

Namespace Assignment

Classes

[AppArray](#)

AppArray class extends the functionality of the BOOSE.Array class.

[AppCanvas](#)

The DrawingCanvas class implements the ICanvas interface to provide functionalities for creating and manipulating graphical shapes, text, and other visual elements on a bitmap canvas.

[AppCommandFactory](#)

A factory class for creating canvas commands tailored to the application.

[AppEnd](#)

AppEnd class inherits from the End class and provides additional functionality by invoking the ReduceRestrictions method during initialization and overriding the Restrictions method to extend or modify its behavior.

[AppFor](#)

AppFor class inherits from the For class and provides additional customization for restriction handling and execution behavior.

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AppIf class inherits from the If class and customizes restriction handling and execution behavior.

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AppInt class inherits from the Int class and customizes the restriction handling and execution behavior.

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AppMethod class inherits from the Method class and modifies the restriction handling. It calls the ReduceRestrictions method during initialization and overrides the Restrictions method to apply restrictions from the base class.

[AppReal](#)

AppReal class inherits from the Real class and allows customization of restriction handling and execution logic.

[AppStoredProgram](#)

AppStoredProgram class inherits from the StoredProgram class and overrides the Run method to execute commands. It also manipulates the internal stack of the base class using reflection and ensures the stack is empty after execution.

[AppTriangle](#)

Command to draw a triangle on the canvas with specified dimensions.

[AppWhile](#)

AppWhile class inherits from the While class and customizes restriction handling and execution behavior. It invokes the ReduceRestrictions method during initialization and overrides the Restrictions method.

[AppWrite](#)

Represents a canvas command for writing text.

[CommandException](#)

Custom exception for handling command errors.

[Form1](#)

Main form of the application, responsible for handling user interactions and canvas rendering.

[SingletonAppCommandFactory](#)

Class AppArray

Namespace: [Assignment](#)

Assembly: Assignment.dll

AppArray class extends the functionality of the BOOSE.Array class.

```
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()

Constructor for the AppArray class. It invokes the ReduceRestrictionCounter method to modify the state of restrictions.

```
public AppArray()
```

Methods

ArrayRestriction()

Overrides the ArrayRestriction method from the BOOSE.Array class. This method invokes the ArrayRestrictions method to apply or enforce restrictions on the array.

```
public void ArrayRestriction()
```

Class AppCanvas

Namespace: [Assignment](#)

Assembly: Assignment.dll

The [DrawingCanvas](#) class implements the [ICanvas](#) interface to provide functionalities for creating and manipulating graphical shapes, text, and other visual elements on a bitmap canvas.

```
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 of the [DrawingCanvas](#) class with default settings.

```
public AppCanvas()
```

Properties

PenColour

Gets or sets the color of the pen used for drawing.

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

Property Value

[object](#)

Xpos

Gets or sets the current X-coordinate of the pen on the canvas.

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

Property Value

[int](#)

Ypos

Gets or sets the current Y-coordinate of the pen on the canvas.

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

Property Value

[int](#)

Methods

Circle(int, bool)

Draws a circle at the 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.

Clear()

Clears the canvas by resetting it to a blank state.

```
public void Clear()
```

DrawTo(int, int)

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

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

Parameters

toX [int](#)

Target X-coordinate.

toY [int](#)

Target Y-coordinate.

MoveTo(int, int)

Moves the pen to the specified coordinates without drawing a line.

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

Parameters

x [int](#)

Target X-coordinate.

y [int](#)

Target Y-coordinate.

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.

Reset()

Resets the canvas to its initial state.

```
public void Reset()
```

Set(int, int)

Resizes the canvas and initializes it with the specified dimensions.

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

Parameters

xsize [int ↗](#)

The width of the canvas.

ysize [int ↗](#)

The height of the canvas.

SetColour(int, int, int)

Sets the pen color using RGB values.

```
public void SetColour(int red = 0, int green = 0, int blue = 0)
```

Parameters

red [int ↗](#)

Red component (0-255).

green [int ↗](#)

Green component (0-255).

blue [int ↗](#)

Blue component (0-255).

Tri(int, int)

Draws a triangle at the current pen position.

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

Parameters

width [int ↗](#)

Base width of the triangle.

height [int ↗](#)

Height of the triangle.

WriteText(string)

Writes the specified text at the current pen position.

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

Parameters

text [string](#)

The text to be written.

getBitmap()

Retrieves the bitmap representation of the current canvas.

```
public object getBitmap()
```

Returns

[object](#)

The bitmap object.

Class AppCommandFactory

Namespace: [Assignment](#)

Assembly: Assignment.dll

A factory class for creating canvas commands tailored to the application.

```
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 provided command type.

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

Parameters

`commandType` [string](#)

The type of command to create.

Returns

`ICommand`

An object implementing the BOOSE.ICommand interface.

Exceptions

[ArgumentNullException](#)

Thrown when the `commandType` is null or empty.

[NotImplementedException](#)

Thrown when the specified command type is not supported.

Class AppEnd

Namespace: [Assignment](#)

Assembly: Assignment.dll

AppEnd class inherits from the End class and provides additional functionality by invoking the ReduceRestrictions method during initialization and overriding the Restrictions method to extend or modify its behavior.

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

Constructors

AppEnd()

Constructor for the AppEnd class. It invokes the ReduceRestrictions method to modify restriction behavior.

```
public AppEnd()
```

Methods

Restrictions()

Overrides the Restrictions method from the End class. This method calls the base class's Restrictions method to enforce the restrictions.

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

Class AppFor

Namespace: [Assignment](#)

Assembly: Assignment.dll

AppFor class inherits from the For class and provides additional customization for restriction handling and execution behavior.

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

Inheritance

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

Implements

ICommand

Inherited Members

For.Compile() , For.LoopControlIV , 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\(object, object\)](#)

Constructors

AppFor()

Constructor for the AppFor class. It invokes the Restrictions method during initialization, which can be customized further.

