5/30/2021

ADVANCED SOFTWARE ENGINEERING

COMPONENT 2- FINAL PROJECT

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THE BRITISH COLLEGE/6984

Introduction

This is documentation for Graphical Programming language project. It is a paint app which basically runs on set of commands which are given by users and gives output in the application window. The app consists of two command line: one for single line command and another for multiline command. “A visual programming language (VPL) often termed as Graphical Programming Language is a programming language that uses graphical elements and figures to develop a program. A VPL employs techniques to design a software program in two or more dimensions, and includes graphical elements, text, symbols and icons within its programming context. A visual programming language is also known as an executable graphics language.” (Technopedia, n.d.) It is more efficient for visual learners in programming as it provides approach which is more intuitive and less cumbersome.

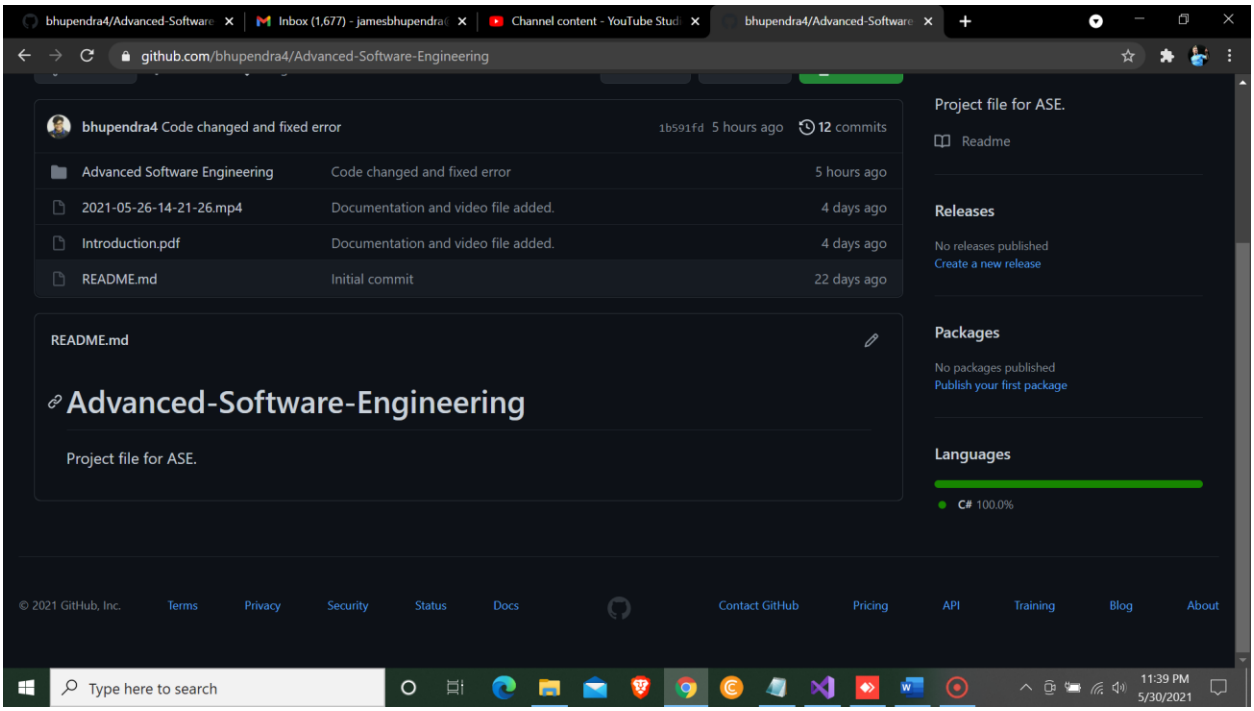
In this task I will be creating a simple programming language which will have drawing functionalities. This application will have two command line one for single line and one for multiline command where the user will input code to perform drawing. And the output I will be displayed in the output panel. The evidences of the application and tits functionalities are present ted in this document. Using graphics in programming language helps us creating different shapes. I have created an application which helps to create different graphical shapes using simple programming language created. Any user can draw simple shapes using created simple programming language.

Version controller

Version controller is a system which keep track of the modification in the code so if something unexpected happens, we can make comparison between the source codes and revert to any previous versions as required. It is very important where multiple developers are continuously working on the same source code. I have used GitHub as our version controller.

YouTube Link: https://youtu.be/RjJPXVXTtTs

GitHub file link: https://github.com/bhupendra4/Advanced-Software-Engineering.git


bhupendra4/Advanced-Software
Inbox (1,677) - jamesbhupendra
Channel content - YouTube Studi
bhupendra4/Advanced-Software
github.com/bhupendra4/Advanced-Software-Engineering
bhupendra4 Code changed and fixed error
1b591fd 5 hours ago
12 commits
Advanced Software Engineering
Code changed and fixed error
5 hours ago
2021-05-26-14-21-26.mp4
Documentation and video file added.
4 days ago
Introduction.pdf
Documentation and video file added.
4 days ago
README.md
Initial commit
22 days ago
README.md
Advanced-Software-Engineering
Project file for ASE.
Project file for ASE.
Readme
Releases
No releases published
Create a new release
Packages
No packages published
Publish your first package
Languages
C# 100.0%
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About
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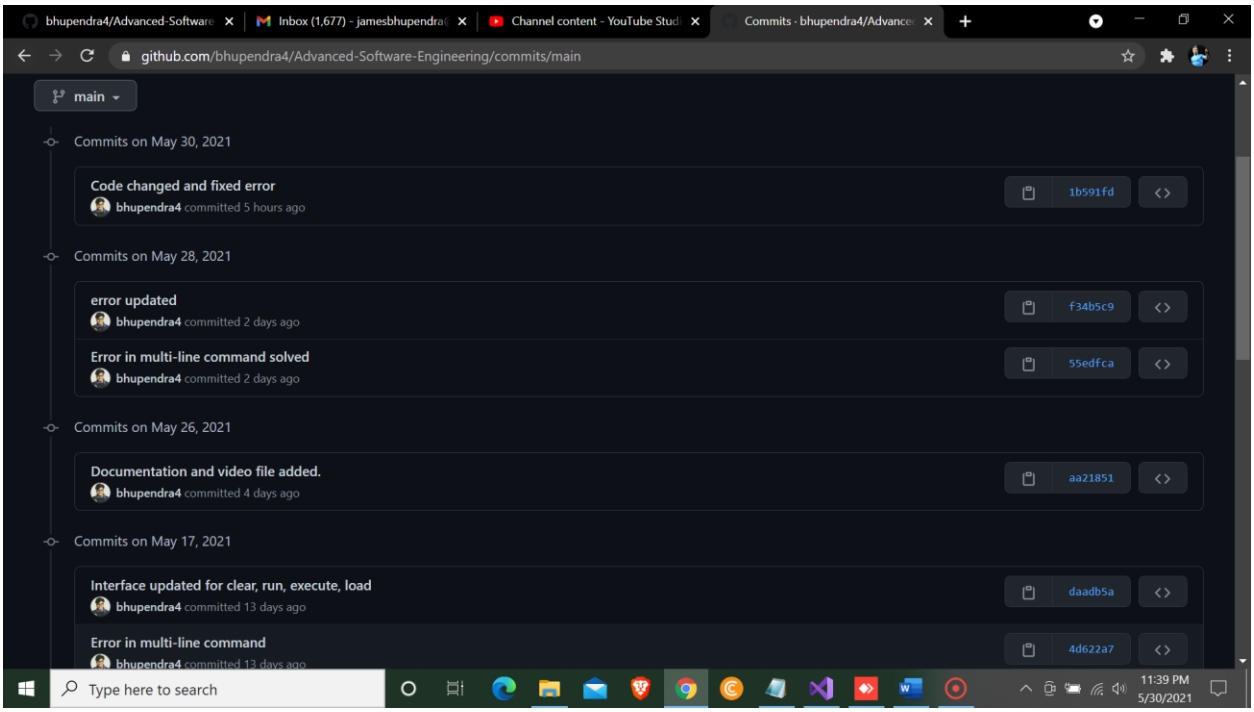
bhupendra4/Advanced-Software
Inbox (1,677) - jamesbhupendra
Channel content - YouTube Studi
Commits · bhupendra4/Advance
github.com/bhupendra4/Advanced-Software-Engineering/commits/main
main
Commits on May 30, 2021
Code changed and fixed error
bhupendra4 committed 5 hours ago
1b591fd
Commits on May 28, 2021
error updated
bhupendra4 committed 2 days ago
f34b5c9
Error in multi-line command solved
bhupendra4 committed 2 days ago
55edfca
Commits on May 26, 2021
Documentation and video file added.
bhupendra4 committed 4 days ago
aa21851
Commits on May 17, 2021
Interface updated for clear, run, execute, load
bhupendra4 committed 13 days ago
daadb5a
Error in multi-line command
bhupendra4 committed 13 days ago
4d622a7
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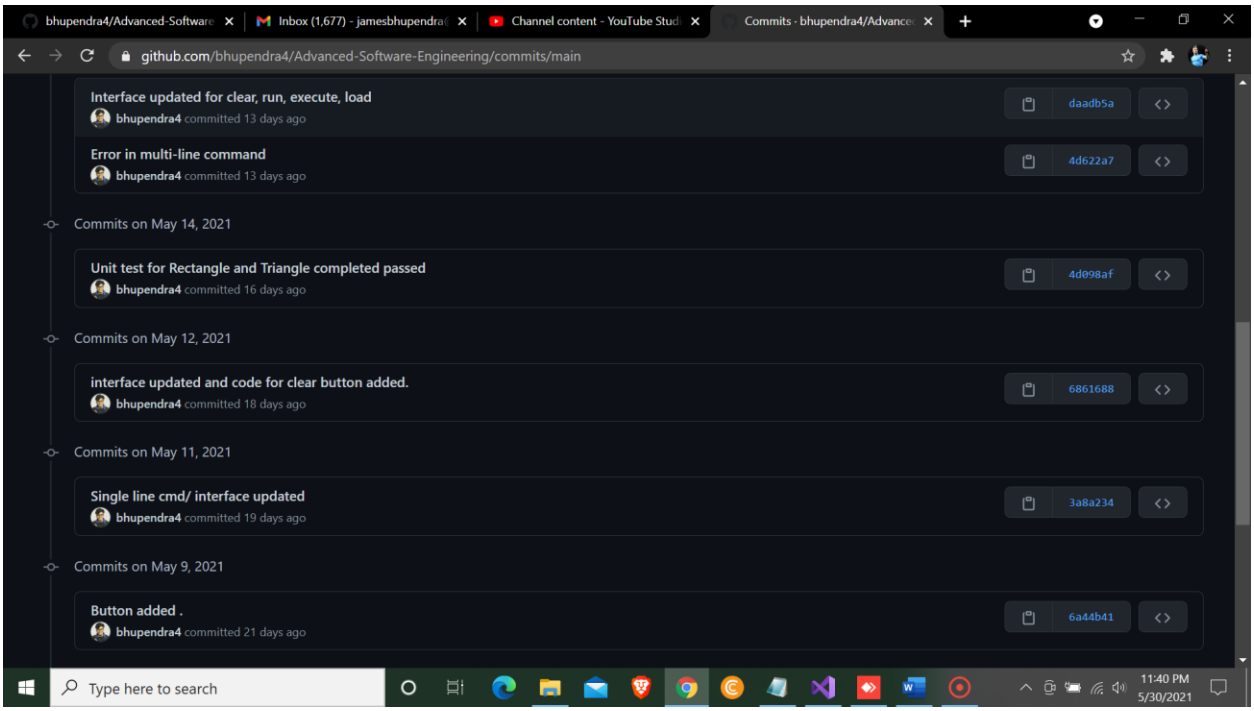
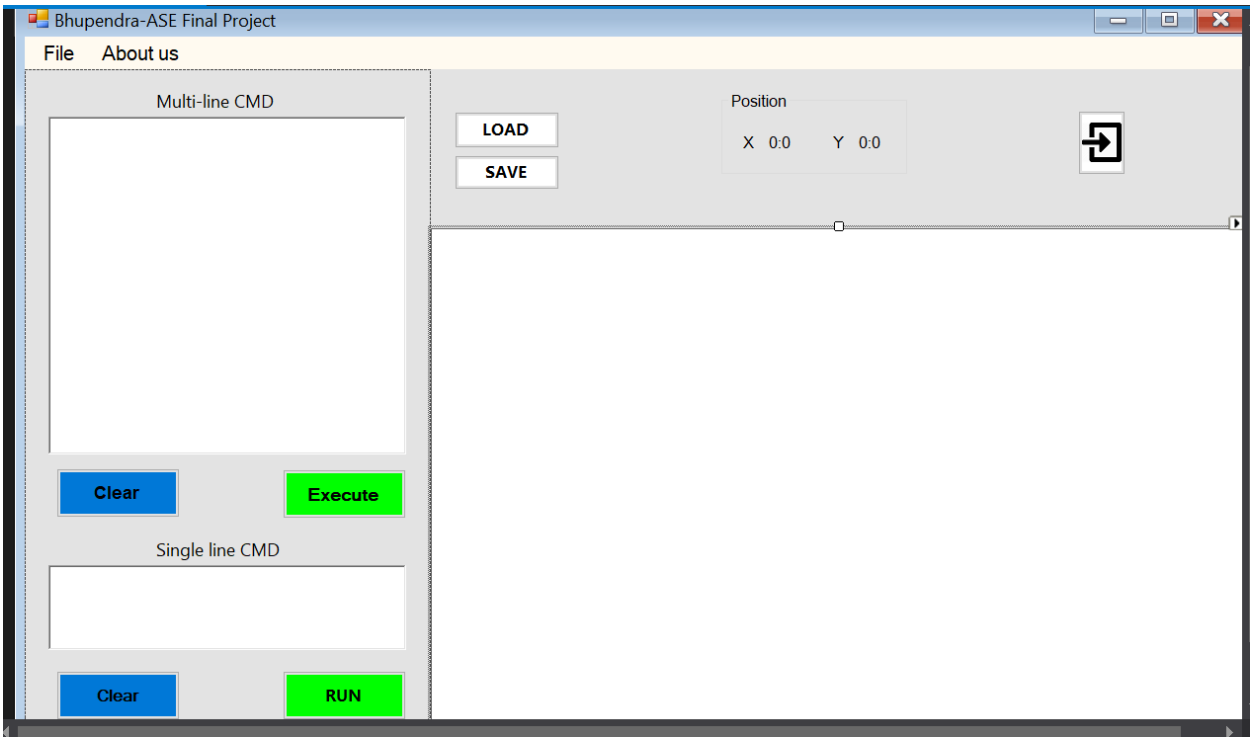
11:39 PM
5/30/2021



