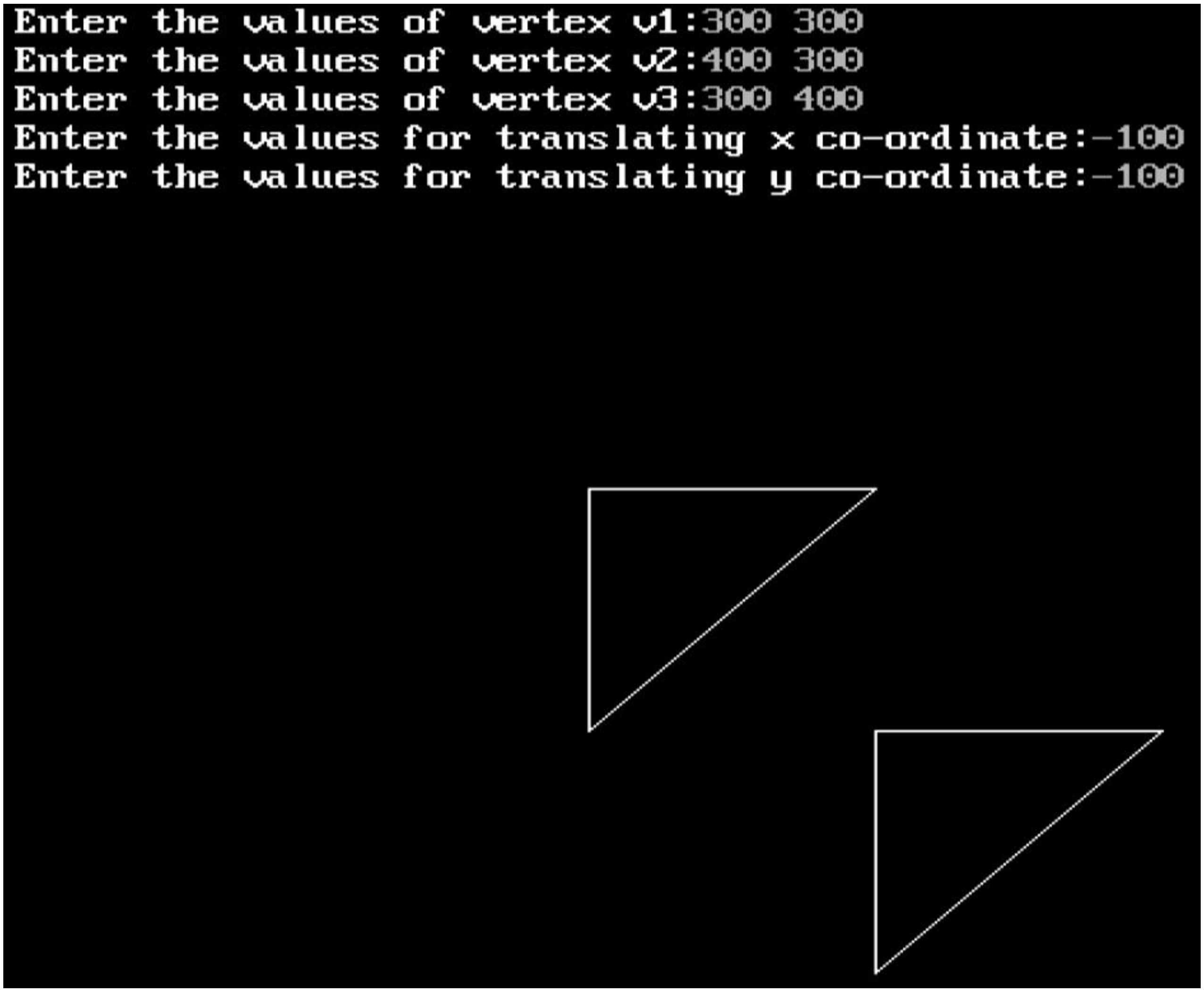
PRACTICAL NO-1

AIM:- Perform 2D translation of a triangle.

