COURSE: Programming in C#
LAB: 05

Amendment Record

Programming in C#
Lab 5

Objectives:

At the end of this session, you will able to understand:

- *Namespace*
- *Exception Handling*

Part I: Getting started (60 minutes)

Exercise 1: Using namespace

Step 1: Open Visual Studio

Step 2: Select the menu File->New->Project to create console based project named ‘Namespace’ and Solution named Session05

Step 3: Rename the class file ‘program.cs‘ to ‘Namespace.cs’

Step 4: Replace code in ‘Namespace.cs’ with given code

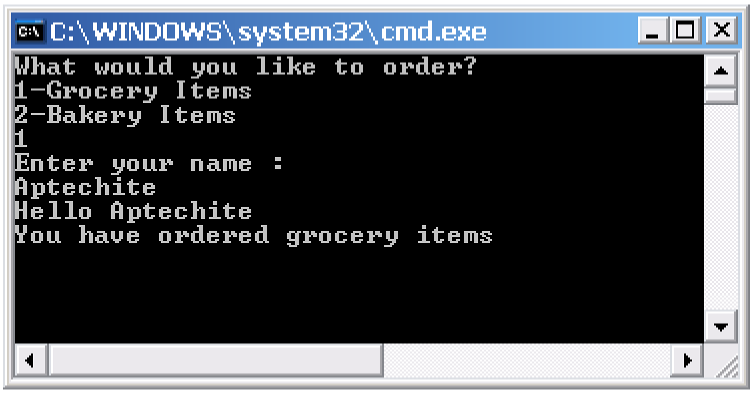
```
using System;
using Customer;
using Order;
namespace Customer
{
    class Cust_details
    {
        public string strName;
        public void getName()
        {
            Console.WriteLine("Enter your name :");
            strName = Console.ReadLine();
        }
    }
}
namespace Order
{
    class Grocery_items
    {
        public void Ord_grocery()
        {
            Cust_details objCust1 = new Cust_details();
            objCust1.getName();
            Console.WriteLine("Hello {0}", objCust1.strName);
            Console.WriteLine("You have ordered grocery items");
        }
    }
   class Bakery_items
    {
        public void Ord_bakery()
        {
            Cust_details objCust2 = new Cust_details();
            objCust2.getName();
            Console.WriteLine("Hello {0}", objCust2.strName);
            Console.WriteLine("You have ordered bakery items");
        }
    }
}
class OrderTest
{
    public static void Main()
    {
        string choice;
        Console.WriteLine("What would you like to order? 1-Grocery Items,
2-Bakery Items");
        choice = Console.ReadLine();
        if (choice == "1")
        {
            Grocery_items objGrocery = new Grocery_items();
            objGrocery.Ord_grocery();
        }
        else
        {
            if (choice == "2")
            {
                Bakery_items objBakery = new Bakery_items();
                objBakery.Ord_bakery();
            }
            else
            {
                Console.WriteLine("Enter either 1 or 2");
            }
        }
        Console.ReadLine();
    }
}
```

Step 5: Select menu File -> Save to save the file

Step 6: Select Build -> Build ‘Namespace.cs’ option to build the project

Step 7: Select Debug -> Start without Debuging to execute the program

The output of the program as following



```
What would you like to order?
1-Grocery Items
2-Bakery Items
1
Enter your name :
Aptechite
Hello Aptechite
You have ordered grocery items
```

Exercise 2: Exception Handling

Step 1: Add a console based project ‘ExHandling1’ to the solution

Step 2: Right click on project ‘ExHandling1’ -> set as Startup project

Step 3: Rename the class file ‘Program.cs’ to ‘ExHandling1.cs’

Step 4: Replace the code in ‘ExHandling1.cs’ with the given code

```
using System;
using System.Collections.Generic;
using System.Text;

namespace Bai05
{
    class Vidu1
    {
        static void Main(string[] args)
        {
            byte[] a = new byte[5];

            //nhap mang
            try
            {
                for (int i = 0; i <= 5; i++)
                {
                    Console.WriteLine("a[{0}]=", i + 1);
                    a[i] = Convert.ToByte(Console.ReadLine());
                }
            }
            catch (FormatException ex)
            {
                //Console.WriteLine(ex.Message);
                Console.WriteLine("Khong duoc nhap ki tu cho mang so");
            }
            catch (OverflowException ex)
            {
                //Console.WriteLine(ex.Message);
                Console.WriteLine("Khong duoc nhap gia tri nam ngoai mien
0-255");
```

