Day 12(08-02-2022) Assignment
By
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Q1.What is Exception Handling?
Why we need Exception Handling?

- Exception handling is a process to handle runtime exceptions.
- Exception handling is done to ensure that our application will not crash or will not display any technical details and to make sure we handle errors gracefully and display user friendly messages.

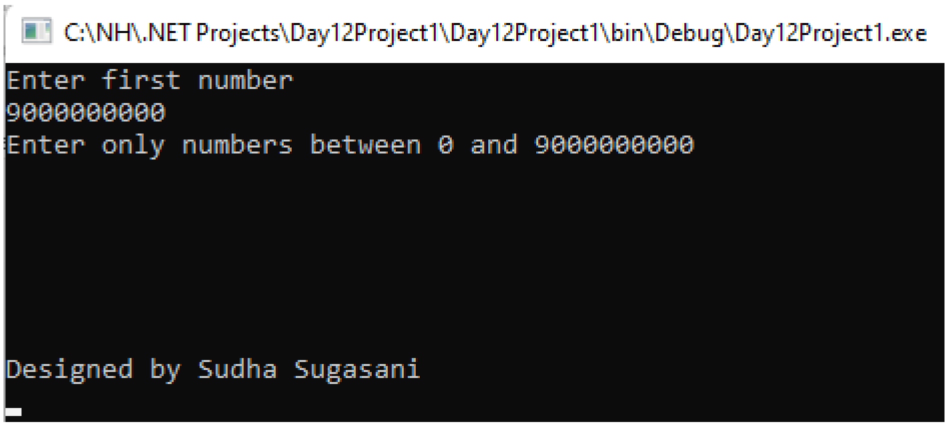
Q2.Write a simple division program to handle three exceptions discussed in the class, also add super exception at the last.

Code:

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

namespace Day12Project1
{


/*************************************************************************
     * Author:Sudha Kumari Sugasani
     * Puropse:Program to handle three exceptions and adding super exception
     *         at last.
     *
**********************************************************************/
    internal class Program
    {
        static void Main(string[] args)
        {

            try
            {
                int fn, sn, division;
                Console.WriteLine("Enter first number");
                fn=Convert.ToInt32(Console.ReadLine());
                Console.WriteLine("Enter second number");
                sn=Convert.ToInt32(Console.ReadLine());
                division = fn / sn;
                Console.WriteLine($"The division of two numbers is
{division}");

            }
            catch(OverflowException)
            {
                Console.WriteLine("Enter only numbers between 0 and
9000000000");
                Console.ReadLine();
            }
            catch(DivideByZeroException)
            {
                Console.WriteLine("Cannot divide with zero");
                Console.ReadLine();
            }
            catch(FormatException)
```

```
                {
                    Console.WriteLine("Enter only numbers");
                    Console.ReadLine();
                }
                catch(Exception)
                {
                    Console.WriteLine("Some error occured,Please contact admin");
                    Console.ReadLine();
                }
                finally
                {
                    Console.WriteLine("\n\n\n\n\nDesigned by Sudha Sugasani");
                    Console.ReadLine();
                }
            }
        }
    }
```

Output:



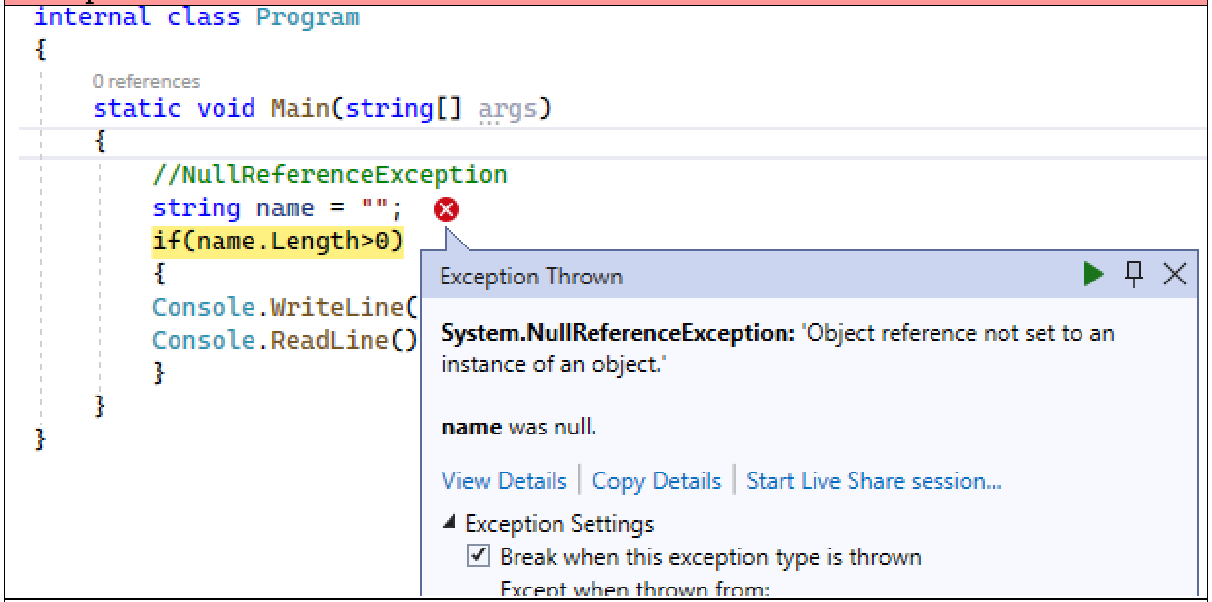
```
C:\NH\.NET Projects\Day12Project1\Day12Project1\bin\Debug\Day12Project1.exe
Enter first number
9000000000
Enter only numbers between 0 and 9000000000