```
public AppFor()
```

Methods

Execute()

Overrides the Execute method from the For class. It calls the base class's Execute method to perform the execution logic defined in the base class.

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

Restrictions()

Overrides the Restrictions method from the For class. This method provides an empty implementation, meaning restrictions are not applied here, but can be extended in the future.

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

Class AppIf

Namespace: [Assignment](#)

Assembly: Assignment.dll

AppIf class inherits from the If class and customizes restriction handling and execution behavior.

```
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.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

AppIf()

Constructor for the AppIf class. It calls the ReduceRestrictions method to modify restriction behavior during initialization.

```
public AppIf()
```

Methods

Execute()

Overrides the Execute method from the If class. This method calls the base class's Execute method to perform the default execution logic.

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

Restrictions()

Overrides the Restrictions method from the If class. This method currently has an empty implementation but can be extended to apply custom restriction logic in the future.

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

Class AppInt

Namespace: [Assignment](#)

Assembly: Assignment.dll

AppInt class inherits from the Int class and customizes the restriction handling and execution behavior.

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

Inheritance

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

Implements

ICommand

Inherited Members

Int.Compile() , 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()

Constructor for the AppInt class. It calls the Restrictions method to apply or customize restrictions during initialization.

```
public AppInt()
```

Methods

Execute()

Overrides the Execute method from the Int class. It calls the base class's Execute method to perform the default execution logic.

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

Restrictions()

Overrides the Restrictions method from the Int class. This method currently has an empty implementation but can be customized to apply restrictions.

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

Class AppMethod

Namespace: [Assignment](#)

Assembly: Assignment.dll

AppMethod class inherits from the Method class and modifies the restriction handling. It calls the ReduceRestrictions method during initialization and overrides the Restrictions method to apply restrictions from the base class.

```
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.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()

Constructor for the AppMethod class. It calls the ReduceRestrictions method to modify restriction behavior during initialization.

```
public AppMethod()
```

Methods

Restrictions()

Overrides the Restrictions method from the Method class. It calls the base class's Restrictions method to apply the default restrictions.

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

Class AppReal

Namespace: [Assignment](#)

Assembly: Assignment.dll

AppReal class inherits from the Real class and allows customization of restriction handling and execution logic.

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

Inheritance

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

Implements

ICommand

Inherited Members

Real.Compile() , 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\(object, object\)](#)

Constructors

AppReal()

Constructor for the AppReal class. This constructor does not modify restrictions or perform any initialization but can be extended in the future.

```
public AppReal()
```

Methods

Execute()

Overrides the Execute method from the Real class. It calls the base class's Execute method to retain the original execution behavior.

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

Restrictions()

Overrides the Restrictions method from the Real class. Currently, it has an empty implementation but can be customized to apply restrictions.

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

Class AppStoredProgram

Namespace: [Assignment](#)

Assembly: Assignment.dll

AppStoredProgram class inherits from the StoredProgram class and overrides the Run method to execute commands. It also manipulates the internal stack of the base class using reflection and ensures the stack is empty after execution.

```
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\(int, int, object, IComparer\)](#) ,
[ArrayList.BinarySearch\(object\)](#) , [ArrayList.BinarySearch\(object, IComparer\)](#) , [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)

Constructor for the AppStoredProgram class. Initializes the stack field of the base class via reflection to access the private stack.

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

Parameters

canvas ICanvas

An instance of ICanvas used by the base class constructor.

Methods

Run()

Overrides the Run method from the StoredProgram class. Executes the stored program commands and checks for conditions such as excessive execution or leftover stack items.

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

Class AppTriangle

Namespace: [Assignment](#)

Assembly: Assignment.dll

Command to draw a triangle on the canvas with specified dimensions.

```
public class AppTriangle : CanvasCommand, ICommand
```

Inheritance

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

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\(object, object\)](#)

Constructors

AppTriangle()

Initializes a new instance of the TriangleDrawer class.

```
public AppTriangle()
```

Methods

CheckParameters(string[])

Validates the parameters for the TriangleDrawer command.

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

Parameters

parameterList [string](#)[]

Execute()

Executes the command to draw a triangle on the canvas.

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

Class AppWhile

Namespace: [Assignment](#)

Assembly: Assignment.dll

AppWhile class inherits from the While class and customizes restriction handling and execution behavior. It invokes the ReduceRestrictions method during initialization and overrides the Restrictions method.

```
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.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()

Constructor for the AppWhile class. It invokes the ReduceRestrictions method to modify restriction behavior during initialization.

```
public AppWhile()
```

Methods

Execute()

Overrides the Execute method from the While class. It calls the base class's Execute method to perform the default execution logic.

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

Restrictions()

Overrides the Restrictions method from the While class. This method currently has an empty implementation but can be extended to apply restrictions.

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

Class AppWrite

Namespace: [Assignment](#)

Assembly: Assignment.dll

Represents a canvas command for writing text.

```
public class AppWrite : CanvasCommand, ICommand
```

Inheritance

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

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\(object, object\)](#)

Constructors

AppWrite()

Default constructor for the [AppWrite](#) class.

```
public AppWrite()
```

Methods

CheckParameters(string[])

Verifies the validity of the provided parameters.

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

Parameters

parameterList [string](#)[]

Execute()

Performs the text-writing operation on the canvas.

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

Class CommandException

Namespace: [Assignment](#)

Assembly: Assignment.dll

Custom exception for handling command errors.

```
public class CommandException : Exception, ISerializable
```

Inheritance

[object](#) ← [Exception](#) ← CommandException

Implements

[ISerializable](#)

Inherited Members

[Exception.GetBaseException\(\)](#) , [Exception.GetType\(\)](#) , [Exception.ToString\(\)](#) , [Exception.Data](#) ,
[Exception.HelpLink](#) , [Exception.HResult](#) , [Exception.InnerException](#) , [Exception.Message](#) ,
[Exception.Source](#) , [Exception.StackTrace](#) , [Exception.TargetSite](#) , [Exception.SerializeObjectState](#) ,
[object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) , [object.GetHashCode\(\)](#) ,
[object.MemberwiseClone\(\)](#) , [object.ReferenceEquals\(object, object\)](#)

Constructors

CommandException(string)

```
public CommandException(string message)
```

Parameters

message [string](#)

CommandException(string, Exception)

```
public CommandException(string message, Exception innerException)
```

Parameters

message [string](#) ↗

innerException [Exception](#) ↗

Class Form1

Namespace: [Assignment](#)

Assembly: Assignment.dll

Main form of the application, responsible for handling user interactions and canvas rendering.

