

Namespace Medium_Scale_Software_Engineering_Project

Classes

[AppCanvas](#)

Canvas for drawing shapes and lines. Implements the ICanvas interface for BOOSE.

[Form1](#)

Main form for the BOOSE interpreter app.

[MyCommandFactory](#)

Factory for creating command objects for BOOSE. Handles error reporting for command creation.

[UnrestrictedBooseRunner](#)

[VariableManager](#)

Manages variables, arrays, and their types for BOOSE programs. Handles declaration, assignment, and value retrieval.

Interfaces

[IBooseRunner](#)

Interface for BOOSE program execution. Defines the contract for running BOOSE code with a canvas.

[IVariableManager](#)

Interface for managing variables in BOOSE programs. Defines contracts for variable declaration, assignment, and retrieval.

Class AppCanvas

Namespace: [Medium Scale Software Engineering Project](#)

Assembly: Medium Scale Software Engineering Project.dll

Canvas for drawing shapes and lines. Implements the ICanvas interface for BOOSE.

```
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(Panel)

Creates a new AppCanvas and sets up the drawing area.

```
public AppCanvas(Panel p)
```

Parameters

p [Panel](#) 

The panel to draw on.

Properties

PenColour

Gets or sets the pen color.

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

Property Value

[object](#)

Xpos

Gets or sets the X position of the cursor.

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

Property Value

[int](#)

Ypos

Gets or sets the Y position of the cursor.

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

Property Value

[int](#)

Methods

Circle(int, bool)

Draws a circle at the cursor position.

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

Parameters

radius [int](#)

The radius of the circle.

filled [bool](#)

Whether the circle is filled.

Clear()

Clears the cursor position.

```
public void Clear()
```

DrawTo(int, int)

Draws a line from the current position to (x, y).

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

Parameters

x [int](#)

The X position to draw to.

y [int](#)

The Y position to draw to.

ExportBase64()

Exports the canvas as a Base64 string.

```
public string ExportBase64()
```

Returns

[string](#)

The image as a Base64 string.

ImportBase64(string)

Loads a Base64 image string onto the canvas.

```
public void ImportBase64(string base64)
```

Parameters

base64 [string](#)

The Base64 string to load.

MoveTo(int, int)

Moves the cursor to a new position.

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

Parameters

x [int](#)

The X position.

y [int](#)

The Y position.

RealClear()

Clears the whole canvas.

```
public void RealClear()
```

Rect(int, int, bool)

Draws a rectangle at the cursor 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](#)

Whether the rectangle is filled.

Rectangle(int, int, bool)

Draws a rectangle (alias for Rect).

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

Parameters

width [int](#)

The width of the rectangle.

height [int](#)

The height of the rectangle.

filled [bool](#)

Whether the rectangle is filled.

Reset()

Resets the cursor before running code.

```
public void Reset()
```

Set(int, int)

Sets the cursor position.

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

Parameters

x [int](#)

The X position.

y [int](#)

The Y position.

SetColour(int, int, int)

Sets the pen color using RGB values.

```
public void SetColour(int r, int gVal, int b)
```

Parameters

r [int](#)

Red value.

gVal [int](#)

Green value.

b [int](#)

Blue value.

Tri(int, int)

Draws a triangle at the cursor position.

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

Parameters

width [int](#)

The width of the triangle.

height [int](#)

The height of the triangle.

WriteText(string)

Writes text at the cursor position.

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

Parameters

text [string](#)

The text to write.

getBitmap()

Gets the bitmap used for drawing.


```
public object getBitmap()
```

Returns

[object](#)

The bitmap object.

Class Form1

Namespace: [Medium Scale Software Engineering Project](#)

Assembly: Medium Scale Software Engineering Project.dll

Main form for the BOOSE interpreter app.

```
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.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\(int, int\)](#) ,
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[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\(Action\)](#) ,
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[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\(EventArgs\).☐](#) ,
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[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.OnMouseDoubleClick\(MouseEventArgs\).☐](#) , [Control.OnMouseClicked\(MouseEventArgs\).☐](#) ,
[Control.OnMouseCaptureChanged\(EventArgs\).☐](#) , [Control.OnMouseDown\(MouseEventArgs\).☐](#) ,
[Control.OnMouseEnter\(EventArgs\).☐](#) , [Control.OnMouseLeave\(EventArgs\).☐](#) ,
[Control.OnDpiChangedBeforeParent\(EventArgs\).☐](#) , [Control.OnDpiChangedAfterParent\(EventArgs\).☐](#) ,
[Control.OnMouseHover\(EventArgs\).☐](#) , [Control.OnMouseMove\(MouseEventArgs\).☐](#) ,
[Control.OnMouseUp\(MouseEventArgs\).☐](#) ,
[Control.OnQueryContinueDrag\(QueryContinueDragEventArgs\).☐](#) ,
[Control.OnRegionChanged\(EventArgs\).☐](#) , [Control.OnPreviewKeyDown\(PreviewKeyDownEventArgs\).☐](#) ,
[Control.OnSizeChanged\(EventArgs\).☐](#) , [Control.OnChangeUICues\(UICuesEventArgs\).☐](#) ,
[Control.OnSystemColorsChanged\(EventArgs\).☐](#) , [Control.OnValidating\(CancelEventArgs\).☐](#) ,
[Control.OnValidated\(EventArgs\).☐](#) , [Control.PerformLayout\(\).☐](#) , [Control.PerformLayout\(Control, string\).☐](#) ,
[Control.PointToClient\(Point\).☐](#) , [Control.PointToScreen\(Point\).☐](#) ,
[Control.PreProcessMessage\(ref Message\).☐](#) , [Control.PreProcessControlMessage\(ref Message\).☐](#) ,
[Control.ProcessKeyEventArgs\(ref Message\).☐](#) , [Control.ProcessKeyMessage\(ref Message\).☐](#) ,
[Control.RaiseDragEvent\(object, DragEventArgs\).☐](#) , [Control.RaisePaintEvent\(object, PaintEventArgs\).☐](#) ,
[Control.RecreateHandle\(\).☐](#) , [Control.RectangleToClient\(Rectangle\).☐](#) ,
[Control.RectangleToScreen\(Rectangle\).☐](#) , [Control.ReflectMessage\(nint, ref Message\).☐](#) ,
[Control.Refresh\(\).☐](#) , [Control.ResetMouseEventArgs\(\).☐](#) , [Control.ResetText\(\).☐](#) , [Control.ResumeLayout\(\).☐](#) ,
[Control.ResumeLayout\(bool\).☐](#) , [Control.Scale\(SizeF\).☐](#) , [Control.Select\(\).☐](#) ,
[Control.SelectNextControl\(Control, bool, bool, bool, bool\).☐](#) , [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()

Creates the main form and sets up events.

```
public Form1()
```

Methods

Dispose(bool)

Disposes resources being used.

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

Parameters

disposing [bool](#)

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

Interface IBooseRunner

Namespace: [Medium Scale Software Engineering Project](#)

Assembly: Medium Scale Software Engineering Project.dll

Interface for BOOSE program execution. Defines the contract for running BOOSE code with a canvas.

```
public interface IBooseRunner
```

Methods

Run(string)

Executes a BOOSE program (code string).

```
void Run(string code)
```

Parameters

code [string](#) 

The BOOSE program code to run.

Interface IVariableManager

Namespace: [Medium Scale Software Engineering Project](#)

Assembly: Medium Scale Software Engineering Project.dll

Interface for managing variables in BOOSE programs. Defines contracts for variable declaration, assignment, and retrieval.

```
public interface IVariableManager
```

Methods

Assign(string, object)

Assigns a value to an existing variable.

```
void Assign(string name, object value)
```

Parameters

name [string](#)

value [object](#)

Declare(string, string, object)

Declares a new variable (numeric or boolean).

```
void Declare(string type, string name, object value = null)
```

Parameters

type [string](#)

name [string](#)

value [object](#)

DeclareArray(string, string, int)

Declares a new array with a given type and size.

```
void DeclareArray(string type, string name, int size)
```

Parameters

type [string](#)

name [string](#)

size [int](#)

GetAllNames()

Returns all variable names (numeric and boolean).

```
IEnumerable<string> GetAllNames()
```

Returns

[IEnumerable](#) <[string](#)>

GetValue(string)

Gets the value of a variable (numeric or boolean).

```
object GetValue(string name)
```

Parameters

name [string](#)

Returns

[object](#)

IsArray(string)

Checks if a name refers to an array.

```
bool IsArray(string name)
```

Parameters

name [string](#)

Returns

[bool](#)

IsBoolean(string)

Checks if a variable is boolean.

```
bool IsBoolean(string name)
```

Parameters

name [string](#)

Returns

[bool](#)

IsDeclared(string)

Checks if a variable is declared.

```
bool IsDeclared(string name)
```

Parameters

name [string](#)

Returns

[bool](#)

Peek(string, int)

Gets the value at a specific index in an array.

```
double Peek(string name, int index)
```

Parameters

name [string](#)

index [int](#)

Returns

[double](#)

Poke(string, int, double)

Sets the value at a specific index in an array.

```
void Poke(string name, int index, double value)
```

Parameters

name [string](#)

index [int](#)

value [double](#)

Substitute(string)

Replaces variable and array names in an expression with their values.

```
string Substitute(string expr)
```

Parameters

expr [string](#) 

Returns

[string](#) 

Class MyCommandFactory

Namespace: [Medium Scale Software Engineering Project](#)

Assembly: Medium Scale Software Engineering Project.dll

Factory for creating command objects for BOOSE. Handles error reporting for command creation.

```
public class MyCommandFactory : CommandFactory, ICommandFactory
```








Inheritance

[object](#)  ← CommandFactory ← MyCommandFactory

Implements

ICommandFactory

Inherited Members

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

Methods

MakeCommand(string)

Creates a command object by name.

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

Parameters

name [string](#) 

The name of the command.

Returns

ICommand

The command object, or null if there is an error.

Exceptions

RestrictionException

Thrown if a BOOSE restriction is violated.

[Exception](#)

Thrown if another error occurs during command creation.

Class UnrestrictedBooseRunner

Namespace: [Medium Scale Software Engineering Project](#)

Assembly: Medium Scale Software Engineering Project.dll

```
public class UnrestrictedBooseRunner : IBooseRunner
```

Inheritance

[object](#) ← UnrestrictedBooseRunner

Implements

[IBooseRunner](#)

Inherited Members

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

Constructors

UnrestrictedBooseRunner(AppCanvas)

```
public UnrestrictedBooseRunner(AppCanvas canvas)
```

Parameters

canvas [AppCanvas](#)

Methods

Run(string)

Executes a BOOSE program (code string).

```
public void Run(string code)
```

Parameters

code [string](#)

The BOOSE program code to run.

Class VariableManager


Namespace: [Medium Scale Software Engineering Project](#)

Assembly: Medium Scale Software Engineering Project.dll








Manages variables, arrays, and their types for BOOSE programs. Handles declaration, assignment, and value retrieval.

```
public class VariableManager
```

Inheritance

[object](#)  ← VariableManager

Inherited Members

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

Methods

Assign(string, object)

Assigns a value to an existing variable.

```
public void Assign(string name, object value)
```

Parameters

name [string](#) 

The name of the variable.

value [object](#) 

The value to assign.

Declare(string, string, object)

Declares a new variable (numeric or boolean).

```
public void Declare(string type, string name, object value = null)
```

Parameters

type [string](#)

The type of the variable ("int", "real", or "boolean").

name [string](#)

The name of the variable.

value [object](#)

The initial value (optional).

DeclareArray(string, string, int)

Declares a new array with a given type and size.

```
public void DeclareArray(string type, string name, int size)
```

Parameters

type [string](#)

The type of the array ("int" or "real").

name [string](#)

The name of the array.

size [int](#)

The size of the array.

GetAllNames()

Returns all variable names (numeric and boolean).

```
public IEnumerable<string> GetAllNames()
```

Returns

[IEnumerable](#) [<string>](#)

An enumerable of all variable names.

GetValue(string)

Gets the value of a variable (numeric or boolean).

```
public object GetValue(string name)
```

Parameters

name [string](#)

The variable name.

Returns

[object](#)

The value of the variable, or null if not found.

IsArray(string)

Checks if a name refers to an array.

```
public bool IsArray(string name)
```

Parameters

name [string](#)

The array name.

Returns

[bool](#)

True if the name is an array, otherwise false.

IsBoolean(string)

Checks if a variable is boolean.

```
public bool IsBoolean(string name)
```

Parameters

name [string](#)

The variable name.

Returns

[bool](#)

True if the variable is boolean, otherwise false.

IsDeclared(string)

Checks if a variable is declared.

```
public bool IsDeclared(string name)
```

Parameters

name [string](#)

The variable name.

Returns

[bool](#)

True if declared, otherwise false.

Peek(string, int)

Gets the value at a specific index in an array.

```
public double Peek(string name, int index)
```

Parameters

name [string](#)

The name of the array.

index [int](#)

The index to retrieve.

Returns

[double](#)

The value at the specified index, or 0 if not found.

Poke(string, int, double)

Sets the value at a specific index in an array.

```
public void Poke(string name, int index, double value)
```

Parameters

name [string](#)

The name of the array.

index [int](#)

The index to set.

value [double](#)

The value to set.

Substitute(string)

Replaces variable and array names in an expression with their values.

```
public string Substitute(string expr)
```

Parameters

expr [string](#)

The expression to substitute.

Returns

[string](#)

The substituted expression string.