

Namespace Test_BOOSE

Classes

[AppCanvasTest](#)

Unit test for AppCanvas class.

Class AppCanvasTest

Namespace: [Test_BOOSE](#)

Assembly: Test_BOOSE.dll

Unit test for AppCanvas class.

```
[TestClass]
public class AppCanvasTest
```

Inheritance

[object](#) ← AppCanvasTest

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Circle_Draw_InvalidRadius()

Ensures that the Circle command throws CanvasException for invalid radius.

```
[TestMethod]
[ExpectedException(typeof(CanvasException))]
public void Circle_Draw_InvalidRadius()
```

Circle_Draw_ValidRadius()

Verifies the Circle command to draw with valid radius.

```
[TestMethod]
public void Circle_Draw_ValidRadius()
```

Clear_CanvasContent()

Verifies that the Clear method clears the canvas drawing.

```
[TestMethod]  
public void Clear_CanvasContent()
```

DrawTo_ThrowsExceptionForInvalidDestination()

Ensures that the DrawTo Method throws CanvasException for invalid destination position.

```
[TestMethod]  
[ExpectedException(typeof(CanvasException))]  
public void DrawTo_ThrowsExceptionForInvalidDestination()
```

DrawTo_UpdatesPenPositionCorrectly()

Verifies the DrawTo method updates the pen position correctly.

```
[TestMethod]  
public void DrawTo_UpdatesPenPositionCorrectly()
```

MoveTo_ThrowsExceptionForInvalidPosition()

Ensures that the MoveTo method throws Canvas Exception for invalid position.

```
[TestMethod]  
[ExpectedException(typeof(CanvasException))]  
public void MoveTo_ThrowsExceptionForInvalidPosition()
```

MoveTo_UpdatesPenPosition()

Verifies that the MoveTo methods updates the pen position correctly.

```
[TestMethod]  
public void MoveTo_UpdatesPenPosition()
```

Rectangle_Draw_InvalidDimensions()

Ensures that the Rectangle command throws CanvasException for invalid dimensions.

```
[TestMethod]
[ExpectedException(typeof(CanvasException))]
public void Rectangle_Draw_InvalidDimensions()
```

Rectangle_Draw_ValidDimensions()

Verifies the Rectangle command to draw with valid dimensions.

```
[TestMethod]
public void Rectangle_Draw_ValidDimensions()
```

Reset_SetPenToOriginPosition()

Verifies that the Reset method reset the pen position to its origin.

```
[TestMethod]
public void Reset_SetPenToOriginPosition()
```

SetColour_ThrowsException_InvalidRGB()

Ensures SetColour throws a CanvasException for invalid RGB values.

```
[TestMethod]
[ExpectedException(typeof(CanvasException))]
public void SetColour_ThrowsException_InvalidRGB()
```

SetColourUpdatesPenColour_ValidRGB()

Ensures the SetColour method updates the pen color correctly with valid RGB values.

```
[TestMethod]
public void SetColour_UpdatesPenColour_ValidRGB()
```

Set_UpdatesCanvasSize()

Verifies the Set command updates canvas dimensions correctly and resets the pen position.

```
[TestMethod]
public void Set_UpdatesCanvasSize()
```

TestMultilineProgram_CommandsExecuteCorrectly()

Ensures multiple commands on the canvas and verifies the result.

```
[TestMethod]
public void TestMultilineProgram_CommandsExecuteCorrectly()
```

Triangle_Draw_InvalidDimensions()

Ensures that the Triangle command throws CanvasException for invalid dimensions.

```
[TestMethod]
[ExpectedException(typeof(CanvasException))]
public void Triangle_Draw_InvalidDimensions()
```

Triangle_Draw_ValidDimensions()

Verifies the Triangle command to draw with valid dimensions.

```
[TestMethod]
public void Triangle_Draw_ValidDimensions()
```

WriteText_EmptyText_ThrowException()

Ensures that the Write command throws CanvasException for empty text.

```
[TestMethod]
[ExpectedException(typeof(CanvasException))]
public void WriteText_EmptyText_ThrowException()
```

Write_Draw_ValidText()

Verifies the Write command to draw valid text.

```
[TestMethod]
public void Write_Draw_ValidText()
```

Namespace Test_BOOSE.CommandsTest

Classes

[AppCallTest](#)

Unit test class for testing the functionality of the [AppCall](#) class.

[AppElseTest](#)

Unit test class for testing the functionality of the [AppElse](#) class.

[AppEndTests](#)

Contains unit tests for the [AppEnd](#) class.

[AppIfTests](#)

Unit test class for testing the functionality of the [AppIf](#) class.

[AppMethodTest](#)

Unit test class for testing the functionality of the [AppMethod](#) class.

[AppWhileTest](#)

Contains unit tests for the [AppWhile](#) class.

[CircleAppTest](#)

Unit test class for testing the functionality of the [CircleApp](#) class.

[RectangleAppTest](#)

Contains unit tests for the [RectangleApp](#) class.

[TriangleAppTest](#)

Contains unit tests for the [TriangleApp](#) class.

Class AppCallTest

Namespace: [Test_BOOSE.CommandsTest](#)

Assembly: Test_BOOSE.dll

Unit test class for testing the functionality of the [AppCall](#) class.

```
[TestClass]  
public class AppCallTest
```

Inheritance

[object](#) ← AppCallTest

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

TestConstructor_CallsReduceRestrictions()

Test to verify that the constructor of [AppCall](#) calls the AppCall.ReduceRestrictions method. This test checks whether the ReduceRestrictions method is invoked during object initialization.

```
[TestMethod]  
public void TestConstructor_CallsReduceRestrictions()
```

TestRestrictions_MethodDoesNotThrowException()

Test to ensure that the [Restrictions\(\)](#) method does not throw any exceptions. This is important because the method is not currently implemented and should not throw any exceptions.

```
[TestMethod]  
public void TestRestrictions_MethodDoesNotThrowException()
```

Class AppElseTest

Namespace: [Test_BOOSE.CommandsTest](#)

Assembly: Test_BOOSE.dll

Unit test class for testing the functionality of the [AppElse](#) class.

```
[TestClass]  
public class AppElseTest
```

Inheritance

[object](#) ← AppElseTest

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Restrictions_ShouldNotThrowException()

Test to verify that the [Restrictions\(\)](#) method does not throw an exception. This test ensures that calling the Restrictions method does not result in any exceptions, as it is not currently implemented in the [AppElse](#) class.

```
[TestMethod]  
public void Restrictions_ShouldNotThrowException()
```

Class AppEndTests

Namespace: [Test_BOOSE.CommandsTest](#)

Assembly: Test_BOOSE.dll

Contains unit tests for the [AppEnd](#) class.

```
[TestClass]
public class AppEndTests
```

Inheritance

[object](#) ← AppEndTests

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Restrictions_NoRestrictionsDefined_NoExceptionThrown()

Tests the behavior of the [Restrictions\(\)](#) method when no restrictions are defined in the method. The test ensures that no exception is thrown when calling this method.

```
[TestMethod]
public void Restrictions_NoRestrictionsDefined_NoExceptionThrown()
```

Class AppIfTests

Namespace: [Test_BOOSE.CommandsTest](#)

Assembly: Test_BOOSE.dll

Unit test class for testing the functionality of the [AppIf](#) class.

```
[TestClass]  
public class AppIfTests
```

Inheritance

[object](#) ← AppIfTests

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Constructor_ShouldCreateInstance()

Test to verify that an instance of the [AppIf](#) class can be successfully created.

```
[TestMethod]  
public void Constructor_ShouldCreateInstance()
```

Restrictions_ShouldNotThrowException()

Test to verify that the [Restrictions\(\)](#) method does not throw any exceptions when called. This test ensures that calling the Restrictions method does not result in any exceptions, as the method is not currently implemented in the [AppIf](#) class.

```
[TestMethod]  
public void Restrictions_ShouldNotThrowException()
```

Class AppMethodTest

Namespace: [Test_BOOSE.CommandsTest](#)

Assembly: Test_BOOSE.dll

Unit test class for testing the functionality of the [AppMethod](#) class.

```
[TestClass]  
public class AppMethodTest
```

Inheritance

[object](#) ← AppMethodTest

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

TestConstructor_ReducesRestrictions()

Test to verify that the constructor of the [AppMethod](#) class correctly reduces restrictions related to method count.

```
[TestMethod]  
public void TestConstructor_ReducesRestrictions()
```

Class AppWhileTest

Namespace: [Test_BOOSE.CommandsTest](#)

Assembly: Test_BOOSE.dll

Contains unit tests for the [AppWhile](#) class.

```
[TestClass]
public class AppWhileTest
```

Inheritance

[object](#) ← AppWhileTest

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Restrictions_ShouldNotThrowAnyException_WhenCalled()

Test to check that the Restrictions method in the [AppWhile](#) class can be called without throwing any exceptions.

```
[TestMethod]
public void Restrictions_ShouldNotThrowAnyException_WhenCalled()
```

Class CircleAppTest

Namespace: [Test_BOOSE.CommandsTest](#)

Assembly: Test_BOOSE.dll

Unit test class for testing the functionality of the [CircleApp](#) class.

```
[TestClass]
public class CircleAppTest
```

Inheritance

[object](#) ← CircleAppTest

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

CheckParameters_ShouldSetRadius_WhenParametersAreValid()

Validates that CheckParameters sets the radius correctly for valid parameters.

```
[TestMethod]
public void CheckParameters_ShouldSetRadius_WhenParametersAreValid()
```

Constructor_Default_ShouldCreateInstance()

Test to verify that the default constructor creates a valid instance of [CircleApp](#).

```
[TestMethod]
public void Constructor_Default_ShouldCreateInstance()
```

Constructor_Parameterized_ShouldSetRadius()

Validates that the parameterized constructor initializes the radius correctly.

```
[TestMethod]
public void Constructor_Parameterized_ShouldSetRadius()
```

Class RectangleAppTest

Namespace: [Test_BOOSE.CommandsTest](#)

Assembly: Test_BOOSE.dll

Contains unit tests for the [RectangleApp](#) class.

```
[TestClass]
public class RectangleAppTest
```

Inheritance

[object](#) ← RectangleAppTest

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

CheckParameters_ShouldAcceptValidParameters()

Tests that the [CheckParameters\(string\[\]\)](#) method accepts valid parameters and validates them correctly.

```
[TestMethod]
public void CheckParameters_ShouldAcceptValidParameters()
```

Constructor_Default_ShouldCreateInstance()

Tests that the default constructor of [RectangleApp](#) creates a new instance.

```
[TestMethod]
public void Constructor_Default_ShouldCreateInstance()
```

Constructor_Parameterized_ShouldSetDimensions()

Tests that the parameterized constructor of [RectangleApp](#) initializes width and height correctly.

```
[TestMethod]
public void Constructor_Parameterized_ShouldSetDimensions()
```