PROGRAM:-

```
#include<stdio.h>
#include<conio.h>
#include<graphics.h>
void main()
{
        int x1,x2,x3,y1,y2,y3,xt,yt;
        int gd=DETECT, gm=DETECT;
        initgraph(&gd,&gm, "C:\\TURBOC3\\BGI");
        printf("Enter the values of vertex v1:");
        scanf("%d %d",&x1,&y1);
        printf("Enter the values of vertex v2:");
        scanf("%d %d",&x2,&y2);
        printf("Enter the values of vertex v3:");
        scanf("%d %d",&x3,&y3);
        line(x1,y1,x2,y2);
        line(x2,y2,x3,y3);
        line(x1,y1,x3,y3);
        printf("Enter the values for translating x co-ordinate:");
        scanf("%d",&xt);
        printf("Enter the values for translating y co-ordinate:");
        scanf("%d",&yt)
        line(x1+xt,y1+yt,x2+xt,y2+yt);

        line(x2+xt,y2+yt,x3+xt,y3+yt);

        line(x1+xt,y1+yt,x3+xt,y3+yt);

        getch();

        closegraph();

}
```

OUTPUT:-



```
Enter the values of vertex v1:300 300
Enter the values of vertex v2:400 300
Enter the values of vertex v3:300 400
Enter the values for translating x co-ordinate:-100
Enter the values for translating y co-ordinate:-100
```