```
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\(EventArgs\)](#) , [Control.OnKeyDown\(KeyEventEventArgs\)](#) ,
[Control.OnKeyPress\(KeyEventEventArgs\)](#) , [Control.OnKeyUp\(KeyEventEventArgs\)](#) ,
[Control.OnLeave\(EventArgs\)](#) , [Control.InvokeLostFocus\(Control, EventArgs\)](#) ,
[Control.OnLostFocus\(EventArgs\)](#) , [Control.OnMarginChanged\(EventArgs\)](#) ,
[Control.OnMouseDoubleClick\(MouseEventArgs\)](#) , [Control.OnMouseClick\(MouseEventArgs\)](#) ,
[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\(Control, bool, bool, bool, bool\)](#) , [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.IsAccessible](#) ,
[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.Invalidated](#) , [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.ChangeUICues](#) , [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 the MainForm class.

```
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.

Class SingletonAppCommandFactory

Namespace: [Assignment](#)

Assembly: Assignment.dll

```
public class SingletonAppCommandFactory
```

Inheritance

[object](#) ← SingletonAppCommandFactory

Inherited Members

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

Properties

Instance

Provides a single instance of [AppCommandFactory](#).

```
public static AppCommandFactory Instance { get; }
```

Property Value

[AppCommandFactory](#)

Namespace AssignmentTest

Classes

[AppArrayTest](#)

[AppCanvasTes](#)

This class contains unit tests for the AppCanvas class, testing various drawing and pen operations.

[AppForTest](#)

Unit tests for the AppFor class, which handles loop-related functionality.

[AppIfTest](#)

Unit tests for the AppIf class, which handles conditional execution functionality.

[AppIntTest](#)

Unit tests for the AppInt class, which handles integer-related functionality.

[AppRealTest](#)

Unit test class for testing the functionality of the AppReal class.

[AppWhileTest](#)

Unit test class for testing the functionality of the AppWhile class.

Class AppArrayTest

Namespace: [AssignmentTest](#)

Assembly: AssignmentTest.dll

```
[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

ArrayTest()

Demonstrates how to test the ArrayRestrictions method of the AppArray class.

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

Setup()

Initializes the test environment by setting up required dependencies. This method is executed before each test.

```
[TestInitialize]
public void Setup()
```

Class AppCanvasTes

Namespace: [AssignmentTest](#)

Assembly: AssignmentTest.dll

This class contains unit tests for the AppCanvas class, testing various drawing and pen operations.

```
[TestClass]  
public class AppCanvasTes
```

Inheritance

[object](#) ← AppCanvasTes

Inherited Members

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

Methods

DrawTo_Command_UpdatesPenPositionCorrectly()

Tests if the DrawTo command updates the pen position correctly.

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

MoveTo_Command_SetsPenPositionCorrectly()

Tests if the MoveTo command sets the pen position correctly.

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

MultilineProgram_ExeuctesCommandsCorrectly()

Tests if multiple commands execute correctly in sequence.

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

Setup()

Sets up the test environment by initializing required objects. This method runs before each test case.

```
[TestInitialize]  
public void Setup()
```

TestAppWrite()

Tests the WriteText method to ensure text is written on the canvas.

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

TestCircle()

Tests the Circle method for various scenarios, including valid and invalid inputs.

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

TestRect()

Tests the Rect method for various scenarios, including valid and invalid inputs.

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

TestTriangle()

Tests the Tri method for drawing triangles with valid and invalid inputs.

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

Class AppForTest

Namespace: [AssignmentTest](#)

Assembly: AssignmentTest.dll

Unit tests for the AppFor class, which handles loop-related functionality.

```
[TestClass]  
public class AppForTest
```

Inheritance

[object](#) ← AppForTest

Inherited Members

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

Methods

ForTest()

Tests the Restrictions and Execute methods of the AppFor class.

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

Setup()

```
[TestInitialize]  
public void Setup()
```

Class AppIfTest

Namespace: [AssignmentTest](#)

Assembly: AssignmentTest.dll

Unit tests for the AppIf class, which handles conditional execution functionality.

```
[TestClass]
public class AppIfTest
```

Inheritance

[object](#) ← AppIfTest

Inherited Members

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

Methods

IfTest()

Tests the Restrictions and Execute methods of the AppIf class.

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

Setup()

Initializes the test environment. This method is executed before each test case.

```
[TestInitialize]
public void Setup()
```

Class AppIntTest

Namespace: [AssignmentTest](#)

Assembly: AssignmentTest.dll

Unit tests for the AppInt class, which handles integer-related functionality.

```
[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

IntTest()

Tests the Restrictions and Execute methods of the AppInt class.

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

Setup()

Initializes the test environment. This method is executed before each test case.

```
[TestInitialize]
public void Setup()
```

Class AppRealTest

Namespace: [AssignmentTest](#)

Assembly: AssignmentTest.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

RealTest()

Test method to check the functionality of AppReal's Restrictions and Execute methods.

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

Setup()

Setup method to initialize objects before each test.

```
[TestInitialize]  
public void Setup()
```

Class AppWhileTest

Namespace: [AssignmentTest](#)

Assembly: AssignmentTest.dll

Unit test class for testing the functionality of 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

Setup()

Setup method to initialize objects before each test.

```
[TestInitialize]  
public void Setup()
```

WhileTest()

Test method to check the functionality of AppWhile's Restrictions and Execute methods.

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

Namespace WebAppBoose.Controllers

Classes

[CanvasController](#)

[HomeController](#)

Class CanvasController

Namespace: [WebAppBoose.Controllers](#)

Assembly: WebAppBoose.dll

```
public class CanvasController : Controller, IActionFilter, IAsyncActionFilter,  
IFilterMetadata, IDisposable
```

Inheritance

[object](#) ← [ControllerBase](#) ← [Controller](#) ← [CanvasController](#)

Implements

[IActionFilter](#), [IAsyncActionFilter](#), [IFilterMetadata](#), [IDisposable](#)

Inherited Members

[Controller.View\(\)](#), [Controller.View\(string\)](#), [Controller.View\(object\)](#),
[Controller.View\(string, object\)](#), [Controller.PartialView\(\)](#), [Controller.PartialView\(string\)](#),
[Controller.PartialView\(object\)](#), [Controller.PartialView\(string, object\)](#),
[Controller.ViewComponent\(string\)](#), [Controller.ViewComponent\(Type\)](#),
[Controller.ViewComponent\(string, object\)](#), [Controller.ViewComponent\(Type, object\)](#),
[Controller.Json\(object\)](#), [Controller.Json\(object, object\)](#),
[Controller.OnActionExecuting\(ActionExecutingContext\)](#),
[Controller.OnActionExecuted\(ActionExecutedContext\)](#),
[Controller.OnActionExecutionAsync\(ActionExecutingContext, ActionExecutionDelegate\)](#),
[Controller.Dispose\(\)](#), [Controller.Dispose\(bool\)](#), [Controller.ViewData](#), [Controller.TempData](#),
[Controller.ViewBag](#), [ControllerBase.StatusCode\(int\)](#), [ControllerBase.StatusCode\(int, object\)](#),
[ControllerBase.Content\(string\)](#), [ControllerBase.Content\(string, string\)](#),
[ControllerBase.Content\(string, string, Encoding\)](#),
[ControllerBase.Content\(string, MediaTypeHeaderValue\)](#), [ControllerBase.NoContent\(\)](#),
[ControllerBase.Ok\(\)](#), [ControllerBase.Ok\(object\)](#), [ControllerBase.Redirect\(string\)](#),
[ControllerBase.RedirectPermanent\(string\)](#), [ControllerBase.RedirectPreserveMethod\(string\)](#),
[ControllerBase.RedirectPermanentPreserveMethod\(string\)](#), [ControllerBase.LocalRedirect\(string\)](#),
[ControllerBase.LocalRedirectPermanent\(string\)](#), [ControllerBase.LocalRedirectPreserveMethod\(string\)](#),
[ControllerBase.LocalRedirectPermanentPreserveMethod\(string\)](#), [ControllerBase.RedirectToAction\(\)](#),
[ControllerBase.RedirectToAction\(string\)](#), [ControllerBase.RedirectToAction\(string, object\)](#),
[ControllerBase.RedirectToAction\(string, string\)](#),
[ControllerBase.RedirectToAction\(string, string, object\)](#),
[ControllerBase.RedirectToAction\(string, string, string\)](#),
[ControllerBase.RedirectToAction\(string, string, object, string\)](#),

[ControllerBase.RedirectToActionPreserveMethod\(string, string, object, string\)](#) ,
 [ControllerBase.RedirectToActionPermanent\(string\)](#) ,
 [ControllerBase.RedirectToActionPermanent\(string, object\)](#) ,
 [ControllerBase.RedirectToActionPermanent\(string, string\)](#) ,
 [ControllerBase.RedirectToActionPermanent\(string, string, string\)](#) ,
 [ControllerBase.RedirectToActionPermanent\(string, string, object\)](#) ,
 [ControllerBase.RedirectToActionPermanent\(string, string, object, string\)](#) ,
 [ControllerBase.RedirectToActionPermanentPreserveMethod\(string, string, object, string\)](#) ,
 [ControllerBase.RedirectToRoute\(string\)](#) , [ControllerBase.RedirectToRoute\(object\)](#) ,
 [ControllerBase.RedirectToRoute\(string, object\)](#) , [ControllerBase.RedirectToRoute\(string, string\)](#) ,
 [ControllerBase.RedirectToRoute\(string, object, string\)](#) ,
 [ControllerBase.RedirectToRoutePreserveMethod\(string, object, string\)](#) ,
 [ControllerBase.RedirectToRoutePermanent\(string\)](#) ,
 [ControllerBase.RedirectToRoutePermanent\(object\)](#) ,
 [ControllerBase.RedirectToRoutePermanent\(string, object\)](#) ,
 [ControllerBase.RedirectToRoutePermanent\(string, string\)](#) ,
 [ControllerBase.RedirectToRoutePermanent\(string, object, string\)](#) ,
 [ControllerBase.RedirectToRoutePermanentPreserveMethod\(string, object, string\)](#) ,
 [ControllerBase.RedirectToPage\(string\)](#) , [ControllerBase.RedirectToPage\(string, object\)](#) ,
 [ControllerBase.RedirectToPage\(string, string\)](#) , [ControllerBase.RedirectToPage\(string, string, object\)](#) ,
 [ControllerBase.RedirectToPage\(string, string, string\)](#) ,
 [ControllerBase.RedirectToPage\(string, string, object, string\)](#) ,
 [ControllerBase.RedirectToPagePermanent\(string\)](#) ,
 [ControllerBase.RedirectToPagePermanent\(string, object\)](#) ,
 [ControllerBase.RedirectToPagePermanent\(string, string\)](#) ,
 [ControllerBase.RedirectToPagePermanent\(string, string, string\)](#) ,
 [ControllerBase.RedirectToPagePermanent\(string, string, object, string\)](#) ,
 [ControllerBase.RedirectToPagePreserveMethod\(string, string, object, string\)](#) ,
 [ControllerBase.RedirectToPagePermanentPreserveMethod\(string, string, object, string\)](#) ,
 [ControllerBase.File\(byte\[\], string\)](#) , [ControllerBase.File\(byte\[\], string, bool\)](#) ,
 [ControllerBase.File\(byte\[\], string, string\)](#) , [ControllerBase.File\(byte\[\], string, string, bool\)](#) ,
 [ControllerBase.File\(byte\[\], string, DateTimeOffset?, EntityTagHeaderValue\)](#) ,
 [ControllerBase.File\(byte\[\], string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#) ,
 [ControllerBase.File\(byte\[\], string, string, DateTimeOffset?, EntityTagHeaderValue\)](#) ,
 [ControllerBase.File\(byte\[\], string, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#) ,
 [ControllerBase.File\(Stream, string\)](#) , [ControllerBase.File\(Stream, string, bool\)](#) ,
 [ControllerBase.File\(Stream, string, string\)](#) , [ControllerBase.File\(Stream, string, string, bool\)](#) ,
 [ControllerBase.File\(Stream, string, DateTimeOffset?\)](#) , [ControllerBase.EntityTagHeaderValue](#) ,
 [ControllerBase.File\(Stream, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#) ,
 [ControllerBase.File\(Stream, string, string, DateTimeOffset?, EntityTagHeaderValue\)](#) ,

[ControllerBase.File\(Stream, string, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#) ,
 [ControllerBase.File\(string, string\)](#) , [ControllerBase.File\(string, string, bool\)](#) ,
 [ControllerBase.File\(string, string, string\)](#) , [ControllerBase.File\(string, string, string, bool\)](#) ,
 [ControllerBase.File\(string, string, DateTimeOffset?, EntityTagHeaderValue\)](#) ,
 [ControllerBase.File\(string, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#) ,
 [ControllerBase.File\(string, string, string, DateTimeOffset?, EntityTagHeaderValue\)](#) ,
 [ControllerBase.File\(string, string, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#) ,
 [ControllerBase.PhysicalFile\(string, string\)](#) , [ControllerBase.PhysicalFile\(string, string, bool\)](#) ,
 [ControllerBase.PhysicalFile\(string, string, string\)](#) ,
 [ControllerBase.PhysicalFile\(string, string, string, bool\)](#) ,
 [ControllerBase.PhysicalFile\(string, string, DateTimeOffset?, EntityTagHeaderValue\)](#) ,
 [ControllerBase.PhysicalFile\(string, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#) ,
 [ControllerBase.PhysicalFile\(string, string, string, DateTimeOffset?, EntityTagHeaderValue\)](#) ,
 [ControllerBase.PhysicalFile\(string, string, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#) ,
 [ControllerBase.Unauthorized\(\)](#) , [ControllerBase.Unauthorized\(object\)](#) , [ControllerBase.NotFound\(\)](#) ,
 [ControllerBase.NotFound\(object\)](#) , [ControllerBase.BadRequest\(\)](#) ,
 [ControllerBase.BadRequest\(object\)](#) , [ControllerBase.BadRequest\(ModelStateDictionary\)](#) ,
 [ControllerBase.UnprocessableEntity\(\)](#) , [ControllerBase.UnprocessableEntity\(object\)](#) ,
 [ControllerBase.UnprocessableEntity\(ModelStateDictionary\)](#) , [ControllerBase.Conflict\(\)](#) ,
 [ControllerBase.Conflict\(object\)](#) , [ControllerBase.Conflict\(ModelStateDictionary\)](#) ,
 [ControllerBase.Problem\(string, string, int?, string, string\)](#) ,
 [ControllerBase.ValidationProblem\(ValidationProblemDetails\)](#) ,
 [ControllerBase.ValidationProblem\(ModelStateDictionary\)](#) , [ControllerBase.ValidationProblem\(\)](#) ,
 [ControllerBase.ValidationProblem\(string, string, int?, string, string, ModelStateDictionary\)](#) ,
 [ControllerBase.Created\(\)](#) , [ControllerBase.Created\(string, object\)](#) ,
 [ControllerBase.Created\(Uri, object\)](#) , [ControllerBase.CreatedAtAction\(string, object\)](#) ,
 [ControllerBase.CreatedAtAction\(string, object, object\)](#) ,
 [ControllerBase.CreatedAtAction\(string, string, object, object\)](#) ,
 [ControllerBase.CreatedAtRoute\(string, object\)](#) , [ControllerBase.CreatedAtRoute\(object, object\)](#) ,
 [ControllerBase.CreatedAtRoute\(string, object, object\)](#) , [ControllerBase.Accepted\(\)](#) ,
 [ControllerBase.Accepted\(object\)](#) , [ControllerBase.Accepted\(Uri\)](#) , [ControllerBase.Accepted\(string\)](#) ,
 [ControllerBase.Accepted\(string, object\)](#) , [ControllerBase.Accepted\(Uri, object\)](#) ,
 [ControllerBase.AcceptedAtAction\(string\)](#) , [ControllerBase.AcceptedAtAction\(string, string\)](#) ,
 [ControllerBase.AcceptedAtAction\(string, object\)](#) ,
 [ControllerBase.AcceptedAtAction\(string, string, object\)](#) ,
 [ControllerBase.AcceptedAtAction\(string, object, object\)](#) ,
 [ControllerBase.AcceptedAtAction\(string, string, object, object\)](#) ,
 [ControllerBase.AcceptedAtRoute\(object\)](#) , [ControllerBase.AcceptedAtRoute\(string\)](#) ,
 [ControllerBase.AcceptedAtRoute\(string, object\)](#) , [ControllerBase.AcceptedAtRoute\(object, object\)](#) ,
 [ControllerBase.AcceptedAtRoute\(string, object, object\)](#) , [ControllerBase.Challenge\(\)](#) ,

[ControllerBase.Challenge\(params string\[\]\)](#) , [ControllerBase.Challenge\(AuthenticationProperties\)](#) ,
 [ControllerBase.Challenge\(AuthenticationProperties, params string\[\]\)](#) , [ControllerBase.Forbid\(\)](#) ,
 [ControllerBase.Forbid\(params string\[\]\)](#) , [ControllerBase.Forbid\(AuthenticationProperties\)](#) ,
 [ControllerBase.Forbid\(AuthenticationProperties, params string\[\]\)](#) ,
 [ControllerBase.SignIn\(ClaimsPrincipal\)](#) , [ControllerBase.SignIn\(ClaimsPrincipal, string\)](#) ,
 [ControllerBase.SignIn\(ClaimsPrincipal, AuthenticationProperties\)](#) ,
 [ControllerBase.SignIn\(ClaimsPrincipal, AuthenticationProperties, string\)](#) , [ControllerBase.SignOut\(\)](#) ,
 [ControllerBase.SignOut\(AuthenticationProperties\)](#) , [ControllerBase.SignOut\(params string\[\]\)](#) ,
 [ControllerBase.SignOut\(AuthenticationProperties, params string\[\]\)](#) ,
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel\)](#) ,
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string\)](#) ,
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider\)](#) ,
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, params Expression<Func<TModel, object>>\[\]\)](#) ,
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, Func<ModelMetadata, bool>\)](#) ,
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider, params Expression<Func<TModel, object>>\[\]\)](#) ,
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider, Func<ModelMetadata, bool>\)](#) ,
 [ControllerBase.TryUpdateModelAsync\(object, Type, string\)](#) ,
 [ControllerBase.TryUpdateModelAsync\(object, Type, string, IValueProvider, Func<ModelMetadata, bool>\)](#) ,
 [ControllerBase.TryValidateModel\(object\)](#) , [ControllerBase.TryValidateModel\(object, string\)](#) ,
 [ControllerBase.HttpContext](#) , [ControllerBase.Request](#) , [ControllerBase.Response](#) ,
 [ControllerBase.RouteData](#) , [ControllerBase.ModelState](#) , [ControllerBase.ControllerContext](#) ,
 [ControllerBase.MetadataProvider](#) , [ControllerBase.ModelBinderFactory](#) , [ControllerBase.Url](#) ,
 [ControllerBase.ObjectValidator](#) , [ControllerBase.ProblemDetailsFactory](#) , [ControllerBase.User](#) ,
 [ControllerBase.Empty](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
 [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
 [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

CanvasController()

Initializes the CanvasController with necessary dependencies.

```
public CanvasController()
```

Methods

BooseCanvasView()

Handles the view for the canvas.

```
public ActionResult BooseCanvasView()
```

Returns

[ActionResult](#)

ClearCanvas()

Clears the canvas and resets the program.

```
[HttpPost]  
public JsonResult ClearCanvas()
```

Returns

[JsonResult](#)

A success response after clearing the canvas.

RunProgram(JsonElement)

Runs the program entered by the user and updates the canvas.

```
[HttpPost]  
public JsonResult RunProgram(JsonElement payload)
```

Parameters

`payload` [JsonElement](#)

Returns

JsonResult ↗

The updated canvas as an image in base64 format.

Class HomeController

Namespace: [WebAppBoose.Controllers](#)

Assembly: WebAppBoose.dll

```
public class HomeController : Controller, IActionFilter, IAsyncActionFilter,  
IFilterMetadata, IDisposable
```

Inheritance

[object](#) ← [ControllerBase](#) ← [Controller](#) ← HomeController

Implements

[IActionFilter](#), [IAsyncActionFilter](#), [IFilterMetadata](#), [IDisposable](#)

Inherited Members

[Controller.View\(\)](#), [Controller.View\(string\)](#), [Controller.View\(object\)](#),
[Controller.View\(string, object\)](#), [Controller.PartialView\(\)](#), [Controller.PartialView\(string\)](#),
[Controller.PartialView\(object\)](#), [Controller.PartialView\(string, object\)](#),
[Controller.ViewComponent\(string\)](#), [Controller.ViewComponent\(Type\)](#),
[Controller.ViewComponent\(string, object\)](#), [Controller.ViewComponent\(Type, object\)](#),
[Controller.Json\(object\)](#), [Controller.Json\(object, object\)](#),
[Controller.OnActionExecuting\(ActionExecutingContext\)](#),
[Controller.OnActionExecuted\(ActionExecutedContext\)](#),
[Controller.OnActionExecutionAsync\(ActionExecutingContext, ActionExecutionDelegate\)](#),
[Controller.Dispose\(\)](#), [Controller.Dispose\(bool\)](#), [Controller.ViewData](#), [Controller.TempData](#),
[Controller.ViewBag](#), [ControllerBase.StatusCode\(int\)](#), [ControllerBase.StatusCode\(int, object\)](#),
[ControllerBase.Content\(string\)](#), [ControllerBase.Content\(string, string\)](#),
[ControllerBase.Content\(string, string, Encoding\)](#),
[ControllerBase.Content\(string, MediaTypeHeaderValue\)](#), [ControllerBase.NoContent\(\)](#),
[ControllerBase.Ok\(\)](#), [ControllerBase.Ok\(object\)](#), [ControllerBase.Redirect\(string\)](#),
[ControllerBase.RedirectPermanent\(string\)](#), [ControllerBase.RedirectPreserveMethod\(string\)](#),
[ControllerBase.RedirectPermanentPreserveMethod\(string\)](#), [ControllerBase.LocalRedirect\(string\)](#),
[ControllerBase.LocalRedirectPermanent\(string\)](#), [ControllerBase.LocalRedirectPreserveMethod\(string\)](#),
[ControllerBase.LocalRedirectPermanentPreserveMethod\(string\)](#), [ControllerBase.RedirectToAction\(\)](#),
[ControllerBase.RedirectToAction\(string\)](#), [ControllerBase.RedirectToAction\(string, object\)](#),
[ControllerBase.RedirectToAction\(string, string\)](#),
[ControllerBase.RedirectToAction\(string, string, object\)](#),
[ControllerBase.RedirectToAction\(string, string, string\)](#),
[ControllerBase.RedirectToAction\(string, string, object, string\)](#),

[ControllerBase.RedirectToActionPreserveMethod\(string, string, object, string\)](#) ,
 [ControllerBase.RedirectToActionPermanent\(string\)](#) ,
 [ControllerBase.RedirectToActionPermanent\(string, object\)](#) ,
 [ControllerBase.RedirectToActionPermanent\(string, string\)](#) ,
 [ControllerBase.RedirectToActionPermanent\(string, string, string\)](#) ,
 [ControllerBase.RedirectToActionPermanent\(string, string, object\)](#) ,
 [ControllerBase.RedirectToActionPermanent\(string, string, object, string\)](#) ,
 [ControllerBase.RedirectToActionPermanentPreserveMethod\(string, string, object, string\)](#) ,
 [ControllerBase.RedirectToRoute\(string\)](#) , [ControllerBase.RedirectToRoute\(object\)](#) ,
 [ControllerBase.RedirectToRoute\(string, object\)](#) , [ControllerBase.RedirectToRoute\(string, string\)](#) ,
 [ControllerBase.RedirectToRoute\(string, object, string\)](#) ,
 [ControllerBase.RedirectToRoutePreserveMethod\(string, object, string\)](#) ,
 [ControllerBase.RedirectToRoutePermanent\(string\)](#) ,
 [ControllerBase.RedirectToRoutePermanent\(object\)](#) ,
 [ControllerBase.RedirectToRoutePermanent\(string, object\)](#) ,
 [ControllerBase.RedirectToRoutePermanent\(string, string\)](#) ,
 [ControllerBase.RedirectToRoutePermanent\(string, object, string\)](#) ,
 [ControllerBase.RedirectToRoutePermanentPreserveMethod\(string, object, string\)](#) ,
 [ControllerBase.RedirectToPage\(string\)](#) , [ControllerBase.RedirectToPage\(string, object\)](#) ,
 [ControllerBase.RedirectToPage\(string, string\)](#) , [ControllerBase.RedirectToPage\(string, string, object\)](#) ,
 [ControllerBase.RedirectToPage\(string, string, string\)](#) ,
 [ControllerBase.RedirectToPage\(string, string, object, string\)](#) ,
 [ControllerBase.RedirectToPagePermanent\(string\)](#) ,
 [ControllerBase.RedirectToPagePermanent\(string, object\)](#) ,
 [ControllerBase.RedirectToPagePermanent\(string, string\)](#) ,
 [ControllerBase.RedirectToPagePermanent\(string, string, string\)](#) ,
 [ControllerBase.RedirectToPagePermanent\(string, string, object, string\)](#) ,
 [ControllerBase.RedirectToPagePreserveMethod\(string, string, object, string\)](#) ,
 [ControllerBase.RedirectToPagePermanentPreserveMethod\(string, string, object, string\)](#) ,
 [ControllerBase.File\(byte\[\], string\)](#) , [ControllerBase.File\(byte\[\], string, bool\)](#) ,
 [ControllerBase.File\(byte\[\], string, string\)](#) , [ControllerBase.File\(byte\[\], string, string, bool\)](#) ,
 [ControllerBase.File\(byte\[\], string, DateTimeOffset?, EntityTagHeaderValue\)](#) ,
 [ControllerBase.File\(byte\[\], string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#) ,
 [ControllerBase.File\(byte\[\], string, string, DateTimeOffset?, EntityTagHeaderValue\)](#) ,
 [ControllerBase.File\(byte\[\], string, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#) ,
 [ControllerBase.File\(Stream, string\)](#) , [ControllerBase.File\(Stream, string, bool\)](#) ,
 [ControllerBase.File\(Stream, string, string\)](#) , [ControllerBase.File\(Stream, string, string, bool\)](#) ,
 [ControllerBase.File\(Stream, string, DateTimeOffset?\)](#) , [ControllerBase.EntityTagHeaderValue](#) ,