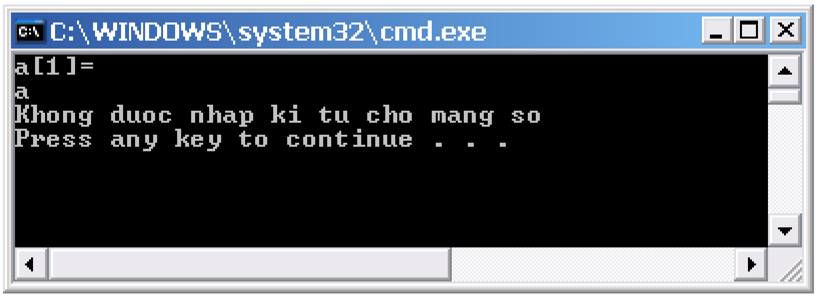
```
            }
            catch (IndexOutOfRangeException ex)
            {
                //Console.WriteLine(ex.Message);
                Console.WriteLine("Loi vuot qua pham vi cua mang");
            }

            //in mang
            for (int i = 0; i < 5; i++)
                Console.Write(" {0}", a[i]);
        }
    }
}
```

Step 5: Select menu File -> Save to save the file

Step 6: Select Build -> Build 'ExHandling1' option to build the project

Step 7: Select Debug -> Start without Debugging to execute the program

The output of program as following



```
a[1]=
a
Khong duoc nhap ki tu cho mang so
Press any key to continue . . .
```

Exercise 3: Write a program to accept a number and print a multiplication table of that number. Use exception handling to ensure that the user enters only numeric values and the number entered is greater than zero.

Step 1: Add a console based project 'ExHandling2' to the solution

Step 2: Right click on project 'ExHandling2' -> set as Startup project

Step 3: Rename the class file 'Program.cs' to 'ExHandling1.cs'

Step 4: Replace the code in 'ExHandling2.cs' with the given code

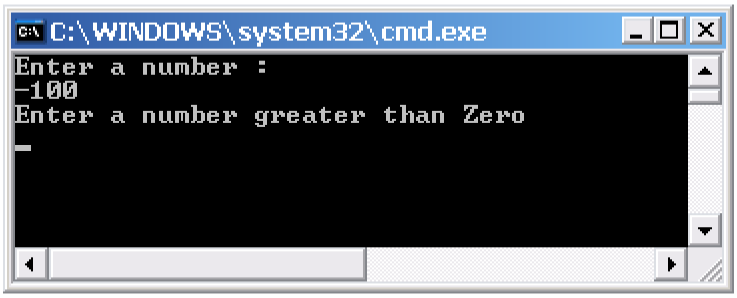
```
using System;
public class InvalidInput : ApplicationException
{
    public InvalidInput()
  : base("Enter a number greater than Zero"){}
}
class TestExcep
{
    public static void Main()
    {
        int intCnt;
        int intNum = 0;
        Console.WriteLine("Enter a number :");
        try
        {
            intNum = Convert.ToInt32(Console.ReadLine());
            if (intNum <= 0)
            {
                throw new InvalidInput();
            }
        }
        catch (InvalidInput objInvalidInput)
        {
            Console.WriteLine(objInvalidInput.Message);
        }
        catch (System.FormatException objFormatException)
        {
            Console.WriteLine(objFormatException.Message);
        }
        finally
        {
            if (intNum > 0)
            {
                for (intCnt = 1; intCnt <= 10; intCnt++)
                    Console.WriteLine(intCnt * intNum);
            }
        }
        Console.ReadLine();
    }
}
```

Step 5: Select menu File -> Save to save the file

Step 6: Select Build -> Build ‘ExHandling2’ option to build the project

Step 7: Select Debug -> Start without Debugging to execute the program

The output of program as following



```
Enter a number :
-100
Enter a number greater than Zero
_
```

