Namespace FlightSimCapstone

Classes

[ArduinoCommunicationUtility](#)

This class contains methods used to detect, read, and handle Arduino serial data .

[ArduinoPortMapping](#)

This class is serialized to JSON data to save Arduino port mapping states defined in the dev form (DevForm.cs).

[BaseDependencyUtility](#)

Holds several methods used to check software and hardware dependencies. These methods are called when an instances of forms are created, or when Button events are fired.

[DevForm](#)

Form Object for the Developer Form. Can be accessed by pressing F6 in the Utility Form.

[GraphicalInterface_Left](#)

This module holds graphical elements to be displayed in the Left Side of the Instrumentation Panel

[GraphicalInterface_Right](#)

This module holds graphical elements to be displayed in the Right Side of the Instrumentation Panel

[SimConnectUtility](#)

This class provides various methods to handle the creation, termination, and data handling of the SimConnect client.

[UtilityForm](#)

Form object for Utility Window

Enums

[SimConnectUtility.SIMCONNECT_NOTIFICATION_GROUP_ID](#)

Class ArduinoCommunicationUtility

Namespace: [FlightSimCapstone](#)

Assembly: FlightSimCapstone.dll

This class contains methods used to detect, read, and handle Arduino serial data .

```
public static class ArduinoCommunicationUtility
```

Inheritance

[object](#) ← ArduinoCommunicationUtility

Inherited Members

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

Fields

comPort

The COM port number for the Arduino device. This is automatically set when Initialize() is called.

```
public static string comPort
```

Field Value

[string](#)

isComOpen

A flag to check if the COM port is currently open.

```
public static bool isComOpen
```

Field Value

[bool](#)⧉

serialData

The data read from the Arduino device.

```
public static string serialData
```

Field Value

[string](#)⧉

serialPort

The serial port used to communicate with the detected Arduino device.

```
public static SerialPort serialPort
```

Field Value

[SerialPort](#)⧉

Methods

CloseSerialPort()

Close serial port if open

```
public static void CloseSerialPort()
```

GetSerialData()

Returns the most current line of serial data from the Arduino device.

```
public static string GetSerialData()
```

Returns

[string](#)⧉

   A string formatted as an int array for each analog or digital Arduino port.

Initialize()

Initialize Arduino Communication Utility

```
public static void Initialize()
```

castSerialInput()

Cast read Arduino serial data to an array of integers

```
public static int[] castSerialInput()
```

Returns

[int](#)⧉[]

   int array of arduino port values

Class ArduinoPortMapping

Namespace: [FlightSimCapstone](#)

Assembly: FlightSimCapstone.dll

This class is serialized to JSON data to save Arduino port mapping states defined in the dev form (DevForm.cs).

```
public class ArduinoPortMapping
```

Inheritance

[object](#) ← ArduinoPortMapping

Inherited Members

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

Properties

Brake

Get or set the port number for brake control

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

Property Value

[int](#)

FlapSwitch

Get or set the port number for the Flap Switch control

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

Property Value

int ⧉

Mixture

Get or set the port number for mixture control

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

Property Value

int ⧉

Throttle

Get or set the port number for throttle control

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

Property Value

int ⧉

TrimWheel

Get or set the port number for the Trim Wheel control

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

Property Value

int ⧉

Class BaseDependencyUtility

Namespace: [FlightSimCapstone](#)

Assembly: FlightSimCapstone.dll

Holds several methods used to check software and hardware dependencies. These methods are called when an instances of forms are created, or when Button events are fired.

```
public static class BaseDependencyUtility
```

Inheritance

[object](#) ← BaseDependencyUtility

Inherited Members

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

Methods

CheckArduinoConnection()

Check if Arduino device is connected to system

```
public static bool CheckArduinoConnection()
```

Returns

[bool](#)

  Bool. True if arduino is detected, false if no arduino detected.

CheckRudderPedalConnection()

Check if Rudder pedals are connected to system

```
public static bool CheckRudderPedalConnection()
```

Returns

[bool⧉](#)

Return true if rudder pedals are detected. False if not.

CheckYokeConnection()

Check if USB Yoke is connected to system

```
public static bool CheckYokeConnection()
```

Returns

[bool⧉](#)

Bool. True if yoke is detected, false if not.