Designed by Sudha Sugasani
```

Q3.Research and write atleast six exceptions that occur in C# with sample code.
Q8.Write any six runtime errors with small code snippets and add runtime error screenshots.

Ex1:Null reference Exception:
    Reason:If we assign null value to the name variable and trying to do Length operation

Code:
1.
```
 static void Main(string[] args)
        {
            //NullReferenceException
            string name = "";
            if(name.Length>0)
            {
            Console.WriteLine("Hi");
            Console.ReadLine();
            }
        }
```
2.
```
static void Main(String[] args)
        {

            //NullReferenceException
            List<int> test = new List<int>() { 4, 5, 6, 7, 8, 9, 10, 11, 12,
13, 14, 15 };
            int a = test[-1];
            Console.ReadLine();
        }
```

Exception1:



```
internal class Program
{
    0 references
    static void Main(string[] args)
    {
        //NullReferenceException
        string name = "";
        if(name.Length>0)
        {
        Console.WriteLine(
        Console.ReadLine()
        }
    }
}
```

Exception Thrown

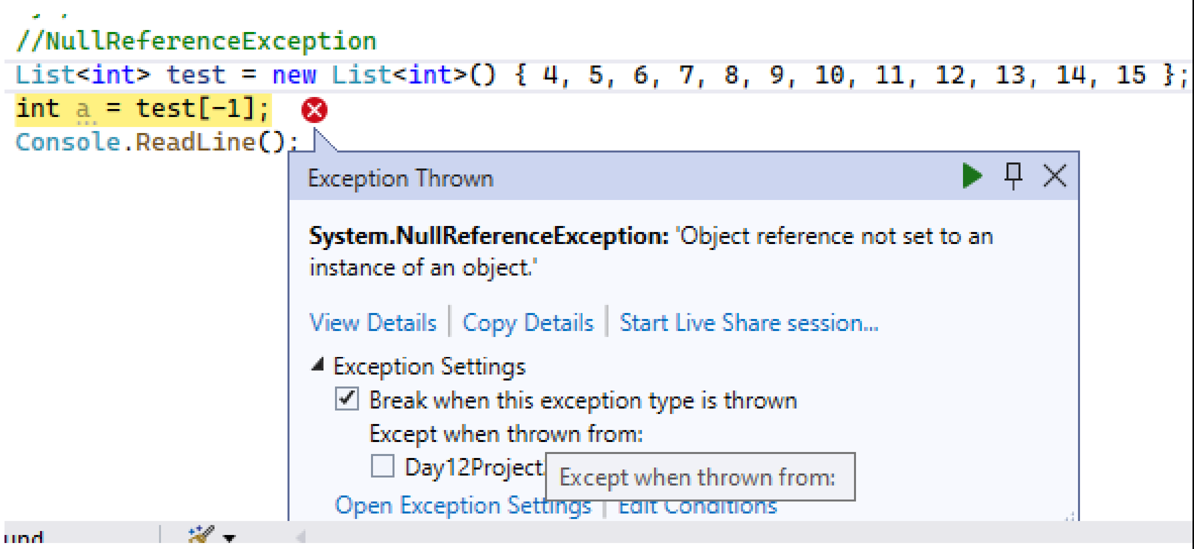
System.NullReferenceException: 'Object reference not set to an instance of an object.'

name was null.

View Details | Copy Details | Start Live Share session...

Exception Settings
- [✓] Break when this exception type is thrown
  Except when thrown from:

Exception2:



```
//NullReferenceException
List<int> test = new List<int>() { 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 };
int a = test[-1];
Console.ReadLine();
```

Exception Thrown

System.NullReferenceException: 'Object reference not set to an instance of an object.'

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Exception Settings
- [✓] Break when this exception type is thrown
  Except when thrown from:
  - [ ] Day12Project

Except when thrown from:

Open Exception Settings | Edit Conditions

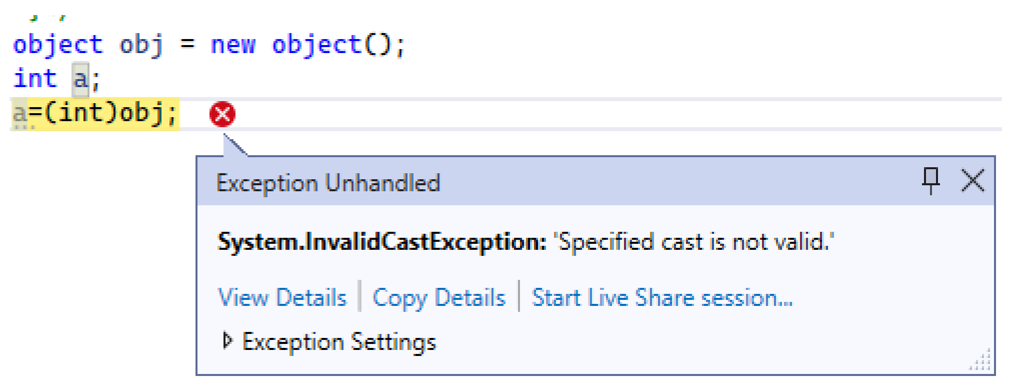
Ex2:InvalidCastException:

Reason:When we are doing type casting,if type casting is not supported,it will occur.

Code:

```
static void Main(string[] args)
        {
            //InvalidCastException
            Object obj=new Object();
            int a;
            a=(int)obj;
            Console.WriteLine(a);
            Console.ReadLine();            }
        }
```

Exception:



```
object obj = new object();
int a;
a=(int)obj;
```

Exception Unhandled

System.InvalidCastException: 'Specified cast is not valid.'

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Exception Settings

Example3:Stack OverflowException

Reason:The exception that is raised whenever we are calling too many methods/properties into one another.

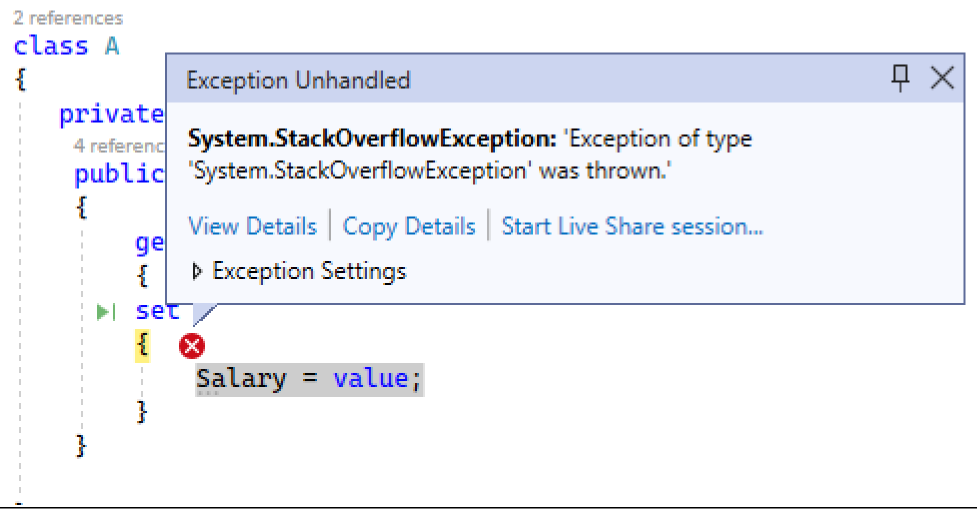
Code:

```
        //StackOverflowException
        class A
        {
           private int salary;
            public int Salary
            {
                get
                { return Salary; }
                set
                {
                    Salary = value;
                }
            }

        }
      static void Main(String[] args)
        {

            A obj=new A();
            obj.Salary = 5;
            Console.WriteLine(obj.Salary);
            Console.ReadLine();
        }
```

Exception:



```
2 references
class A
{
   private
    4 referenc
    public
    {
        ge
        {
        set
        {
            Salary = value;
        }
    }
```

Exception Unhandled

System.StackOverflowException: 'Exception of type 'System.StackOverflowException' was thrown.'

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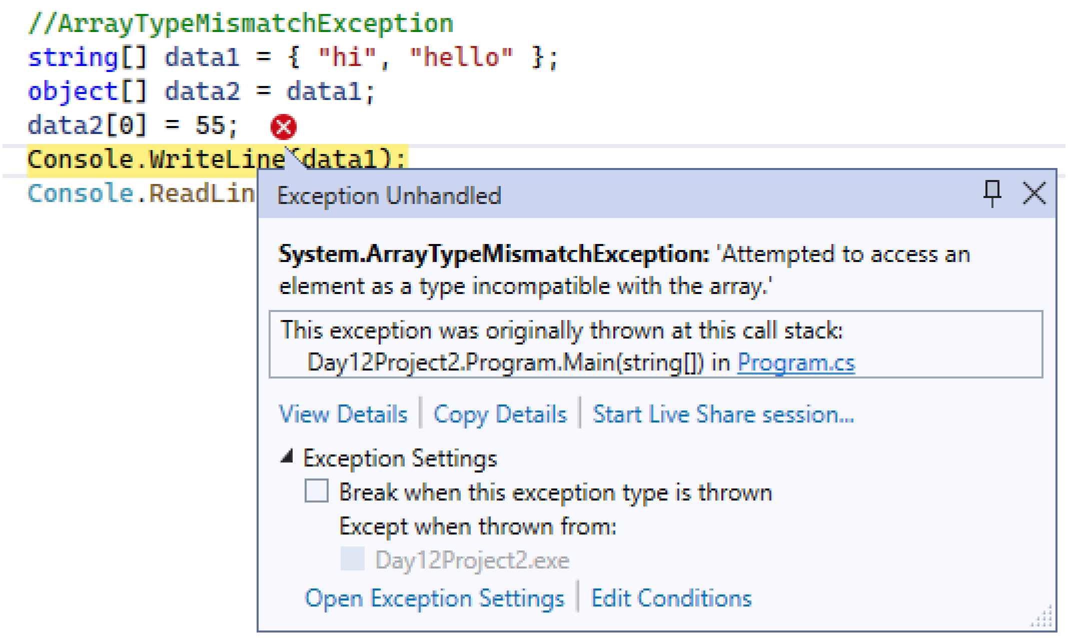
Exception Settings

Example4:ArrayTypeMismatchException:
Purpose:When the system cannot convert the element to the type declared for the Array

Code:
```
static void Main(String[] args)
        {

            //ArrayTypeMismatchException
            string[] data1 = { "hi", "hello" };
            object[] data2 = data1;
            data2[0] = 55;
            Console.WriteLine(data1);
            Console.ReadLine();

        }
```

Exception:



```
//ArrayTypeMismatchException
string[] data1 = { "hi", "hello" };
object[] data2 = data1;
data2[0] = 55;
Console.WriteLine(data1);
Console.ReadLin
```

Exception Unhandled

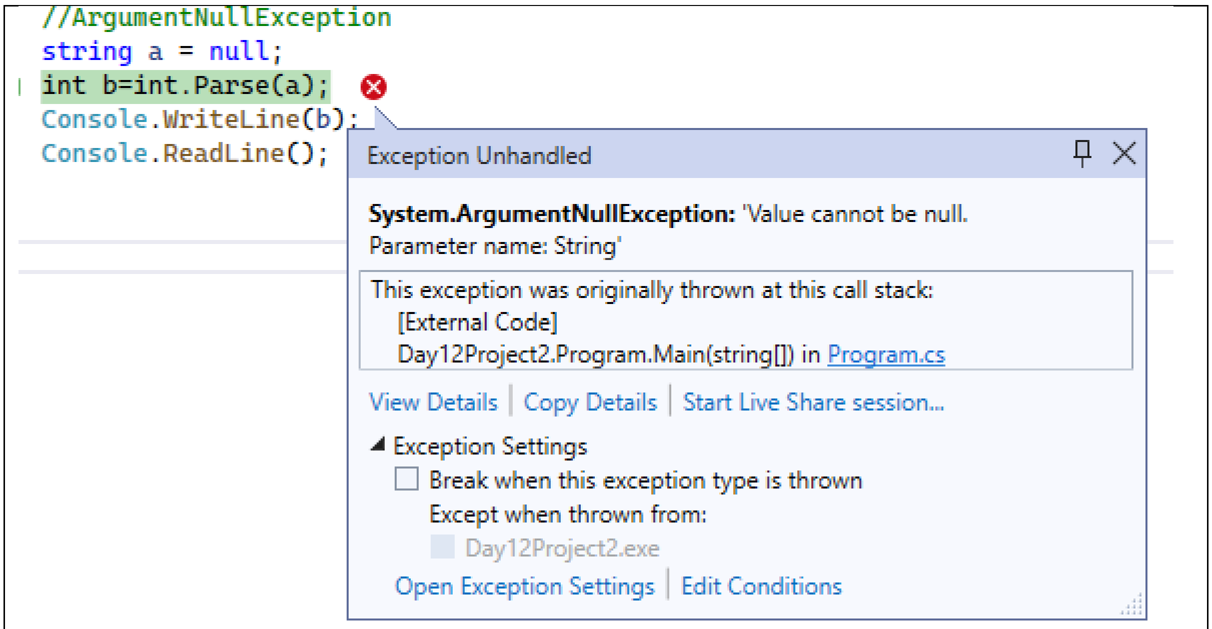
System.ArrayTypeMismatchException: 'Attempted to access an element as a type incompatible with the array.'

This exception was originally thrown at this call stack:
Day12Project2.Program.Main(string[]) in Program.cs

Ex5.ArgumentNullException:
Purpose: The exception thrown when a null reference is passed to a method that does not accept it as a valid argument.

Code:
```
static void Main(String[] args)
        {

            //ArgumentNullException
            string a = null;
            int b=int.Parse(a);
            Console.WriteLine(b);
            Console.ReadLine();

        }
```

Exception:



```
//ArgumentNullException
string a = null;
int b=int.Parse(a);
Console.WriteLine(b);
Console.ReadLine();
```

Exception Unhandled

System.ArgumentNullException: 'Value cannot be null.
Parameter name: String'

This exception was originally thrown at this call stack:
[External Code]
Day12Project2.Program.Main(string[]) in Program.cs

View Details | Copy Details | Start Live Share session...
Exception Settings
Break when this exception type is thrown
Except when thrown from:
Day12Project2.exe
Open Exception Settings | Edit Conditions

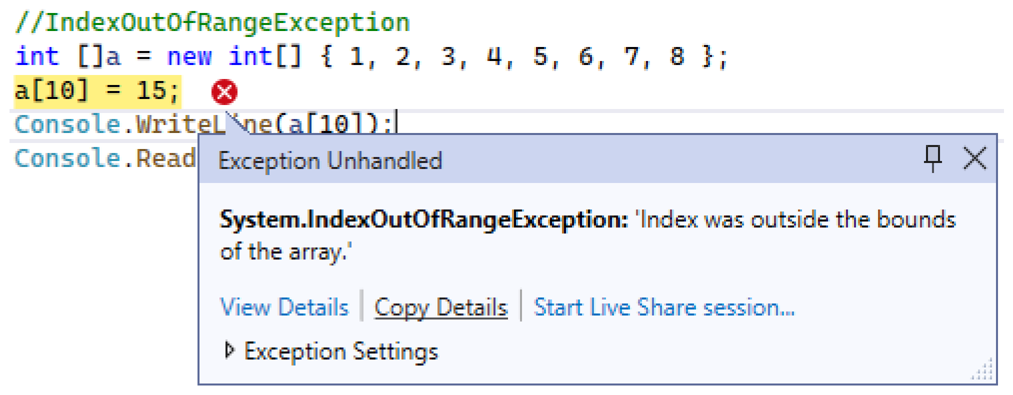
Example 6:IndexOutOfRangeEXception

Purpose :If you want to assign the exceeded index of values it will raise exception.

Code:

```
static void Main(String[] args)
        {
            //IndexOutOfRangeException
            int []a = new int[] { 1, 2, 3, 4, 5, 6, 7, 8 };
            a[10] = 15;
            Console.WriteLine(a[10]);
            Console.ReadLine();

        }
```

Exception:



```
//IndexOutOfRangeException
int []a = new int[] { 1, 2, 3, 4, 5, 6, 7, 8 };
a[10] = 15;
Console.WriteLine(a[10]);
Console.Read
```

Exception Unhandled

System.IndexOutOfRangeException: 'Index was outside the bounds of the array.'

Q4.What is the use of Finally block illustrate with an example.

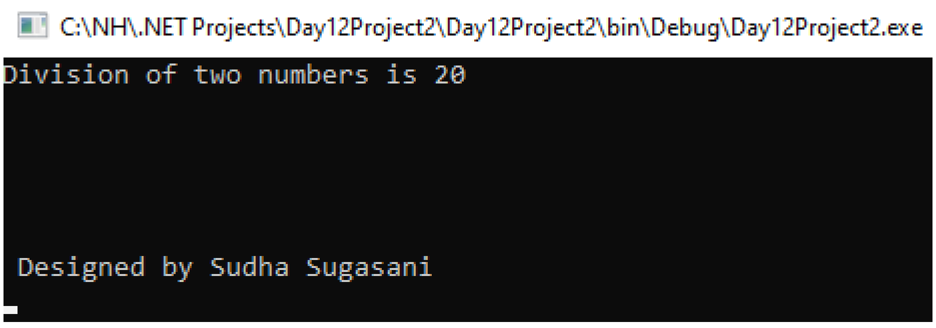
Statements in the finally block will be excecuted whether we get the exception or not.

Example code:

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

```
namespace Day12Project2
{
    internal class Program
    {
        /****************************************************
         * Author:Sudha Sugasani
         * Purpose:Program to show the use of finally block
         * ****************************************************/
        static void Main(string[] args)
        {
            try
            {
                int a = 100;
                int b = 5;
                int c = a / b;
                Console.WriteLine($"Division of two numbers is {c}");
            }
            catch(Exception)
            {

            }
            finally
            {
                Console.WriteLine("\n\n\n\n\n Designed by Sudha Sugasani");
                Console.ReadLine();
            }
        }
    }
}
```

Output:



```
C:\NH\.NET Projects\Day12Project2\Day12Project2\bin\Debug\Day12Project2.exe
Division of two numbers is 20




 Designed by Sudha Sugasani
```

Q5.Write the five points explained about Exception Handling

1.Exception Handling is done to ensure that our application will not crash or will not display any technical details and to make sure we handle errors gracefully and display user friendly mesaage.
2.A single try block can have multiple catch blocks.
3.Always write general exception at last.
4.Staments inside the finally block will execute whether we get the exception or not
5.General syntax for writing Exception Handling is

```
  try
  {
     //Error related code
  }
   catch
   {
      // Type of Exception
```

```
    }
   finally
    {
       //Message that we want to print irrespective of Exception
     }
```

Q6.What is Compilation and Runtime error .
Write atleast three differences between them.

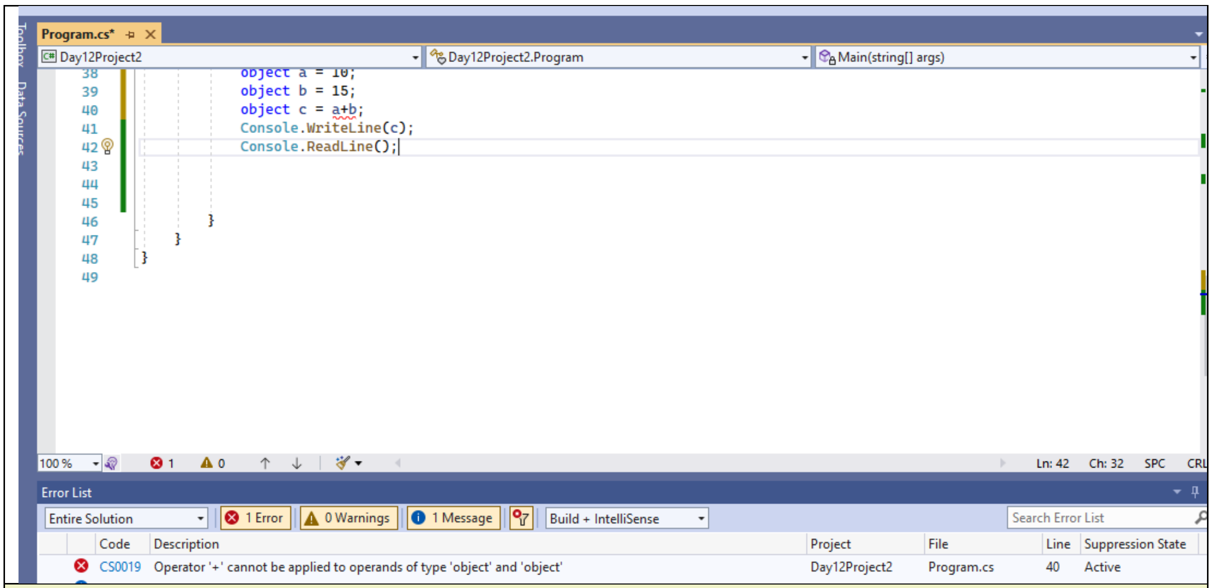
Compilation Error	Runtime Error
1.Errors that occur when we violate the rules of syntax are called Compilation Errors	1.Errors which occur during program execution After successful compilation are called Runtime Errors.
2.This compile error indicates something that must be fixed before the code can be compiled	2.This Runtime errors are hard to find because compiler will not indicate these runtime errors.
3.It includes syntax errors like missing semicolon(;),etc..	3.It includes errors like dividing by zero,etc..

Q7.Write any six compilation errors with small code snippet and add compilation error screenshots.

Example1:

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

namespace Day12Project2
{


    internal class Program
    {

        static void Main(String[] args)
        {

            object a = 10;
            object b = 15;
            object c = a+b;
            Console.WriteLine(c);
            Console.ReadLine();



        }
    }
}
```