Exercise 4: Throw statement

Step 1: Add a console based project ‘ExHandling3’ to the solution

Step 2: Right click on project ‘ExHandling3’ -> set as Startup project

Step 3: Rename the class file ‘Program.cs’ to ‘ExHandling1.cs’

Step 4: Replace the code in ‘ExHandling3.cs’ with the given code

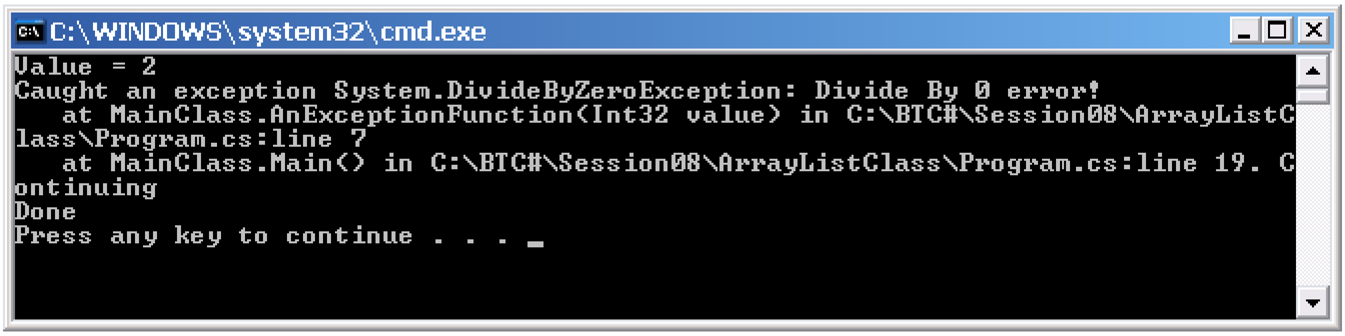
```
using System;
class MainClass
{
    public static int AnExceptionFunction(int value)
    {
        if (value == 0) // Can't divide by zero
            throw new DivideByZeroException("Divide By 0 error!");

        int x = 20 / value;
        return x;
    }
    public static void Main()
    {
        int value = 0;
        try
        {
            value = AnExceptionFunction(10); // This works ok
            Console.WriteLine("Value = {0}", value);
            AnExceptionFunction(0); // This doesn't
            Console.WriteLine("Value = {0}", value);
        }
        catch (Exception e)
        {
            Console.WriteLine("Caught an exception {0}. Continuing", e);
        }
        Console.WriteLine("Done");
    }
}
```

Step 5: Select menu File -> Save to save the file

Step 6: Select Build -> Build 'ExHandling3' option to build the project

Step 7: Select Debug -> Start without Debugging to execute the program

The output of program as following



```
Value = 2
Caught an exception System.DivideByZeroException: Divide By 0 error!
   at MainClass.AnExceptionFunction(Int32 value) in C:\BTC#\Session08\ArrayListC
lass\Program.cs:line 7
   at MainClass.Main() in C:\BTC#\Session08\ArrayListClass\Program.cs:line 19. C
ontinuing
Done
Press any key to continue . . .
```