GetFlightSimExePath()

Return the file path to FlightSim.exe

```
public static string GetFlightSimExePath()
```

Returns

[string⧉](#)

String of the file path to Microsoft Flight Simulator executable

GetNumDisplaySources()

Get the number of display sources connected to the system.

```
public static int GetNumDisplaySources()
```

Returns

[int ↗](#)

    int

GetSimConnectDLLPath()

Return File Path to SimConnect.DLL

```
public static string GetSimConnectDLLPath()
```

Returns

[string ↗](#)

    String of the file path to SimConnect.dll

LocateFlightSim()

Return bool if Flight Sim Directory can be located

```
public static bool LocateFlightSim()
```

Returns

[bool ↗](#)

    Bool. True if MSFS is found, False if not found

LocateFlightSimSDK()

Return bool if Flight Sim SDK can be located

```
public static bool LocateFlightSimSDK()
```

Returns

[bool ↗](#)

Bool. True if SDK is found, false if not found.

LocateSimConnectDll()

Return bool if Flight Sim DLL can be located

```
public static bool LocateSimConnectDll()
```

Returns

[bool⬈](#)

Bool, True if SimConecct.dll is found, false if not found.

LocateSimConnectNETDll()

Return bool if Flight Sim .NET DLL can be located

```
public static bool LocateSimConnectNETDll()
```

Returns

[bool⬈](#)

Bool. True if .NET dll is found, false if not found.

Class DevForm

Namespace: [FlightSimCapstone](#)

Assembly: FlightSimCapstone.dll

Form Object for the Developer Form. Can be accessed by pressing F6 in the Utility Form.

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

Inheritance

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

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.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.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.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.Menu⧉ ,
Form.MinimumSize⧉ , Form.MaximizeBox⧉ , Form.MdiChildren⧉ , Form.MdiParent⧉ ,
Form.MergedMenu⧉ , 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.OnParentChanged(EventArgs)⧉ , ContainerControl.PerformAutoScale()⧉ ,
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(Delegate, params object[]) ⬀ , Control.BringToFront() ⬀ ,
Control.Contains(Control) ⬀ , Control.CreateAccessibilityInstance() ⬀ , Control.CreateGraphics() ⬀ ,
Control.CreateControl() ⬀ , Control.DestroyHandle() ⬀ , Control.DoDragDrop(object, DragDropEffects) ⬀ ,
Control.DrawToBitmap(Bitmap, Rectangle) ⬀ , Control.EndInvoke(IAsyncResult) ⬀ , Control.FindForm() ⬀ ,
Control.GetTopLevel() ⬀ , Control.RaiseKeyEvent(object, KeyEventArgs) ⬀ ,
Control.RaiseMouseEvent(object, MouseEventArgs) ⬀ , Control.Focus() ⬀ ,
Control.FromChildHandle(IntPtr) ⬀ , Control.FromHandle(IntPtr) ⬀ ,
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(Delegate) ⬀ ,
Control.Invoke(Delegate, params object[]) ⬀ , 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.ScaleBitmapLogicalToDevice(ref Bitmap) ⬀ ,
Control.NotifyInvalidate(Rectangle) ⬀ , Control.InvokeOnClick(Control, EventArgs) ⬀ ,
Control.OnAutoSizeChanged(EventArgs) ⬀ , Control.OnBackColorChanged(EventArgs) ⬀ ,
Control.OnBindingContextChanged(EventArgs) ⬀ , Control.OnCausesValidationChanged(EventArgs) ⬀ ,
Control.OnContextMenuChanged(EventArgs) ⬀ , Control.OnContextMenuStripChanged(EventArgs) ⬀ ,
Control.OnCursorChanged(EventArgs) ⬀ , Control.OnDockChanged(EventArgs) ⬀ ,
Control.OnForeColorChanged(EventArgs) ⬀ , Control.OnNotifyMessage(Message) ⬀ ,
Control.OnParentBackColorChanged(EventArgs) ⬀ ,
Control.OnParentBackgroundImageChanged(EventArgs) ⬀ ,
Control.OnParentBindingContextChanged(EventArgs) ⬀ , Control.OnParentCursorChanged(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.OnGotFocus(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.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.OnMove(EventArgs) ,
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.RescaleConstantsForDpi(int, int) ,
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(IntPtr, 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.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.ContextMenu ⊡ ,
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.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.ContextMenuChanged ⊡ ,
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.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.Events](#)⊡ , [Component.Container](#)⊡ ,
[Component.DesignMode](#)⊡ , [Component.Disposed](#)⊡ , [MarshalByRefObject.MemberwiseClone(bool)](#)⊡ ,
[MarshalByRefObject.GetLifetimeService()](#)⊡ , [MarshalByRefObject.InitializeLifetimeService()](#)⊡ ,
[MarshalByRefObject.CreateObjRef(Type)](#)⊡ , [object.Equals(object)](#)⊡ , [object.Equals(object, object)](#)⊡ ,
[object.ReferenceEquals(object, object)](#)⊡ , [object.GetHashCode()](#)⊡ , [object.GetType()](#)⊡ ,
[object.MemberwiseClone()](#)⊡