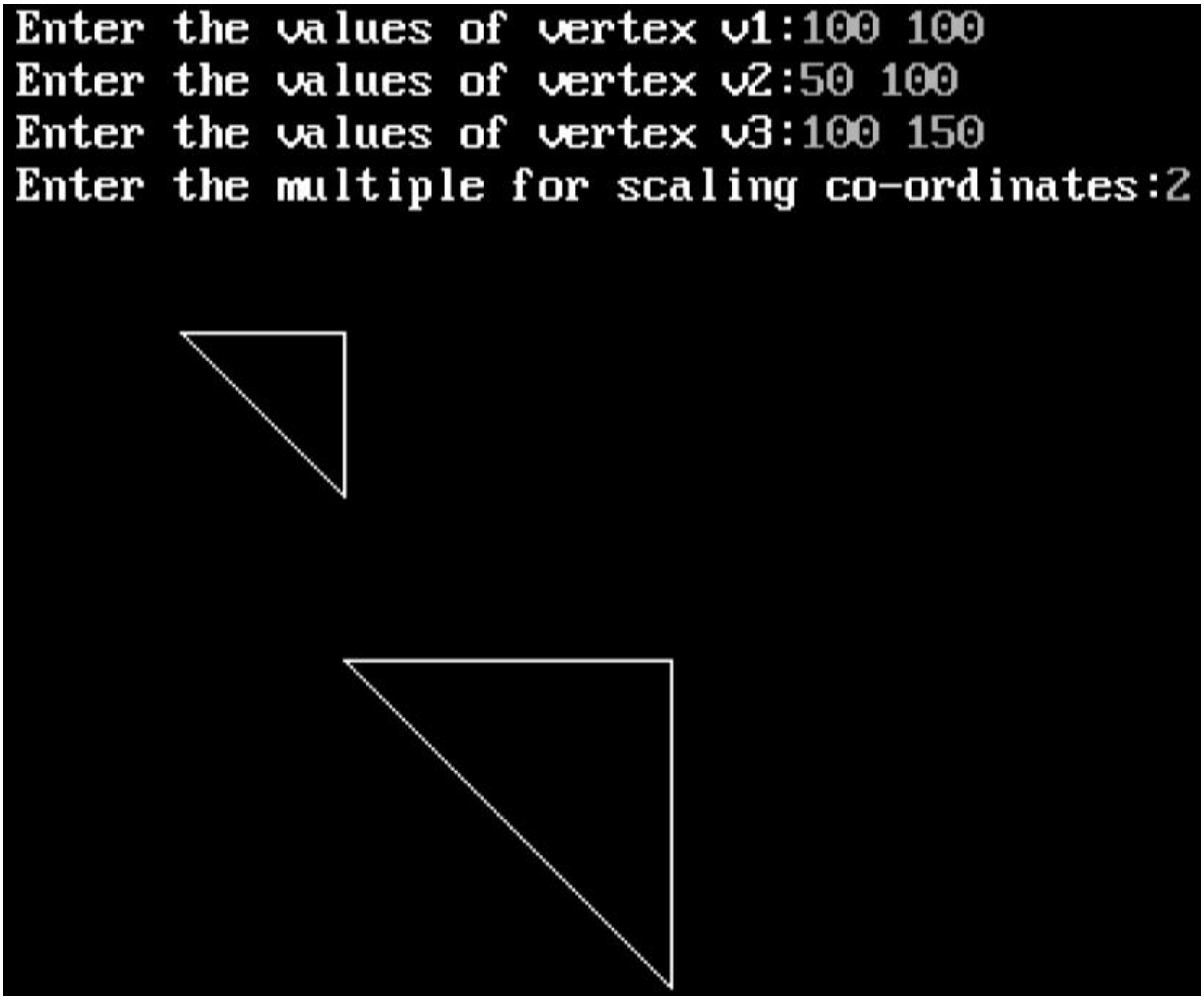
PRACTICAL NO-2

AIM:- Perform 2D scaling of a triangle.

PROGRAM:-

```
#include<stdio.h>

#include<conio.h>

#include<graphics.h>

void main()

{

        int x1,x2,x3,y1,y2,y3,t;

        int gd=DETECT, gm=DETECT;

        initgraph(&gd,&gm, "C:\\TURBOC3\\BGI");

        printf("Enter the values of vertex v1:");

        scanf("%d %d",&x1,&y1);

        printf("Enter the values of vertex v2:");

        scanf("%d %d",&x2,&y2);

        printf("Enter the values of vertex v3:");

        scanf("%d %d",&x3,&y3);

        line(x1,y1,x2,y2);

        line(x2,y2,x3,y3);

        line(x1,y1,x3,y3);

        printf("Enter the multiple for scaling co-ordinates:");

        scanf("%d",&t);

        line(x1*t,y1*t,x2*t,y2*t);

        line(x2*t,y2*t,x3*t,y3*t);
        line(x1*t,y1*t,x3*t,y3*t);

        getch();

        closegraph();

}
```

OUTPUT:-



```
Enter the values of vertex v1:100 100
Enter the values of vertex v2:50 100
Enter the values of vertex v3:100 150
Enter the multiple for scaling co-ordinates:2
```

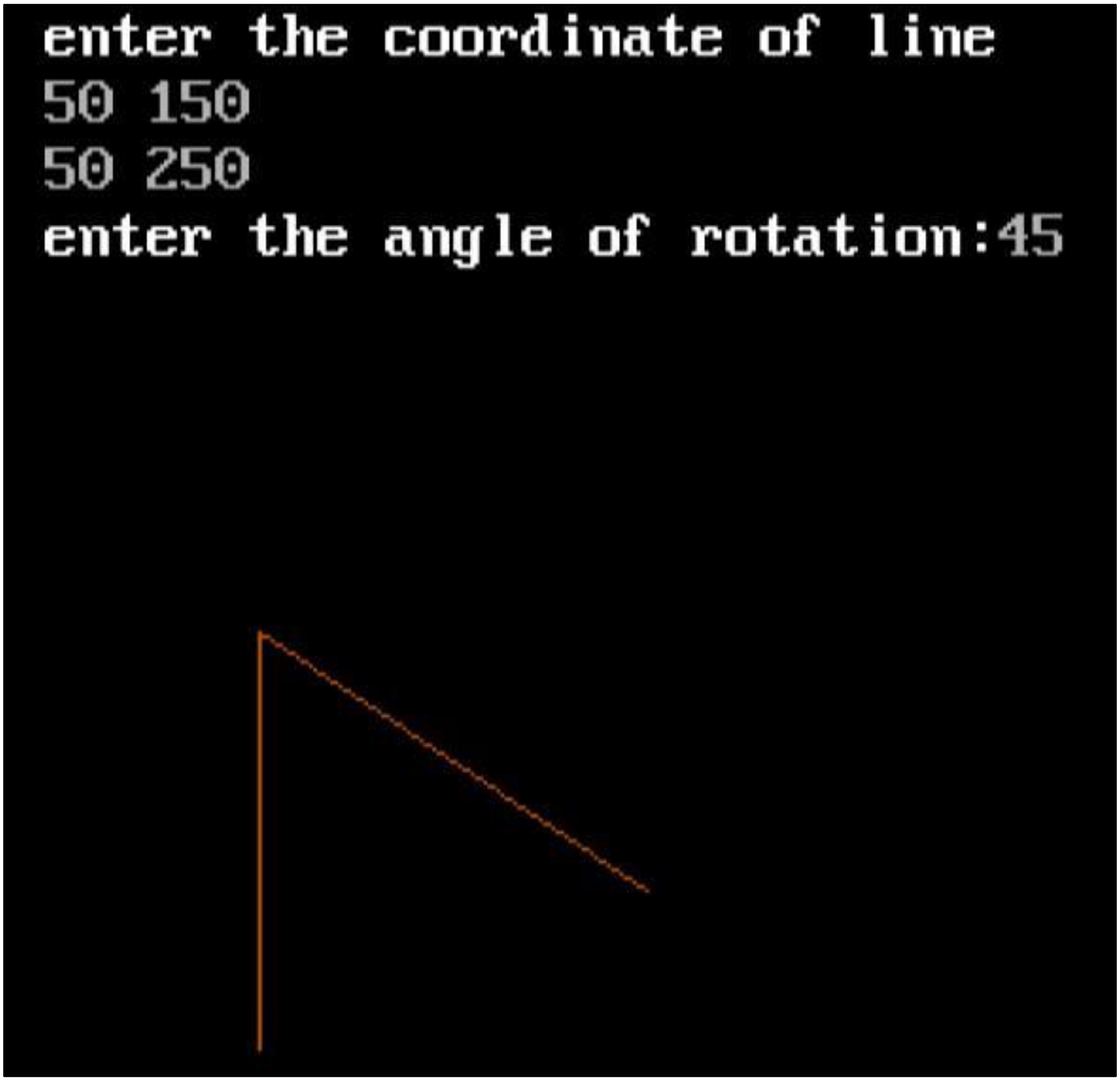
PRACTICAL NO-3

AIM:- Perform 2D Rotation of a line.

PROGRAM:-

```
#include<stdio.h>

#include<graphics.h>

#include<conio.h>

#include<math.h>

void main()

{

int gd=DETECT,gm;

int x1,y1,x2,y2;

float b1,b2;

float t,deg;

initgraph(&gd,&gm,"c:\\tc\\bgi");

printf("enter the coordinate of line \n");

scanf("%d%d%d%d",&x1,&y1,&x2,&y2);

setcolor(6);

line(x1,y1,x2,y2);

getch();

printf("enter the angle of rotation:");

scanf("%f",&deg);

t=(22*deg)/(180*7);

b1=abs((x2*cos(t))-(y2*sin(t)));

b2=abs((x2*sin(t))+(y2*cos(t)));

line(x1,y1,b1,b2);
getch();

closegraph();

}
```

OUTPUT:-



```
enter the coordinate of line
50 150
50 250
enter the angle of rotation:45
```