Dashboard

This is the homepage or dashboard of application every operations are carried out from this page. It has four panel one panel for single line and multiline commands where the user can pass single line or multiline code to be executed. Another panel consisting canvas (output panel) which gives output of code from single and multiline command. It also has pen color, fill and positon where the drawing is to be created. And in the right side we have drawing pen which is free form pen it will be used to draw free drawings, and there is background for changing background of canvas and clear button for clearing everything.

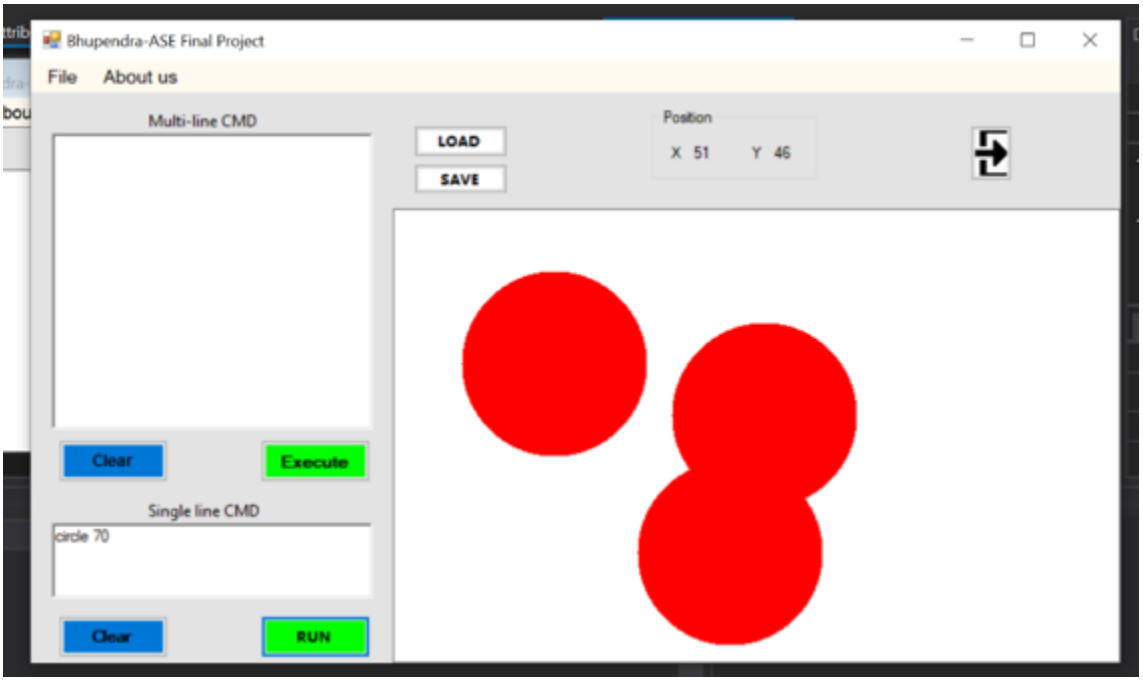
This is my dashboard: Homepage



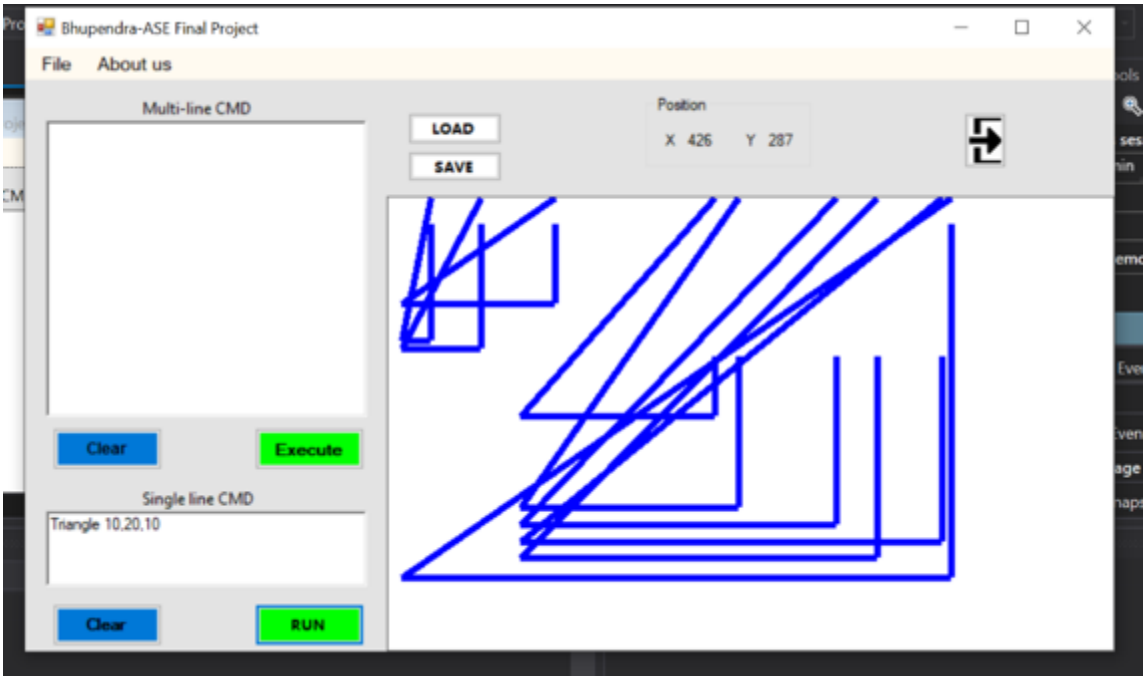
Single line command

These single line commands are for component 1. From this we can make circle, triangle, rectangle, we can move the position where the drawing is to be created.

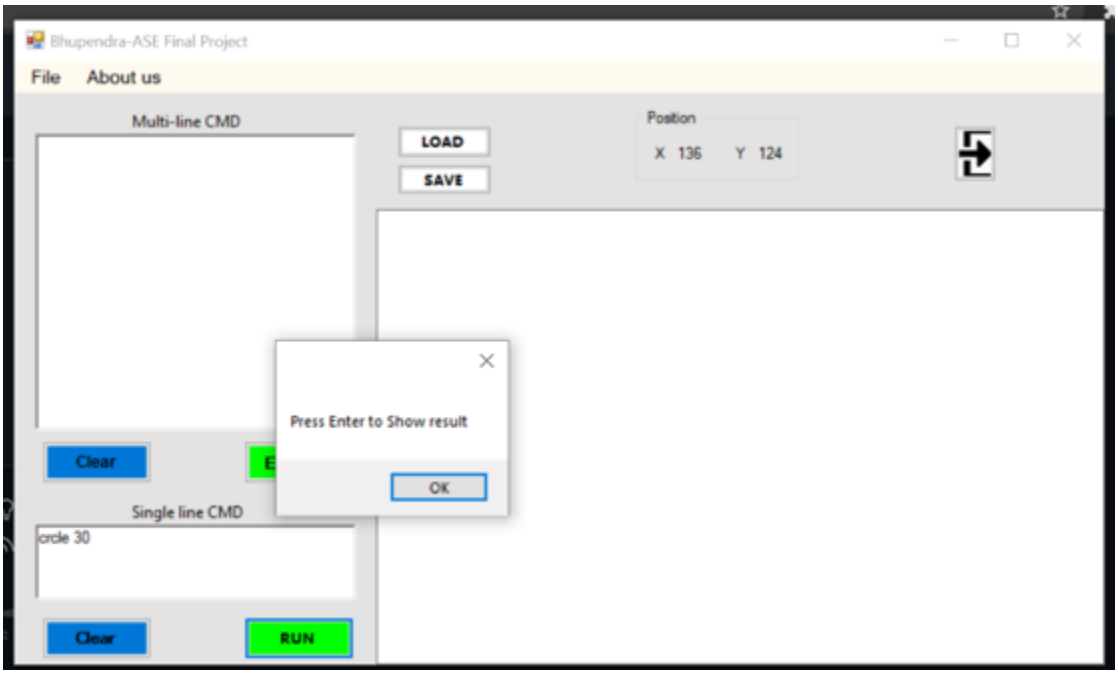
Circle is Created:



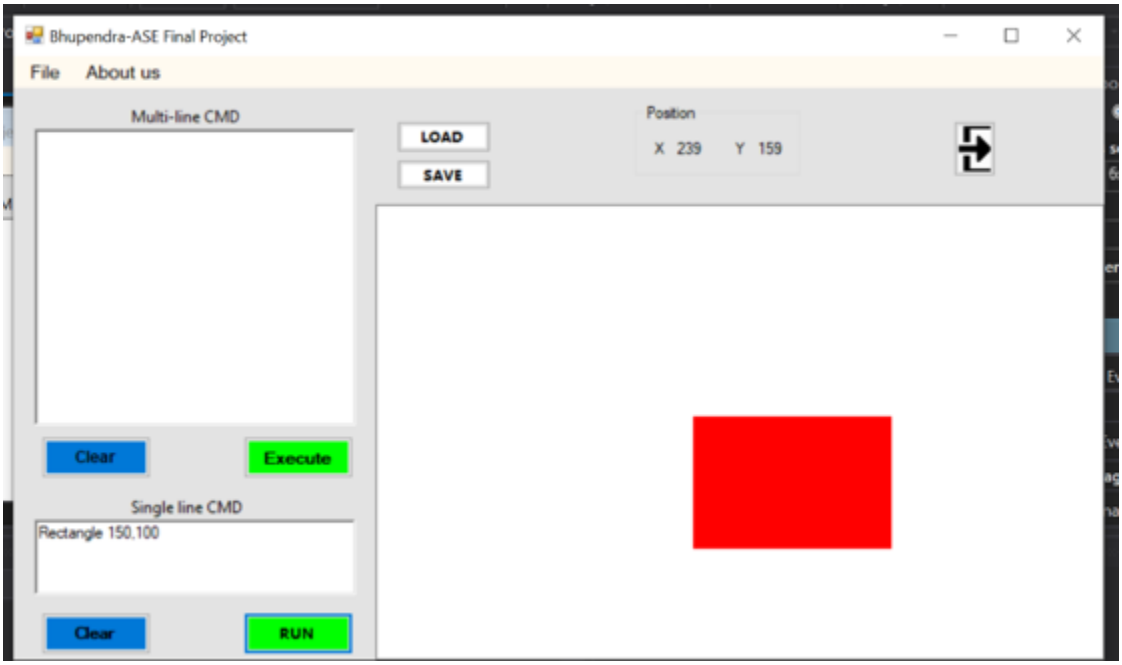
Triangle is Created:



Invalid Command is passed:



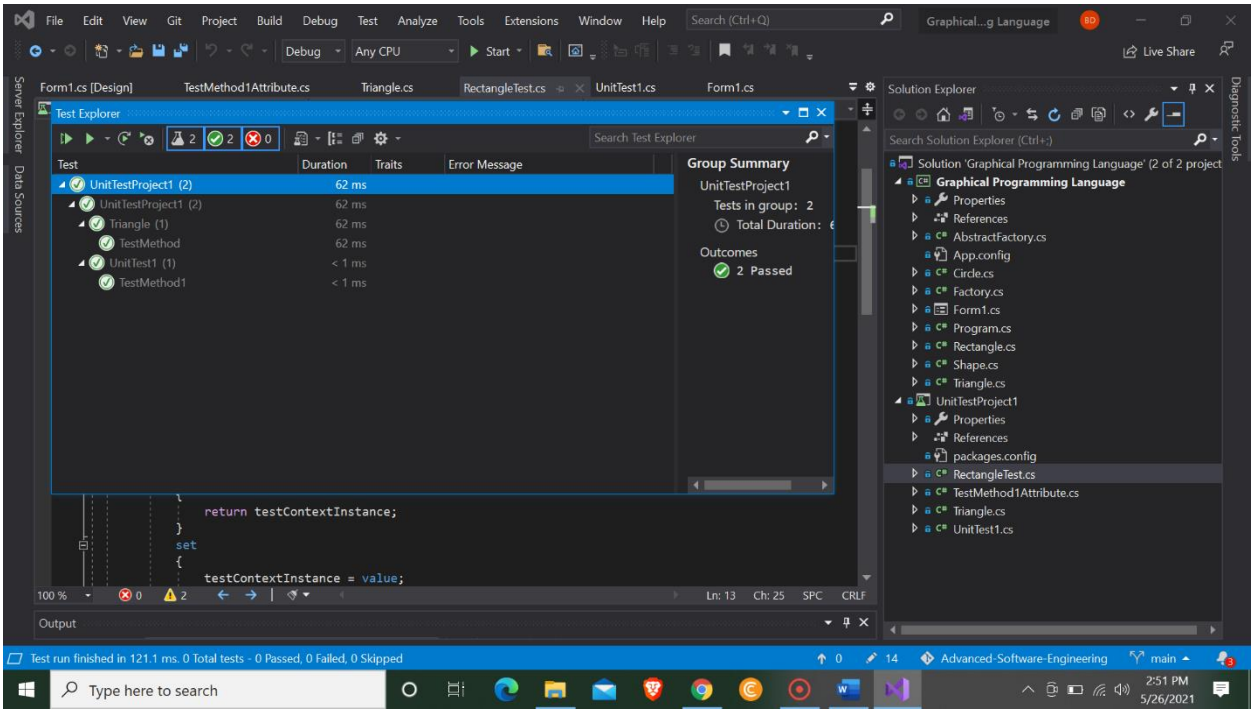
Rectangle is created:

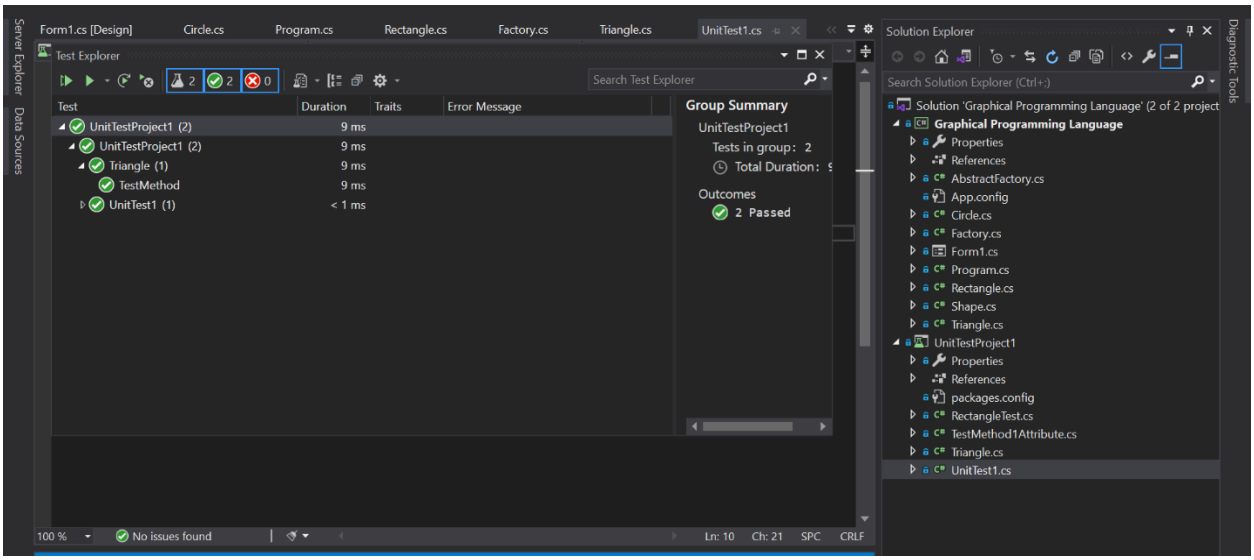


UNIT TEST:

Unit testing is a type of software testing where individual units or components of a software are tested. The purpose is to validate that each unit of the software code performs as expected. Unit Testing is done during the development (coding phase) of an application by the developers.

Screenshot of unit test running


File Edit View Git Project Build Debug Test Analyze Tools Extensions Window Help
Debug
Any CPU
Start
Live Share
Form1.cs [Design]
TestMethod1Attribute.cs
Triangle.cs
RectangleTest.cs
UnitTest1.cs
Form1.cs
Test Explorer
Search Test Explorer
Test
Duration
Traits
Error Message
UnitTestProject1 (2) 62 ms
UnitTestProject1 (2) 62 ms
Triangle (1) 62 ms
TestMethod 62 ms
UnitTest1 (1) < 1 ms
TestMethod1 < 1 ms
Group Summary
UnitTestProject1
Tests in group: 2
Total Duration:
Outcomes
2 Passed
return testContextInstance;
}
set
{
testContextInstance = value;
Solution Explorer
Search Solution Explorer (Ctrl+;)
Solution 'Graphical Programming Language' (2 of 2 project
Graphical Programming Language
Properties
References
AbstractFactory.cs
App.config
Circle.cs
Factory.cs
Form1.cs
Program.cs
Rectangle.cs
Shape.cs
Triangle.cs
UnitTestProject1
Properties
References
packages.config
RectangleTest.cs
TestMethod1Attribute.cs
Triangle.cs
UnitTest1.cs
100 %
Ln: 13 Ch: 25 SPC CRLF
Output
Test run finished in 121.1 ms. 0 Total tests - 0 Passed, 0 Failed, 0 Skipped
Advanced-Software-Engineering
main
Type here to search
2:51 PM
5/26/2021


Form1.cs [Design]
Circle.cs
Program.cs
Rectangle.cs
Factory.cs
Triangle.cs
UnitTest1.cs
Test Explorer
Search Test Explorer
Test
Duration
Traits
Error Message
UnitTestProject1 (2) 9 ms
UnitTestProject1 (2) 9 ms
Triangle (1) 9 ms
TestMethod 9 ms
UnitTest1 (1) < 1 ms
Group Summary
UnitTestProject1
Tests in group: 2
Total Duration:
Outcomes
2 Passed
Solution Explorer
Search Solution Explorer (Ctrl+;)
Solution 'Graphical Programming Language' (2 of 2 project
Graphical Programming Language
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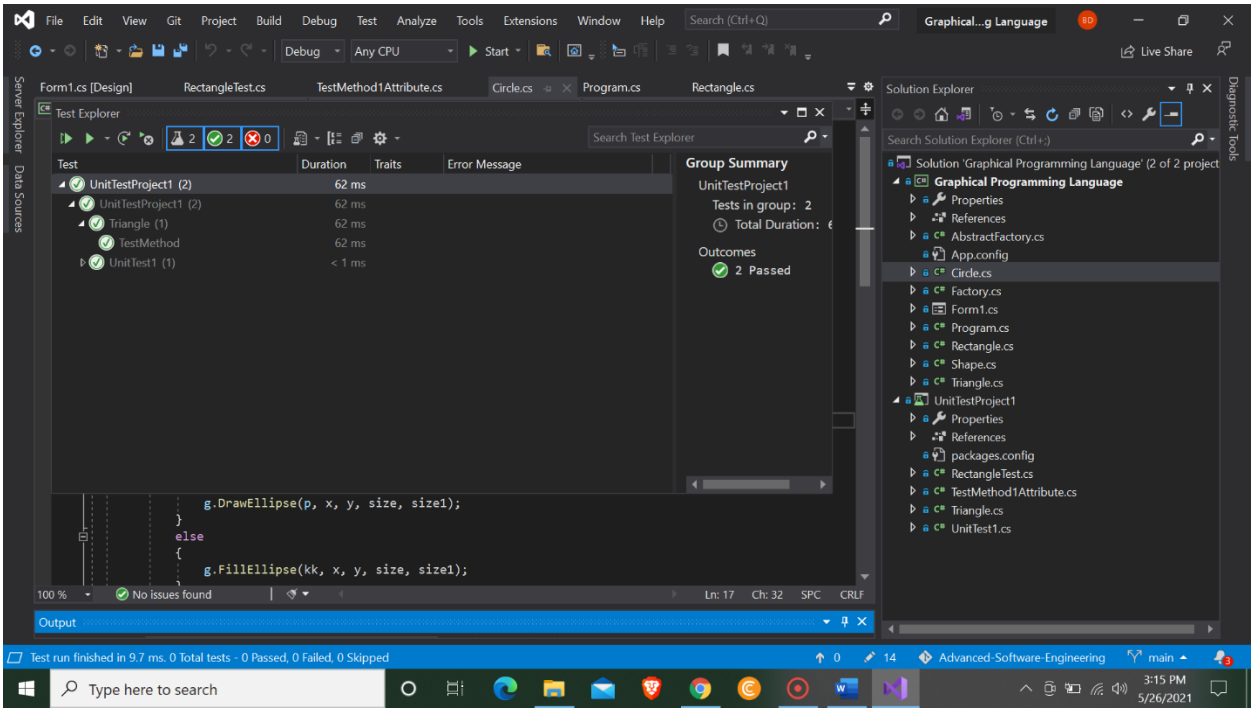
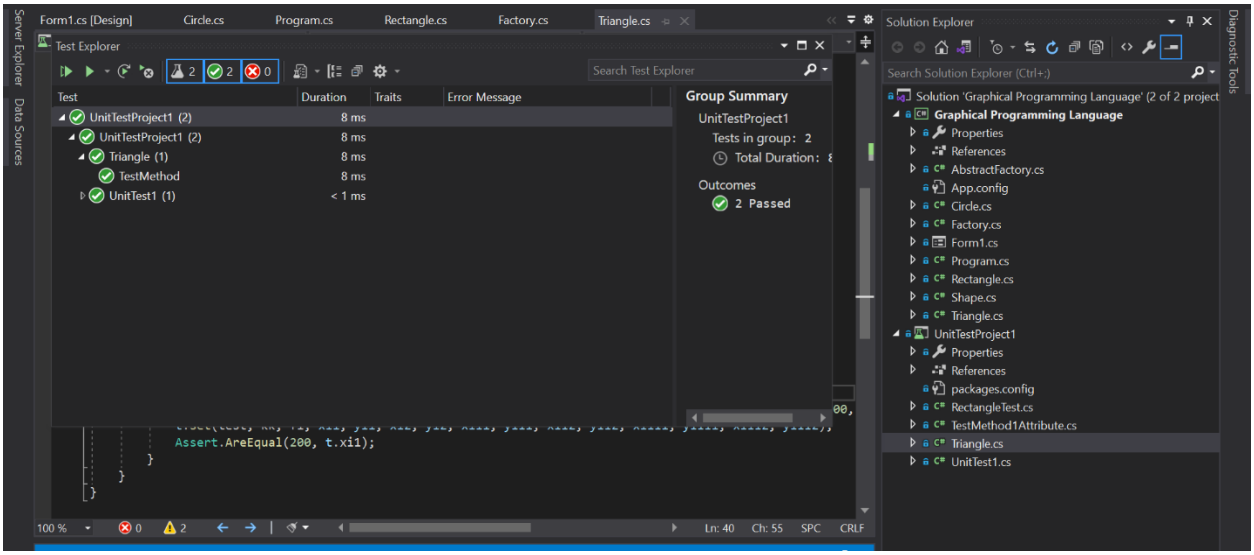
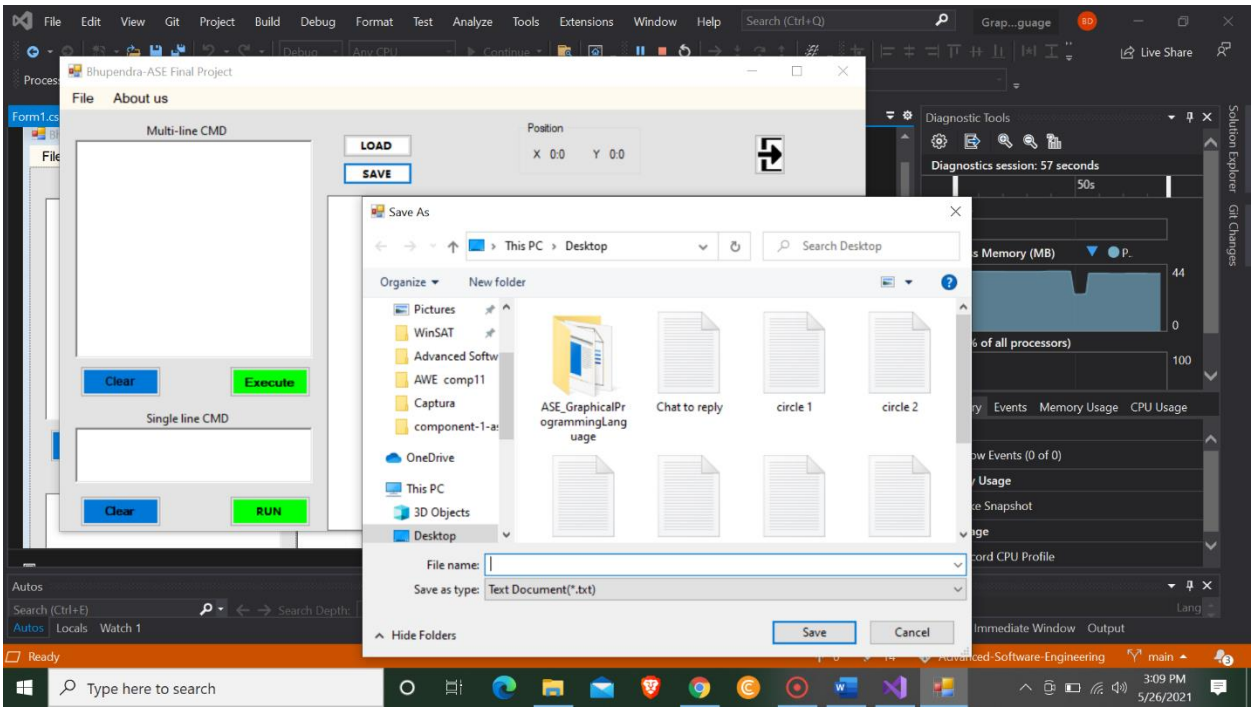
Program.cs
Rectangle.cs
Shape.cs
Triangle.cs
UnitTestProject1
Properties
References
packages.config
RectangleTest.cs
TestMethod1Attribute.cs
Triangle.cs
UnitTest1.cs
100 %
No issues found
Ln: 10 Ch: 21 SPC CRLF

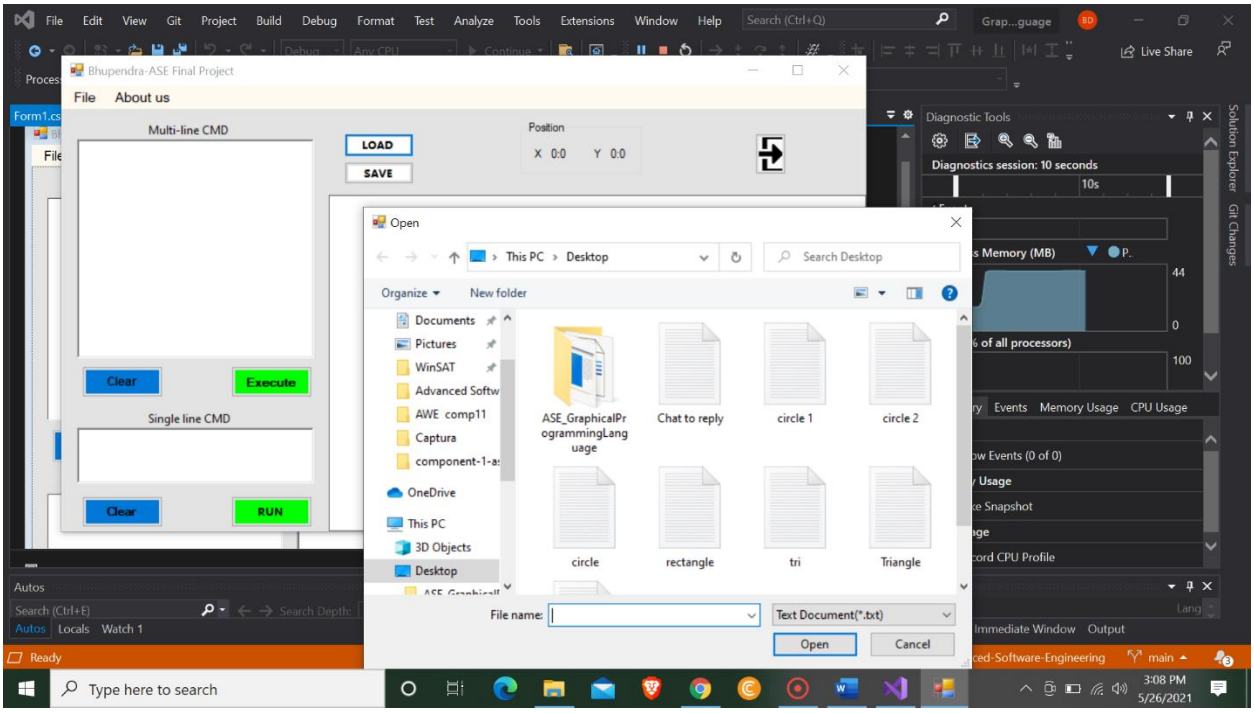




Saving the project:

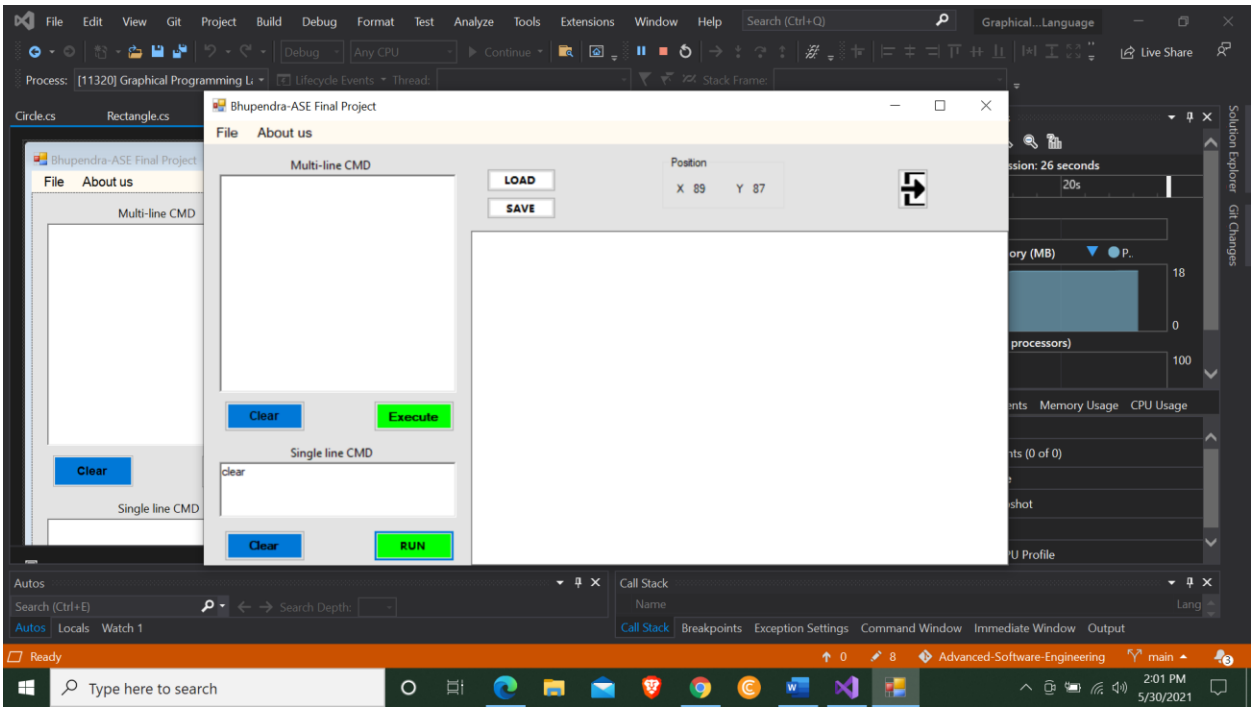


Loading the saved project:



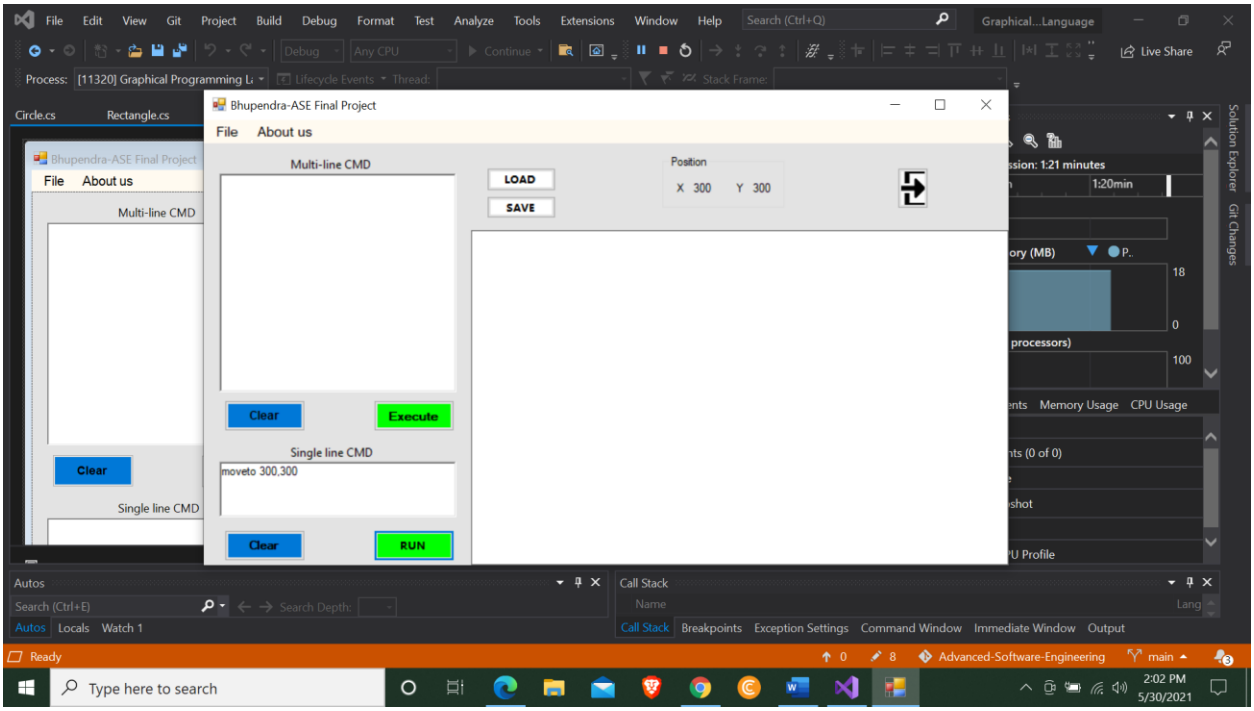
Clear

When we type clear in our single line command drawing panel is cleared.

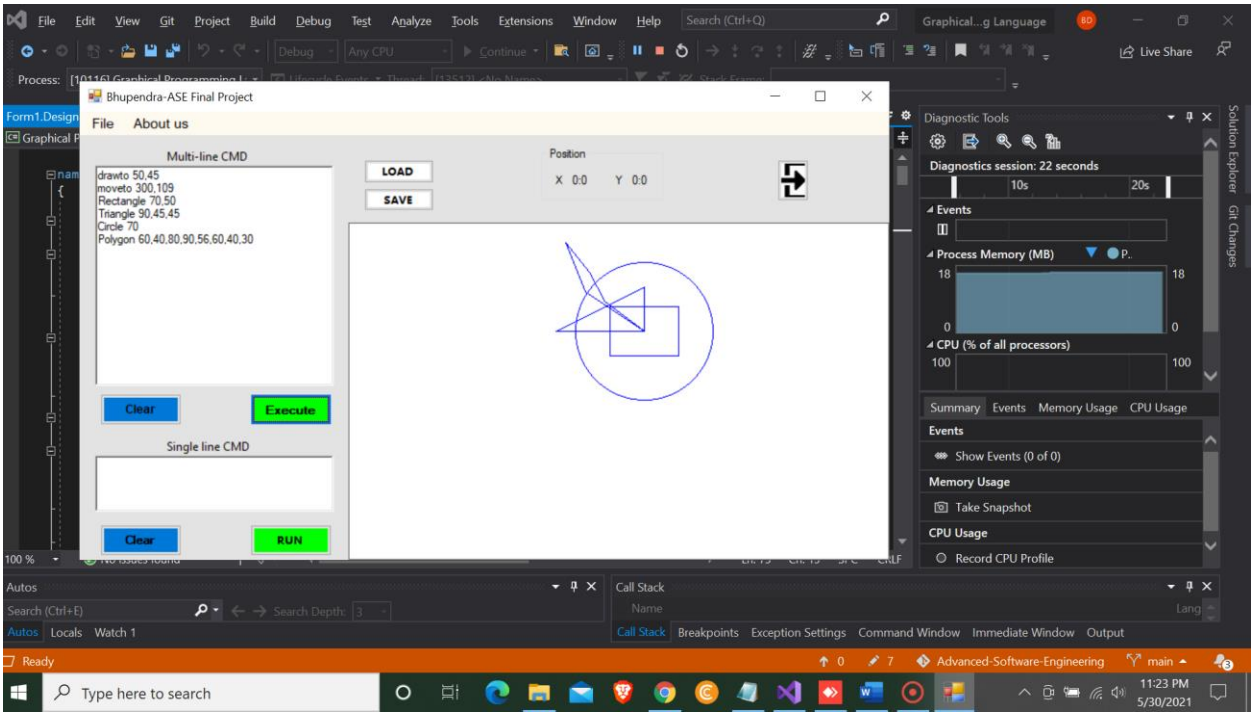


Move to

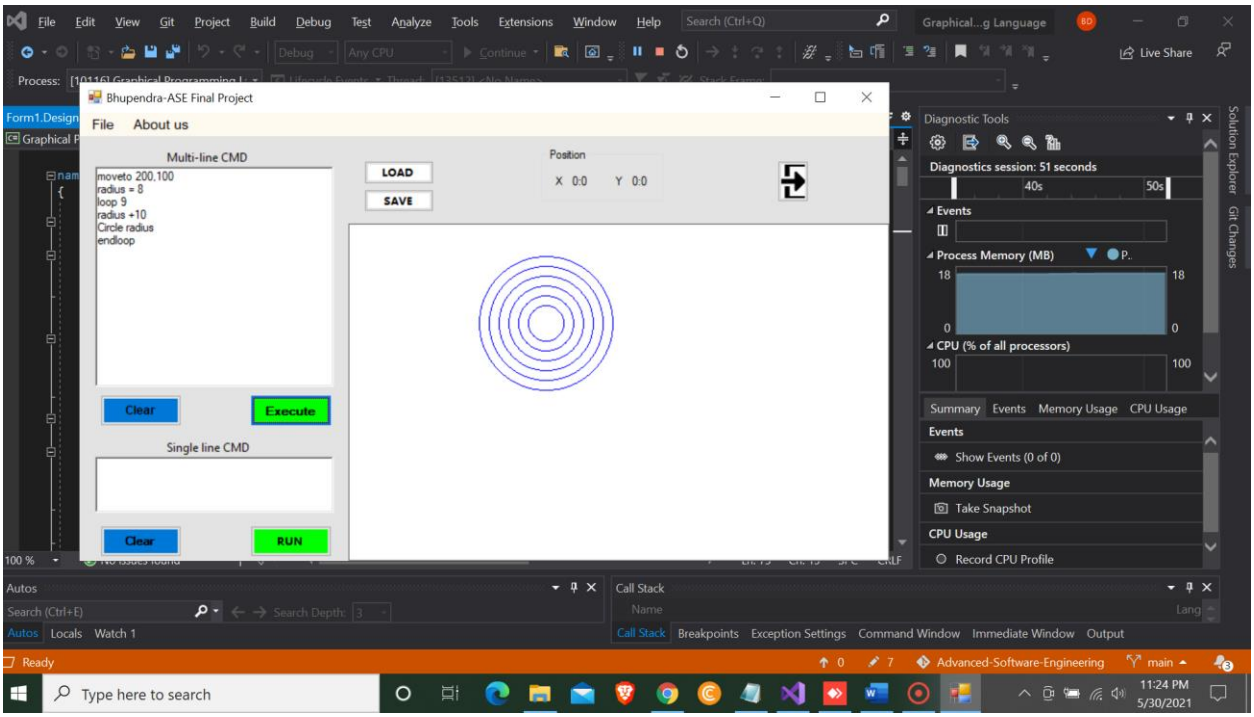
When we insert move to command the position is changed.



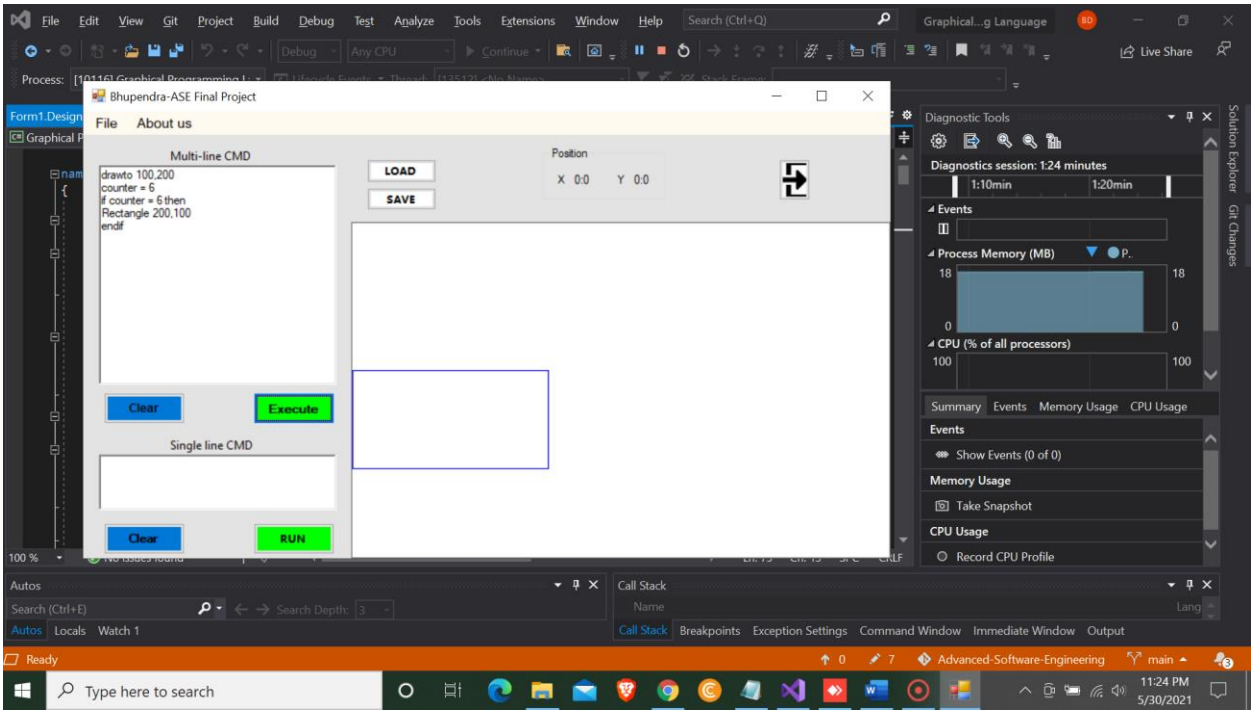
Multiline Commands:



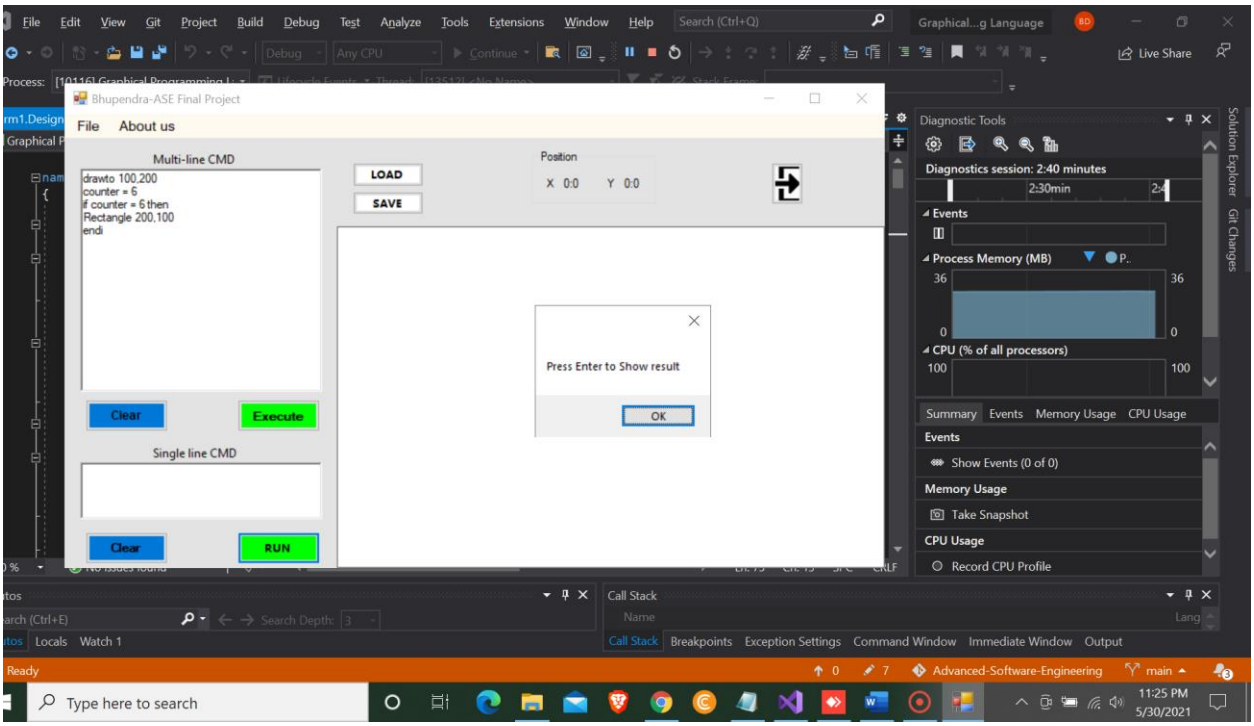
Loop:



IF STATEMENT:



SYNTAX CHECKING:



Source Code:

Triangle:

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

namespace Graphical_Programming_Language
{
  public  class Triangle :Shape
    {

        public int xi1, yi1, xi2, yi2, xii1, yii1, xii2, yii2, xiii1, yiii1, xiii2,
yiii2;
        Color c1;
        int texturestyle;
        Brush bb;
        public override void draw(Graphics g)
        {
            Pen p = new Pen(c1, 5);

            //------------------------------------------------------------------------
----------------------------------------
            g.DrawLine(p, xi1, yi1, xi2, yi2);
            g.DrawLine(p, xii1, yii1, xii2, yii2);
            g.DrawLine(p, xiii1, yiii1, xiii2, yiii2);
            //------------------------------------------------------------------------
----------------------------------------
        }
        public override void set(int texturestyle, Brush kk, Color f1, params int[] list)
        {
            this.texturestyle = texturestyle;
            this.bb = kk;
            this.c1 = f1;

            this.xi1 = list[0];
            this.yi1 = list[1];
            this.xi2 = list[2];
            this.yi2 = list[3];

            this.xii1 = list[4];
            this.yii1 = list[5];
            this.xii2 = list[6];
            this.yii2 = list[7];

            this.xiii1 = list[8];
            this.yiii1 = list[9];
            this.xiii2 = list[10];
            this.yiii2 = list[11];

        }

    }
}
```

Rectangle:

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

namespace Graphical_Programming_Language
{
 public   class Rectangle : Shape
    {
        public int xPos, yPos, size, size1;
        public int texturestyle;
        Brush brush;
        Color color;

        /// <summary>
        /// implemented from shape class to draw rectangle
        /// </summary>
        /// <param name="g"></param>
        public override void draw(Graphics g)
        {
            Pen p = new Pen(color, 3);
            if (texturestyle == 0)
            {
                g.DrawRectangle(p, xPos, yPos, size, size1);
            }
            else
            {
                g.FillRectangle(brush, xPos, yPos, size, size1);
            }

        }
        public override void set(int texturestyle, Brush brushs, Color colors, params
int[] list)
        {
            this.texturestyle = texturestyle;
            this.brush = brushs;
            this.color = colors;
            this.xPos = list[0];
            this.yPos = list[1];
            this.size = list[2];
            this.size1 = list[3];
        }


    }
}
```

Circle:

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

namespace Graphical_Programming_Language
{
  public  class Circle :Shape
    {
        public int c, d, size, size1;
        Color f1;
        int myTexture;
        Brush kk;









        public override void draw(Graphics g)
        {
            Pen p = new Pen(f1, 5);
            if (myTexture == 0)
            {
                g.DrawEllipse(p, c, d, size, size1);
            }
            else
            {
                g.FillEllipse(kk, c, d, size, size1);
            }
        }
        /// <summary>
        /// setting required parameter to draw circle
        /// </summary>
        /// <param name="texturestyle"></param>
        /// <param name="bb"></param>
        /// <param name="c1"></param>
        /// <param name="list"></param>
        public override void set(int texturestyle, Brush kk, Color f1, params int[] list)
        {
            this.myTexture = texturestyle;
            this.kk = kk;
            this.f1 = f1;
            this.c = list[0];
            this.d = list[1];
```

```
            this.size = list[2];
            this.size1 = list[3];
        }
    }
}
```

Factory Abstract:

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

namespace Graphical_Programming_Language
{
  public abstract  class AbstractFactory
    {
        public abstract Shape GetShape(String shapeType);
    }

}
```

Shape:

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

namespace Graphical_Programming_Language
{
   public abstract class Shape
    {

            public abstract void draw(Graphics g);

            public abstract void set(int texture, Brush myBrush, Color myColor, params
int[] list);

    }
}
```

Factory.cs

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

namespace Graphical_Programming_Language
{
```

```
    class Factory : AbstractFactory
    {
        public override Shape GetShape(String shapeType)
        {
            if (shapeType == "circle")
            {
                return new Circle();
            }
            else if (shapeType == "rectangle")
            {
                return new Rectangle();
            }
            else if (shapeType == "triangle")
            {
                return new Triangle();
            }
            return null;

        }
    }
}
```