Exercise 5: Finally statement

Step 1: Add a console based project 'FinallyStmt' to the solution

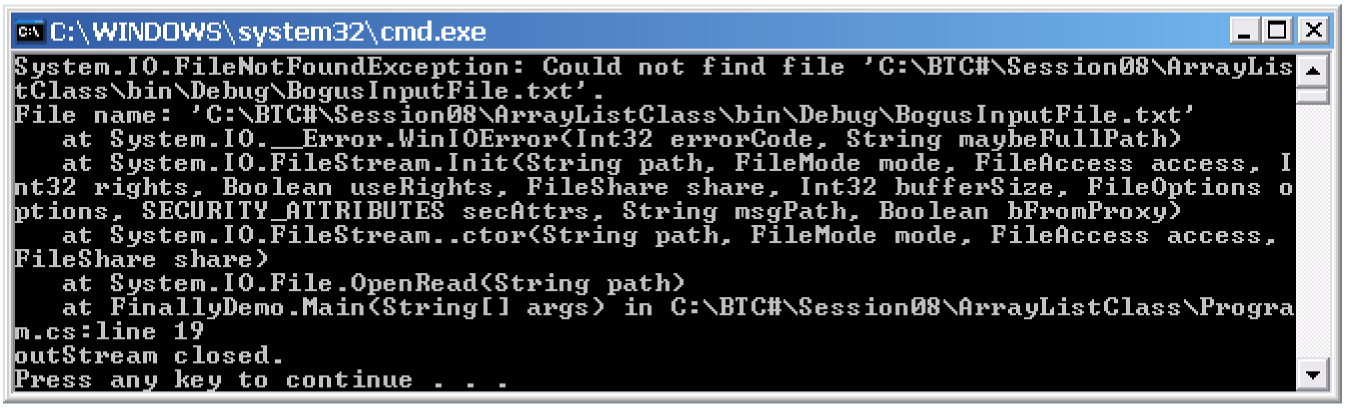
Step 2: Right click on project 'FinallyStmt -> set as Startup project

Step 3: Rename the class file 'Program.cs' to 'FinallyStmt.cs'

Step 4: Replace the code in 'FinallyStmt.cs' with the given code

```
using System;
using System.IO;
class FinallyDemo
{
    static void Main(string[] args)
    {
        FileStream outStream = null;
        FileStream inStream = null;
        try
        {
            //mo file de ghi du lieu
            outStream = File.OpenWrite("DestinationFile.txt");
            //mo file de doc du lieu
            inStream = File.OpenRead("BogusInputFile.txt");
            //cac cau lenh doc du lieu tu file
        }
        catch (Exception ex)
        {
            Console.WriteLine(ex.ToString());
        }
        finally
        {
            if (outStream != null)
            {
                outStream.Close();
                Console.WriteLine("outStream closed.");
            }
            if (inStream != null)
            {
                inStream.Close();
                Console.WriteLine("inStream closed.");
            }
        }
    }
}
```

The output of program as following



```
System.IO.FileNotFoundException: Could not find file 'C:\BTC#\Session08\ArrayLis
tClass\bin\Debug\BogusInputFile.txt'.
File name: 'C:\BTC#\Session08\ArrayListClass\bin\Debug\BogusInputFile.txt'
   at System.IO.__Error.WinIOError(Int32 errorCode, String maybeFullPath)
   at System.IO.FileStream.Init(String path, FileMode mode, FileAccess access, I
nt32 rights, Boolean useRights, FileShare share, Int32 bufferSize, FileOptions o
ptions, SECURITY_ATTRIBUTES secAttrs, String msgPath, Boolean bFromProxy)
   at System.IO.FileStream..ctor(String path, FileMode mode, FileAccess access,
FileShare share)
   at System.IO.File.OpenRead(String path)
   at FinallyDemo.Main(String[] args) in C:\BTC#\Session08\ArrayListClass\Progra
m.cs:line 19
outStream closed.
Press any key to continue . . .
```

Part II : Workshop – 15 minutes

Students open workshop in onlinevarsity,

Exercise 1: Do assignment of module 10 in workshop

Exercise 2: Do assignment of module 11 in workshop

References then View, Run, Think about it

Part III: Do it yourself

Exercise 1:

Create a namespace called **`Customer`** and add a class to it having a method that accepts customer names. Create another namespace called **`Order`** and two classes within it, one for grocery items and the other for bakery products. The `Main()` program should accept customer names and a choice indicating whether the customer has selected to order grocery items or bakery products. Accordingly, the appropriate class should be called and a message displayed informing the user about the choice.

Exercise 2:

Write a custom exception named **AmountException** to handle the following business issues

- When Senior Lecture gets less than 60,000 salary
- When bonus is more than 10,000

Your exception class should have a field named **personName** to store the person's name.

Write a Test program to work with various class objects and their behaviors. Add some code to demonstrate the polymorphism. Also show the functionality of your custom exception class by adding some appropriate code.

Part IV: Homework

1) **C# Programming, Aptech Education**
2) **MSDN Document**