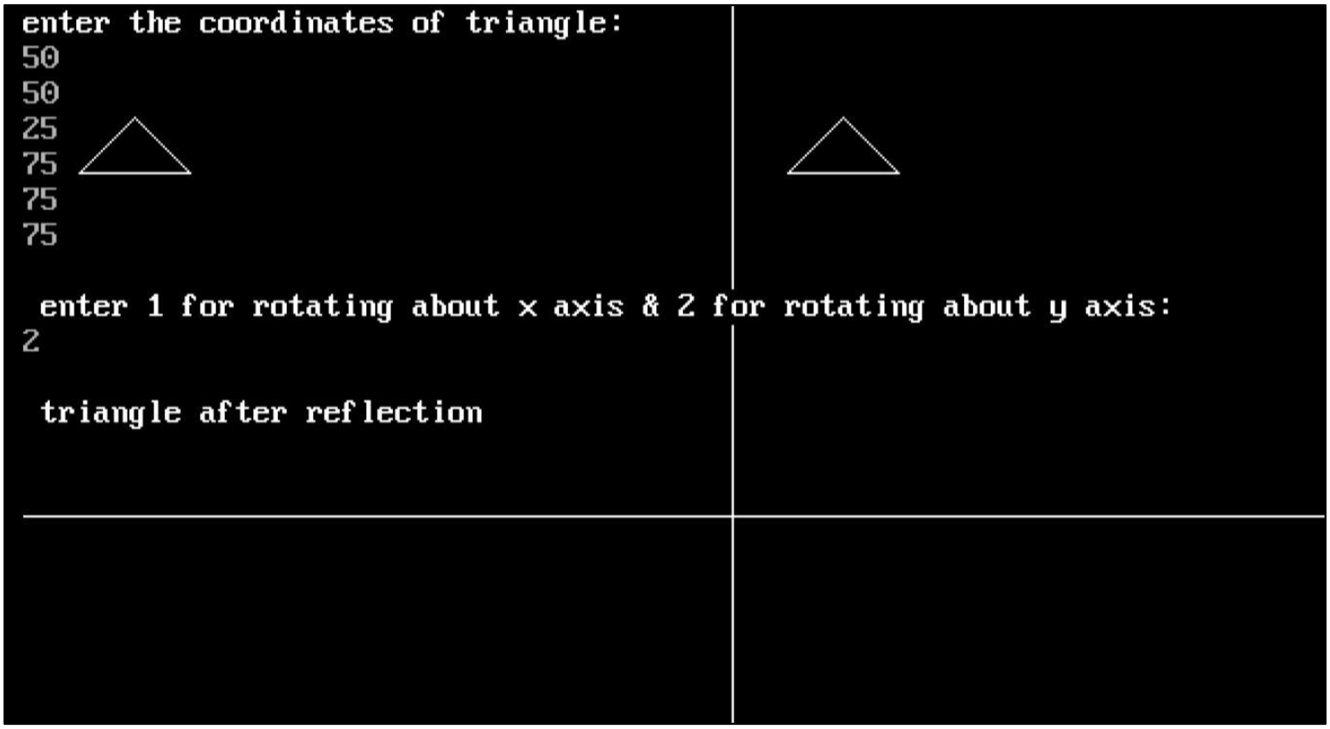
PRACTICAL NO-4

AIM:- Write a program to perform for 2D reflection.

PROGRAM:-

```
#include<stdio.h>

#include<conio.h>

#include<graphics.h>

#include<stdlib.h>

void main()

{

int gd=DETECT,gm;

int x1,y1,x2,y2,x3,y3,ref;

clrscr();

initgraph(&gd,&gm,"C:\\TC\\bgi");

printf("\n enter the coordinates of triangle:\n");

scanf("%d%d%d%d%d%d",&x1,&y1,&x2,&y2,&x3,&y3);

line(x1,y1,x2,y2);

line(x2,y2,x3,y3);

line(x3,y3,x1,y1);

line(320,0,320,460);

line(0,230,640,230);

printf("\n enter 1 for rotating about x axis & 2 for rotating about y axis:\n");

scanf("%d",&ref);

if(ref==1)

{

        if(y1>230)
        {       x1=x1;
                x2=x2;
                x3=x3;
                y1=y1-230;
                y2=y2-230;
                y3=y3-230;
        }
        else
        {       x1=x1;
                x2=x2;
                x3=x3;
                y1=y1+230;
                y2=y2+230;
                y3=y3+230;
        }
}
if(ref==2)
{
        if(x1>320)
        {       x1=x1;
                x2=x2;
                x3=x3;
                x1=x1-320;
                x2=x2-320;
                x3=x3-320;
        }
        else
        {       y1=y1;
                y2=y2;
                y3=y3;
                x1=x1+320;
                x2=x2+320;
                x3=x3+320;
        }
}
printf("\n triangle after reflection");
line(x1,y1,x2,y2);
line(x2,y2,x3,y3);
line(x3,y3,x1,y1);
getch();
closegraph();
}
}
```

OUTPUT:-



```
enter the coordinates of triangle:
50
50
25
75
75
75

 enter 1 for rotating about x axis & 2 for rotating about y axis:
2

 triangle after reflection
```

Practical no 5

AIM: Setup DirectX 11, Window Framework And Initialize Direct3D Device.

Step 1:

Create new project, and select “Windows Forms Application”, select .NET Framework as 2.0 in Visuals C#.