Exception:



```
            object a = 10;
            object b = 15;
            object c = a+b;
            Console.WriteLine(c);
            Console.ReadLine();




        }
    }
}
```

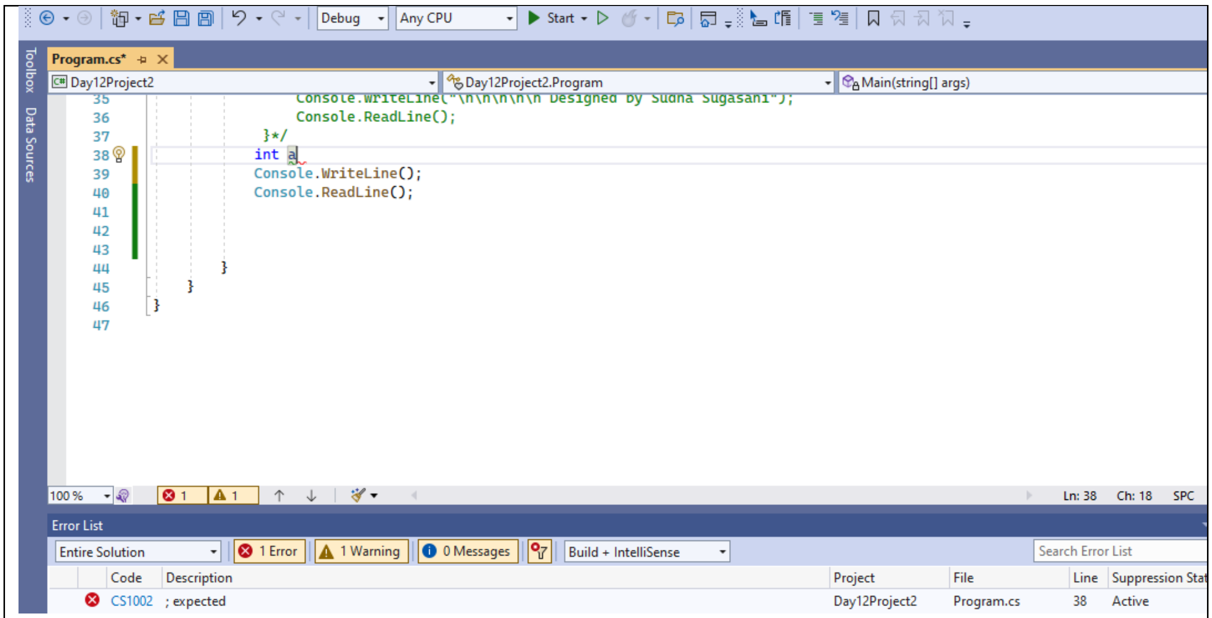
	Code	Description	Project	File	Line	Suppression State
✖	CS0019	Operator '+' cannot be applied to operands of type 'object' and 'object'	Day12Project2	Program.cs	40	Active

Example 2:

Code:

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

namespace Day12Project2
{


    internal class Program
    {


        static void Main(String[] args)
        {

            int a
            Console.WriteLine();
            Console.ReadLine();



        }
    }
}
```

Exception:



```
                Console.WriteLine("\n\n\n\n\n Designed by Sudha Sugasani");
                Console.ReadLine();
            }*/
            int a
            Console.WriteLine();
            Console.ReadLine();



        }
    }
}
```

Error List

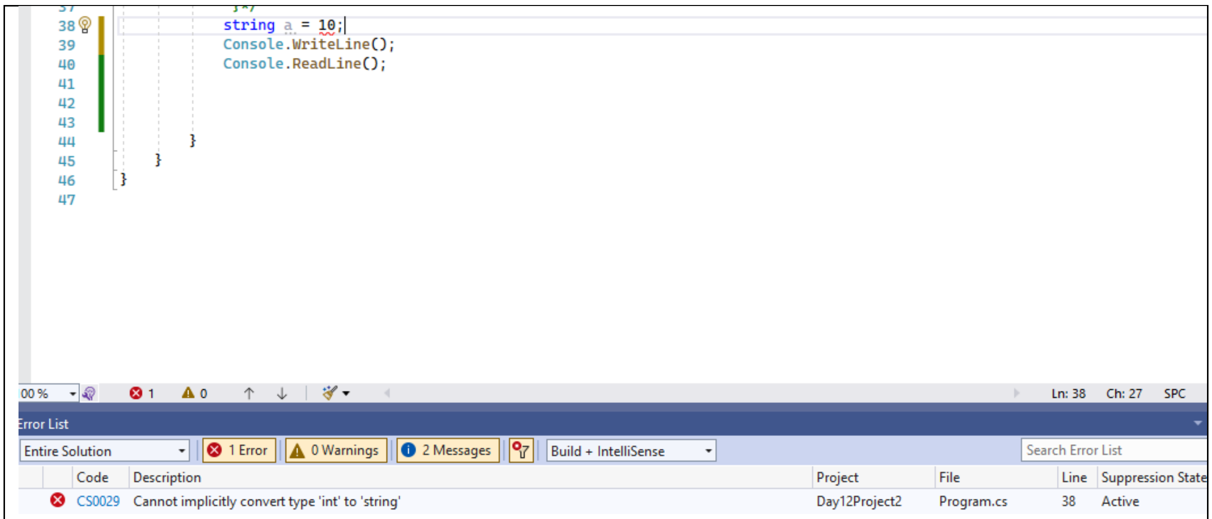
	Code	Description	Project	File	Line	Suppression Stat
⊗	CS1002	; expected	Day12Project2	Program.cs	38	Active

Example3:

Code:

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

namespace Day12Project2
{


    internal class Program
    {


        static void Main(String[] args)
        {
            string a = 10;
            Console.WriteLine();
            Console.ReadLine();

        }
    }
}
```