 [ControllerBase.File\(Stream, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#) ,
 [ControllerBase.File\(Stream, string, string, DateTimeOffset?, EntityTagHeaderValue\)](#) ,

[ControllerBase.File\(Stream, string, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#) ,
 [ControllerBase.File\(string, string\)](#) , [ControllerBase.File\(string, string, bool\)](#) ,
 [ControllerBase.File\(string, string, string\)](#) , [ControllerBase.File\(string, string, string, bool\)](#) ,
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 [ControllerBase.File\(string, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#) ,
 [ControllerBase.File\(string, string, string, DateTimeOffset?, EntityTagHeaderValue\)](#) ,
 [ControllerBase.File\(string, string, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#) ,
 [ControllerBase.PhysicalFile\(string, string\)](#) , [ControllerBase.PhysicalFile\(string, string, bool\)](#) ,
 [ControllerBase.PhysicalFile\(string, string, string\)](#) ,
 [ControllerBase.PhysicalFile\(string, string, string, bool\)](#) ,
 [ControllerBase.PhysicalFile\(string, string, DateTimeOffset?, EntityTagHeaderValue\)](#) ,
 [ControllerBase.PhysicalFile\(string, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#) ,
 [ControllerBase.PhysicalFile\(string, string, string, DateTimeOffset?, EntityTagHeaderValue\)](#) ,
 [ControllerBase.PhysicalFile\(string, string, string, DateTimeOffset?, EntityTagHeaderValue, bool\)](#) ,
 [ControllerBase.Unauthorized\(\)](#) , [ControllerBase.Unauthorized\(object\)](#) , [ControllerBase.NotFound\(\)](#) ,
 [ControllerBase.NotFound\(object\)](#) , [ControllerBase.BadRequest\(\)](#) ,
 [ControllerBase.BadRequest\(object\)](#) , [ControllerBase.BadRequest\(ModelStateDictionary\)](#) ,
 [ControllerBase.UnprocessableEntity\(\)](#) , [ControllerBase.UnprocessableEntity\(object\)](#) ,
 [ControllerBase.UnprocessableEntity\(ModelStateDictionary\)](#) , [ControllerBase.Conflict\(\)](#) ,
 [ControllerBase.Conflict\(object\)](#) , [ControllerBase.Conflict\(ModelStateDictionary\)](#) ,
 [ControllerBase.Problem\(string, string, int?, string, string\)](#) ,
 [ControllerBase.ValidationProblem\(ValidationProblemDetails\)](#) ,
 [ControllerBase.ValidationProblem\(ModelStateDictionary\)](#) , [ControllerBase.ValidationProblem\(\)](#) ,
 [ControllerBase.ValidationProblem\(string, string, int?, string, string, ModelStateDictionary\)](#) ,
 [ControllerBase.Created\(\)](#) , [ControllerBase.Created\(string, object\)](#) ,
 [ControllerBase.Created\(Uri, object\)](#) , [ControllerBase.CreatedAtAction\(string, object\)](#) ,
 [ControllerBase.CreatedAtAction\(string, object, object\)](#) ,
 [ControllerBase.CreatedAtAction\(string, string, object, object\)](#) ,
 [ControllerBase.CreatedAtRoute\(string, object\)](#) , [ControllerBase.CreatedAtRoute\(object, object\)](#) ,
 [ControllerBase.CreatedAtRoute\(string, object, object\)](#) , [ControllerBase.Accepted\(\)](#) ,
 [ControllerBase.Accepted\(object\)](#) , [ControllerBase.Accepted\(Uri\)](#) , [ControllerBase.Accepted\(string\)](#) ,
 [ControllerBase.Accepted\(string, object\)](#) , [ControllerBase.Accepted\(Uri, object\)](#) ,
 [ControllerBase.AcceptedAtAction\(string\)](#) , [ControllerBase.AcceptedAtAction\(string, string\)](#) ,
 [ControllerBase.AcceptedAtAction\(string, object\)](#) ,
 [ControllerBase.AcceptedAtAction\(string, string, object\)](#) ,
 [ControllerBase.AcceptedAtAction\(string, object, object\)](#) ,
 [ControllerBase.AcceptedAtAction\(string, string, object, object\)](#) ,
 [ControllerBase.AcceptedAtRoute\(object\)](#) , [ControllerBase.AcceptedAtRoute\(string\)](#) ,
 [ControllerBase.AcceptedAtRoute\(string, object\)](#) , [ControllerBase.AcceptedAtRoute\(object, object\)](#) ,
 [ControllerBase.AcceptedAtRoute\(string, object, object\)](#) , [ControllerBase.Challenge\(\)](#) ,

[ControllerBase.Challenge\(params string\[\]\)](#) , [ControllerBase.Challenge\(AuthenticationProperties\)](#) ,
 [ControllerBase.Challenge\(AuthenticationProperties, params string\[\]\)](#) , [ControllerBase.Forbid\(\)](#) ,
 [ControllerBase.Forbid\(params string\[\]\)](#) , [ControllerBase.Forbid\(AuthenticationProperties\)](#) ,
 [ControllerBase.Forbid\(AuthenticationProperties, params string\[\]\)](#) ,
 [ControllerBase.SignIn\(ClaimsPrincipal\)](#) , [ControllerBase.SignIn\(ClaimsPrincipal, string\)](#) ,
 [ControllerBase.SignIn\(ClaimsPrincipal, AuthenticationProperties\)](#) ,
 [ControllerBase.SignIn\(ClaimsPrincipal, AuthenticationProperties, string\)](#) , [ControllerBase.SignOut\(\)](#) ,
 [ControllerBase.SignOut\(AuthenticationProperties\)](#) , [ControllerBase.SignOut\(params string\[\]\)](#) ,
 [ControllerBase.SignOut\(AuthenticationProperties, params string\[\]\)](#) ,
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel\)](#) ,
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string\)](#) ,
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider\)](#) ,
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, params Expression<Func<TModel, object>>\[\]\)](#) ,
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, Func<ModelMetadata, bool>\)](#) ,
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider, params Expression<Func<TModel, object>>\[\]\)](#) ,
 [ControllerBase.TryUpdateModelAsync<TModel>\(TModel, string, IValueProvider, Func<ModelMetadata, bool>\)](#) ,
 [ControllerBase.TryUpdateModelAsync\(object, Type, string\)](#) ,
 [ControllerBase.TryUpdateModelAsync\(object, Type, string, IValueProvider, Func<ModelMetadata, bool>\)](#) ,
 [ControllerBase.TryValidateModel\(object\)](#) , [ControllerBase.TryValidateModel\(object, string\)](#) ,
 [ControllerBase.HttpContext](#) , [ControllerBase.Request](#) , [ControllerBase.Response](#) ,
 [ControllerBase.RouteData](#) , [ControllerBase.ModelState](#) , [ControllerBase.ControllerContext](#) ,
 [ControllerBase.MetadataProvider](#) , [ControllerBase.ModelBinderFactory](#) , [ControllerBase.Url](#) ,
 [ControllerBase.ObjectValidator](#) , [ControllerBase.ProblemDetailsFactory](#) , [ControllerBase.User](#) ,
 [ControllerBase.Empty](#) , [object.Equals\(object\)](#) , [object.Equals\(object, object\)](#) ,
 [object.GetHashCode\(\)](#) , [object.GetType\(\)](#) , [object.MemberwiseClone\(\)](#) ,
 [object.ReferenceEquals\(object, object\)](#) , [object.ToString\(\)](#)

Constructors

HomeController(ILocator<HomeController>)