Right Click on properties Click on open click on build Select Platform Target and Select x86.

Step 2:

Click on View Code of Form 1.

Step 3:

Go to Solution Explorer, right click on project name, and select Add Reference. Click on Browse and select the given .dll files which are “Microsoft.DirectX”, “Microsoft.DirectX.Direct3D”, and “Microsoft.DirectX.DirectX3DX”.

Step 4:

Go to Properties Section of Form, select Paint in the Event List and enter as Form1_Paint.

Step 5:

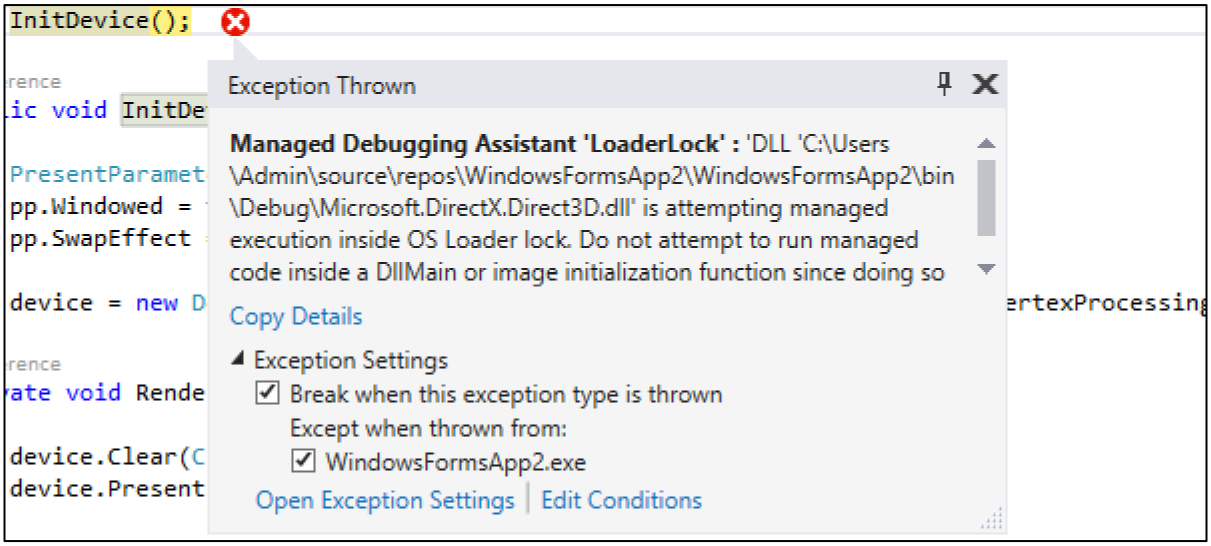
Copy and Paste the below given code into Form’s C# code file. Namespace must be as same as your project name.

Program:

```
using System;
using System.Collections.Generic;
using System.ComponentModel;
using System.Data;
using System.Drawing;
using System.Text;
using System.Windows.Forms;
using Microsoft.DirectX;
using Microsoft.DirectX.Direct3D;


namespace WindowsFormsApp2
{
    public partial class Form1 : Form
    {
        Microsoft.DirectX.Direct3D.Device device;
        public Form1()
        {
            InitializeComponent();
            InitDevice();
        }
        public void InitDevice()
        {
            PresentParameters pp = new PresentParameters();
            pp.Windowed = true;
            pp.SwapEffect = SwapEffect.Discard;

            device = new Device(0, DeviceType.Hardware, this,
CreateFlags.HardwareVertexProcessing, pp);
        }
        private void Render()
        {
            device.Clear(ClearFlags.Target,Color.CornflowerBlue,0,1);
            device.Present();

        }

        private void Form1_Paint(object sender, PaintEventArgs e)
        {
            Render();
        }
    }
}
```

Click OnStart

A Window will Appear : (CHECK-IN THE CHECKBOXES OF EXCEPTIONS)



```
InitDevice();

rence
ic void InitDe

PresentParamet
pp.Windowed = 
pp.SwapEffect 

device = new D                                                   ertexProcessing

rence
ate void Rende

device.Clear(C
device.Present
```