Class TriangleAppTest

Namespace: [Test_BOOSE.CommandsTest](#)

Assembly: Test_BOOSE.dll

Contains unit tests for the [TriangleApp](#) class.

```
[TestClass]
public class TriangleAppTest
```

Inheritance

[object](#) ← TriangleAppTest

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

CheckParameters_ShouldThrowCommandException_WhenDimensionsAreNonPositive()

Tests that [CheckParameters\(string\[\]\)](#) throws a BOOSE.CommandException when dimensions are non-positive.

```
[TestMethod]
public void CheckParameters_ShouldThrowCommandException_WhenDimensionsAreNonPositive()
```

CheckParameters_ShouldThrowCommandException_WhenParameterCountIsIncorrect()

Tests that [CheckParameters\(string\[\]\)](#) throws a BOOSE.CommandException when the number of parameters is incorrect.

```
[TestMethod]
public void CheckParameters_ShouldThrowCommandException_WhenParameterCountIsIncorrect()
```

CheckParameters_ShouldThrowCommandException_WhenParametersAreNotValidIntegers()

Tests that [CheckParameters\(string\[\]\)](#) throws a BOOSE.CommandException when parameters are not valid integers.

```
[TestMethod]  
public void CheckParameters_ShouldThrowCommandException_WhenParametersAreNotValidIntegers()
```

CheckParameters_ShouldThrowCommandException_WhenParametersAreNull()

Tests that [CheckParameters\(string\[\]\)](#) throws a BOOSE.CommandException when parameters are null.

```
[TestMethod]  
public void CheckParameters_ShouldThrowCommandException_WhenParametersAreNull()
```

Constructor_Default_ShouldCreateInstance()

Tests that the default constructor of [TriangleApp](#) creates a new instance.

```
[TestMethod]  
public void Constructor_Default_ShouldCreateInstance()
```

Constructor_Parameterized_ShouldSetDimensions()

Tests that the parameterized constructor of [TriangleApp](#) initializes width and height correctly.

```
[TestMethod]  
public void Constructor_Parameterized_ShouldSetDimensions()
```

Execute_ShouldDrawTriangle_WhenParametersAreValid()

Tests that [Execute\(\)](#) calls the [Tri\(int,int\)](#) method with correct dimensions.

```
[TestMethod]
public void Execute_ShouldDrawTriangle_WhenParametersAreValid()
```

Namespace Test_BOOSE.ComponentTest

Classes

[AppArrayTest](#)

Unit test class for testing the functionality of the [AppArray](#) class.

[AppBooleanTest](#)

Unit test class for testing the functionality of the [AppBoolean](#) class.

[AppIntTest](#)

Unit test class for testing the functionality of the [AppInt](#) class.

[AppRealTest](#)

Unit test class for testing the functionality of the [AppReal](#) class.

Class AppArrayTest

Namespace: [Test_BOOSE.ComponentTest](#)

Assembly: Test_BOOSE.dll

Unit test class for testing the functionality of the [AppArray](#) class.

```
[TestClass]  
public class AppArrayTest
```

Inheritance

[object](#) ← AppArrayTest

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Constructor_ShouldCreateInstance()

Test to verify that an instance of [AppArray](#) can be successfully created. This ensures that the constructor initializes the object correctly.

```
[TestMethod]  
public void Constructor_ShouldCreateInstance()
```

Class AppBooleanTest

Namespace: [Test_BOOSE.ComponentTest](#)

Assembly: Test_BOOSE.dll

Unit test class for testing the functionality of the [AppBoolean](#) class.

```
[TestClass]  
public class AppBooleanTest
```

Inheritance

[object](#) ← AppBooleanTest

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

TestRestrictions_MethodDoesNotThrowException()

Test to ensure that the [Restrictions\(\)](#) method does not throw any exceptions. This is important because the method is not currently implemented, and no restrictions are applied.

```
[TestMethod]  
public void TestRestrictions_MethodDoesNotThrowException()
```

Class AppIntTest

Namespace: [Test_BOOSE.ComponentTest](#)

Assembly: Test_BOOSE.dll

Unit test class for testing the functionality of the [AppInt](#) class.

```
[TestClass]
public class AppIntTest
```

Inheritance

[object](#) ← AppIntTest

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

AppInt_Restrictions_ShouldNotThrowException()

Test to verify that the creation of an [AppInt](#) instance does not throw any exceptions and the instance is initialized properly.

```
[TestMethod]
public void AppInt_Restrictions_ShouldNotThrowException()
```

AppInt_ShouldInitializeWithoutException()

Test to verify that an instance of [AppInt](#) can be successfully created without any exceptions.

```
[TestMethod]
public void AppInt_ShouldInitializeWithoutException()
```

Class AppRealTest

Namespace: [Test_BOOSE.ComponentTest](#)

Assembly: Test_BOOSE.dll

Unit test class for testing the functionality of the [AppReal](#) class.

```
[TestClass]  
public class AppRealTest
```

Inheritance

[object](#) ← AppRealTest

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Methods

Restrictions_ShouldNotThrowAnyException_WhenCalled()

Test to verify that the Restrictions method in the [AppReal](#) class does not throw any exception when called.

```
[TestMethod]  
public void Restrictions_ShouldNotThrowAnyException_WhenCalled()
```

Namespace _77356855_Aastha_Tamrakar ASE Assignment

Classes

[AppCanvas](#)

Represents a canvas for drawing and managing graphical elements.

[AppCommandFactory](#)

Application-specific commands are created by this factory class. Extends the base BOOSE.Command Factory to support custom application-specific commands.

[Form1](#)

Represents the main form of BOOSE application which provide UI and functionality for the canvas and commands.

Class AppCanvas

Namespace: [77356855_Aastha_Tamrakar ASE Assignment](#)

Assembly: 77356855_Aastha_Tamrakar_ASE_Assignment.dll

Represents a canvas for drawing and managing graphical elements.

```
public class AppCanvas : ICanvas
```

Inheritance

[object](#) ← AppCanvas

Implements

ICanvas

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

AppCanvas()

Initializes a new instance for AppCanvas with default size.

```
public AppCanvas()
```

Properties

PenColour

Gets or sets the current pen color.

```
public object PenColour { get; set; }
```

Property Value

Xpos

Gets or sets the current X position of the pen.

```
public int Xpos { get; set; }
```

Property Value

[int](#)

Exceptions

CanvasException

Thrown when the position is beyond the boundaries of the canvas. See BOOSE.CanvasException for details.

Ypos

Gets or sets the current Y position of the pen.

```
public int Ypos { get; set; }
```

Property Value

[int](#)

Exceptions

CanvasException

Thrown when the position is beyond the boundaries of the canvas. See BOOSE.CanvasException for details.

Methods

Circle(int, bool)

Draws circle at current pen position.

```
public void Circle(int radius, bool filled)
```

Parameters

radius [int](#)

The radius of the circle.

filled [bool](#)

Indicates whether the circle should be filled.

Exceptions

CanvasException

Thrown when the radius is negative or the graphics object is not initialized. See BOOSE.CanvasException for details.

Clear()

Clears the canvas by filling it with default background color.

```
public void Clear()
```

Exceptions

CanvasException

Thrown when the graphic object is not initialized. See BOOSE.CanvasException for details.

DrawTo(int, int)

Draws a line from the current pen position to the specified position.

```
public void DrawTo(int toX, int toY)
```

Parameters

toX [int](#)

The target X position.

toY [int](#)

The target Y position.

Exceptions

CanvasException

Thrown when the position is beyond the boundaries of the canvas or the graphics object is not initialized. See BOOSE.CanvasException for details.

MoveTo(int, int)

Moves the pen to the specified position without drawing.

```
public void MoveTo(int x, int y)
```

Parameters

x [int](#)

The target X position.

y [int](#)

The target Y position.

Exceptions

CanvasException

Thrown when the position is beyond the boundaries of the canvas. See BOOSE.CanvasException for details.

Rect(int, int, bool)

Draws a rectangle at the current pen position.

```
public void Rect(int width, int height, bool filled)
```

Parameters

width [int](#)

The width of the rectangle.

height [int](#)

The height of the rectangle.

filled [bool](#)

Indicates whether the rectangle should be filled.

Exceptions

[CanvasException](#)

Thrown when the dimensions are negative or the graphics object is not initialized. See [BOOSE.CanvasException](#) for details.

Reset()

Resets the pen position to the origin (0, 0).

```
public void Reset()
```

Set(int, int)

Sets the size of the canvas and resets the pen position.

```
public void Set(int xsiz, int ysize)
```

Parameters

xsize [int](#)

The width of the canvas.

ysize [int](#)

The height of the canvas.

SetColour(int, int, int)

Set the pen color using RGB values.

```
public void SetColour(int red, int green, int blue)
```

Parameters

red [int](#)

The red component (0-255).

green [int](#)

The green component (0-255).

blue [int](#)

The blue component (0-255).

Exceptions

CanvasException

Thrown when the color value is out of range. See BOOSE.CanvasException for details.

Tri(int, int)

Draws a triangle at the current pen position.

```
public void Tri(int width, int height)
```

Parameters

width [int](#)

The width of the triangle.

height [int](#)

The height of the triangle.

Exceptions

CanvasException

Thrown when the dimensions are negative or the graphics object is not initialized. See BOOSE.CanvasException for details.

WriteText(string)

Writes text at the current pen position.

```
public void WriteText(string text)
```

Parameters

text [string](#)

The text to write.

Exceptions

CanvasException

Thrown when the text is null, empty, or the graphics object is not initialized. See BOOSE.CanvasException for details.

getBitmap()

Get the bitmap representation of canavs.

```
public object getBitmap()
```

Returns

object ↗

The current bitmap.

Class AppCommandFactory

Namespace: [77356855_Aastha_Tamrakar ASE Assignment](#)

Assembly: 77356855_Aastha_Tamrakar_ASE_Assignment.dll

Application-specific commands are created by this factory class. Extends the base BOOSE.Command Factory to support custom application-specific commands.

```
public class AppCommandFactory : CommandFactory, ICommandFactory
```

Inheritance

[object](#) ← CommandFactory ← AppCommandFactory

Implements

ICommandFactory

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

AppCommandFactory()

Initializes a new instance of the [AppCommandFactory](#) class.

```
public AppCommandFactory()
```

Methods

MakeCommand(string)

Creates a command instance based on the specified command type. This factory supports application-specific commands such as "tri", "write", and others.

```
public override ICommand MakeCommand(string commandType)
```

Parameters

`commandType` [string](#) ↗

The type of command to create, specified as a string.

Returns

ICommand

An instance of the corresponding command based on the `commandType`. If no specific command matches, delegates to the base class to create default commands.

Remarks

The `commandType` string is converted to lowercase and trimmed before matching. Example command types include "tri" for drawing a triangle, "write" for writing functionality, and various others for drawing shapes, conditional logic, loops, etc.

