VB.NET Exception Handling

What is an Exception?

An **exception** is an unwanted error that occurs during the execution of a program and can be a system exception or application exception. Exceptions are nothing but some abnormal and typically an event or condition that arises during the execution, which may interrupt the normal flow of the program.

An exception can occur due to different reasons, including the following:

- A user has entered incorrect data or performs a division operator, such as an attempt to divide by zero.
- A connection has been lost in the middle of communication, or system memory has run out.

Exception Handling

When an error occurred during the execution of a program, the exception provides a way to transfer control from one part of the program to another using **exception handling** to handle the error. VB.NET exception has four built-in keywords such as **Try, Catch, Finally**, and **Throw** to handle and move controls from one part of the program to another.

Keyword	Description
Try	A try block is used to monitor a particular exception that may throw an exception within the application. And to handle these exceptions, it always follows one or more catch blocks.
Catch	It is a block of code that catches an exception with an exception handler at the place in a program where the problem arises.
Finally	It is used to execute a set of statements in a program, whether an exception has occurred.
Throw	As the name suggests, a throw handler is used to throw an exception after the occurrence of a problem.

Exception Classes in VB.NET

In VB.net, there are various types of exceptions represented by classes. And these exception classes originate from their parent's class 'System.Exception'.

The following are the two exception classes used primarily in VB.NET.

1. **System.SystemException**
2. **System.ApplicationException**

System.SystemException: It is a base class that includes all predefined exception classes, and some system-generated exception classes that have been generated during a run time such as **DivideByZeroException, IndexOutOfRangeException, StackOverflowExpression**, and so on.

System.ApplicationException: It is an exception class that throws an exception defined within the application by the programmer or developer. Furthermore, we can say that it is a user-defined exception that inherits from **System.ApplicationException class**.

Syntax of exception handler block

```
Try
   ' code or statement to be executed
   [ Exit Try block]
' catch statement followed by Try block
Catch [ Exception name] As [ Exception Type]
[Catch1 Statements] Catch [Exception name] As [Exception Type]
[ Exit Try ]
 [ Finally
   [ Finally Statements ] ]
End Try
```

In the above syntax, the Try/Catch block is always surrounded by a code that can throw an exception. And the code is known as a protected code. Furthermore, we can also use multiple catch statements to catch various types of exceptions in a program, as shown in the syntax.

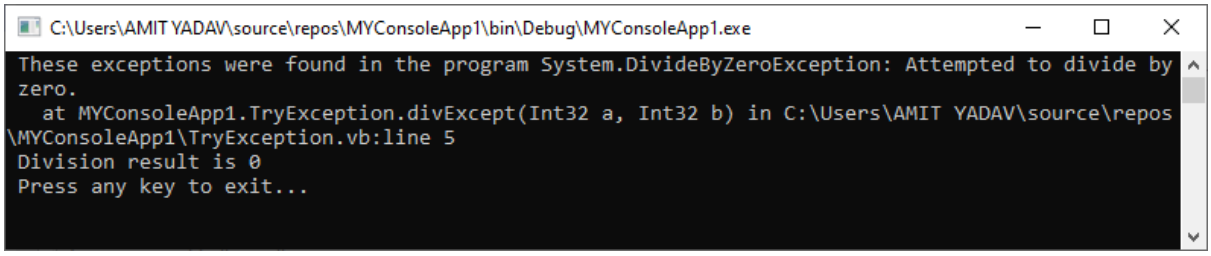
Example to Exception Handle

Let's create a program to handle an exception using the Try, Catch, and Finally keywords for Dividing a number by zero in VB.NET programming.

TryException.vb

```
Module TryException
    Sub divExcept(ByVal a As Integer, ByVal b As Integer)
        Dim res As Integer
        Try
            res = a \ b
            ' Catch block followed by Try block
        Catch ex As DivideByZeroException
            Console.WriteLine(" These exceptions were found in the program {0}", ex)
            ' Finally block will be executed whether there is an exception or not.
        Finally
            Console.WriteLine(" Division result is {0}", res)
        End Try
    End Sub
    Sub Main()
        divExcept(5, 0) ' pass the parameters value
        Console.WriteLine(" Press any key to exit...")
        Console.ReadKey()
    End Sub
End Module
```

Output:



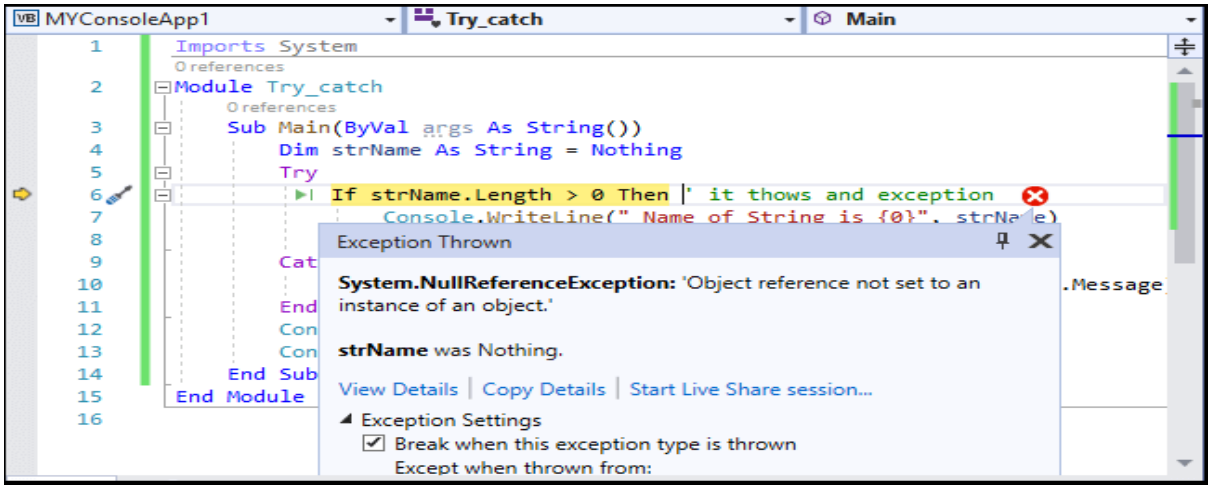
Using Try-Catch Statement

Lets' create a program using the Try-Catch statement in VB.NET to handle the exceptions.

Try_catch.vb

```
Imports System
Module Try_catch
    Sub Main(ByVal args As String())
        Dim strName As String = Nothing
        Try
            If strName.Length > 0 Then ' it thows and exception
                Console.WriteLine(" Name of String is {0}", strName)
            End If
        Catch ex As Exception  ' it cacthes an exception
            Console.WriteLine(" Catch exception in a proram {0}", ex.Message)
        End Try
        Console.WriteLine(" Press any key to exit...")
        Console.ReadKey()
    End Sub
End Module
```

Output:



Throwing Objects

In VB.NET exception handling, we can throw an object exception directly or indirectly derived from the **System. Exception class**. To throw an object using the throw statement in a catch block, such as:

```
Throw [ expression ]
```

Let's create a program to throw an object in VB.NET exception.

throwexcept.vb

```
Imports System
Module thowexcept
   Sub Main()
      Try
         Throw New ApplicationException("It will throw a custom object exception")
      Catch ex As Exception
         Console.WriteLine(" Custom Exception is: {0}", ex.Message)
      Finally
         Console.WriteLine("Finally block statement executes whether there is an exce
ption or not.")
      End Try
      Console.WriteLine(" Press any key to exit")
      Console.ReadKey()
   End Sub
End Module
```

Output: