3.3

Identify and implement opportunities for error handling and reporting:

- Types of errors
- Write a sample code in C# where you can give different types of inputs.
- Identify the errors using debugging tools.
- Handle the errors (With Coding).

You must perform the above in a written report.

Types of error-:

The errors in programming language are mainly three categories, they are-:

1. syntax error
2. logic error
3. run time error

Syntax error-:

It is known as more complicated errors in the coding and it is most common type of error that can be faced by many developers. Most of the errors that are made by the developers at the time of writing code, if we use any IDE environment it will detect the errors as soon as the developer write the code so the developer can fix it after the error is known and in some other it will show the errors at the time of compile the application environment.

Example-:

```
case 4:
 c = a / b;
textBox4.Text = Convert.ToString(c);
```

```
break                                   //here  I can observe the syntax error
```

Runtime error-:

It will appear after compile of the code and it will run the code. It will occur at the time of attempting an operation and that is not possible to carry out and it can be fix by rewriting the code and then the code is recompiling and running it.

Example-:

```
int a = 5, b = 0;
int result = a / b;                 // here I can runtime error
```

Logical error-:

This error occur at the time of output, like the developer cannot see the error at the time of compiling and at the time of run it but, the error may occur at the time of code execution like it show unwanted result at the time of users and this type of error is known as logic error and for fixing the error it may become very difficult because at the time of developing it will not show any error in the document.

Example-:

```
int a = 5, b = 6;
double avg = a + b / 2.0;           //here  logical error is found, it should be (a + b) / 2.0
```

A sample code in C# where you can give different types of inputs.-:

```
using System;                                   //using namespace as class
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;

namespace company1                      // creating namespace as company 1
{
  public partial class Form4 : Form
  {
    public Form4()
    {
      InitializeComponent();
    }

    private void button1_Click(object sender, EventArgs e)
    {
      int a, b, c;                              //giving each string as integer
      a = Convert.ToInt32(textBox2.Text);     //converting text into integer
      b = Convert.ToInt32(textBox3.Text);
      switch(Convert.ToInt32(textBox1.Text))        //using switch control structure for 1
textbox
```

```
        {
            case 1:                         //creating switch case structure
                c = a + b;                          //giving function for case
                textBox4.Text = Convert.ToString(c);     //converting value into string
                break;                  // completing on case
            case 2:
                c = a - b;
                textBox4.Text = Convert.ToString(c);
                break;
            case 3:
                c = a * b;
                textBox4.Text = Convert.ToString(c);
                break;
            case 4:
                c = a / b;
                textBox4.Text = Convert.ToString(c);
                break;
        }
    }
  }
}
```

The errors using debugging tools-:

It is the process of finding the error in the code and solving the code in the code which prevents correct operations of system and it is used in many software companies for testing the code and log flies etc. and the tools which are observed in the visual studio and debugging tools is used to help the developer at the time of development.

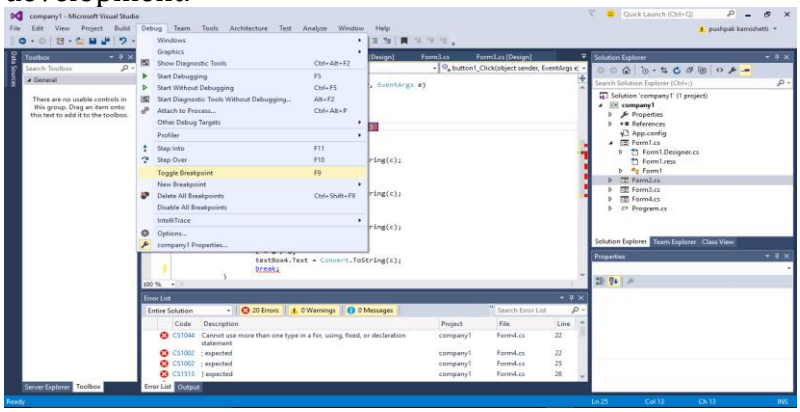

Figure 1toggle breakpoint

Which is used to create the breakpoint at current line and breaking point on lines code will appear with comment or declaration statement and etc.

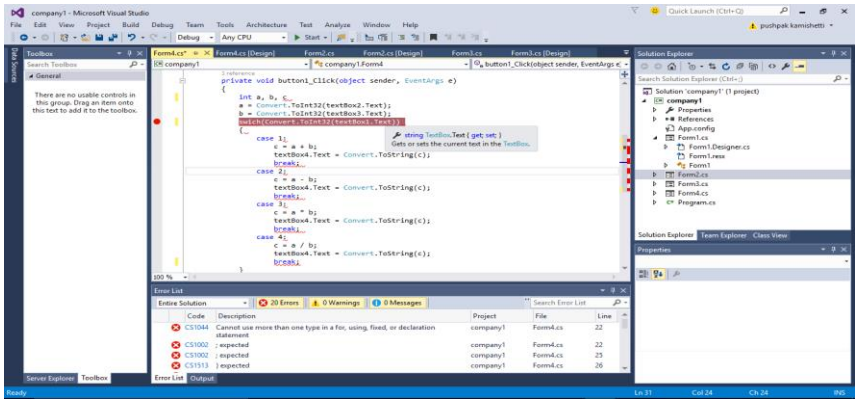

Figure 2output of toggle breakpoint

The output of the toggle breakpoint which I have used in the coding shows the red of that line and in the visual studio it is observed in the part of debug and short cut key for breakpoint is F9

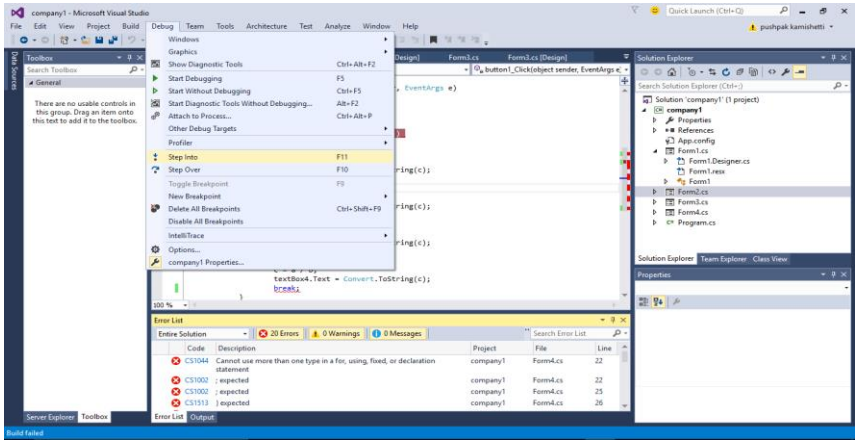

Figure 3step into

It is used to break the current line of execution and it is used at the time when that statement is used for call producer of next statement and after the next statement will be displayed first and in the visual studio it is observed in the part of debug and short cut key for step into is F11

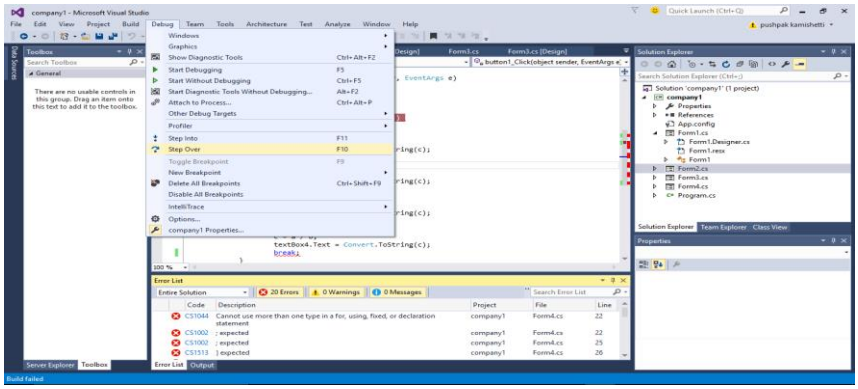

Figure 4step over

It is used for jump the function of code without waiting again for the next action of the statement and the code will execute for the application created. In the visual studio it is observed in the part of debug and short cut key for step over is F10