Class Form1

Namespace: [77356855_Aastha_Tamrakar ASE Assignment](#)

Assembly: 77356855_Aastha_Tamrakar_ASE_Assignment.dll

Represents the main form of BOOSE application which provide UI and functionality for the canvas and commands.

```
public class Form1 : Form, IDropTarget, ISynchronizeInvoke, IWin32Window,  
IBindableComponent, IComponent, IDisposable, IContainerControl
```

Inheritance

```
object ↗ ← MarshalByRefObject ↗ ← Component ↗ ← Control ↗ ← ScrollableControl ↗ ←  
ContainerControl ↗ ← Form ↗ ← Form1
```

Implements

```
IDropTarget ↗ , ISynchronizeInvoke ↗ , IWin32Window ↗ , IBindableComponent ↗ , IComponent ↗ ,  
IDisposable ↗ , IContainerControl ↗
```

Inherited Members

```
Form.SetVisibleCore(bool) ↗ , Form.Activate() ↗ , Form.ActivateMdiChild(Form) ↗ ,  
Form.AddOwnedForm(Form) ↗ , Form.AdjustFormScrollbars(bool) ↗ , Form.Close() ↗ ,  
Form.CreateAccessibilityInstance() ↗ , Form.CreateControlsInstance() ↗ , Form.CreateHandle() ↗ ,  
Form.DefWndProc(ref Message) ↗ , Form.ProcessMnemonic(char) ↗ , Form.CenterToParent() ↗ ,  
Form.CenterToScreen() ↗ , Form.LayoutMdi(MdiLayout) ↗ , Form.OnActivated(EventArgs) ↗ ,  
Form.OnBackgroundImageChanged(EventArgs) ↗ ,  
Form.OnBackgroundImageLayoutChanged(EventArgs) ↗ , Form.OnClosing(CancelEventArgs) ↗ ,  
Form.OnClosed(EventArgs) ↗ , Form.OnFormClosing(FormClosingEventArgs) ↗ ,  
Form.OnFormClosed(FormClosedEventArgs) ↗ , Form.OnCreateControl() ↗ ,  
Form.OnDeactivate(EventArgs) ↗ , Form.OnEnabledChanged(EventArgs) ↗ , Form.OnEnter(EventArgs) ↗ ,  
Form.OnFontChanged(EventArgs) ↗ , Form.OnGotFocus(EventArgs) ↗ ,  
Form.OnHandleCreated(EventArgs) ↗ , Form.OnHandleDestroyed(EventArgs) ↗ ,  
Form.OnHelpButtonClicked(CancelEventArgs) ↗ , Form.OnLayout(LayoutEventArgs) ↗ ,  
Form.OnLoad(EventArgs) ↗ , Form.OnMaximizedBoundsChanged(EventArgs) ↗ ,  
Form.OnMaximumSizeChanged(EventArgs) ↗ , Form.OnMinimumSizeChanged(EventArgs) ↗ ,  
Form.OnInputLanguageChanged(InputLanguageChangedEventArgs) ↗ ,  
Form.OnInputLanguageChanging(InputLanguageChangingEventArgs) ↗ ,  
Form.OnVisibleChanged(EventArgs) ↗ , Form.OnMdiChildActivate(EventArgs) ↗ ,  
Form.OnMenuStart(EventArgs) ↗ , Form.OnMenuComplete(EventArgs) ↗ ,  
Form.OnPaint(PaintEventArgs) ↗ , Form.OnResize(EventArgs) ↗ ,
```

[Form.OnDpiChanged\(DpiChangedEventArgs\)](#) , [Form.OnGetDpiScaledSize\(int, int, ref Size\)](#) ,
[Form.OnRightToLeftLayoutChanged\(EventArgs\)](#) , [Form.OnShown\(EventArgs\)](#) ,
[Form.OnTextChanged\(EventArgs\)](#) , [Form.ProcessCmdKey\(ref Message, Keys\)](#) ,
[Form.ProcessDialogKey\(Keys\)](#) , [Form.ProcessDialogChar\(char\)](#) ,
[Form.ProcessKeyPreview\(ref Message\)](#) , [Form.ProcessTabKey\(bool\)](#) ,
[Form.RemoveOwnedForm\(Form\)](#) , [Form.Select\(bool, bool\)](#) ,
[Form.ScaleMinAxisSize\(float, float, bool\)](#) ,
[Form.GetScaledBounds\(Rectangle, SizeF, BoundsSpecified\)](#) ,
[Form.ScaleControl\(SizeF, BoundsSpecified\)](#) , [Form.SetBoundsCore\(int, int, int, int, BoundsSpecified\)](#) ,
[Form.SetClientSizeCore\(int, int\)](#) , [Form.SetDesktopBounds\(int, int, int, int\)](#) ,
[Form.SetDesktopLocation\(int, int\)](#) , [Form.Show\(IWin32Window\)](#) , [Form.ShowDialog\(\)](#) ,
[Form.ShowDialog\(IWin32Window\)](#) , [Form.ToString\(\)](#) , [Form.UpdateDefaultButton\(\)](#) ,
[Form.OnResizeBegin\(EventArgs\)](#) , [Form.OnResizeEnd\(EventArgs\)](#) ,
[Form.OnStyleChanged\(EventArgs\)](#) , [Form.ValidateChildren\(\)](#) ,
[Form.ValidateChildren\(ValidationConstraints\)](#) , [Form.WndProc\(ref Message\)](#) , [Form.AcceptButton](#) ,
[Form.ActiveForm](#) , [Form.ActiveMdiChild](#) , [Form.AllowTransparency](#) , [Form.AutoScroll](#) ,
[Form.AutoSize](#) , [Form.AutoSizeMode](#) , [Form.AutoValidate](#) , [Form.BackColor](#) ,
[Form.FormBorderStyle](#) , [Form.CancelButton](#) , [Form.ClientSize](#) , [Form.ControlBox](#) ,
[Form.CreateParams](#) , [Form.DefaultImeMode](#) , [Form.DefaultSize](#) , [Form.DesktopBounds](#) ,
[Form/DesktopLocation](#) , [Form/DialogResult](#) , [Form/HelpButton](#) , [Form/Icon](#) , [Form/IsMdiChild](#) ,
[Form/IsMdiContainer](#) , [Form/IsRestrictedWindow](#) , [Form/KeyPreview](#) , [Form/Location](#) ,
[Form/MaximizedBounds](#) , [Form/MaximumSize](#) , [Form/MainMenuStrip](#) , [Form/MinimumSize](#) ,
[Form/MaximizeBox](#) , [Form/MdiChildren](#) , [Form/MdiChildrenMinimizedAnchorBottom](#) ,
[Form/MdiParent](#) , [Form/MinimizeBox](#) , [Form/Modal](#) , [Form/Opacity](#) , [Form/OwnedForms](#) ,
[Form/Owner](#) , [Form/RestoreBounds](#) , [Form/RightToLeftLayout](#) , [Form>ShowInTaskbar](#) ,
[Form>ShowIcon](#) , [Form>ShowWithoutActivation](#) , [Form/Size](#) , [Form/SizeGripStyle](#) ,
[Form/StartPosition](#) , [Form/Text](#) , [Form/TopLevel](#) , [Form/TopMost](#) , [Form/TransparencyKey](#) ,
[Form/WindowState](#) , [Form/AutoSizeChanged](#) , [Form/AutoValidateChanged](#) ,
[Form/HelpButtonClicked](#) , [Form/MaximizedBoundsChanged](#) , [Form/MaximumSizeChanged](#) ,
[Form/MinimumSizeChanged](#) , [Form/Activated](#) , [Form/Deactivate](#) , [Form/FormClosing](#) ,
[Form/FormClosed](#) , [Form/Load](#) , [Form/MdiChildActivate](#) , [Form/MenuComplete](#) ,
[Form/MenuStart](#) , [Form/InputLanguageChanged](#) , [Form/InputLanguageChanging](#) ,
[Form/RightToLeftLayoutChanged](#) , [Form/Shown](#) , [Form/DpiChanged](#) , [Form/ResizeBegin](#) ,
[Form/ResizeEnd](#) , [ContainerControl.OnAutoValidateChanged\(EventArgs\)](#) ,
[ContainerControl.OnMove\(EventArgs\)](#) , [ContainerControl.OnParentChanged\(EventArgs\)](#) ,
[ContainerControl.PerformLayout\(\)](#) , [ContainerControl.RescaleConstantsForDpi\(int, int\)](#) ,
[ContainerControl/Validate\(\)](#) , [ContainerControl/Validate\(bool\)](#) ,
[ContainerControl/AutoScaleDimensions](#) , [ContainerControl/AutoScaleFactor](#) ,
[ContainerControl/AutoScaleMode](#) , [ContainerControl/BindingContext](#) ,
[ContainerControl/CanEnableIme](#) , [ContainerControl/ActiveControl](#) ,

[ContainerControl.CurrentAutoScaleDimensions](#) , [ContainerControl.ParentForm](#) ,
[ScrollableControl.ScrollStateAutoScrolling](#) , [ScrollableControl.ScrollStateHScrollVisible](#) ,
[ScrollableControl.ScrollStateVScrollVisible](#) , [ScrollableControl.ScrollStateUserHasScrolled](#) ,
[ScrollableControl.ScrollStateFullDrag](#) , [ScrollableControl.GetScrollState\(int\)](#) ,
[ScrollableControl.OnMouseWheel\(MouseEventArgs\)](#) ,
[ScrollableControl.OnRightToLeftChanged\(EventArgs\)](#) ,
[ScrollableControl.OnPaintBackground\(PaintEventArgs\)](#) ,
[ScrollableControl.OnPaddingChanged\(EventArgs\)](#) , [ScrollableControl.SetDisplayRectLocation\(int, int\)](#) ,
[ScrollableControl.ScrollControlIntoView\(Control\)](#) , [ScrollableControl.ScrollToControl\(Control\)](#) ,
[ScrollableControl.OnScroll\(ScrollEventArgs\)](#) , [ScrollableControl.SetAutoScrollMargin\(int, int\)](#) ,
[ScrollableControl.SetScrollState\(int, bool\)](#) , [ScrollableControl.AutoScrollMargin](#) ,
[ScrollableControl.AutoScrollPosition](#) , [ScrollableControl.AutoScrollMinSize](#) ,
[ScrollableControl.DisplayRectangle](#) , [ScrollableControl.HScroll](#) , [ScrollableControl.HorizontalScroll](#) ,
[ScrollableControl.VScroll](#) , [ScrollableControl.VerticalScroll](#) , [ScrollableControl.Scroll](#) ,
[Control.GetAccessibilityObjectById\(int\)](#) , [Control.SetAutoSizeMode\(AutoSizeMode\)](#) ,
[Control.GetAutoSizeMode\(\)](#) , [Control.GetPreferredSize\(Size\)](#) ,
[Control.AccessibilityNotifyClients\(AccessibleEvents, int\)](#) ,
[Control.AccessibilityNotifyClients\(AccessibleEvents, int, int\)](#) , [Control.BeginInvoke\(Delegate\)](#) ,
[Control.BeginInvoke\(Action\)](#) , [Control.BeginInvoke\(Delegate, params object\[\]\)](#) ,
[Control.BringToFront\(\)](#) , [Control.Contains\(Control\)](#) , [Control.CreateGraphics\(\)](#) ,
[Control.CreateControl\(\)](#) , [Control.DestroyHandle\(\)](#) , [Control.DoDragDrop\(object, DragDropEffects\)](#) ,
[Control.DoDragDrop\(object, DragDropEffects, Bitmap, Point, bool\)](#) ,
[Control.DrawToBitmap\(Bitmap, Rectangle\)](#) , [Control.EndInvoke\(IAsyncResult\)](#) , [Control.FindForm\(\)](#) ,
[Control.GetTopLevel\(\)](#) , [Control.RaiseKeyEvent\(object, KeyEventArgs\)](#) ,
[Control.RaiseMouseEvent\(object, MouseEventArgs\)](#) , [Control.Focus\(\)](#) ,
[Control.FromChildHandle\(nint\)](#) , [Control.FromHandle\(nint\)](#) ,
[Control.GetChildAtPoint\(Point, GetChildAtPointSkip\)](#) , [Control.GetChildAtPoint\(Point\)](#) ,
[Control.GetContainerControl\(\)](#) , [Control.GetNextControl\(Control, bool\)](#) ,
[Control.GetStyle\(ControlStyles\)](#) , [Control.Hide\(\)](#) , [Control.InitLayout\(\)](#) , [Control.Invalidate\(Region\)](#) ,
[Control.Invalidate\(Region, bool\)](#) , [Control.Invalidate\(\)](#) , [Control.Invalidate\(bool\)](#) ,
[Control.Invalidate\(Rectangle\)](#) , [Control.Invalidate\(Rectangle, bool\)](#) , [Control.Invoke\(Action\)](#) ,
[Control.Invoke\(Delegate\)](#) , [Control.Invoke\(Delegate, params object\[\]\)](#) ,
[Control.Invoke<T>\(Func<T>\)](#) , [Control.InvokePaint\(Control, PaintEventArgs\)](#) ,
[Control.InvokePaintBackground\(Control, PaintEventArgs\)](#) , [Control.IsKeyLocked\(Keys\)](#) ,
[Control.IsInputChar\(char\)](#) , [Control.IsInputKey\(Keys\)](#) , [Control.IsMnemonic\(char, string\)](#) ,
[Control.LogicalToDeviceUnits\(int\)](#) , [Control.LogicalToDeviceUnits\(Size\)](#) ,
[Control.ScaleBitmapLogicalToDevice\(ref Bitmap\)](#) , [Control.NotifyInvalidate\(Rectangle\)](#) ,
[Control.InvokeOnClick\(Control, EventArgs\)](#) , [Control.OnAutoSizeChanged\(EventArgs\)](#) ,
[Control.OnBackColorChanged\(EventArgs\)](#) , [Control.OnBindingContextChanged\(EventArgs\)](#) ,
[Control.OnCausesValidationChanged\(EventArgs\)](#) , [Control.OnContextMenuStripChanged\(EventArgs\)](#) ,

[Control.OnCursorChanged\(EventArgs\)](#) , [Control.OnDataContextChanged\(EventArgs\)](#) ,
[Control.OnDockChanged\(EventArgs\)](#) , [Control.OnForeColorChanged\(EventArgs\)](#) ,
[Control.OnNotifyMessage\(Message\)](#) , [Control.OnParentBackColorChanged\(EventArgs\)](#) ,
[Control.OnParentBackgroundImageChanged\(EventArgs\)](#) ,
[Control.OnParentBindingContextChanged\(EventArgs\)](#) , [Control.OnParentCursorChanged\(EventArgs\)](#) ,
[Control.OnParentDataContextChanged\(EventArgs\)](#) , [Control.OnParentEnabledChanged\(EventArgs\)](#) ,
[Control.OnParentFontChanged\(EventArgs\)](#) , [Control.OnParentForeColorChanged\(EventArgs\)](#) ,
[Control.OnParentRightToLeftChanged\(EventArgs\)](#) , [Control.OnParentVisibleChanged\(EventArgs\)](#) ,
[Control.OnPrint\(PaintEventArgs\)](#) , [Control.OnTabIndexChanged\(EventArgs\)](#) ,
[Control.OnTabStopChanged\(EventArgs\)](#) , [Control.OnClick\(EventArgs\)](#) ,
[Control.OnClientSizeChanged\(EventArgs\)](#) , [Control.OnControlAdded\(ControlEventArgs\)](#) ,
[Control.OnControlRemoved\(ControlEventArgs\)](#) , [Control.OnLocationChanged\(EventArgs\)](#) ,
[Control.OnDoubleClick\(EventArgs\)](#) , [Control.OnDragEnter\(DragEventArgs\)](#) ,
[Control.OnDragOver\(DragEventArgs\)](#) , [Control.OnDragLeave\(EventArgs\)](#) ,
[Control.OnDragDrop\(DragEventArgs\)](#) , [Control.OnGiveFeedback\(GiveFeedbackEventArgs\)](#) ,
[Control.InvokeGotFocus\(Control, EventArgs\)](#) , [Control.OnHelpRequested\(HelpEventArgs\)](#) ,
[Control.OnInvalidate\(InvalidateEventArgs\)](#) , [Control.OnKeyDown\(KeyEventEventArgs\)](#) ,
[Control.OnKeyPress\(KeyPressEventEventArgs\)](#) , [Control.OnKeyUp\(KeyEventEventArgs\)](#) ,
[Control.OnLeave\(EventArgs\)](#) , [Control.InvokeLostFocus\(Control, EventArgs\)](#) ,
[Control.OnLostFocus\(EventArgs\)](#) , [Control.OnMarginChanged\(EventArgs\)](#) ,
[Control.OnMouseDoubleClick\(MouseEventArgs\)](#) , [Control.OnMouseClicked\(MouseEventArgs\)](#) ,
[Control.OnMouseCaptureChanged\(EventArgs\)](#) , [Control.OnMouseDown\(MouseEventArgs\)](#) ,
[Control.OnMouseEnter\(EventArgs\)](#) , [Control.OnMouseLeave\(EventArgs\)](#) ,
[Control.OnDpiChangedBeforeParent\(EventArgs\)](#) , [Control.OnDpiChangedAfterParent\(EventArgs\)](#) ,
[Control.OnMouseHover\(EventArgs\)](#) , [Control.OnMouseMove\(MouseEventArgs\)](#) ,
[Control.OnMouseUp\(MouseEventArgs\)](#) ,
[Control.OnQueryContinueDrag\(QueryContinueDragEventArgs\)](#) ,
[Control.OnRegionChanged\(EventArgs\)](#) , [Control.OnPreviewKeyDown\(PreviewKeyDownEventArgs\)](#) ,
[Control.OnSizeChanged\(EventArgs\)](#) , [Control.OnChangeUICues\(UICuesEventArgs\)](#) ,
[Control.OnSystemColorsChanged\(EventArgs\)](#) , [Control.OnValidating\(CancelEventArgs\)](#) ,
[Control.OnValidated\(EventArgs\)](#) , [Control.PerformLayout\(\)](#) , [Control.PerformLayout\(Control, string\)](#) ,
[Control.PointToClient\(Point\)](#) , [Control.PointToScreen\(Point\)](#) ,
[Control.PreProcessMessage\(ref Message\)](#) , [Control.PreProcessControlMessage\(ref Message\)](#) ,
[Control.ProcessKeyEventArgs\(ref Message\)](#) , [Control.ProcessKeyMessage\(ref Message\)](#) ,
[Control.RaiseDragEvent\(object, DragEventArgs\)](#) , [Control.RaisePaintEvent\(object, PaintEventArgs\)](#) ,
[Control.RecreateHandle\(\)](#) , [Control.RectangleToClient\(Rectangle\)](#) ,
[Control.RectangleToScreen\(Rectangle\)](#) , [Control.ReflectMessage\(nint, ref Message\)](#) ,
[Control.Refresh\(\)](#) , [Control.ResetMouseEventArgs\(\)](#) , [Control.ResetText\(\)](#) , [Control.ResumeLayout\(\)](#) ,
[Control.ResumeLayout\(bool\)](#) , [Control.Scale\(SizeF\)](#) , [Control.Select\(\)](#) ,
[Control.SelectNextControl\(Control, bool, bool, bool\)](#) , [Control.SendToBack\(\)](#) ,

[Control.SetBounds\(int, int, int, int\)](#) , [Control.SetBounds\(int, int, int, int, BoundsSpecified\)](#) ,
[Control.SizeFromClientSize\(Size\)](#) , [Control.SetStyle\(ControlStyles, bool\)](#) , [Control.SetTopLevel\(bool\)](#) ,
[Control.RtlTranslateAlignment\(HorizontalAlignment\)](#) ,
[Control.RtlTranslateAlignment\(LeftRightAlignment\)](#) ,
[Control.RtlTranslateAlignment\(ContentAlignment\)](#) ,
[Control.RtlTranslateHorizontal\(HorizontalAlignment\)](#) ,
[Control.RtlTranslateLeftRight\(LeftRightAlignment\)](#) , [Control.RtlTranslateContent\(ContentAlignment\)](#) ,
[Control.Show\(\)](#) , [Control.SuspendLayout\(\)](#) , [Control.Update\(\)](#) , [Control.UpdateBounds\(\)](#) ,
[Control.UpdateBounds\(int, int, int, int\)](#) , [Control.UpdateBounds\(int, int, int, int, int, int\)](#) ,
[Control.UpdateZOrder\(\)](#) , [Control.UpdateStyles\(\)](#) , [Control.OnImeModeChanged\(EventArgs\)](#) ,
[Control.AccessibilityObject](#) , [Control.AccessibleDefaultActionDescription](#) ,
[Control.AccessibleDescription](#) , [Control.AccessibleName](#) , [Control.AccessibleRole](#) ,
[Control.AllowDrop](#) , [Control.Anchor](#) , [Control.AutoScrollOffset](#) , [Control.LayoutEngine](#) ,
[Control.DataContext](#) , [Control.BackgroundImage](#) , [Control.BackgroundImageLayout](#) ,
[Control.Bottom](#) , [Control.Bounds](#) , [Control.CanFocus](#) , [Control.CanRaiseEvents](#) ,
[Control.CanSelect](#) , [Control.Capture](#) , [Control.CausesValidation](#) ,
[Control.CheckForIllegalCrossThreadCalls](#) , [Control.ClientRectangle](#) , [Control.CompanyName](#) ,
[Control.ContainsFocus](#) , [Control.ContextMenuStrip](#) , [Control.Controls](#) , [Control.Created](#) ,
[Control.Cursor](#) , [Control.DataBindings](#) , [Control.DefaultBackColor](#) , [Control.DefaultCursor](#) ,
[Control.DefaultFont](#) , [Control.DefaultForeColor](#) , [Control.DefaultMargin](#) ,
[Control.DefaultMaximumSize](#) , [Control.DefaultMinimumSize](#) , [Control.DefaultPadding](#) ,
[Control.DeviceDpi](#) , [Control.IsDisposed](#) , [Control.Disposing](#) , [Control.Dock](#) ,
[Control.DoubleBuffered](#) , [Control.Enabled](#) , [Control.Focused](#) , [Control.Font](#) ,
[Control.FontHeight](#) , [Control.ForeColor](#) , [Control.Handle](#) , [Control.HasChildren](#) , [Control.Height](#) ,
[Control.IsHandleCreated](#) , [Control.InvokeRequired](#) , [Control.Accessible](#) ,
[Control.IsAncestorSiteInDesignMode](#) , [Control.IsMirrored](#) , [Control.Left](#) , [Control.Margin](#) ,
[Control.ModifierKeys](#) , [Control.MouseButtons](#) , [Control.mousePosition](#) , [Control.Name](#) ,
[Control.Parent](#) , [Control.ProductName](#) , [Control.ProductVersion](#) , [Control.RecreatingHandle](#) ,
[Control.Region](#) , [Control.RenderRightToLeft](#) , [Control.ResizeRedraw](#) , [Control.Right](#) ,
[Control.RightToLeft](#) , [Control.ScaleChildren](#) , [Control.Site](#) , [Control.TabIndex](#) , [Control.TabStop](#) ,
[Control.Tag](#) , [Control.Top](#) , [Control.TopLevelControl](#) , [Control.ShowKeyboardCues](#) ,
[Control.ShowFocusCues](#) , [Control.UseWaitCursor](#) , [Control.Visible](#) , [Control.Width](#) ,
[Control.PreferredSize](#) , [Control.Padding](#) , [Control.ImeMode](#) , [Control.ImeModeBase](#) ,
[Control.PropagatingImeMode](#) , [Control.BackColorChanged](#) , [Control.BackgroundImageChanged](#) ,
[Control.BackgroundImageLayoutChanged](#) , [Control.BindingContextChanged](#) ,
[Control.CausesValidationChanged](#) , [Control.ClientSizeChanged](#) ,
[Control.ContextMenuStripChanged](#) , [Control.CursorChanged](#) , [Control.DockChanged](#) ,
[Control.EnabledChanged](#) , [Control.FontChanged](#) , [Control.ForeColorChanged](#) ,
[Control.LocationChanged](#) , [Control.MarginChanged](#) , [Control.RegionChanged](#) ,
[Control.RightToLeftChanged](#) , [Control.SizeChanged](#) , [Control.TabIndexChanged](#) ,

[Control.TabStopChanged](#) , [Control.TextChanged](#) , [Control.VisibleChanged](#) , [Control.Click](#) ,
[Control.ControlAdded](#) , [Control.ControlRemoved](#) , [Control.DataContextChanged](#) ,
[Control.DragDrop](#) , [Control.DragEnter](#) , [Control.DragOver](#) , [Control.DragLeave](#) ,
[Control.GiveFeedback](#) , [Control.HandleCreated](#) , [Control.HandleDestroyed](#) ,
[Control.HelpRequested](#) , [Control.Invalidate](#) , [Control.PaddingChanged](#) , [Control.Paint](#) ,
[Control.QueryContinueDrag](#) , [Control.QueryAccessibilityHelp](#) , [Control.DoubleClick](#) ,
[Control.Enter](#) , [Control.GotFocus](#) , [Control.KeyDown](#) , [Control.KeyPress](#) , [Control.KeyUp](#) ,
[Control.Layout](#) , [Control.Leave](#) , [Control.LostFocus](#) , [Control.MouseClick](#) ,
[Control.MouseDoubleClick](#) , [Control.MouseCaptureChanged](#) , [Control.MouseDown](#) ,
[Control.MouseEnter](#) , [Control.MouseLeave](#) , [Control.DpiChangedBeforeParent](#) ,
[Control.DpiChangedAfterParent](#) , [Control.MouseHover](#) , [Control.MouseMove](#) , [Control.MouseUp](#) ,
[Control.MouseWheel](#) , [Control.Move](#) , [Control.PreviewKeyDown](#) , [Control.Resize](#) ,
[Control.ChangeUICTypes](#) , [Control.StyleChanged](#) , [Control.SystemColorsChanged](#) ,
[Control.Validating](#) , [Control.Validated](#) , [Control.ParentChanged](#) , [Control.ImeModeChanged](#) ,
[Component.Dispose\(\)](#) , [Component.GetService\(Type\)](#) , [Component.Container](#) ,
[Component.DesignMode](#) , [Component.Events](#) , [Component.Disposed](#) ,
[MarshalByRefObject.GetLifetimeService\(\)](#) , [MarshalByRefObject.InitializeLifetimeService\(\)](#) ,
[MarshalByRefObject.MemberwiseClone\(bool\)](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Constructors

Form1()

Initializes a new instance of form class. Sets up canvas, command factory, stored program, and parser.

```
public Form1()
```

Methods

Dispose(bool)

Clean up any resources being used.

```
protected override void Dispose(bool disposing)
```

Parameters

disposing bool ↗

true if managed resources should be disposed; otherwise, false.

Namespace _77356855_Aastha_Tamrakar_ASE_Assignment.Commands

Classes

[AppCall](#)

Represents a custom implementation of the BOOSE.Call class that reduces restrictions.

[AppElse](#)

Represents the Else command in the application, which is part of a compound command structure. This class extends the base BOOSE.Else class and overrides its Else.Restrictions method.

[AppEnd](#)

Represents a custom implementation of the BOOSE.End class. This class overrides the End.Restrictions method from the base class.

[AppFor](#)

Represents a custom implementation of the BOOSE.For class. This class overrides the For.Restrictions method from the base class.

[AppIf](#)

Represents the AppIf class which inherits from the AppCompoundCommand class.

[AppMethod](#)

Represents a custom implementation of the BOOSE.Method class. This class overrides the constructor to reduce restrictions on method count.

[AppWhile](#)

Represents a compound command that implements a "while" loop structure in the application. Inherits from the BOOSE.While class and provides a customizable implementation.

[CircleApp](#)

Represents a command to draw a circle on a canvas.

[ClearApp](#)

Represents a command to clear the canvas.

[RectangleApp](#)

Represents a rectangle drawing command that requires two parameters: width and height.

[ResetApp](#)

Represents a reset command to reset the canvas state.

[TriangleApp](#)

Command that represents to draw triangle on the canvas. This command requires two parameters : width and height.

[WriteApp](#)

Represents a command to write text on the canvas. The command accepts one parameter: the text to be written.

Class AppCall

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Commands](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents a custom implementation of the BOOSE.Call class that reduces restrictions.

```
public class AppCall : Call, ICommand
```

Inheritance

[object](#) ← Command ← Evaluation ← Boolean ← ConditionalCommand ← CompoundCommand ← Call ← AppCall

Implements

ICommand

Inherited Members

Call.methodName , Call.Compile() , Call.Execute() , CompoundCommand.ReduceRestrictions() ,
[CompoundCommand.CheckParameters\(string\[\]\)](#) , CompoundCommand.CorrespondingCommand ,
ConditionalCommand.endLineNumber , ConditionalCommand.EndLineNumber ,
ConditionalCommand.Condition , ConditionalCommand.LineNumber , ConditionalCommand.CondType ,
ConditionalCommand.ReturnLineNumber , Boolean.BoolValue , Evaluation.expression ,
Evaluation.evaluatedExpression , Evaluation.varName , Evaluation.value ,
[Evaluation.ProcessExpression\(string\)](#) , Evaluation.Expression , Evaluation.VarName , Evaluation.Value ,
Evaluation.Local , Command.program , Command.parameterList , Command.parameters ,
Command.paramsint , [Command.Set\(StoredProgram, string\)](#) , [Command.ProcessParameters\(string\)](#) ,
Command.ToString() , Command.Program , Command.Name , Command.ParameterList ,
Command.Parameters , Command.Parmsint , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Constructors

AppCall()

Initializes a new instance of the [AppCall](#) class. Calls the ReduceRestrictions method during initialization to reduce any restrictions.

```
public AppCall()
```

Methods

Restrictions()

Overrides the Call.Restrictions method. This method is intended to define specific restrictions but is currently not implemented.

```
public override void Restrictions()
```

Class AppElse

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Commands](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents the Else command in the application, which is part of a compound command structure. This class extends the base BOOSE.Else class and overrides its Else.Restrictions method.

```
public class AppElse : Else, ICommand
```

Inheritance

[object](#) ← Command ← Evaluation ← Boolean ← ConditionalCommand ← CompoundCommand ← Else ← AppElse

Implements

ICommand

Inherited Members

[Else.CheckParameters\(string\[\]\)](#) , Else.Compile() , Else.Execute() , Else.CorrectingEnd ,
CompoundCommand.ReduceRestrictions() , CompoundCommand.CorrectingCommand ,
ConditionalCommand.endLineNumber , ConditionalCommand.EndLineNumber ,
ConditionalCommand.Condition , ConditionalCommand.LineNumber , ConditionalCommand.CondType ,
ConditionalCommand.ReturnLineNumber , Boolean.BoolValue , Evaluation.expression ,
Evaluation.evaluatedExpression , Evaluation.varName , Evaluation.value ,
[Evaluation.ProcessExpression\(string\)](#) , Evaluation.Expression , Evaluation.VarName , Evaluation.Value ,
Evaluation.Local , Command.program , Command.parameterList , Command.parameters ,
Command.paramsint , [Command.Set\(StoredProgram, string\)](#) , [Command.ProcessParameters\(string\)](#) ,
Command.ToString() , Command.Program , Command.Name , Command.ParameterList ,
Command.Parameters , Command.Paramsint , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Methods

Restrictions()

Overrides the Else.Restrictions method. This method is intended to define any restrictions related to the Else command but is currently not implemented.

```
public override void Restrictions()
```

Class AppEnd

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Commands](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents a custom implementation of the BOOSE.End class. This class overrides the End.Restrictions method from the base class.

```
public class AppEnd : End, ICommand
```

Inheritance

[object](#) ← Command ← Evaluation ← Boolean ← ConditionalCommand ← CompoundCommand ← End ← AppEnd

