

# Namespace ASE\_Assignment

## Classes

### [AppCanvas](#)

This Class all the functions related to the BOOSEInterpreter. It extends BOOSE.ICanvas and contains the functions for the pen and drawing methods. Also contains the constructor for the appcanvas using multiple classes from System.Drawing.

### [AppCommandFactory](#)

An extended from CommandFactory, used to add additional commands to BOOSE or overwrite existing commands. Checks this list first and then goes back to the original list so that commands that are overwritten won't be called.

### [AppWrite](#)

A class created for the write command to function in the BOOSEInterpreter. Extends CommandOneParameter, and uses variables extended from it to take the parameter of function to then be sent back to the WriteText function in AppCanvas.

### [Canvas](#)

This class contains all the function for the BOOSEInterpreter's User Interface. Each method relates to an object in the design.

# Class AppCanvas

Namespace: [ASE Assignment](#)

Assembly: ASE Assignment.dll

This Class all the functions related to the BOOSEInterpreter. It extends BOOSE.ICanvas and contains the functions for the pen and drawing methods. Also contains the constructor for the appcanvas using multiple classes from System.Drawing.

```
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()

The Constructor of the Canvas, uses the Set() function to create the Canvas.

```
public AppCanvas()
```

# Properties

## PenColour

A public variable that contains the colour of the pen constantly, used in functions to ensure no colour change occurs accidentally.

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

Property Value

[object](#)

## Xpos

A public variable used in the majority of functions on the canvas as it keeps the X value of the pen.

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

Property Value

[int](#)

## Ypos

A public variable used in the majority of functions on the canvas as it keeps the Y value of the pen.

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

Property Value

[int](#)

## Methods

### Circle(int, bool)

Draws a circle on the canvas using the System.Drawing Method DrawEllipse. It is Centered around the pen's location.

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

## Parameters

**radius** [int](#)

An Integer used to measure the size of the circle drawn.

**filled** [bool](#)

A Boolean used to check if the circle wants to be filled.

## Exceptions

### CanvasException

If the radius is an incorrect size.

[InvalidDataException](#)

Thrown if the parameter aren't the correct data type.

## Clear()

Removes all drawings from the canvas.

```
public void Clear()
```

## DrawTo(int, int)

Creates a line using the System.Drawing method: DrawLine(). Uses the pens position as a starting point and uses the parameters to move to that location whilst creating a line.

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

## Parameters

**toX** [int](#)

The X coordinate of the End position.

**toY** [int](#)

The Y coordinate of the End Position.

## Exceptions

### CanvasException

Thrown if the Coordinates given are not within the bounds.

### [InvalidDataException](#)

Thrown if the parameters are the incorrect data type.

## MoveTo(int, int)

Relocates the pen from its current location to the location given by the parameters.

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

## Parameters

x [int](#) 

The X coordinate of the pen's new position.

y [int](#) 

The Y coordinate of the pen's new position.

## Exceptions

### CanvasException

Thrown if the pen's new coordinate is invalid.

### [InvalidDataException](#)

Thrown if the pen's coordinates' aren't valid data type.

## Rect(int, int, bool)

The Method draws a rectangle using the System.Drawing Method: DrawRectangle. Draws it using the pen's position as the top left corner.

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

## Parameters

**width** [int](#)

The rectangles length on the x-axis.

**height** [int](#)

The rectangles length on the y-axis.

**filled** [bool](#)

The boolean deciding if the rectangle is just an outline or solid colour of the pen.

## Exceptions

### CanvasException

Thrown if the rectangles dimension is greater than the canvas, or less than zero.

[InvalidDataException](#)

Thrown if the parameters passed are invalid data types.

## Reset()

Returns the pen back to the position the pen started at when the program was first started. Currently it resets to the middle of the Canvas.

```
public void Reset()
```

## Set(int, int)

This method is used in the constructor of the Canvas, sets the pen to its starting position and creates the Pen, Brush and Graphics for the Canvas.

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

## Parameters

**xsize** [int](#)

The Width of the Canvas created.

**ysize** [int](#)

The Height of the Canvas created.

## SetColour(int, int, int)

The method uses the the Color Method to set the pen's colour using RGB Values.

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

## Parameters

**red** [int](#)

Scales from 0-255, reflects the amount of red in the colour.

**green** [int](#)

Scales from 0-255, reflects the amount of green in the colour.

**blue** [int](#)

Scales from 0-255, reflects the amount of blue in the colour.

## Exceptions

### CanvasException

If the parameter is above 255, the exception is thrown.

[InvalidDataException](#)

Thrown if the parameters given aren't the correct values.

## Tri(int, int)

The Method uses the System.Drawing Method: DrawPolygon. Creates three coordinates that function uses to make a triangle centered on the pen.

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

### Parameters

**width** [int](#)

The width from the widest section.

**height** [int](#)

The height from the lowest to the highest point.

### Exceptions

#### CanvasException

Thrown if either parameter is greater than the canvas or smaller than zero.

[InvalidDataException](#)

Thrown if one of the parameters' data type isn't correct.

## WriteText(string)

Creates Text on the canvas using the System.Drawing Method: DrawString(). Uses the Arial font and requires a brush instead of a pen.

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

### Parameters

**text** [string](#)

The string that is written onto the canvas.



# getBitmap()

This method retrieves the current bitmap, potential use for saving the current drawings for future use.

```
public object getBitmap()
```

## Returns

[object](#)<sup>↗</sup>

The current bitmap in the Bitmap data type.

# Class AppCommandFactory


Namespace: [ASE Assignment](#)

Assembly: ASE Assignment.dll

An extended from CommandFactory, used to add additional commands to BOOSE or overwrite existing commands. Checks this list first and then goes back to the original list so that commands that are overwritten won't be called.

```
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()

Doesn't require a constructor as it utilises CommandFactory's Constructor.

```
public AppCommandFactory()
```

## Methods

### MakeCommand(string)

Takes the command type from the parser and checks it against the list of commands it has, first checking the newer versions and then checking the commands stored in the original commandfactory.

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

## Parameters

**commandType** [string](#) 

The command written in the textbox on the BOOSEInterpreter has been adjusted to only have the command.

## Returns

ICommand

The ICommand Class of the command given.

# Class AppWrite


Namespace: [ASE Assignment](#)

Assembly: ASE Assignment.dll

A class created for the write command to function in the BOOSEInterpreter. Extends CommandOneParameter, and uses variables extended from it to take the parameter of function to then be sent back to the WriteText function in AppCanvas.

```
public class AppWrite : CommandOneParameter, ICommand
```










## Inheritance

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

## Implements

ICommand

## Inherited Members

CommandOneParameter.param1 , CommandOneParameter.param1unprocessed , [CommandOneParameter.CheckParameters\(string\[\]\)](#)  , 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

### Execute()

An override function from CommandOneParameter. Creates a string variable from the broken down command from the StoredProgram and then passes back to the canvas method WriteText() for it be executed.

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

# Class Canvas

Namespace: [ASE Assignment](#)

Assembly: ASE Assignment.dll

This class contains all the function for the BOOSEInterpreter's User Interface. Each method relates to an object in the design.

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

## Inheritance

[object](#) ← [MarshalByRefObject](#) ← [Component](#) ← [Control](#) ← [ScrollableControl](#) ← [ContainerControl](#) ← [Form](#) ← Canvas

## 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.ScaleMinMaxSize\(float, float, bool\)](#) ,  
[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.PerformAutoScale\(\)](#) , [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.OnInvalidated\(InvalidateEventArgs\)](#), [Control.OnKeyDown\(KeyEventArgs\)](#),  
[Control.OnKeyPress\(KeyPressEventArgs\)](#), [Control.OnKeyUp\(KeyEventArgs\)](#),  
[Control.OnLeave\(EventArgs\)](#), [Control.InvokeLostFocus\(Control, EventArgs\)](#),  
[Control.OnLostFocus\(EventArgs\)](#), [Control.OnMarginChanged\(EventArgs\)](#),  
[Control.OnMouseDown\(MouseEventArgs\)](#), [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

### Canvas()

Setups the Canvas after running the program. Runs the About Method in the Debug window, creates instances of the canvas, commandfactory, StoredProgram and the Parser.

```
public Canvas()
```


## 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 AppTest

## Classes

### [BOOSEUnitTest](#)

Unit Testing for the program, tests the moveto, drawto and a multiline program using the parser. The AppCanvas, CommandFactory, and the Parser had constructed for each test.

# Class BOOSEUnitTest


Namespace: [AppTest](#)

Assembly: AppTest.dll








Unit Testing for the program, tests the moveto, drawto and a multiline program using the parser. The AppCanvas, CommandFactory, and the Parser had constructed for each test.

```
[TestClass]
public class BOOSEUnitTest
```

## Inheritance

[object](#)  ← BOOSEUnitTest

## Inherited Members

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

## Methods

### drawToTestX()

Unit Tests for the drawTo function, tests if the pen does move in the x axis when the function is called. Checks the position of the pen against the parameter given.

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

### drawToTestY()

Unit Tests for the drawTo function, tests if the pen does move in the y axis when the function is called. Checks the position of the pen against the parameter given.

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

## moveToTestX()

Unit test for the moveTo function, tests the movement in the X axis and checks the pen's position against the coordinate given.

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

## moveToTestY()

Unit test for the moveTo function, tests the movement in the Y axis and checks the pen's position against the coordinate given.

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

## multilineTest()

Unit test for a multiline program. Runs multiple functions and then checks the final position of the pen against the final parameter given for the coordinates.

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