```
public HomeController(ILocator<HomeController> logger)
```

Parameters

```
logger ILogger<HomeController>
```

Methods

Error()

```
[ResponseCache(Duration = 0, Location = ResponseCacheLocation.None, NoStore = true)]  
public IActionResult Error()
```

Returns

[IActionResult](#)

Index()

```
public IActionResult Index()
```

Returns

[IActionResult](#)

Privacy()

```
public IActionResult Privacy()
```

Returns

[IActionResult](#)

Namespace WebAppBoose.Models

Classes

[ErrorViewModel](#)

Class ErrorViewModel

Namespace: [WebAppBoose.Models](#)

Assembly: WebAppBoose.dll

```
public class ErrorViewModel
```

Inheritance

[object](#) ← ErrorViewModel

Inherited Members

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

Properties

RequestId

```
public string? RequestId { get; set; }
```

Property Value

[string](#)

ShowRequestId

```
public bool ShowRequestId { get; }
```

Property Value

[bool](#)

Namespace WebApplication1

Classes

[Program](#)

Class Program

Namespace: [WebApplication1](#)

Assembly: WebAppBoose.dll

```
public class Program
```

Inheritance

[object](#) ← Program

Inherited Members

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

Methods

Main(string[])

```
public static void Main(string[] args)
```

Parameters

args [string](#)[]