Implements

ICommand

Inherited Members

End.Compile() , End.Execute() , CompoundCommand.ReduceRestrictions() ,
[CompoundCommand.CheckParameters\(string\[\]\)](#) , CompoundCommand.CorrectingCommand ,
ConditionalCommand.endLineNumber , ConditionalCommand.EndLineNumber ,
ConditionalCommand.Condition , ConditionalCommand.LineNumber , ConditionalCommand.CondType ,
ConditionalCommand.ReturnLineNumber , Boolean.BoolValue , Evaluation.expression ,
Evaluation.evaluatedExpression , Evaluation.varName , Evaluation.value ,
[Evaluation.ProcessExpression\(string\)](#) , Evaluation.Expression , Evaluation.VarName , Evaluation.Value ,
Evaluation.Local , Command.program , Command.parameterList , Command.parameters ,
Command.paramsint , [Command.Set\(StoredProgram, string\)](#) , [Command.ProcessParameters\(string\)](#) ,
Command.ToString() , Command.Program , Command.Name , Command.ParameterList ,
Command.Parameters , Command.Paramsint , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Methods

Restrictions()

Overrides the End.Restrictions method. This method is intended to define specific restrictions but is currently not implemented.

```
public override void Restrictions()
```

Class AppFor

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Commands](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents a custom implementation of the BOOSE.For class. This class overrides the For.Restrictions method from the base class.

```
public class AppFor : For, ICommand
```

Inheritance

[object](#) ← Command ← Evaluation ← Boolean ← ConditionalCommand ← For ← AppFor

Implements

ICommand

Inherited Members

For.Compile() , For.Execute() , For.LoopControlV , For.From , For.To , For.Step ,
ConditionalCommand.endLineNumber , ConditionalCommand.EndLineNumber ,
ConditionalCommand.Condition , ConditionalCommand.LineNumber , ConditionalCommand.CondType ,
ConditionalCommand.ReturnLineNumber , Boolean.BoolValue , Evaluation.expression ,
Evaluation.evaluatedExpression , Evaluation.varName , Evaluation.value ,
[Evaluation.CheckParameters\(string\[\]\)](#) , [Evaluation.ProcessExpression\(string\)](#) , Evaluation.Expression ,
Evaluation.VarName , Evaluation.Value , Evaluation.Local , Command.program , Command.parameterList ,
Command.parameters , Command.paramsint , [Command.Set\(StoredProgram, string\)](#) ,
[Command.ProcessParameters\(string\)](#) , Command.ToString() , Command.Program , Command.Name ,
Command.ParameterList , Command.Parameters , Command.Paramsint , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Methods

Restrictions()

Overrides the For.Restrictions method. This method is intended to define specific restrictions but is currently not implemented.

```
public override void Restrictions()
```


Class AppIf

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Commands](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents the AppIf class which inherits from the AppCompoundCommand class.

```
public class AppIf : If, ICommand
```

Inheritance

[object](#) ← Command ← Evaluation ← Boolean ← ConditionalCommand ← CompoundCommand ← If ← AppIf

Implements

ICommand

Inherited Members

CompoundCommand.ReduceRestrictions() , [CompoundCommand.CheckParameters\(string\[\]\)](#) ,
CompoundCommand.Compile() , CompoundCommand.CorrespondingCommand ,
ConditionalCommand.endLineNumber , ConditionalCommand.Execute() ,
ConditionalCommand.EndLineNumber , ConditionalCommand.Condition ,
ConditionalCommand.LineNumber , ConditionalCommand.CondType ,
ConditionalCommand.ReturnLineNumber , Boolean.BoolValue , Evaluation.expression ,
Evaluation.evaluatedExpression , Evaluation.varName , Evaluation.value ,
[Evaluation.ProcessExpression\(string\)](#) , Evaluation.Expression , Evaluation.VarName , Evaluation.Value ,
Evaluation.Local , Command.program , Command.parameterList , Command.parameters ,
Command.paramsint , [Command.Set\(StoredProgram, string\)](#) , [Command.ProcessParameters\(string\)](#) ,
Command.ToString() , Command.Program , Command.Name , Command.ParameterList ,
Command.Parameters , Command.Paramsint , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Constructors

AppIf()

Initializes a new instance of the [AppIf](#) class.

```
public AppIf()
```

Methods

Restrictions()

A protected method intended to reduce or simplify restrictions. This method is currently not implemented.

```
public override void Restrictions()
```

Class AppMethod

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Commands](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents a custom implementation of the BOOSE.Method class. This class overrides the constructor to reduce restrictions on method count.

```
public class AppMethod : Method, ICommand
```

Inheritance

[object](#) ← Command ← Evaluation ← Boolean ← ConditionalCommand ← CompoundCommand ← Method ← AppMethod

Implements

ICommand

Inherited Members

[Method.CheckParameters\(string\[\]\)](#) , Method.Compile() , Method.Execute() , Method.LocalVariables , Method.MethodName , Method.Type , CompoundCommand.ReduceRestrictions() , CompoundCommand.CorrectingCommand , ConditionalCommand.endLineNumber , ConditionalCommand.EndLineNumber , ConditionalCommand.Condition , ConditionalCommand.LineNumber , ConditionalCommand.CondType , ConditionalCommand.ReturnLineNumber , Boolean.Restrictions() , Boolean.BoolValue , Evaluation.expression , Evaluation.evaluatedExpression , Evaluation.varName , Evaluation.value , [Evaluation.ProcessExpression\(string\)](#) , Evaluation.Expression , Evaluation.VarName , Evaluation.Value , Evaluation.Local , Command.program , Command.parameterList , Command.parameters , Command.paramsint , [Command.Set\(StoredProgram, string\)](#) , [Command.ProcessParameters\(string\)](#) , Command.ToString() , Command.Program , Command.Name , Command.ParameterList , Command.Parameters , Command.Paramsint , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Constructors

AppMethod()

Initializes a new instance of the [AppMethod](#) class. Calls the ReduceRestrictions method to remove any restriction on method count.

```
public AppMethod()
```

Class AppWhile

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Commands](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents a compound command that implements a "while" loop structure in the application. Inherits from the BOOSE.While class and provides a customizable implementation.

```
public class AppWhile : While, ICommand
```

Inheritance

[object](#) ← Command ← Evaluation ← Boolean ← ConditionalCommand ← CompoundCommand ← While ← AppWhile

Implements

ICommand

Inherited Members

CompoundCommand.ReduceRestrictions() , [CompoundCommand.CheckParameters\(string\[\]\)](#) ,
CompoundCommand.Compile() , CompoundCommand.CorrectingCommand ,
ConditionalCommand.endLineNumber , ConditionalCommand.Execute() ,
ConditionalCommand.EndLineNumber , ConditionalCommand.Condition ,
ConditionalCommand.LineNumber , ConditionalCommand.CondType ,
ConditionalCommand.ReturnLineNumber , Boolean.BoolValue , Evaluation.expression ,
Evaluation.evaluatedExpression , Evaluation.varName , Evaluation.value ,
[Evaluation.ProcessExpression\(string\)](#) , Evaluation.Expression , Evaluation.VarName , Evaluation.Value ,
Evaluation.Local , Command.program , Command.parameterList , Command.parameters ,
Command.paramsint , [Command.Set\(StoredProgram, string\)](#) , [Command.ProcessParameters\(string\)](#) ,
Command.ToString() , Command.Program , Command.Name , Command.ParameterList ,
Command.Parameters , Command.Paramsint , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Constructors

AppWhile()

Initializes a new instance of the [AppWhile](#) class. This constructor can be used to perform any setup necessary for the "while" loop implementation.

```
public AppWhile()
```

Methods

Restrictions()

Overrides the default restrictions for the "while" loop. This method can be used to define or customize restrictions specific to the "while" loop structure.

```
public override void Restrictions()
```

Class CircleApp

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Commands](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents a command to draw a circle on a canvas.

```
public class CircleApp : CommandOneParameter, ICommand
```

Inheritance

[object](#) ← Command ← CanvasCommand ← CommandOneParameter ← CircleApp

Implements

ICommand

Inherited Members

CommandOneParameter.param1 , CommandOneParameter.param1unprocessed ,
CanvasCommand.yPos , CanvasCommand.xPos , CanvasCommand.canvas , CanvasCommand.Canvas ,
Command.program , Command.parameterList , Command.parameters , Command.paramsint ,
[Command.Set\(StoredProgram, string\)](#) , Command.Compile() , [Command.ProcessParameters\(string\)](#) ,
Command.ToString() , Command.Program , Command.Name , Command.ParameterList ,
Command.Parameters , Command.Paramsint , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Constructors

CircleApp()

Initializes a new instance of the CircleApp class.

```
public CircleApp()
```

CircleApp(Canvas, int)

Initializes a new instance of the CircleApp class with a specified canvas and radius.

```
public CircleApp(Canvas canvas, int radius)
```

Parameters

canvas Canvas

The canvas where the circle will be drawn.

radius [int](#)

The radius of the circle.

Methods

CheckParameters(string[])

Validates the parameters provided for the circle command.

```
public override void CheckParameters(string[] parameterList)
```

Parameters

parameterList [string](#)[]

An array of parameters where the first value should be the radius.

Exceptions

CommandException

Thrown when the parameter list is invalid or the radius is not a valid integer.

[ArgumentOutOfRangeException](#)

Thrown when the radius is not a positive integer.

[Exception](#)

Thrown for any unexpected errors during parameter validation.

Execute()

Executes the command to draw a circle with the specified radius on the canvas.

```
public override void Execute()
```

Exceptions

RestrictionException

Thrown when the radius exceeds the maximum allowable value (2000).

[ArgumentException](#)

Thrown when a parameter is out of the valid range.

[InvalidOperationException](#)

Thrown when there is an error during execution.

[Exception](#)

Thrown for any unexpected errors during execution.

Class ClearApp

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Commands](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents a command to clear the canvas.

```
public class ClearApp : CanvasCommand, ICommand
```

Inheritance

[object](#) ← Command ← CanvasCommand ← ClearApp

Implements

ICommand

Inherited Members

CanvasCommand.yPos , CanvasCommand.xPos , CanvasCommand.canvas , CanvasCommand.Canvas ,
Command.program , Command.parameterList , Command.parameters , Command.paramsint ,
[Command.Set\(StoredProgram, string\)](#) , Command.Compile() , [Command.ProcessParameters\(string\)](#) ,
Command.ToString() , Command.Program , Command.Name , Command.ParameterList ,
Command.Parameters , Command.Paramsint , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Methods

CheckParameters(string[])

Validates the parameters for the clear command.

```
public override void CheckParameters(string[] parameter)
```

Parameters

parameter [string](#)[]

An array of parameters to pass to the command.

Remarks

This method checks if the `parameter` array has more than one element and throws an exception if it does.

Exceptions

[ArgumentException](#)

Thrown when the clear command is provided with parameters.

Execute()

Executes the clear command to clear the canvas.

```
public override void Execute()
```

Remarks

This method calls the `CanvasCommand.Execute` method and then clears the canvas by calling `BOOSE.ICanvas.Clear()`.