Exception:



```
            string a = 10;
            Console.WriteLine();
            Console.ReadLine();


        }
    }
}
```

00 %   1   0   Ln: 38   Ch: 27   SPC

Error List

Entire Solution   1 Error   0 Warnings   2 Messages   Build + IntelliSense   Search Error List

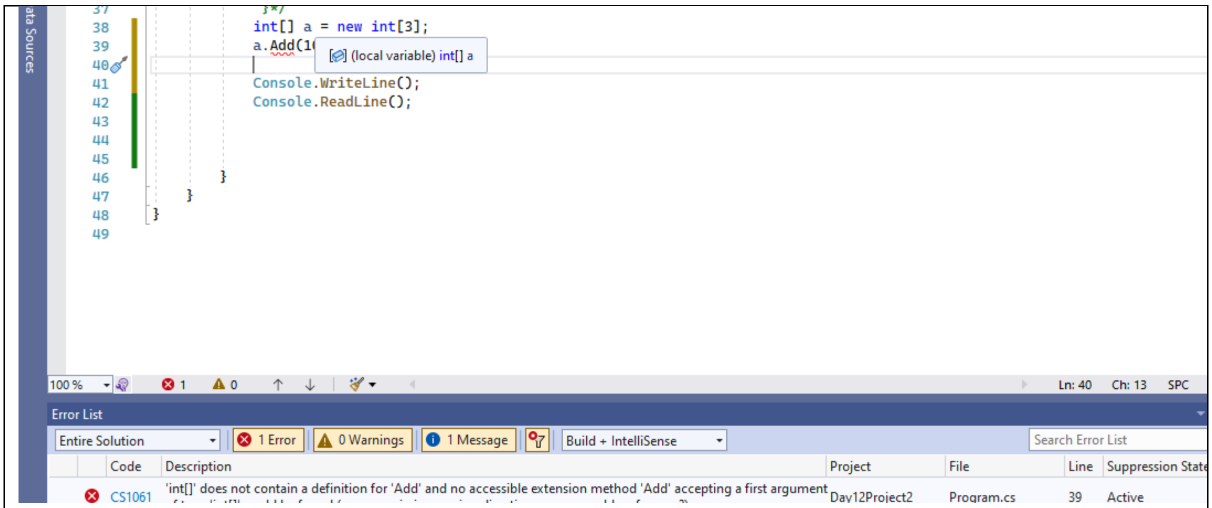
	Code	Description	Project	File	Line	Suppression State
✖	CS0029	Cannot implicitly convert type 'int' to 'string'	Day12Project2	Program.cs	38	Active

Example3:

Code:

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

namespace Day12Project2
{


    internal class Program
    {


        static void Main(String[] args)
        {

            int[] a = new int[3];
            a.Add(10);

            Console.WriteLine();
            Console.ReadLine();



        }
    }
}
```

Exception:



```
            }*/
            int[] a = new int[3];
            a.Add(1(
                    [local variable) int[] a
            Console.WriteLine();
            Console.ReadLine();


        }
    }
}
```

100 % ⊗ 1 ⚠ 0 Ln: 40 Ch: 13 SPC

Error List

Entire Solution | ⊗ 1 Error | ⚠ 0 Warnings | ⓘ 1 Message | Build + IntelliSense | Search Error List

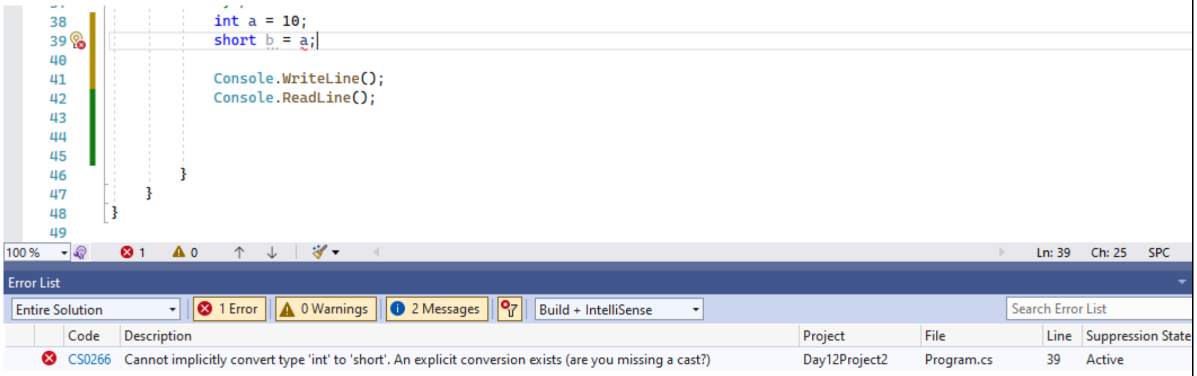
	Code	Description	Project	File	Line	Suppression State
⊗	CS1061	'int[]' does not contain a definition for 'Add' and no accessible extension method 'Add' accepting a first argument	Day12Project2	Program.cs	39	Active

Example4:

Code:

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

namespace Day12Project2
{


    internal class Program
    {
            int a = 10;
            short b = a;

            Console.WriteLine();
            Console.ReadLine();



        }
    }
}
```