Remarks

This form is used to display diagnostics and/or test features before they are integrated into the
application visible to the end user.

Constructors

DevForm()

Default constructor This should never be used. Does not allow for cross-form communication.

```
public DevForm()
```

DevForm(Form)

Overloaded constructor. Accepts instance of Utility form.

Creates a timer that ticks every 1 second. This is used to retrieve Instrumentation panel data from
SimConnect.

```
public DevForm(Form callingUtilityForm)
```

Parameters

`callingUtilityForm` [Form↗](#)

Methods

CloseHandler(object, FormClosingEventArgs)

Form Close event
When dev form is closed, stop and discard the valueTimer.
NOTE: Consider terminating connection to SimConnect if deemed applicable later.

```
protected void CloseHandler(object sender, FormClosingEventArgs e)
```

Parameters

`sender` [object↗](#)

`e` [FormClosingEventArgs↗](#)

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 GraphicalInterface_Left

Namespace: [FlightSimCapstone](#)

Assembly: FlightSimCapstone.dll

This module holds graphical elements to be displayed in the Left Side of the Instrumentation Panel

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

Inheritance

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

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.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.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.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.Menu ,
Form.MinimumSize , Form.MaximizeBox , Form.MdiChildren , Form.MdiParent ,
Form.MergedMenu , 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.OnParentChanged(EventArgs) , ContainerControl.PerformAutoScale() ,
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(Delegate, params object[])⮬ , Control.BringToFront()⮬ ,
Control.Contains(Control)⮬ , Control.CreateAccessibilityInstance()⮬ , Control.CreateGraphics()⮬ ,
Control.CreateControl()⮬ , Control.DestroyHandle()⮬ , Control.DoDragDrop(object, DragDropEffects)⮬ ,
Control.DrawToBitmap(Bitmap, Rectangle)⮬ , Control.EndInvoke(IAsyncResult)⮬ , Control.FindForm()⮬ ,
Control.GetTopLevel()⮬ , Control.RaiseKeyEvent(object, KeyEventArgs)⮬ ,
Control.RaiseMouseEvent(object, MouseEventArgs)⮬ , Control.Focus()⮬ ,
Control.FromChildHandle(IntPtr)⮬ , Control.FromHandle(IntPtr)⮬ ,
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(Delegate)⮬ ,
Control.Invoke(Delegate, params object[])⮬ , 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.ScaleBitmapLogicalToDevice(ref Bitmap)⮬ ,
Control.NotifyInvalidate(Rectangle)⮬ , Control.InvokeOnClick(Control, EventArgs)⮬ ,
Control.OnAutoSizeChanged(EventArgs)⮬ , Control.OnBackColorChanged(EventArgs)⮬ ,
Control.OnBindingContextChanged(EventArgs)⮬ , Control.OnCausesValidationChanged(EventArgs)⮬ ,
Control.OnContextMenuChanged(EventArgs)⮬ , Control.OnContextMenuStripChanged(EventArgs)⮬ ,
Control.OnCursorChanged(EventArgs)⮬ , Control.OnDockChanged(EventArgs)⮬ ,
Control.OnForeColorChanged(EventArgs)⮬ , Control.OnNotifyMessage(Message)⮬ ,
Control.OnParentBackColorChanged(EventArgs)⮬ ,
Control.OnParentBackgroundImageChanged(EventArgs)⮬ ,
Control.OnParentBindingContextChanged(EventArgs)⮬ , Control.OnParentCursorChanged(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.OnGotFocus(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.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.OnMove(EventArgs)☑ ,
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.RescaleConstantsForDpi(int, int)☑ ,
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(IntPtr, 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.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.ContextMenu⧉ ,
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.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.ContextMenuChanged⧉ ,
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.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.Events ⧉ , Component.Container ⧉ , Component.DesignMode ⧉ , Component.Disposed ⧉ , MarshalByRefObject.MemberwiseClone(bool) ⧉ , MarshalByRefObject.GetLifetimeService() ⧉ , MarshalByRefObject.InitializeLifetimeService() ⧉ , MarshalByRefObject.CreateObjRef(Type) ⧉ , object.Equals(object) ⧉ , object.Equals(object, object) ⧉ , object.ReferenceEquals(object, object) ⧉ , object.GetHashCode() ⧉ , object.GetType() ⧉ , object.MemberwiseClone() ⧉