Class RectangleApp

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Commands](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents a rectangle drawing command that requires two parameters: width and height.

```
public class RectangleApp : CommandTwoParameters, ICommand
```

Inheritance

[object](#) ← Command ← CanvasCommand ← CommandOneParameter ← CommandTwoParameters ← RectangleApp

Implements

ICommand

Inherited Members

CommandTwoParameters.param2 , CommandTwoParameters.param2unprocessed ,
CommandOneParameter.param1 , CommandOneParameter.param1unprocessed ,
CanvasCommand.yPos , CanvasCommand.xPos , CanvasCommand.canvas , CanvasCommand.Canvas ,
Command.program , Command.parameterList , Command.parameters , Command.paramsint ,
[Command.Set\(StoredProgram, string\)](#) , Command.Compile() , [Command.ProcessParameters\(string\)](#) ,
Command.ToString() , Command.Program , Command.Name , Command.ParameterList ,
Command.Parameters , Command.Paramsint , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Constructors

RectangleApp()

Initializes a new instance of the [RectangleApp](#) class.

```
public RectangleApp()
```

RectangleApp(Canvas, int, int)

Initializes a new instance of the [RectangleApp](#) class with specified canvas, width, and height.

```
public RectangleApp(Canvas canvas, int width, int height)
```

Parameters

canvas Canvas

The canvas where the rectangle will be drawn.

width [int](#)

The width of the rectangle.

height [int](#)

The height of the rectangle.

Methods

CheckParameters(string[])

Checks the parameters provided for the rectangle command. Validates that exactly two positive integer parameters (width and height) are provided and within the allowed range.

```
public override void CheckParameters(string[] parameterList)
```

Parameters

parameterList [string](#)[]

The list of parameters as strings.

Execute()

Executes the command to draw a rectangle on the canvas. Validates the width and height parameters and ensures they do not exceed the maximum allowed values.

```
public override void Execute()
```

Class ResetApp

Namespace: [77356855_Aastha_Tamrakar_ASE_Assignment.Commands](#)

Assembly: 77356855_Aastha_Tamrakar_ASE_Assignment.dll

Represents a reset command to reset the canvas state.

```
public class ResetApp : CanvasCommand, ICommand
```

Inheritance

[object](#) ← Command ← CanvasCommand ← ResetApp

Implements

ICommand

Inherited Members

CanvasCommand.yPos , CanvasCommand.xPos , CanvasCommand.canvas , CanvasCommand.Canvas ,
Command.program , Command.parameterList , Command.parameters , Command.paramsint ,
[Command.Set\(StoredProgram, string\)](#) , Command.Compile() , [Command.ProcessParameters\(string\)](#) ,
Command.ToString() , Command.Program , Command.Name , Command.ParameterList ,
Command.Parameters , Command.Paramsint , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Methods

CheckParameters(string[])

Validates the parameters for the reset command.

```
public override void CheckParameters(string[] parameter)
```

Parameters

parameter [string](#)[]

An array of parameters to pass to the command.

Exceptions

[ArgumentException](#)

Thrown when the reset command is provided with parameters.

Execute()

Executes the reset command to reset the BOOSE.Canvas.

```
public override void Execute()
```

Remarks

This method calls the BOOSE.Canvas.Reset() method to reset all the canvas drawings to their default state.

Class TriangleApp

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Commands](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Command that represents to draw triangle on the canvas. This command requires two parameters : width and height.

```
public class TriangleApp : CommandTwoParameters, ICommand
```

Inheritance

[object](#) ← Command ← CanvasCommand ← CommandOneParameter ← CommandTwoParameters ← TriangleApp

Implements

ICommand

Inherited Members

CommandTwoParameters.param2 , CommandTwoParameters.param2unprocessed ,
CommandOneParameter.param1 , CommandOneParameter.param1unprocessed ,
CanvasCommand.yPos , CanvasCommand.xPos , CanvasCommand.canvas , CanvasCommand.Canvas ,
Command.program , Command.parameterList , Command.parameters , Command.paramsint ,
[Command.Set\(StoredProgram, string\)](#) , Command.Compile() , [Command.ProcessParameters\(string\)](#) ,
Command.ToString() , Command.Program , Command.Name , Command.ParameterList ,
Command.Parameters , Command.Paramsint , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Constructors

TriangleApp()

Initializes a new instance of the [TriangleApp](#) class.

```
public TriangleApp()
```

TriangleApp(Canvas, int, int)

Initializes a new instance of the [TriangleApp](#) class with specified canvas, width, and height.

```
public TriangleApp(Canvas canvas, int width, int height)
```

Parameters

canvas Canvas

The BOOSE.Canvas on which the triangle should be drawn.

width [int](#)

The width of the triangle.

height [int](#)

The height of the triangle.

Methods

CheckParameters(string[])

Checks and validates parameters for the triangle drawing command. Ensures only two parameters are provided.

```
public override void CheckParameters(string[] parameters)
```

Parameters

parameters [string](#)[]

The parameters to validate.

Exceptions

CommandException

Thrown when the number of parameters are incorrect or invalid.

Execute()

Executes the triangle drawing command on the BOOSE.Canvas.

```
public override void Execute()
```

Class WriteApp

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Commands](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents a command to write text on the canvas. The command accepts one parameter: the text to be written.

```
public class WriteApp : CommandOneParameter, ICommand
```

Inheritance

[object](#) ← Command ← CanvasCommand ← CommandOneParameter ← WriteApp

Implements

ICommand

Inherited Members

CommandOneParameter.param1 , CommandOneParameter.param1unprocessed ,
CanvasCommand.yPos , CanvasCommand.xPos , CanvasCommand.canvas , CanvasCommand.Canvas ,
Command.program , Command.parameterList , Command.parameters , Command.paramsint ,
[Command.Set\(StoredProgram, string\)](#) , Command.Compile() , [Command.ProcessParameters\(string\)](#) ,
Command.ToString() , Command.Program , Command.Name , Command.ParameterList ,
Command.Parameters , Command.Paramsint , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Constructors

WriteApp()

Initializes a new instance of the [WriteApp](#) class.

```
public WriteApp()
```

WriteApp(Canvas, string)

Initializes a new instance of the [WriteApp](#) class with specified BOOSE.Canvas and text.

```
public WriteApp(Canvas c, string text)
```

Parameters

c Canvas

The BOOSE.Canvas where the text will be written.

text string

The text to write on the BOOSE.Canvas.

Methods

CheckParameters(string[])

Checks and validates the parameter for the text writing command. Ensures exactly one parameter is provided and is valid.

```
public override void CheckParameters(string[] parameterList)
```

Parameters

parameterList string[]

The parameters to validate.

Exceptions

CommandException

Thrown when the parameter count is incorrect or the text is invalid.

Execute()

Executes the text writing command on the BOOSE.Canvas.

```
public override void Execute()
```

Exceptions

RestrictionException

Thrown when the text is null, empty, whitespace, or exceeds 100 characters.

Namespace _77356855_Aastha_Tamrakar ASE Assignment.Components

Classes

[AppArray](#)

Represents an application-specific implementation of the BOOSE.Boose.Array class. This class extends the functionality of the BOOSE.Boose.Array to fit the specific requirements of the application.

[AppBoolean](#)

Represents a custom implementation of the BOOSE.Boolean class. This class is used for handling boolean variables in the application.

[AppInt](#)

Represents an integer type with custom restrictions for the application.

[AppReal](#)

Represents the AppReal class which inherits from the BOOSE.Real class.

[AppStoredProgram](#)

Represents a custom implementation of a stored program that runs commands on a specified canvas. This class overrides the [Run\(\)](#) method to process and execute commands until no more are left.

Class AppArray

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Components](#)

Assembly: 77356855_Aastha_Tamrakar_ASE_Assignment.dll

Represents an application-specific implementation of the BOOSE BOOSE.Array class. This class extends the functionality of the BOOSE BOOSE.Array to fit the specific requirements of the application.

```
public class AppArray : Array, ICommand
```

Inheritance

[object](#) ← Command ← Evaluation ← Array ← AppArray

Implements

ICommand

Inherited Members

Array.PEEK , Array.POKE , Array.type , Array.rows , Array.columns , Array.valueInt , Array.valueReal ,
Array.intArray , Array.realArray , Array.pokeValue , Array.peekVar , Array.rowS , Array.columnS , Array.row ,
Array.column , Array.ArrayRestrictions() , Array.ReduceRestrictionCounter() , Array.Compile() ,
[Array.CheckParameters\(string\[\]\)](#) , Array.Execute() , [Array.ProcessArrayParametersCompile\(bool\)](#) ,
[Array.ProcessArrayParametersExecute\(bool\)](#) , [Array.SetIntArray\(int, int, int\)](#) ,
[Array.SetRealArray\(double, int, int\)](#) , [Array.GetIntArray\(int, int\)](#) , [Array.GetRealArray\(int, int\)](#) ,
Array.Rows , Array.Columns , Evaluation.expression , Evaluation.evaluatedExpression ,
Evaluation.varName , Evaluation.value , [Evaluation.ProcessExpression\(string\)](#) , Evaluation.Expression ,
Evaluation.VarName , Evaluation.Value , Evaluation.Local , Command.program , Command.parameterList ,
Command.parameters , Command.paramsint , [Command.Set\(StoredProgram, string\)](#) ,
[Command.ProcessParameters\(string\)](#) , Command.ToString() , Command.Program , Command.Name ,
Command.ParameterList , Command.Parameters , Command.Paramsint , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Constructors

AppArray()

Initializes a new instance of the [AppArray](#) class. This constructor calls ReduceRestrictionCounter to adjust the restriction counter as part of the initialization process.

```
public AppArray()
```

Class AppBoolean

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Components](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents a custom implementation of the BOOSE.Boolean class. This class is used for handling boolean variables in the application.

```
public class AppBoolean : Boolean, ICommand
```

Inheritance

[object](#) ← Command ← Evaluation ← Boolean ← AppBoolean

Implements

ICommand

Inherited Members

Boolean.Compile() , Boolean.Execute() , Boolean.BoolValue , Evaluation.expression ,
Evaluation.evaluatedExpression , Evaluation.varName , Evaluation.value ,
[Evaluation.CheckParameters\(string\[\]\)](#) , [Evaluation.ProcessExpression\(string\)](#) , Evaluation.Expression ,
Evaluation.VarName , Evaluation.Value , Evaluation.Local , Command.program , Command.parameterList ,
Command.parameters , Command.paramsint , [Command.Set\(StoredProgram, string\)](#) ,
[Command.ProcessParameters\(string\)](#) , Command.ToString() , Command.Program , Command.Name ,
Command.ParameterList , Command.Parameters , Command.Paramsint , [object.Equals\(object\)](#) ,
[object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Methods

Restrictions()

Specifies the restrictions or rules for the boolean values. This method can be overridden to define custom restrictions for boolean values.

```
public override void Restrictions()
```

Class AppInt

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Components](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents an integer type with custom restrictions for the application.

```
public class AppInt : Int, ICommand
```