Exception Thrown

Managed Debugging Assistant 'LoaderLock' : 'DLL 'C:\Users\Admin\source\repos\WindowsFormsApp2\WindowsFormsApp2\bin\Debug\Microsoft.DirectX.Direct3D.dll' is attempting managed execution inside OS Loader lock. Do not attempt to run managed code inside a DllMain or image initialization function since doing so

Copy Details

Exception Settings

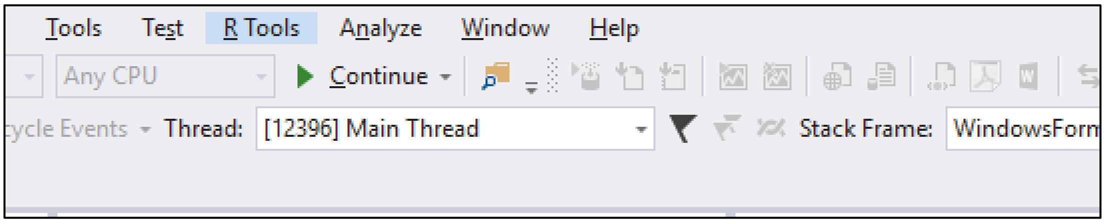
☑ Break when this exception type is thrown

Except when thrown from:

☑ WindowsFormsApp2.exe

Open Exception Settings | Edit Conditions

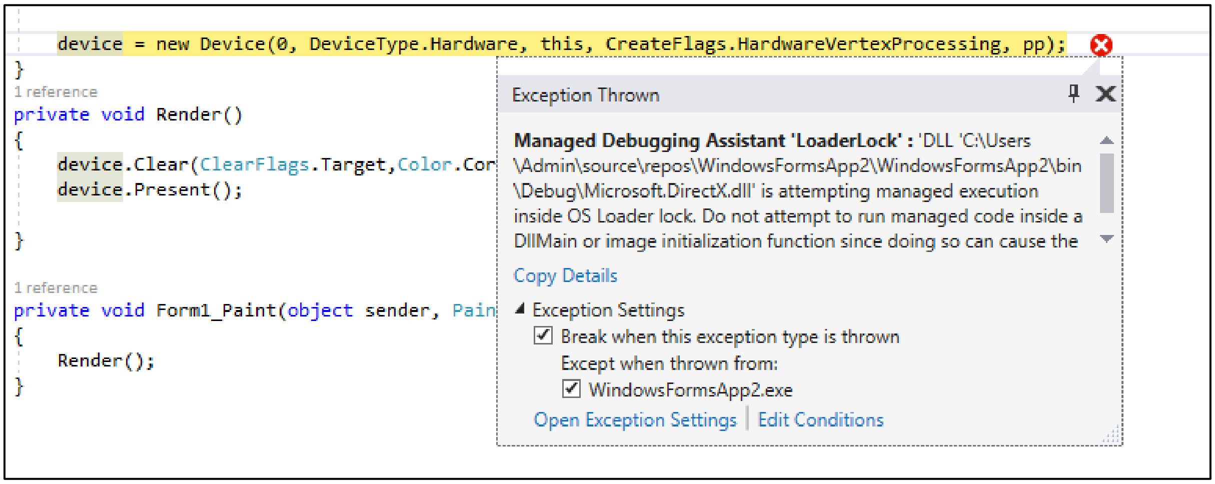
Click On Continue –



Thread: [12396] Main Thread

Stack Frame: WindowsForm

A New Window Will Appear –(CHECK-IN THE CHECKBOXES OF EXCEPTIONS)



```
    device = new Device(0, DeviceType.Hardware, this, CreateFlags.HardwareVertexProcessing, pp);
}
1 reference
private void Render()
{
    device.Clear(ClearFlags.Target,Color.Cor
    device.Present();

}

1 reference
private void Form1_Paint(object sender, Pain
{
    Render();
}
```

Exception Thrown

Managed Debugging Assistant 'LoaderLock' : 'DLL 'C:\Users\Admin\source\repos\WindowsFormsApp2\WindowsFormsApp2\bin\Debug\Microsoft.DirectX.dll' is attempting managed execution inside OS Loader lock. Do not attempt to run managed code inside a DllMain or image initialization function since doing so can cause the

