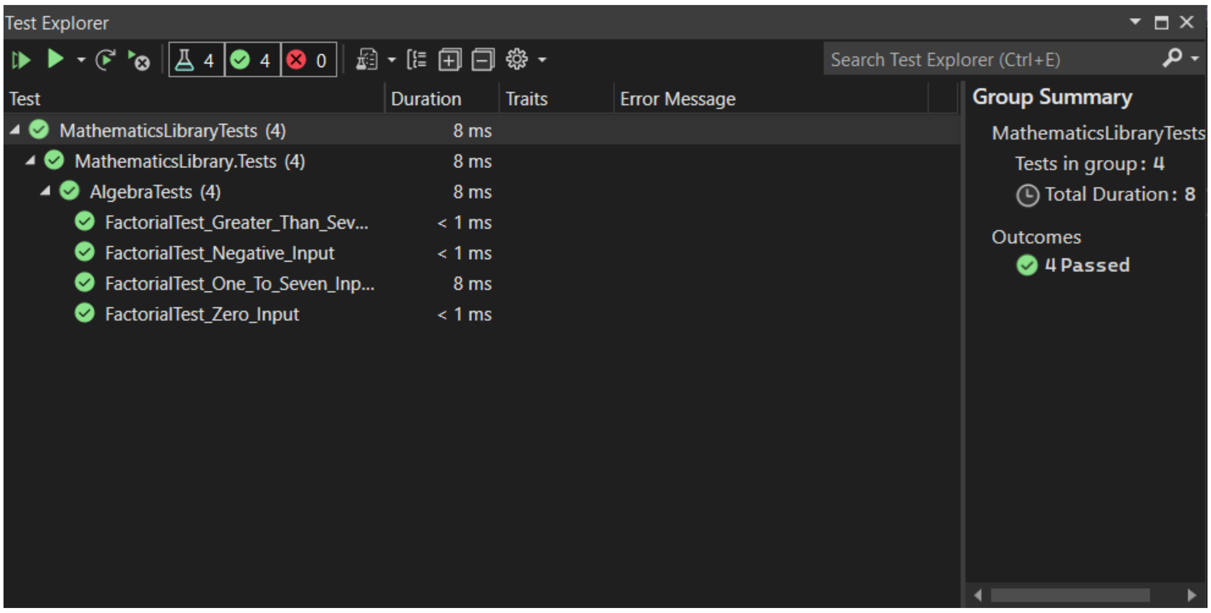
Code:

```
namespace MathematicsLibrary.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 = 4;
            int expected = 24;


            //Act
            int actual = Algebra.Factorial(n);

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

        [TestMethod()]
        public void FactorialTest_Negative_Input()
        {
            //Arrange
            int n = -5;
            int expected = -9999;


            //Act
            int actual = Algebra.Factorial(n);

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

        [TestMethod()]
        public void FactorialTest_Greater_Than_Seven_Input()
        {
            //Arrange
            int n = 9;
            int expected = -999;

            //Act
            int actual = Algebra.Factorial(n);


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

Output:



```
Test Explorer
4  0  4                                          Search Test Explorer (Ctrl+E)
Test                                 Duration   Traits   Error Message                          Group Summary
MathematicsLibraryTests (4)           496 ms                                                     MathematicsLibraryTests
  MathematicsLibrary.Tests (4)        496 ms                                                       Tests in group: 4
    AlgebraTests (4)                  496 ms                                                       Total Duration: 49
      FactorialTest_Greater_Than_Sev... < 1 ms              Assert.AreEqual failed. Expected:<-...  Outcomes
      FactorialTest_Negative_Input        1 ms              Assert.AreEqual failed. Expected:<-...    4 Failed
      FactorialTest_One_To_Seven_Inp... 495 ms              Assert.AreEqual failed. Expected:<2...
      FactorialTest_Zero_Input          < 1 ms              Assert.AreEqual failed. Expected:<1...
```



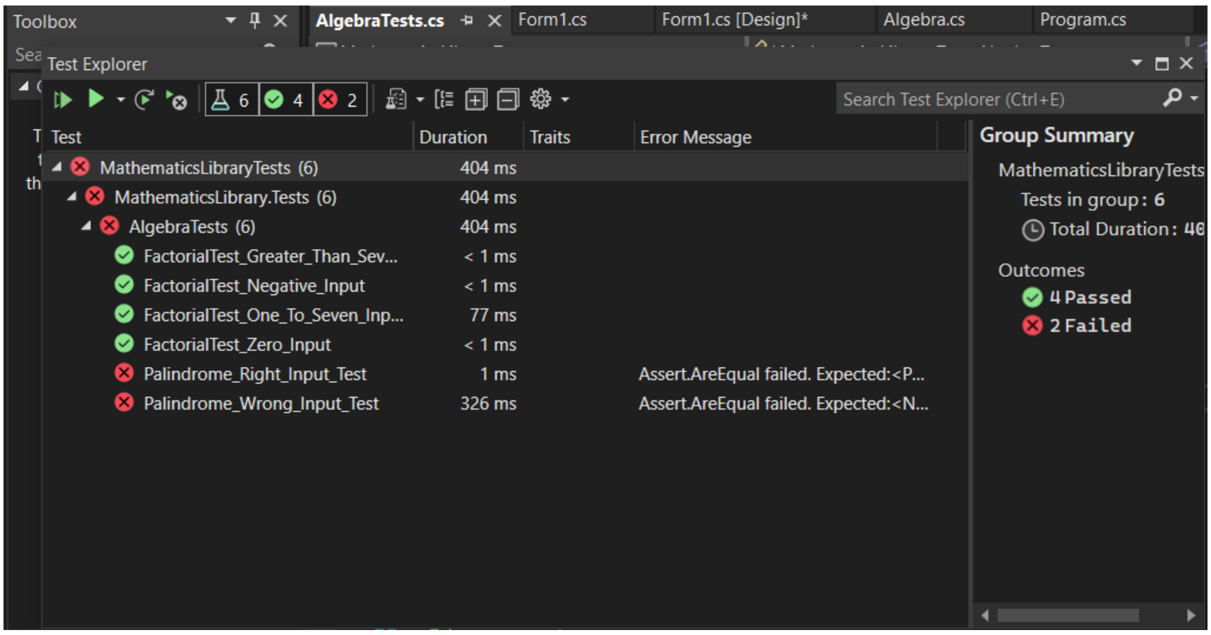
```
Test Explorer
4  4  0                                          Search Test Explorer (Ctrl+E)
Test                                 Duration   Traits   Error Message                          Group Summary
MathematicsLibraryTests (4)             8 ms                                                     MathematicsLibraryTests
  MathematicsLibrary.Tests (4)          8 ms                                                       Tests in group: 4
    AlgebraTests (4)                    8 ms                                                       Total Duration: 8
      FactorialTest_Greater_Than_Sev... < 1 ms                                                   Outcomes
      FactorialTest_Negative_Input      < 1 ms                                                     4 Passed
      FactorialTest_One_To_Seven_Inp...   8 ms
      FactorialTest_Zero_Input          < 1 ms
```

8. 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.

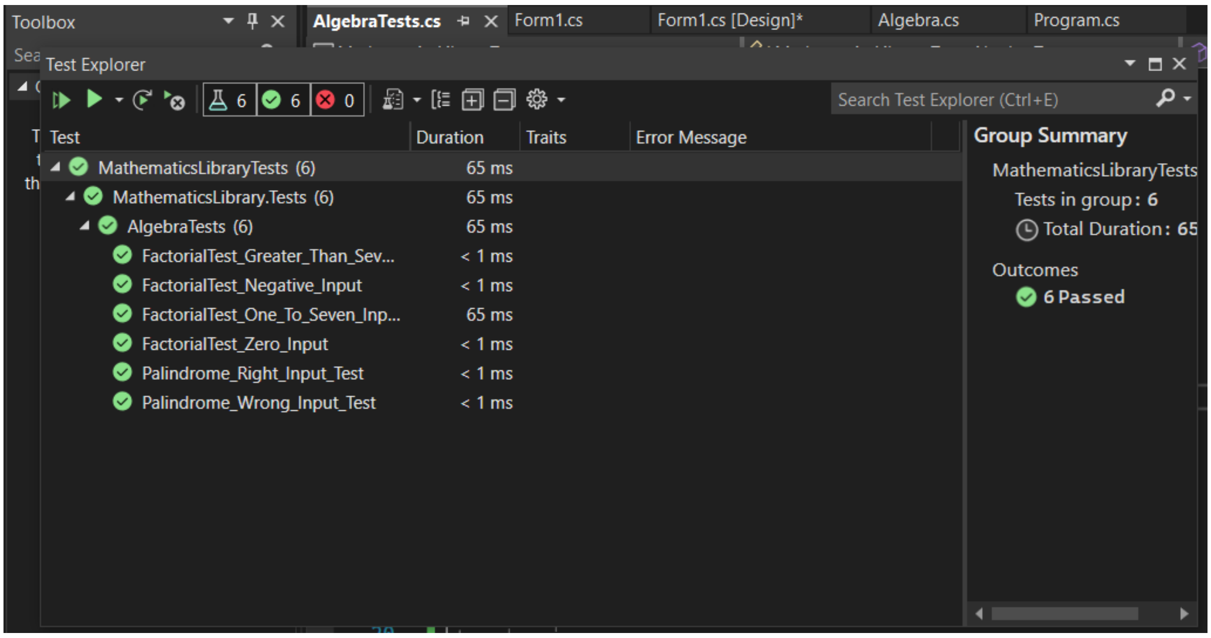
Code:

```
[TestMethod()]
public void Palindrome_Right_Input_Test()
{
    //Arrange
    int n = 23532;
    string expected = "Palindrome";

    //Act
    string actual = Algebra.Palindrome(n);

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


[TestMethod()]
public void Palindrome_Wrong_Input_Test()
{
    //Arrange
    int n = 1566;
    string expected = "Not Palindrome";

    //Act
    string actual = Algebra.Palindrome(n);

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

public static string Palindrome(int n)
{
    int sum = 0, rem, temp;
    temp = n;

    while(n>0)
    {
        rem = n % 10;
        sum = (sum * 10) + rem;
        n = n / 10;
    }

    if (temp == sum)
        return "Palindrome";

    else
        return "Not Palindrome";
}
```

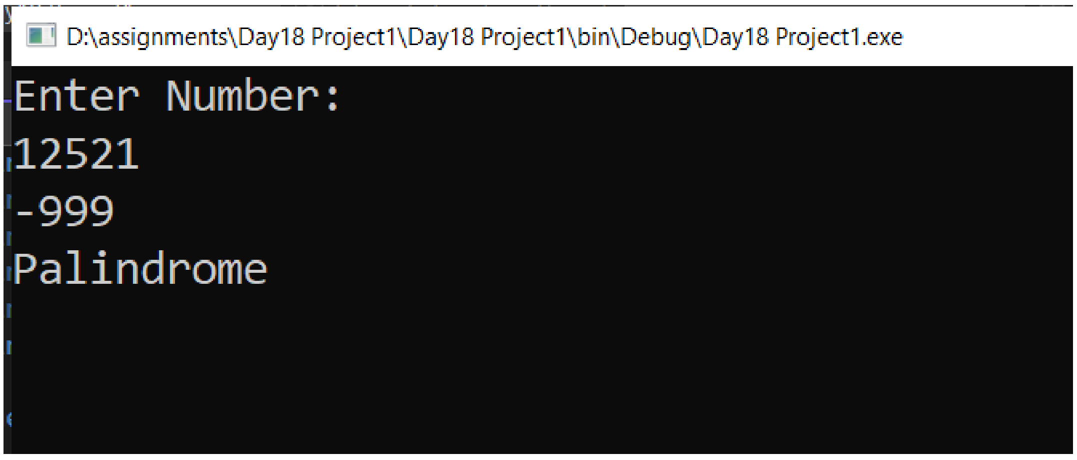
Output:



```
Test                                      Duration   Traits   Error Message
MathematicsLibraryTests (6)               404 ms
  MathematicsLibrary.Tests (6)            404 ms
    AlgebraTests (6)                      404 ms
      FactorialTest_Greater_Than_Sev...   < 1 ms
      FactorialTest_Negative_Input        < 1 ms
      FactorialTest_One_To_Seven_Inp...   77 ms
      FactorialTest_Zero_Input            < 1 ms
      Palindrome_Right_Input_Test         1 ms                Assert.AreEqual failed. Expected:<P...
      Palindrome_Wrong_Input_Test         326 ms              Assert.AreEqual failed. Expected:<N...

Group Summary
MathematicsLibraryTests
  Tests in group: 6
  Total Duration: 40
Outcomes
  4 Passed
  2 Failed
```



```
Test                                      Duration   Traits   Error Message
MathematicsLibraryTests (6)               65 ms
  MathematicsLibrary.Tests (6)            65 ms
    AlgebraTests (6)                      65 ms
      FactorialTest_Greater_Than_Sev...   < 1 ms
      FactorialTest_Negative_Input        < 1 ms
      FactorialTest_One_To_Seven_Inp...   65 ms
      FactorialTest_Zero_Input            < 1 ms
      Palindrome_Right_Input_Test         < 1 ms
      Palindrome_Wrong_Input_Test         < 1 ms

Group Summary
MathematicsLibraryTests
  Tests in group: 6
  Total Duration: 65
Outcomes
  6 Passed
```



D:\assignments\Day18 Project1\Day18 Project1\bin\Debug\Day18 Project1.exe

```
Enter Number:
12521
-999
Palindrome
```