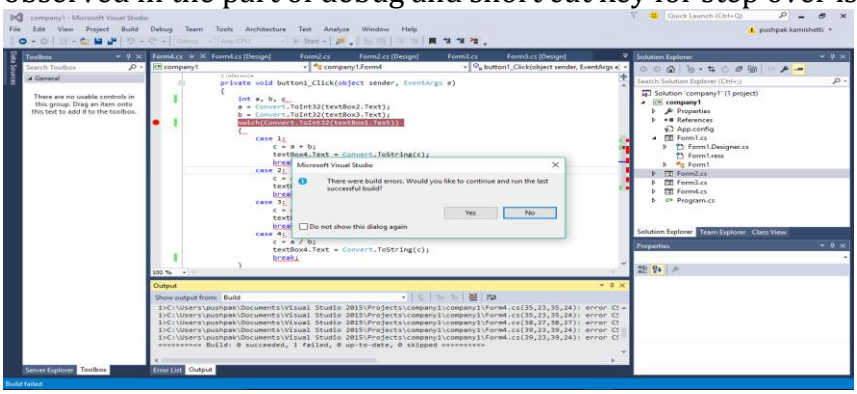

Figure 5executing leaving error

It asking the developer wants to show the output, neglecting the errors by using these debuggers function and shows the output of the code which I have created.

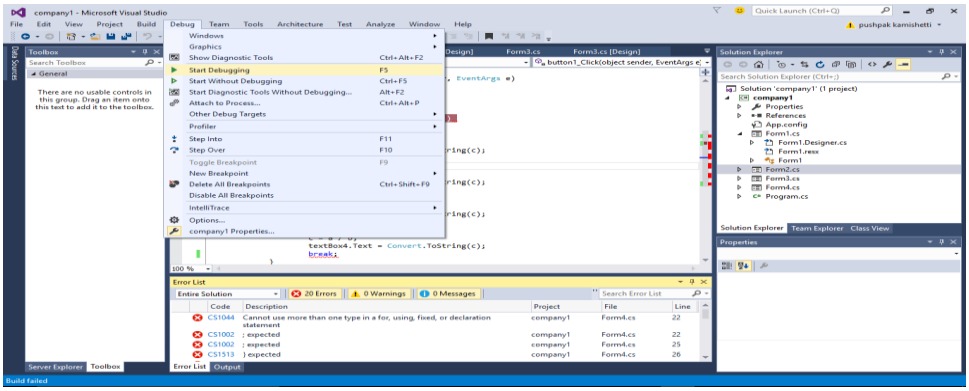

Figure 6 start debugging

It is used for knowing the errors and used for debugging the code, used for running the code in the application and with help of it i can able to find out the errors in the code and errors at the steps and In the visual studio it is observed in the part of debug and I have seen start debugging

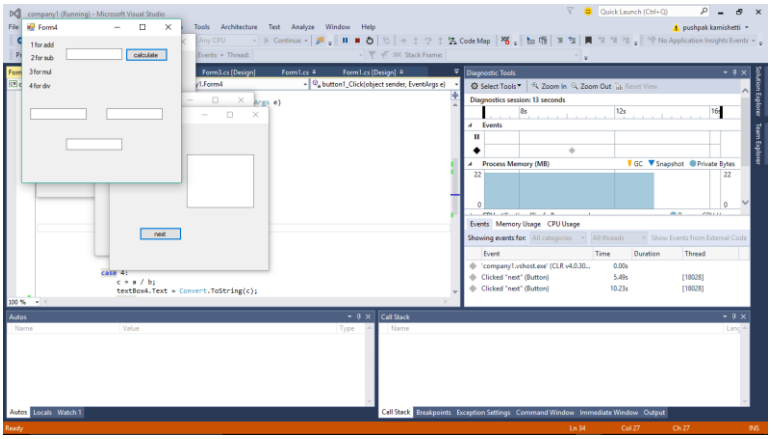

Figure 7output

It is the output after debugging the code without any errors in the code is observed as output of debugging.