Constructors

GraphicalInterface_Left(UtilityForm)

Class constructor

Initialize picturebox attributes. Overlay transparent images, set size, parent image(s), location, and color.

Instantiate Timer

```
public GraphicalInterface_Left(UtilityForm callingUtilityForm)
```

Parameters

callingUtilityForm UtilityForm

Properties

isRightClosing

```
public bool isRightClosing { get; set; }
```

Property Value

[bool⧉](#)

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.

SetImageRotation(Bitmap, float)

This image rotates a Bitmap image around the center point. Image is re-sized accordingly to avoid visible image resize durring transformation. see [https://foxlearn.com/csharp/image-rotation-8368.html⧉](https://foxlearn.com/csharp/image-rotation-8368.html)

```
public static Bitmap SetImageRotation(Bitmap image, float degree)
```

Parameters

image [Bitmap⧉](#)

degree [float⧉](#)

Returns

[Bitmap⧉](#)

TranslateImageY(Bitmap, float)

Translate bitmap image across Y axis

```
public static Bitmap TranslateImageY(Bitmap image, float y)
```

Parameters

image Bitmap⧉

y float⧉

Returns

Bitmap⧉

setLinkedForm(GraphicalInterface_Right)

Setter method for linked form

```
public void setLinkedForm(GraphicalInterface_Right rightForm)
```

Parameters

rightForm GraphicalInterface_Right

Class GraphicalInterface_Right

Namespace: [FlightSimCapstone](#)

Assembly: FlightSimCapstone.dll

This module holds graphical elements to be displayed in the Right Side of the Instrumentation Panel

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

Inheritance

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

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.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.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.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.Menu⊞ ,
Form.MinimumSize⊞ , Form.MaximizeBox⊞ , Form.MdiChildren⊞ , Form.MdiParent⊞ ,
Form.MergedMenu⊞ , 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.OnParentChanged(EventArgs)⊞ , ContainerControl.PerformAutoScale()⊞ ,
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(Delegate, params object[])☑ , Control.BringToFront()☑ ,
Control.Contains(Control)☑ , Control.CreateAccessibilityInstance()☑ , Control.CreateGraphics()☑ ,
Control.CreateControl()☑ , Control.DestroyHandle()☑ , Control.DoDragDrop(object, DragDropEffects)☑ ,
Control.DrawToBitmap(Bitmap, Rectangle)☑ , Control.EndInvoke(IAsyncResult)☑ , Control.FindForm()☑ ,
Control.GetTopLevel()☑ , Control.RaiseKeyEvent(object, KeyEventArgs)☑ ,
Control.RaiseMouseEvent(object, MouseEventArgs)☑ , Control.Focus()☑ ,
Control.FromChildHandle(IntPtr)☑ , Control.FromHandle(IntPtr)☑ ,
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(Delegate)☑ ,
Control.Invoke(Delegate, params object[])☑ , 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.ScaleBitmapLogicalToDevice(ref Bitmap)☑ ,
Control.NotifyInvalidate(Rectangle)☑ , Control.InvokeOnClick(Control, EventArgs)☑ ,
Control.OnAutoSizeChanged(EventArgs)☑ , Control.OnBackColorChanged(EventArgs)☑ ,
Control.OnBindingContextChanged(EventArgs)☑ , Control.OnCausesValidationChanged(EventArgs)☑ ,
Control.OnContextMenuChanged(EventArgs)☑ , Control.OnContextMenuStripChanged(EventArgs)☑ ,
Control.OnCursorChanged(EventArgs)☑ , Control.OnDockChanged(EventArgs)☑ ,
Control.OnForeColorChanged(EventArgs)☑ , Control.OnNotifyMessage(Message)☑ ,
Control.OnParentBackColorChanged(EventArgs)☑ ,
Control.OnParentBackgroundImageChanged(EventArgs)☑ ,
Control.OnParentBindingContextChanged(EventArgs)☑ , Control.OnParentCursorChanged(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.OnGotFocus(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.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.OnMove(EventArgs)🗗 ,
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.RescaleConstantsForDpi(int, int)🗗 ,
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(IntPtr, 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.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.ContextMenu⧉ ,
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.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.ContextMenuChanged⧉ ,
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.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.Events⧉ , Component.Container⧉ , Component.DesignMode⧉ , Component.Disposed⧉ , MarshalByRefObject.MemberwiseClone(bool)⧉ , MarshalByRefObject.GetLifetimeService()⧉ , MarshalByRefObject.InitializeLifetimeService()⧉ , MarshalByRefObject.CreateObjRef(Type)⧉ , object.Equals(object)⧉ , object.Equals(object, object)⧉ , object.ReferenceEquals(object, object)⧉ , object.GetHashCode()⧉ , object.GetType()⧉ , object.MemberwiseClone()⧉