Exception:



```
            int a = 10;
            short b = a;

            Console.WriteLine();
            Console.ReadLine();



        }
    }
}
```

100 % ⊗ 1 ⚠ 0 Ln: 39 Ch: 25 SPC

Error List

Entire Solution | ⊗ 1 Error | ⚠ 0 Warnings | ⓘ 2 Messages | Build + IntelliSense | Search Error List

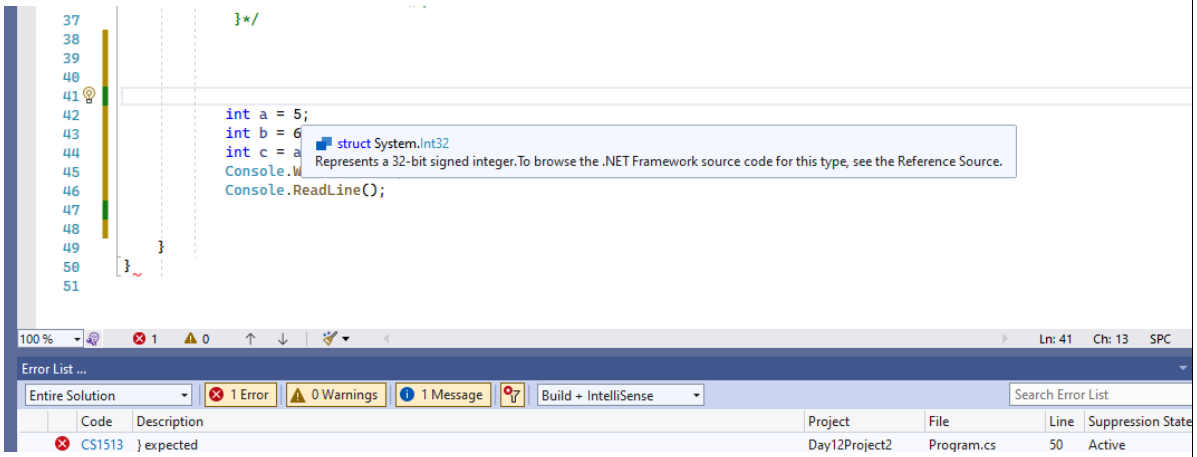
	Code	Description	Project	File	Line	Suppression State
⊗	CS0266	Cannot implicitly convert type 'int' to 'short'. An explicit conversion exists (are you missing a cast?)	Day12Project2	Program.cs	39	Active

Example5:

Code:

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

namespace Day12Project2
{


    internal class Program
    {

            int a = 5;
            int b = 6;
            int c = a + b;
            Console.WriteLine(c);
            Console.ReadLine();


    }
}
```

Exception:



```
        }*/



            int a = 5;
            int b = 6
            int c = a
            Console.W
            Console.ReadLine();


        }
    }
```

struct System.Int32
Represents a 32-bit signed integer.To browse the .NET Framework source code for this type, see the Reference Source.

100 %   ⊗ 1   ⚠ 0   Ln: 41   Ch: 13   SPC

Error List ...

Entire Solution | ⊗ 1 Error | ⚠ 0 Warnings | ⓘ 1 Message | Build + IntelliSense | Search Error List

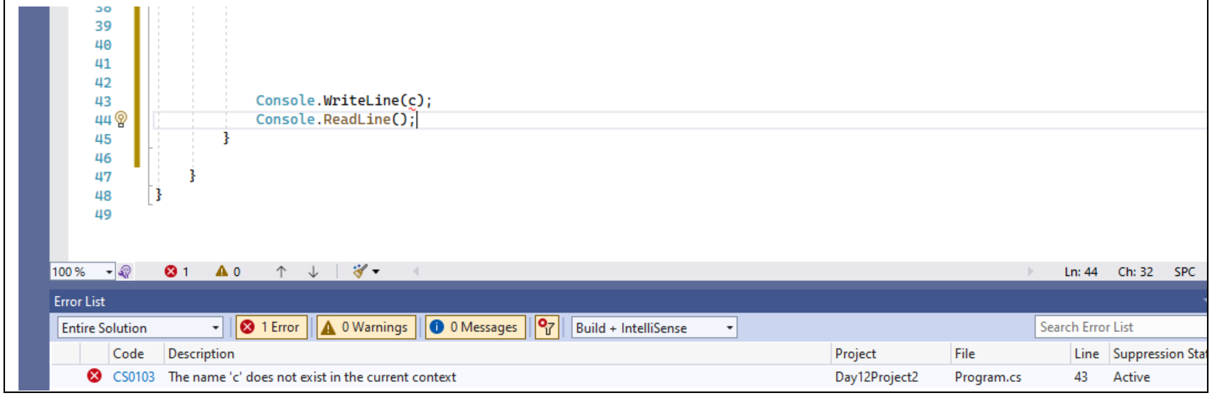
	Code	Description	Project	File	Line	Suppression State
⊗	CS1513	} expected	Day12Project2	Program.cs	50	Active

Example 6:

Code:

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

namespace Day12Project2
{


    internal class Program
    {
        static void Main(String[] args)
        {

            Console.WriteLine(c);
            Console.ReadLine();
        }

    }
}
```

Exception:



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

    }
}
```

100 %   ✖ 1   ⚠ 0   Ln: 44   Ch: 32   SPC

Error List

Entire Solution | ✖ 1 Error | ⚠ 0 Warnings | ⓘ 0 Messages | Build + IntelliSense | Search Error List

	Code	Description	Project	File	Line	Suppression Stat
✖	CS0103	The name 'c' does not exist in the current context	Day12Project2	Program.cs	43	Active