Handle the errors (With Coding)-:

This problem will arise during the execution of program and the c# exception is a response that rises while running the program in the c# coding the exception we can see is System.Exception

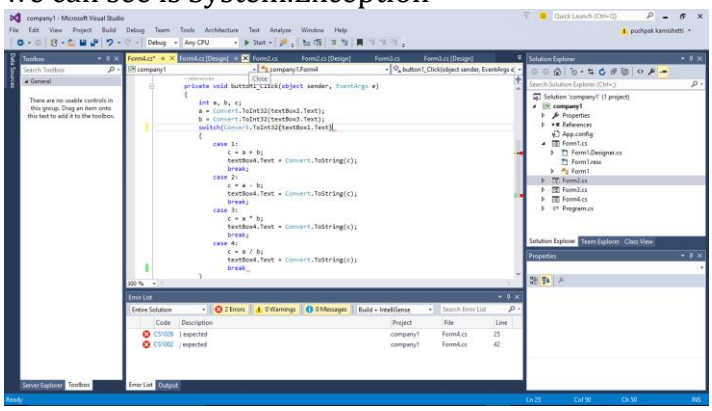

Figure 8error can be found down

Error for the coding which I have been typed can see some of the unexpected error and can be seen at the down and I can see the lines which is error

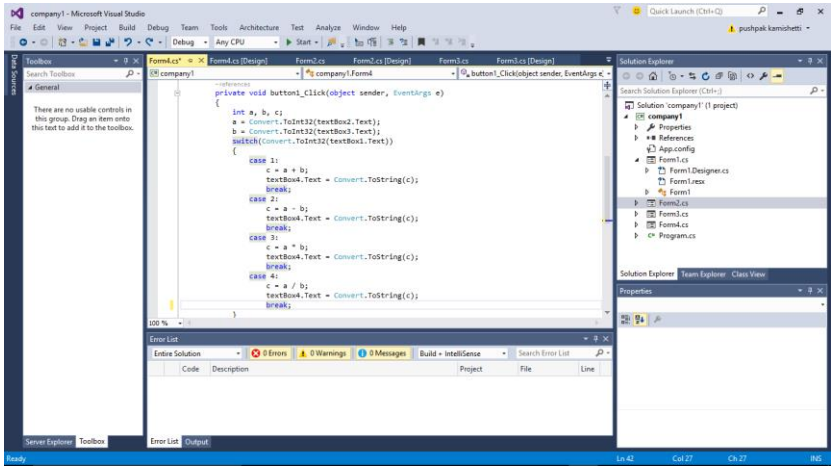

Figure 9clearing the error

After clearing the error in the code I can see nothing can be found in the down 0 error can be seen in the code and it is ready for execution.

3.4

Make effective use of an integrated development environment (IDE) including code and screen templates in your written report

- Use Visual Studio
- Select the screen template
- Create a form
- Include code
- Keep screen shots.

Visual studio-:

It is an integrated development environment and it is used for developing the websites, windows application and mobile application etc. and it will work in every platform such as windows etc. which is current trending program where the many developers use this environment for the many application creation like for example it contains java forms, asp.net forms, c# forms which helps the developer to use their particular thing in easy way to developer for saving the storage.