Constructors

GraphicalInterface_Right()

Class constructor

Initialize picturebox attributes. Oberlay transparent images, set size, parent image(s) and color

Instantiate Timer.

```
public GraphicalInterface_Right()
```

Properties

isLeftClosing

```
public bool isLeftClosing { get; set; }
```

Property Value

bool⧉

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.

SetImageRotation(Bitmap, float)

This image rotates a Bitmap image around the center point. Image is re-sized accordingly to avoid visible image resize durring transformation. see [https://foxlearn.com/csharp/image-rotation-8368.html⧉](https://foxlearn.com/csharp/image-rotation-8368.html)

```
public static Bitmap SetImageRotation(Bitmap image, float degree)
```

Parameters

image [Bitmap⧉](#)

degree [float⧉](#)

Returns

[Bitmap⧉](#)

setLinkedForm(GraphicalInterface_Left)

Setter method for linked form

```
public void setLinkedForm(GraphicalInterface_Left leftForm)
```

Parameters

`leftForm` [GraphicalInterface_Left](#)

Class SimConnectUtility

Namespace: [FlightSimCapstone](#)

Assembly: FlightSimCapstone.dll

This class provides various methods to handle the creation, termination, and data handling of the SimConnect client.

```
public static class SimConnectUtility
```

Inheritance

[object](#) ← SimConnectUtility

Inherited Members

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

Remarks

This class declares the datatypes of all values retrieved from SimConnect, and maps

Properties

AirspeedIndicatorValue

```
public static double AirspeedIndicatorValue { get; }
```

Property Value

[double](#)

AltimeterValue

```
public static double AltimeterValue { get; }
```

Property Value

[double](#)⊠

AmmeterValue

```csharp
public static double AmmeterValue { get; }
```

Property Value

[double](#)⊠

ConnectionStatus

```csharp
public static bool ConnectionStatus { get; set; }
```

Property Value

[bool](#)⊠

CurrentFuelValue

```csharp
public static double CurrentFuelValue { get; }
```

Property Value

[double](#)⊠

DevForm

```csharp
public static DevForm DevForm { get; set; }
```

Property Value

HeadingIndicatorValue

```
public static double HeadingIndicatorValue { get; }
```

Property Value

[double](#)⌁

HourValue

```
public static double HourValue { get; }
```

Property Value

[double](#)⌁

MinuteValue

```
public static double MinuteValue { get; }
```

Property Value

[double](#)⌁

PitchValue

```
public static double PitchValue { get; }
```

Property Value

[double](#)⌁

RollValue

```
public static double RollValue { get; }
```

Property Value

[double](#)⤢

SecondValue

```
public static double SecondValue { get; }
```

Property Value

[double](#)⤢

SuctuionGaugeValue

```
public static double SuctuionGaugeValue { get; }
```

Property Value

[double](#)⤢

TotalFuelValue

```
public static double TotalFuelValue { get; }
```

Property Value

[double](#)⤢

TurnCoordinatorValue

```csharp
public static double TurnCoordinatorValue { get; }
```

Property Value

[double⧉](#)

TurnIndicatorValue

```csharp
public static double TurnIndicatorValue { get; }
```

Property Value

[double⧉](#)

UtilityForm

```csharp
public static UtilityForm UtilityForm { get; set; }
```

Property Value

[UtilityForm](#)

VerticalAirspeedIndicatorValue

```csharp
public static double VerticalAirspeedIndicatorValue { get; }
```