Copy Details

Exception Settings

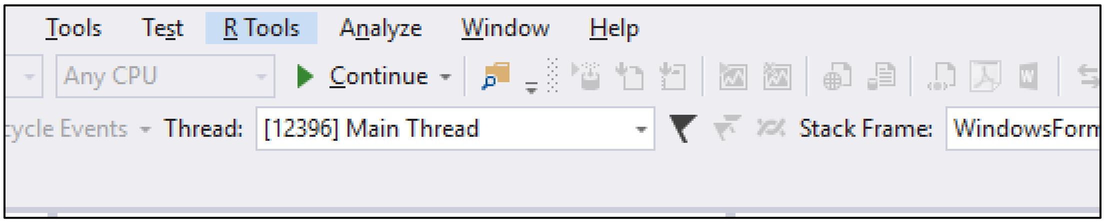
☑ Break when this exception type is thrown

Except when thrown from:

☑ WindowsFormsApp2.exe

Open Exception Settings | Edit Conditions

Again Clicking Continue –

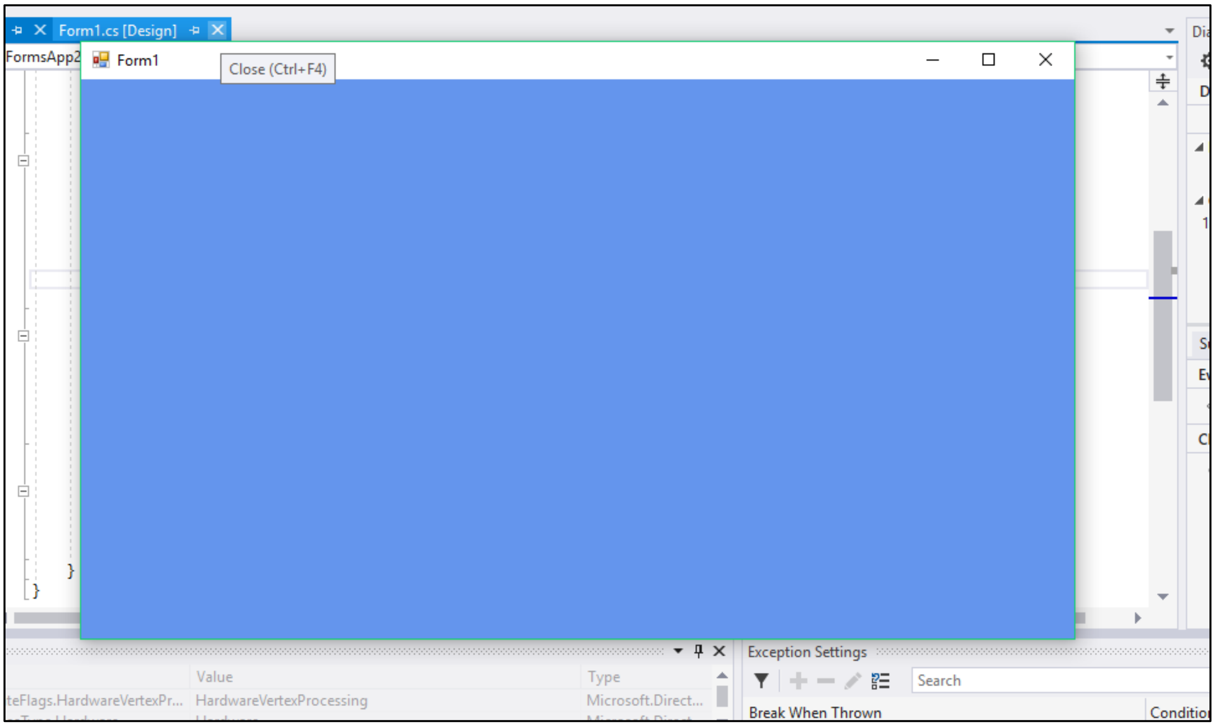


Any CPU

Thread: [12396] Main Thread

Stack Frame: WindowsForm

And the Required will Appear –



	Value	Type
teFlags.HardwareVertexPr...	HardwareVertexProcessing	Microsoft.Direct...