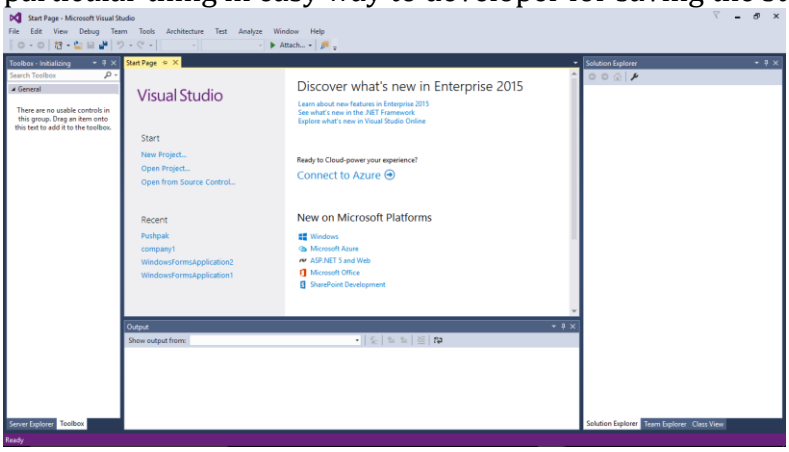

Figure 10visual studio

Select the screen template-:

It is the language templates which have different type of forms in it like windows application form, console and many more in it and the developer can chose any form of his choice.

1. It is the form which will find in the visual studio and used for .net programming and it is a graphical interface, it provides the developer to form to write the application for desktop, laptop and many more for the people.

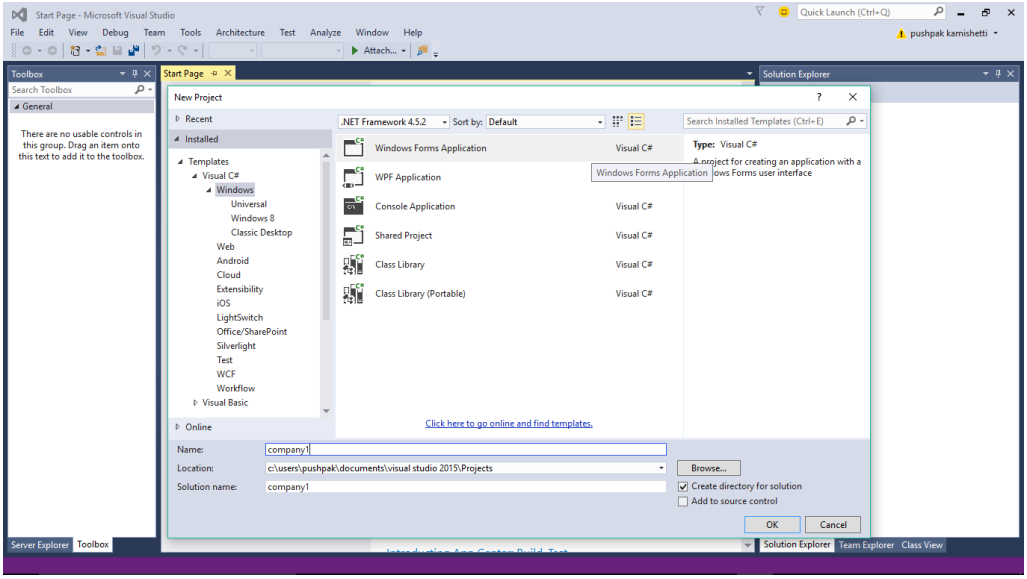

Figure 11step 1

In the first I have opened the visual studio and then next I have gone to the file next new then select project their I have seen the above box with the c# forms, I have selected windows form application for my application

Create a form-:

It is used to create the pages in the application of language by using the designs.