Inheritance

[object](#) ← Command ← Evaluation ← Int ← AppInt

Implements

ICommand

Inherited Members

Int.Compile() , Int.Execute() , Evaluation.expression , Evaluation.evaluatedExpression ,
Evaluation.varName , Evaluation.value , [Evaluation.CheckParameters\(string\[\]\)](#) ,
[Evaluation.ProcessExpression\(string\)](#) , Evaluation.Expression , Evaluation.VarName , Evaluation.Value ,
Evaluation.Local , Command.program , Command.parameterList , Command.parameters ,
Command.paramsint , [Command.Set\(StoredProgram, string\)](#) , [Command.ProcessParameters\(string\)](#) ,
Command.ToString() , Command.Program , Command.Name , Command.ParameterList ,
Command.Parameters , Command.Paramsint , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
[object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
[object.ReferenceEquals\(object, object\)](#)

Constructors

AppInt()

Initializes a new instance of the [AppInt](#) class. Calls the [Restrictions\(\)](#) method to apply any restrictions on the integer type.

```
public AppInt()
```

Methods

Restrictions()

Applies custom restrictions to the integer type. This method can be overridden to define specific restrictions.

```
public override void Restrictions()
```

Class AppReal

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Components](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents the AppReal class which inherits from the BOOSE.Real class.

```
public class AppReal : Real, ICommand
```

Inheritance

[object](#) ← Command ← Evaluation ← Real ← AppReal

Implements

ICommand

Inherited Members

Real.Compile() , Real.Execute() , Real.Value , Evaluation.expression , Evaluation.evaluatedExpression , Evaluation.varName , Evaluation.value , [Evaluation.CheckParameters\(string\[\]\)](#) , [Evaluation.ProcessExpression\(string\)](#) , Evaluation.Expression , Evaluation.VarName , Evaluation.Local , Command.program , Command.parameterList , Command.parameters , Command.paramsint , [Command.Set\(StoredProgram, string\)](#) , [Command.ProcessParameters\(string\)](#) , Command.ToString() , Command.Program , Command.Name , Command.ParameterList , Command.Parameters , Command.Paramsint , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Methods

Restrictions()

Overrides the Restrictions method from the base Real class. This method is intended to define specific restrictions but is currently not implemented.

```
public override void Restrictions()
```

Class AppStoredProgram

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.Components](#)

Assembly: 77356855_Aastha_Tamrakar_ASE_Assignment.dll

Represents a custom implementation of a stored program that runs commands on a specified canvas. This class overrides the [Run\(\)](#) method to process and execute commands until no more are left.

```
public class AppStoredProgram : StoredProgram, IList, ICollection, IEnumerable,  
ICloneable, IStoredProgram
```

Inheritance

[object](#) ← [ArrayList](#) ← [StoredProgram](#) ← [AppStoredProgram](#)

Implements

[IList](#), [ICollection](#), [IEnumerable](#), [ICloneable](#), [IStoredProgram](#)

Inherited Members

[StoredProgram.SyntaxOk](#), [StoredProgram.AddMethod\(Method\)](#), [StoredProgram.GetMethod\(string\)](#),
[StoredProgram.AddVariable\(Evaluation\)](#), [StoredProgram.GetVariable\(string\)](#),
[StoredProgram.GetVariable\(int\)](#), [StoredProgram.FindVariable\(Evaluation\)](#),
[StoredProgram.FindVariable\(string\)](#), [StoredProgram.VariableExists\(string\)](#),
[StoredProgram.GetVarValue\(string\)](#), [StoredProgram.UpdateVariable\(string, int\)](#),
[StoredProgram.UpdateVariable\(string, double\)](#), [StoredProgram.UpdateVariable\(string, bool\)](#),
[StoredProgram.DeleteVariable\(string\)](#), [StoredProgram.IsExpression\(string\)](#),
[StoredProgram.EvaluateExpressionWithString\(string\)](#), [StoredProgram.EvaluateExpression\(string\)](#),
[StoredProgram.Push\(ConditionalCommand\)](#), [StoredProgram.Pop\(\)](#), [StoredProgram.Add\(Command\)](#),
[StoredProgram.NextCommand\(\)](#), [StoredProgram.ResetProgram\(\)](#), [StoredProgram.Commandsleft\(\)](#),
[StoredProgram.PC](#), [ArrayList.Adapter\(IList\)](#), [ArrayList.Add\(object\)](#),
[ArrayList.AddRange\(Collection\)](#), [ArrayList.BinarySearch\(int, int, object, Comparer\)](#),
[ArrayList.BinarySearch\(object\)](#), [ArrayList.BinarySearch\(object, Comparer\)](#), [ArrayList.Clear\(\)](#),
[ArrayList.Clone\(\)](#), [ArrayList.Contains\(object\)](#), [ArrayList.CopyTo\(Array\)](#),
[ArrayList.CopyTo\(Array, int\)](#), [ArrayList.CopyTo\(int, Array, int, int\)](#), [ArrayList.FixedSize\(ArrayList\)](#),
[ArrayList.FixedSize\(IList\)](#), [ArrayList.GetEnumerator\(\)](#), [ArrayList.GetEnumerator\(int, int\)](#),
[ArrayList.GetRange\(int, int\)](#), [ArrayList.IndexOf\(object\)](#), [ArrayList.IndexOf\(object, int\)](#),
[ArrayList.IndexOf\(object, int, int\)](#), [ArrayList.Insert\(int, object\)](#),
[ArrayList.InsertRange\(int, Collection\)](#), [ArrayList.LastIndexOf\(object\)](#),
[ArrayList.LastIndexOf\(object, int\)](#), [ArrayList.LastIndexOf\(object, int, int\)](#),
[ArrayList.ReadOnly\(ArrayList\)](#), [ArrayList.ReadOnly\(IList\)](#), [ArrayList.Remove\(object\)](#),
[ArrayList.RemoveAt\(int\)](#), [ArrayList.RemoveRange\(int, int\)](#), [ArrayList.Repeat\(object, int\)](#),

[ArrayList.Reverse\(\)](#) , [ArrayList.Reverse\(int, int\)](#) , [ArrayList.SetRange\(int, ICollection\)](#) ,
[ArrayList.Sort\(\)](#) , [ArrayList.Sort\(IComparer\)](#) , [ArrayList.Sort\(int, int, IComparer\)](#) ,
[ArrayList.Synchronized\(ArrayList\)](#) , [ArrayList.Synchronized\(IList\)](#) , [ArrayList.ToArray\(\)](#) ,
[ArrayList.ToArray\(Type\)](#) , [ArrayList.TrimToSize\(\)](#) , [ArrayList.Capacity](#) , [ArrayList.Count](#) ,
[ArrayList.IsFixedSize](#) , [ArrayList.IsReadOnly](#) , [ArrayList.IsSynchronized](#) , [ArrayList.this\[int\]](#) ,
[ArrayList.SyncRoot](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) ,
[object.ToString\(\)](#)

Constructors

AppStoredProgram(ICanvas)

Initializes a new instance of the [AppStoredProgram](#) class. This constructor initializes the stored program with a specified BOOSE.ICanvas.

```
public AppStoredProgram(ICanvas canvas)
```

Parameters

canvas ICanvas

The BOOSE.ICanvas on which the program will run its commands.

Methods

Run()

Executes the stored program by processing and executing all the commands sequentially. The method continues to execute commands as long as there are remaining commands.

```
public override void Run()
```

Remarks

The method checks if there are commands left in the program using Commandsleft. If there are commands, it retrieves the next command using NextCommand and executes it. The loop continues until there are no more commands to execute.

Namespace _77356855_Aastha_Tamrakar ASE Assignment.FileOperation

Classes

[LoadCanvas](#)

Represents a class that handles loading a canvas image from a file.

[ReadCommand](#)

Represents a class responsible for reading commands from a text file.

[SaveCanvas](#)

Represents a class responsible for saving the canvas image to a file.

[WriteCommand](#)

Represents a class responsible for writing the given commands to a text file.

Class LoadCanvas

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.FileOperation](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents a class that handles loading a canvas image from a file.

```
public class LoadCanvas
```

Inheritance

[object](#) ← LoadCanvas

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

LoadCanvas()

Initializes a new instance of the [LoadCanvas](#) class.

```
public LoadCanvas()
```

Methods

Load()

Opens a file dialog to allow the user to select an image file and loads it into a bitmap.

```
public Bitmap Load()
```

Returns

[Bitmap](#)

A [Bitmap](#) object representing the loaded canvas image, or `null` if the operation was canceled or failed.

Remarks

The supported image formats are PNG, JPG, and BMP. If an error occurs while loading the image, an error message will be displayed.

Class ReadCommand

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.FileOperation](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents a class responsible for reading commands from a text file.

```
public class ReadCommand
```

Inheritance

[object](#) ← ReadCommand

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

ReadCommand()

Initializes a new instance of the [ReadCommand](#) class.

```
public ReadCommand()
```

Methods

Read()

Opens a file dialog to allow the user to select a text file and loads its content as a string.

```
public string Read()
```

Returns

[string](#)

A string containing the contents of the selected file. If the operation is canceled or fails, an empty string is returned.

Remarks

The file dialog filters files to show only text files (with a .txt extension), but all file types can be selected. If an error occurs during file reading, an error message will be displayed to the user.

Class SaveCanvas

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.FileOperation](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents a class responsible for saving the canvas image to a file.

```
public class SaveCanvas
```

Inheritance

[object](#) ← SaveCanvas

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

SaveCanvas()

Initializes a new instance of the [SaveCanvas](#) class.

```
public SaveCanvas()
```

Methods

Save(Bitmap)

Opens a save file dialog to allow the user to choose a location and format to save the canvas as an image.

```
public void Save(Bitmap canvasBitmap)
```

Parameters

canvasBitmap [Bitmap](#)

The [Bitmap](#) representing the current canvas to be saved.

Remarks

The method supports saving the canvas in multiple formats, including PNG, JPEG, and BMP. The format is determined based on the file extension chosen by the user. If an error occurs during the save process, an error message will be displayed to the user.

Class WriteCommand

Namespace: [77356855_Aastha_Tamrakar ASE Assignment.FileOperation](#)

Assembly: 77356855_Aastha_Tamrakar ASE Assignment.dll

Represents a class responsible for writing the given commands to a text file.

```
public class WriteCommand
```

Inheritance

[object](#) ← WriteCommand

Inherited Members

[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

WriteCommand()

Initializes a new instance of the [WriteCommand](#) class.

```
public WriteCommand()
```

Methods

Write(string)

Opens a save file dialog and writes the given commands to the selected text file.

```
public void Write(string Commands)
```

Parameters

Commands [string](#)

A string containing the commands to be saved to the file.

Remarks

This method allows the user to choose the location and file name for saving the commands. If an error occurs during the saving process, an error message is shown.