Property Value

[double⧉](#)

Methods

ConnectSimconnectClient()

Attempt to create an instance of SimConnect client.

```
public static bool ConnectSimconnectClient()
```

Returns

[bool](#)☝

bool - True/False if SimConnect Client could be established

DisconnectSimconnectClient()

Disconnect SimConnect Client from MSFS

```
public static bool DisconnectSimconnectClient()
```

Returns

[bool](#)☝

InitializeSimReadings()

This method initializes the process of reading Microsoft Flight Simulator data.

```
public static void InitializeSimReadings()
```

Remarks

Declarations are defined to Simconnect environment variables. Retrieved data mapped to declared structs (See SimConnectData.cs)
TODO: See if refresh rate can be sped up using SIMCONNECT_PERIOD.SIM_FRAME

RefreshSimconnect()

Refresh values retrieved from SimConnect

```
public static bool RefreshSimconnect()
```

Returns

[bool⧉](#)

Remarks

This method should called on each timer itteration of Form objects Returns true if successful, returns false if exception thrown

Simconnect_OnRecvSimobjectData(SimConnect, SIMCONNECT_RECV_SIMOBJECT_DATA)

This method specifies what data the SimConnect Client should expect to recieve from Microsoft Flight Simulator

```
public static void Simconnect_OnRecvSimobjectData(SimConnect sender,
SIMCONNECT_RECV_SIMOBJECT_DATA data)
```

Parameters

sender SimConnect

data SIMCONNECT_RECV_SIMOBJECT_DATA

UpdateBrakeFromPotentiometer(int)

Toggle the Parking Brake in MSFS based on potentiometer value

```
public static void UpdateBrakeFromPotentiometer(int potValue)
```

Parameters

potValue [int⧉](#)

UpdateFlapsFromPotentiometer(int)

```
public static void UpdateFlapsFromPotentiometer(int potValue)
```

Parameters

potValue [int](#)

UpdateMixtureFromPotentiometer(int)

Update MSFS Mixture from Arduino Potentiometer reading

```
public static void UpdateMixtureFromPotentiometer(int potValue)
```

Parameters

potValue [int](#)

UpdateThrottleFromPotentiometer(int)

Update MSFS Throttle from Arduino Potentiometer value (Range: 0-1023)

```
public static void UpdateThrottleFromPotentiometer(int potValue)
```

Parameters

potValue [int](#)

UpdateTrimWheelFromPotentiometer(int)

Update the trim wheel Toggles calibration of yoke pich. Does not directly affect trim wheel in MSFS, but should get the same result.

```
public static void UpdateTrimWheelFromPotentiometer(int potValue)
```

Parameters

`potValue` [int](#)

Enum SimConnectUtility.SIMCONNECT_NOTIFICATION_GROUP_ID

Namespace: [FlightSimCapstone](#)

Assembly: FlightSimCapstone.dll

```
public enum SimConnectUtility.SIMCONNECT_NOTIFICATION_GROUP_ID : uint
```

Fields

Default = 0

Class UtilityForm

Namespace: [FlightSimCapstone](#)

Assembly: FlightSimCapstone.dll

Form object for Utility Window

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

Inheritance

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

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.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.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.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.Menu ,
Form.MinimumSize , Form.MaximizeBox , Form.MdiChildren , Form.MdiParent ,
Form.MergedMenu , 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.OnParentChanged(EventArgs) , ContainerControl.PerformAutoScale() ,
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(Delegate, params object[])⊡ , Control.BringToFront()⊡ ,

Control.Contains(Control)⊡ , Control.CreateAccessibilityInstance()⊡ , Control.CreateGraphics()⊡ ,

Control.CreateControl()⊡ , Control.DestroyHandle()⊡ , Control.DoDragDrop(object, DragDropEffects)⊡ ,

Control.DrawToBitmap(Bitmap, Rectangle)⊡ , Control.EndInvoke(IAsyncResult)⊡ , Control.FindForm()⊡ ,

Control.GetTopLevel()⊡ , Control.RaiseKeyEvent(object, KeyEventArgs)⊡ ,

Control.RaiseMouseEvent(object, MouseEventArgs)⊡ , Control.Focus()⊡ ,

Control.FromChildHandle(IntPtr)⊡ , Control.FromHandle(IntPtr)⊡ ,

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(Delegate)⊡ ,

Control.Invoke(Delegate, params object[])⊡ , 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.ScaleBitmapLogicalToDevice(ref Bitmap)⊡ ,