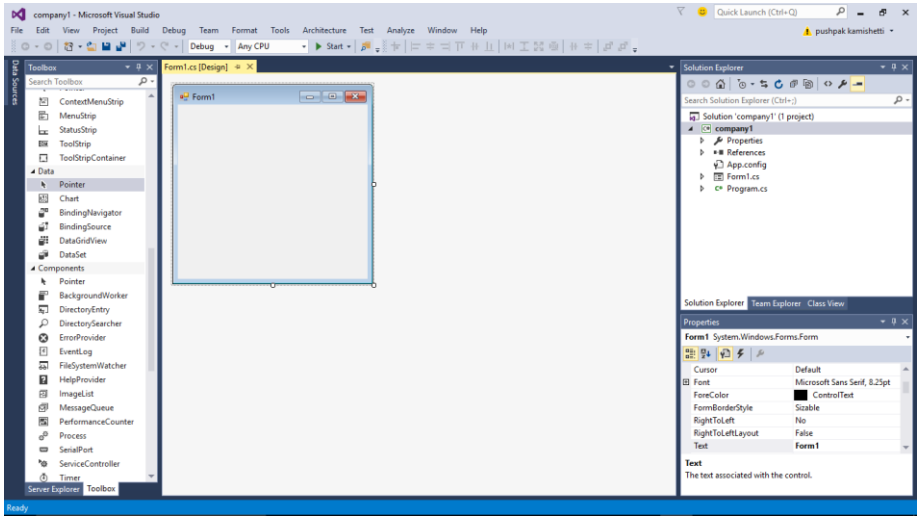

Figure 12step 2

Next of selecting the windows form application then click ok button after that new form will be created as shown in the above

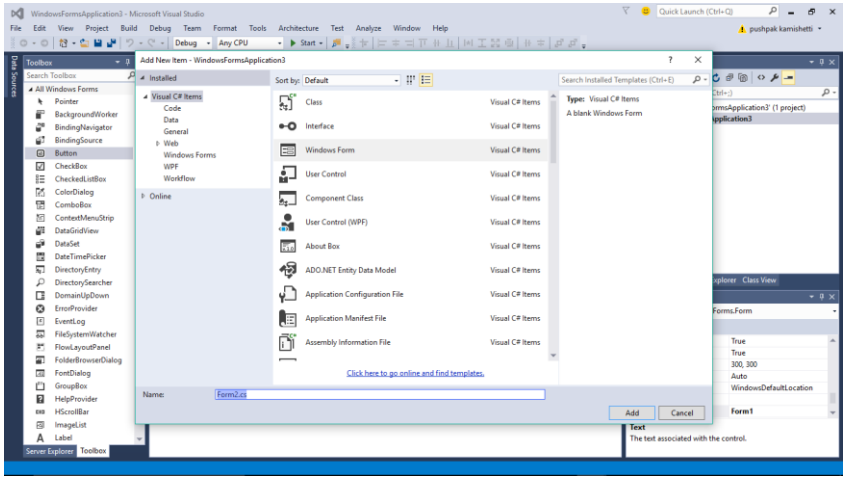

Figure 13for creating another form

For creating another form, I need to go project which will appear on the top and by keeping the cursor on it I can see the new form creation by clicking on that I have got many options by clicking the windows form it will open another form.

Include the code-:

I am using the language for coding is C# sharp and the scripting I have done according to it and created the output of the code.

Code-:

```
using System;                          //using namespace as class
```

```
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;

namespace company1                    // creating namespace as company 1
{
{
   public partial class Form1 : Form
   {
      public Form1()
      {
         InitializeComponent();
      }

      private void button1_Click(object sender, EventArgs e)
      {
        DialogResult r1= MessageBox.Show("Application is going to exit");
//message box code is written
         Application.Exit();              //exit code
      }

      private void refreshToolStripMenuItem_Click(object sender, EventArgs e)
      {
         Form1 f1 = new Form1();
         f1.Show();
      }

      private void nextToolStripMenuItem_Click(object sender, EventArgs e)
      {
         Form2 f2 = new Form2();            //redirecting to new form code
         f2.Show();                              //show code
      }

      private void exitToolStripMenuItem_Click(object sender, EventArgs e)
      {
         Application.Exit();
      }
   }
}
```