Form Design: Source Code

```
namespace Graphical_Programming_Language
{
   partial class Form1
   {
      /// <summary>
      /// Required designer variable.
      /// </summary>
      private System.ComponentModel.IContainer components = null;

      /// <summary>
      /// Clean up any resources being used.
      /// </summary>
      /// <param name="disposing">true if managed resources should be disposed; otherwise, false.</param>
```

```
        protected override void Dispose(bool disposing)
        {
            if (disposing && (components != null))
            {
                components.Dispose();
            }
            base.Dispose(disposing);
        }

        #region Windows Form Designer generated code

        /// <summary>
        /// Required method for Designer support - do not modify
        /// the contents of this method with the code editor.
        /// </summary>
        private void InitializeComponent()
        {
            System.ComponentModel.ComponentResourceManager resources = new
System.ComponentModel.ComponentResourceManager(typeof(Form1));
            this.menuStrip1 = new System.Windows.Forms.MenuStrip();
            this.fileToolStripMenuItem = new System.Windows.Forms.ToolStripMenuItem();
            this.newToolStripMenuItem = new System.Windows.Forms.ToolStripMenuItem();
            this.openToolStripMenuItem = new System.Windows.Forms.ToolStripMenuItem();
            this.exitToolStripMenuItem = new System.Windows.Forms.ToolStripMenuItem();
            this.aboutUsToolStripMenuItem = new System.Windows.Forms.ToolStripMenuItem();
            this.hELPToolStripMenuItem = new System.Windows.Forms.ToolStripMenuItem();
            this.panel1 = new System.Windows.Forms.Panel();
            this.brnexecute = new System.Windows.Forms.Button();
            this.btnclear = new System.Windows.Forms.Button();
```

```
this.btnclear2 = new System.Windows.Forms.Button();
this.Btn_runs = new System.Windows.Forms.Button();
this.label3 = new System.Windows.Forms.Label();
this.richTextBox1 = new System.Windows.Forms.RichTextBox();
this.label2 = new System.Windows.Forms.Label();
this.txtCommand = new System.Windows.Forms.RichTextBox();
this.pnlShow = new System.Windows.Forms.Panel();
this.button4 = new System.Windows.Forms.Button();
this.button5 = new System.Windows.Forms.Button();
this.label4 = new System.Windows.Forms.Label();
this.groupBox1 = new System.Windows.Forms.GroupBox();
this.label6 = new System.Windows.Forms.Label();
this.label5 = new System.Windows.Forms.Label();
this.label1 = new System.Windows.Forms.Label();
this.btnload = new System.Windows.Forms.Button();
this.menuStrip1.SuspendLayout();
this.panel1.SuspendLayout();
this.groupBox1.SuspendLayout();
this.SuspendLayout();
//
// menuStrip1
//
this.menuStrip1.BackColor = System.Drawing.Color.FloralWhite;
this.menuStrip1.ImageScalingSize = new System.Drawing.Size(24, 24);
this.menuStrip1.Items.AddRange(new System.Windows.Forms.ToolStripItem[] {
this.fileToolStripMenuItem,
this.aboutUsToolStripMenuItem});
this.menuStrip1.Location = new System.Drawing.Point(0, 0);
```

```
        this.menuStrip1.Name = "menuStrip1";
        this.menuStrip1.Size = new System.Drawing.Size(1238, 33);
        this.menuStrip1.TabIndex = 0;
        this.menuStrip1.Text = "menuStrip1";
       //  this.menuStrip1.ItemClicked += new
System.Windows.Forms.ToolStripItemClickedEventHandler(this.menuStrip1_ItemClicked);
        //
        // fileToolStripMenuItem
        //
        this.fileToolStripMenuItem.DropDownItems.AddRange(new
System.Windows.Forms.ToolStripItem[] {
        this.newToolStripMenuItem,
        this.openToolStripMenuItem,
        this.exitToolStripMenuItem});
        this.fileToolStripMenuItem.Font = new System.Drawing.Font("Microsoft Sans Serif",
10F, System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        this.fileToolStripMenuItem.Name = "fileToolStripMenuItem";
        this.fileToolStripMenuItem.Size = new System.Drawing.Size(59, 29);
        this.fileToolStripMenuItem.Text = "File";
        //
        // newToolStripMenuItem
        //
        this.newToolStripMenuItem.ImageAlign =
System.Drawing.ContentAlignment.MiddleLeft;
        this.newToolStripMenuItem.Name = "newToolStripMenuItem";
        this.newToolStripMenuItem.Size = new System.Drawing.Size(163, 34);
        this.newToolStripMenuItem.Text = "New ";
        //
        // openToolStripMenuItem
        //
```

```
        this.openToolStripMenuItem.Name = "openToolStripMenuItem";
        this.openToolStripMenuItem.Size = new System.Drawing.Size(163, 34);
        this.openToolStripMenuItem.Text = "Open";
        this.openToolStripMenuItem.Click += new
System.EventHandler(this.openToolStripMenuItem_Click);
        //
        // exitToolStripMenuItem
        //
        this.exitToolStripMenuItem.Name = "exitToolStripMenuItem";
        this.exitToolStripMenuItem.Size = new System.Drawing.Size(163, 34);
        this.exitToolStripMenuItem.Text = "Exit";
        this.exitToolStripMenuItem.Click += new
System.EventHandler(this.exitToolStripMenuItem_Click);
        //
        // aboutUsToolStripMenuItem
        //
        this.aboutUsToolStripMenuItem.DropDownItems.AddRange(new
System.Windows.Forms.ToolStripItem[] {
        this.hELPToolStripMenuItem});
        this.aboutUsToolStripMenuItem.Font = new System.Drawing.Font("Microsoft Sans
Serif", 10F, System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point,
((byte)(0)));
        this.aboutUsToolStripMenuItem.Name = "aboutUsToolStripMenuItem";
        this.aboutUsToolStripMenuItem.Size = new System.Drawing.Size(106, 29);
        this.aboutUsToolStripMenuItem.Text = "About us";
        this.aboutUsToolStripMenuItem.Click += new
System.EventHandler(this.aboutUsToolStripMenuItem_Click);
        //
        // hELPToolStripMenuItem
        //
        this.hELPToolStripMenuItem.Name = "hELPToolStripMenuItem";
```

```
        this.hELPToolStripMenuItem.Size = new System.Drawing.Size(154, 34);
        this.hELPToolStripMenuItem.Text = "Help";
        this.hELPToolStripMenuItem.Click += new
System.EventHandler(this.hELPToolStripMenuItem_Click);
        //
        // panel1
        //
        this.panel1.Controls.Add(this.brnexecute);
        this.panel1.Controls.Add(this.btnclear);
        this.panel1.Controls.Add(this.btnclear2);
        this.panel1.Controls.Add(this.Btn_runs);
        this.panel1.Controls.Add(this.label3);
        this.panel1.Controls.Add(this.richTextBox1);
        this.panel1.Controls.Add(this.label2);
        this.panel1.Controls.Add(this.txtCommand);
        this.panel1.Dock = System.Windows.Forms.DockStyle.Left;
        this.panel1.Location = new System.Drawing.Point(0, 33);
        this.panel1.Name = "panel1";
        this.panel1.Size = new System.Drawing.Size(411, 689);
        this.panel1.TabIndex = 1;
        this.panel1.Paint += new System.Windows.Forms.PaintEventHandler(this.panel1_Paint);
        //
        // brnexecute
        //
        this.brnexecute.BackColor = System.Drawing.Color.Lime;
        this.brnexecute.Font = new System.Drawing.Font("Microsoft Sans Serif", 9F,
System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        this.brnexecute.Location = new System.Drawing.Point(261, 405);
        this.brnexecute.Name = "brnexecute";
```

```
        this.brnexecute.Size = new System.Drawing.Size(125, 50);
        this.brnexecute.TabIndex = 0;
        this.brnexecute.Text = "Execute";
        this.brnexecute.UseVisualStyleBackColor = false;
        this.brnexecute.Click += new System.EventHandler(this.brnexecute_Click);
        //
        // btnclear
        //
        this.btnclear.BackColor = System.Drawing.SystemColors.Highlight;
        this.btnclear.Font = new System.Drawing.Font("Arial", 9F,
System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        this.btnclear.Location = new System.Drawing.Point(32, 404);
        this.btnclear.Name = "btnclear";
        this.btnclear.Size = new System.Drawing.Size(125, 50);
        this.btnclear.TabIndex = 0;
        this.btnclear.Text = "Clear";
        this.btnclear.UseVisualStyleBackColor = false;
        this.btnclear.Click += new System.EventHandler(this.btnclear_Click);
        //
        // btnclear2
        //
        this.btnclear2.BackColor = System.Drawing.SystemColors.Highlight;
        this.btnclear2.Font = new System.Drawing.Font("Microsoft Sans Serif", 8F,
System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        this.btnclear2.Location = new System.Drawing.Point(32, 609);
        this.btnclear2.Name = "btnclear2";
        this.btnclear2.Size = new System.Drawing.Size(125, 50);
        this.btnclear2.TabIndex = 10;
        this.btnclear2.Text = "Clear";
```

```
        this.btnclear2.UseVisualStyleBackColor = false;
        this.btnclear2.Click += new System.EventHandler(this.btnclear2_Click);
        //
        // Btn_runs
        //
        this.Btn_runs.BackColor = System.Drawing.Color.Lime;
        this.Btn_runs.BackgroundImageLayout = System.Windows.Forms.ImageLayout.None;
        this.Btn_runs.Font = new System.Drawing.Font("Microsoft YaHei", 8F,
System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        this.Btn_runs.Location = new System.Drawing.Point(261, 609);
        this.Btn_runs.Name = "Btn_runs";
        this.Btn_runs.Size = new System.Drawing.Size(125, 50);
        this.Btn_runs.TabIndex = 9;
        this.Btn_runs.Text = "RUN";
        this.Btn_runs.UseVisualStyleBackColor = false;
        this.Btn_runs.Click += new System.EventHandler(this.Btn_runs_Click);
        //
        // label3
        //
        this.label3.Anchor =
((System.Windows.Forms.AnchorStyles)((((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Bottom)
        | System.Windows.Forms.AnchorStyles.Left)
        | System.Windows.Forms.AnchorStyles.Right)));
        this.label3.AutoEllipsis = true;
        this.label3.AutoSize = true;
        this.label3.Font = new System.Drawing.Font("Microsoft Tai Le", 9F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        this.label3.Location = new System.Drawing.Point(129, 476);
        this.label3.Name = "label3";
```

```
        this.label3.Size = new System.Drawing.Size(135, 23);
        this.label3.TabIndex = 6;
        this.label3.Text = "Single line CMD";
        //
        // richTextBox1
        //
        this.richTextBox1.Location = new System.Drawing.Point(24, 502);
        this.richTextBox1.Name = "richTextBox1";
        this.richTextBox1.Size = new System.Drawing.Size(362, 86);
        this.richTextBox1.TabIndex = 7;
        this.richTextBox1.Text = "";
        //
        // label2
        //
        this.label2.Anchor =
((System.Windows.Forms.AnchorStyles)((((System.Windows.Forms.AnchorStyles.Top |
System.Windows.Forms.AnchorStyles.Bottom)
        | System.Windows.Forms.AnchorStyles.Left)
        | System.Windows.Forms.AnchorStyles.Right)));
        this.label2.AutoEllipsis = true;
        this.label2.AutoSize = true;
        this.label2.Font = new System.Drawing.Font("Microsoft Tai Le", 9F,
System.Drawing.FontStyle.Regular, System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        this.label2.Location = new System.Drawing.Point(129, 22);
        this.label2.Name = "label2";
        this.label2.Size = new System.Drawing.Size(129, 23);
        this.label2.TabIndex = 3;
        this.label2.Text = "Multi-line CMD";
        this.label2.Click += new System.EventHandler(this.label1_Click);
```

```
            //
            // txtCommand
            //
            this.txtCommand.Location = new System.Drawing.Point(24, 48);
            this.txtCommand.Name = "txtCommand";
            this.txtCommand.Size = new System.Drawing.Size(362, 342);
            this.txtCommand.TabIndex = 4;
            this.txtCommand.Text = "";
            this.txtCommand.TextChanged += new
System.EventHandler(this.richTextBox2_TextChanged);
            //
            // pnlShow
            //
            this.pnlShow.BackColor = System.Drawing.SystemColors.Window;
            this.pnlShow.BorderStyle = System.Windows.Forms.BorderStyle.FixedSingle;
            this.pnlShow.Dock = System.Windows.Forms.DockStyle.Bottom;
            this.pnlShow.Location = new System.Drawing.Point(411, 196);
            this.pnlShow.Name = "pnlShow";
            this.pnlShow.Size = new System.Drawing.Size(827, 526);
            this.pnlShow.TabIndex = 2;
            this.pnlShow.MouseClick += new
System.Windows.Forms.MouseEventHandler(this.pnlShow_MouseClick);
            this.pnlShow.MouseDown += new
System.Windows.Forms.MouseEventHandler(this.pnlShow_MouseDown);
            this.pnlShow.MouseUp += new
System.Windows.Forms.MouseEventHandler(this.pnlShow_MouseUp);
            //
            // button4
            //
            this.button4.BackColor = System.Drawing.SystemColors.HighlightText;
```

```
        this.button4.BackgroundImage =
((System.Drawing.Image)(resources.GetObject("button4.BackgroundImage")));
        this.button4.BackgroundImageLayout = System.Windows.Forms.ImageLayout.Center;
        this.button4.Location = new System.Drawing.Point(1066, 75);
        this.button4.Name = "button4";
        this.button4.Size = new System.Drawing.Size(48, 65);
        this.button4.TabIndex = 5;
        this.button4.UseVisualStyleBackColor = false;
        this.button4.Click += new System.EventHandler(this.button4_Click);
        //
        // button5
        //
        this.button5.BackColor = System.Drawing.SystemColors.Window;
        this.button5.BackgroundImageLayout = System.Windows.Forms.ImageLayout.None;
        this.button5.Font = new System.Drawing.Font("Microsoft YaHei", 8F,
System.Drawing.FontStyle.Bold, System.Drawing.GraphicsUnit.Point, ((byte)(0)));
        this.button5.Location = new System.Drawing.Point(435, 120);
        this.button5.Name = "button5";
        this.button5.Size = new System.Drawing.Size(106, 35);
        this.button5.TabIndex = 5;
        this.button5.Text = "SAVE";
        this.button5.UseVisualStyleBackColor = false;
        this.button5.Click += new System.EventHandler(this.button1_Click);
        //
        // label4
        //
        this.label4.AutoSize = true;
        this.label4.Location = new System.Drawing.Point(18, 42);
        this.label4.Name = "label4";
```

```
this.label4.Size = new System.Drawing.Size(20, 20);
this.label4.TabIndex = 0;
this.label4.Text = "X";
//
// groupBox1
//
this.groupBox1.Controls.Add(this.label6);
this.groupBox1.Controls.Add(this.label5);
this.groupBox1.Controls.Add(this.label1);
this.groupBox1.Controls.Add(this.label4);
this.groupBox1.Location = new System.Drawing.Point(705, 55);
this.groupBox1.Name = "groupBox1";
this.groupBox1.Size = new System.Drawing.Size(188, 85);
this.groupBox1.TabIndex = 6;
this.groupBox1.TabStop = false;
this.groupBox1.Text = "Position";
//
// label6
//
this.label6.AutoSize = true;
this.label6.Location = new System.Drawing.Point(135, 42);
this.label6.Name = "label6";
this.label6.Size = new System.Drawing.Size(31, 20);
this.label6.TabIndex = 0;
this.label6.Text = "0:0";
//
// label5
//
```

```
        this.label5.AutoSize = true;
        this.label5.Location = new System.Drawing.Point(44, 42);
        this.label5.Name = "label5";
        this.label5.Size = new System.Drawing.Size(31, 20);
        this.label5.TabIndex = 0;
        this.label5.Text = "0:0";
        //
        // label1
        //
        this.label1.AutoSize = true;
        this.label1.Location = new System.Drawing.Point(109, 42);
        this.label1.Name = "label1";
        this.label1.Size = new System.Drawing.Size(20, 20);
        this.label1.TabIndex = 0;
        this.label1.Text = "Y";
        //
        // btnload
        //
        this.btnload.BackColor = System.Drawing.SystemColors.ButtonHighlight;
        this.btnload.Font = new System.Drawing.Font("Microsoft YaHei", 8F,
System.Drawing.FontStyle.Bold);
        this.btnload.Location = new System.Drawing.Point(435, 76);
        this.btnload.Name = "btnload";
        this.btnload.Size = new System.Drawing.Size(106, 37);
        this.btnload.TabIndex = 7;
        this.btnload.Text = "LOAD";
        this.btnload.UseVisualStyleBackColor = false;
        this.btnload.Click += new System.EventHandler(this.btnload_Click);
        //
```

```
    // Form1
    //
    this.AutoScaleDimensions = new System.Drawing.SizeF(9F, 20F);
    this.AutoScaleMode = System.Windows.Forms.AutoScaleMode.Font;
    this.BackColor = System.Drawing.SystemColors.ControlLight;
    this.ClientSize = new System.Drawing.Size(1238, 722);
    this.Controls.Add(this.btnload);
    this.Controls.Add(this.groupBox1);
    this.Controls.Add(this.button4);
    this.Controls.Add(this.button5);
    this.Controls.Add(this.pnlShow);
    this.Controls.Add(this.panel1);
    this.Controls.Add(this.menuStrip1);
    this.MainMenuStrip = this.menuStrip1;
    this.Name = "Form1";
    this.Text = "Bhupendra-ASE Final Project ";
    this.Load += new System.EventHandler(this.Form1_Load);
    this.menuStrip1.ResumeLayout(false);
    this.menuStrip1.PerformLayout();
    this.panel1.ResumeLayout(false);
    this.panel1.PerformLayout();
    this.groupBox1.ResumeLayout(false);
    this.groupBox1.PerformLayout();
    this.ResumeLayout(false);
    this.PerformLayout();

}
```

```
    #endregion

    private System.Windows.Forms.MenuStrip menuStrip1;
    private System.Windows.Forms.ToolStripMenuItem fileToolStripMenuItem;
    private System.Windows.Forms.ToolStripMenuItem newToolStripMenuItem;
    private System.Windows.Forms.ToolStripMenuItem openToolStripMenuItem;
    private System.Windows.Forms.ToolStripMenuItem exitToolStripMenuItem;
    private System.Windows.Forms.ToolStripMenuItem aboutUsToolStripMenuItem;
    private System.Windows.Forms.Panel panel1;
    private System.Windows.Forms.Panel pnlShow;
    private System.Windows.Forms.RichTextBox txtCommand;
    private System.Windows.Forms.Label label2;
    private System.Windows.Forms.ToolStripMenuItem hELPToolStripMenuItem;
    private System.Windows.Forms.Button button4;
    private System.Windows.Forms.Button Btn_runs;
    private System.Windows.Forms.Label label3;
    private System.Windows.Forms.RichTextBox richTextBox1;
    private System.Windows.Forms.Button button5;
    private System.Windows.Forms.Label label4;
    private System.Windows.Forms.GroupBox groupBox1;
    private System.Windows.Forms.Label label6;
    private System.Windows.Forms.Label label5;
    private System.Windows.Forms.Label label1;
    private System.Windows.Forms.Button btnclear;
    private System.Windows.Forms.Button btnclear2;
    private System.Windows.Forms.Button btnload;
    private System.Windows.Forms.Button brnexecute;
}
```

}

Conclusion

In this way I have completed component 2 with all the required evidence. I have developed a functional graphical programming language application which satisfies all the requirement. All the loop commands and if commands work whose evidences are presented above as well as I have presented some extra features such as background color and free drawing pen to draw on the canvas. The application also has syntax checking. Furthermore, the application is designed using factory method where all the shapes are generated from factory provider class. I have also included source code of my application.