Control.NotifyInvalidate(Rectangle)⊡ , Control.InvokeOnClick(Control, EventArgs)⊡ ,

Control.OnAutoSizeChanged(EventArgs)⊡ , Control.OnBackColorChanged(EventArgs)⊡ ,

Control.OnBindingContextChanged(EventArgs)⊡ , Control.OnCausesValidationChanged(EventArgs)⊡ ,

Control.OnContextMenuChanged(EventArgs)⊡ , Control.OnContextMenuStripChanged(EventArgs)⊡ ,

Control.OnCursorChanged(EventArgs)⊡ , Control.OnDockChanged(EventArgs)⊡ ,

Control.OnForeColorChanged(EventArgs)⊡ , Control.OnNotifyMessage(Message)⊡ ,

Control.OnParentBackColorChanged(EventArgs)⊡ ,

Control.OnParentBackgroundImageChanged(EventArgs)⊡ ,

Control.OnParentBindingContextChanged(EventArgs)⊡ , Control.OnParentCursorChanged(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.OnGotFocus(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.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.OnMove(EventArgs)☑ ,
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.RescaleConstantsForDpi(int, int)☑ ,
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(IntPtr, 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.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.ContextMenu⧉ ,
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.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.ContextMenuChanged⧉ ,
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.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.Events⧉ , Component.Container⧉ , Component.DesignMode⧉ , Component.Disposed⧉ , MarshalByRefObject.MemberwiseClone(bool)⧉ , MarshalByRefObject.GetLifetimeService()⧉ , MarshalByRefObject.InitializeLifetimeService()⧉ , MarshalByRefObject.CreateObjRef(Type)⧉ , object.Equals(object)⧉ , object.Equals(object, object)⧉ , object.ReferenceEquals(object, object)⧉ , object.GetHashCode()⧉ , object.GetType()⧉ , object.MemberwiseClone()⧉

Remarks

This form provides a console showing application information, and buttons for opening the graphical interface configuration, and to launch Microsoft Flight Simulator.

Constructors

UtilityForm()

Utility Form Constructor

```
public UtilityForm()
```

Remarks

Maps Utility Form events, checks for software and hardware dependencies.

Properties

BrakeMapping

```
public static int BrakeMapping { get; set; }
```

Property Value

int ⧉

DevForm

```
public DevForm DevForm { get; set; }
```

Property Value

DevForm

FlapSwitchMapping

```
public static int FlapSwitchMapping { get; set; }
```

Property Value

int ⧉

GraphicalInterface_Left

```
public GraphicalInterface_Left GraphicalInterface_Left { get; set; }
```

Property Value

GraphicalInterface_Left

GraphicalInterface_Right

```
public GraphicalInterface_Right GraphicalInterface_Right { get; set; }
```

Property Value

IsGraphicalInterfaceOpen

```
public bool IsGraphicalInterfaceOpen { get; set; }
```

Property Value

[bool⧉](#)

MixtureMapping

```
public static int MixtureMapping { get; set; }
```

Property Value

[int⧉](#)

ThrottleMapping

```
public static int ThrottleMapping { get; set; }
```

Property Value

[int⧉](#)

TrimWheelMapping

```
public static int TrimWheelMapping { get; set; }
```

Property Value

[int⧉](#)

Methods

AppendAppConsole(string, Color)

This function appends text to the rich textbox element displayed in the Utility Window. Appended text color can be specified.

```
public void AppendAppConsole(string text, Color color)
```

Parameters

text [string](#)

    Text to append to utility form console

color [Color](#)

    Color of appended text

CloseHandler(object, CancelEventArgs)

Utility Form Close Event

```
protected void CloseHandler(object sender, CancelEventArgs e)
```

Parameters

sender [object](#)

e [CancelEventArgs](#)

Remarks

Logic conducted when Utility Form is closed.

NOTE: This will be required when the Graphical Interface is created. Currently a prototype. The UtilityForm will not close if 'int close' is set to 1.

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.

LoadControlMappings()

Load saved mappings from file, and map to arduino ports.

```
public static void LoadControlMappings()
```

SaveControlMappings()

Save the current mappings to IO. (ArduinoSettings.fly). This allows the application to load specified mappings when the application restarts.

```
public static void SaveControlMappings()
```