Screenshots-:

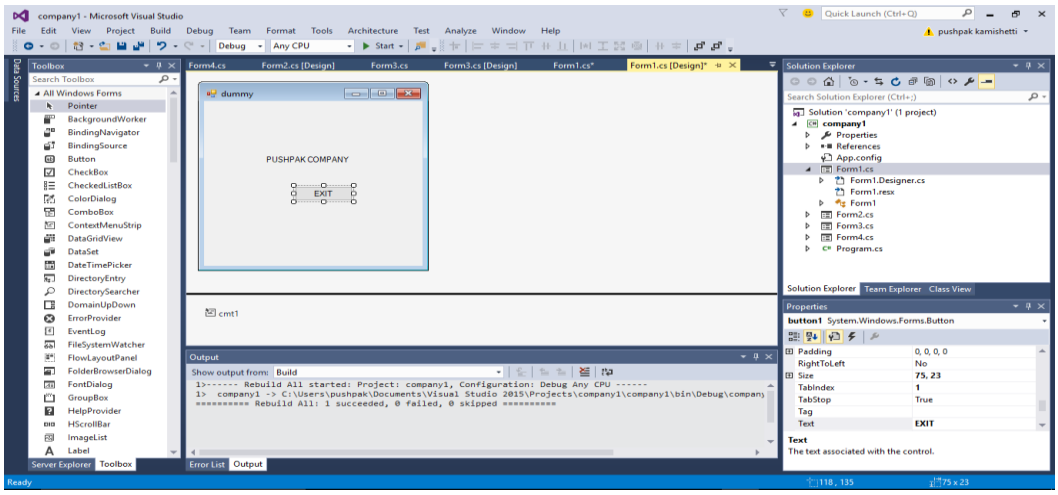

Figure 14 design of the output and code for this design

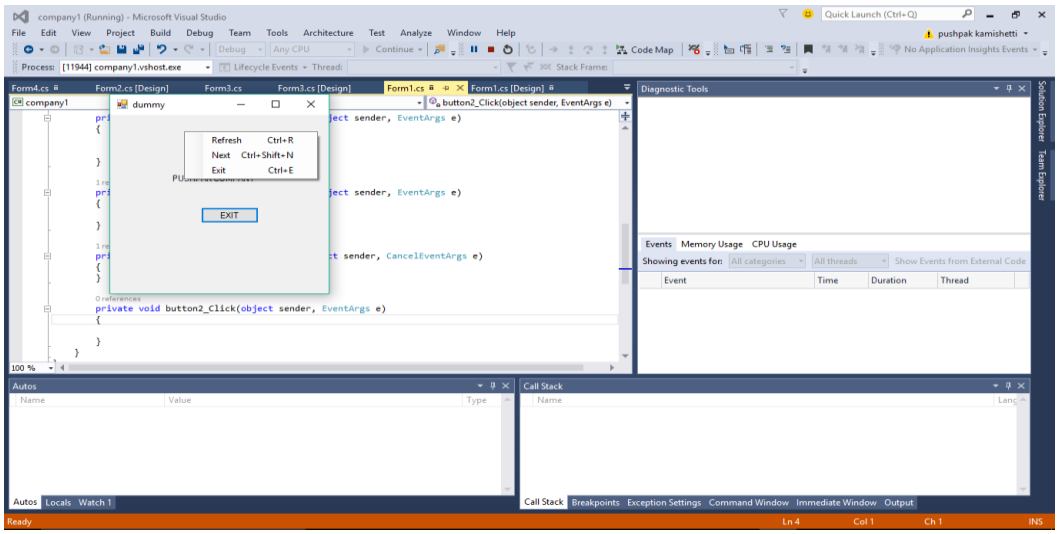

Figure 15output for the code