

Chapter 4

Basic Windows Programming

Objective

- Learning Windows Form Designer
- Controls
 - Common Controls
 - Container Controls
 - Menus and Toolbars
 - Dialogs

Prerequisite

- VB based Rapid Application Development
 - Highly detailed UI via an intuitive Form Designer

Controls

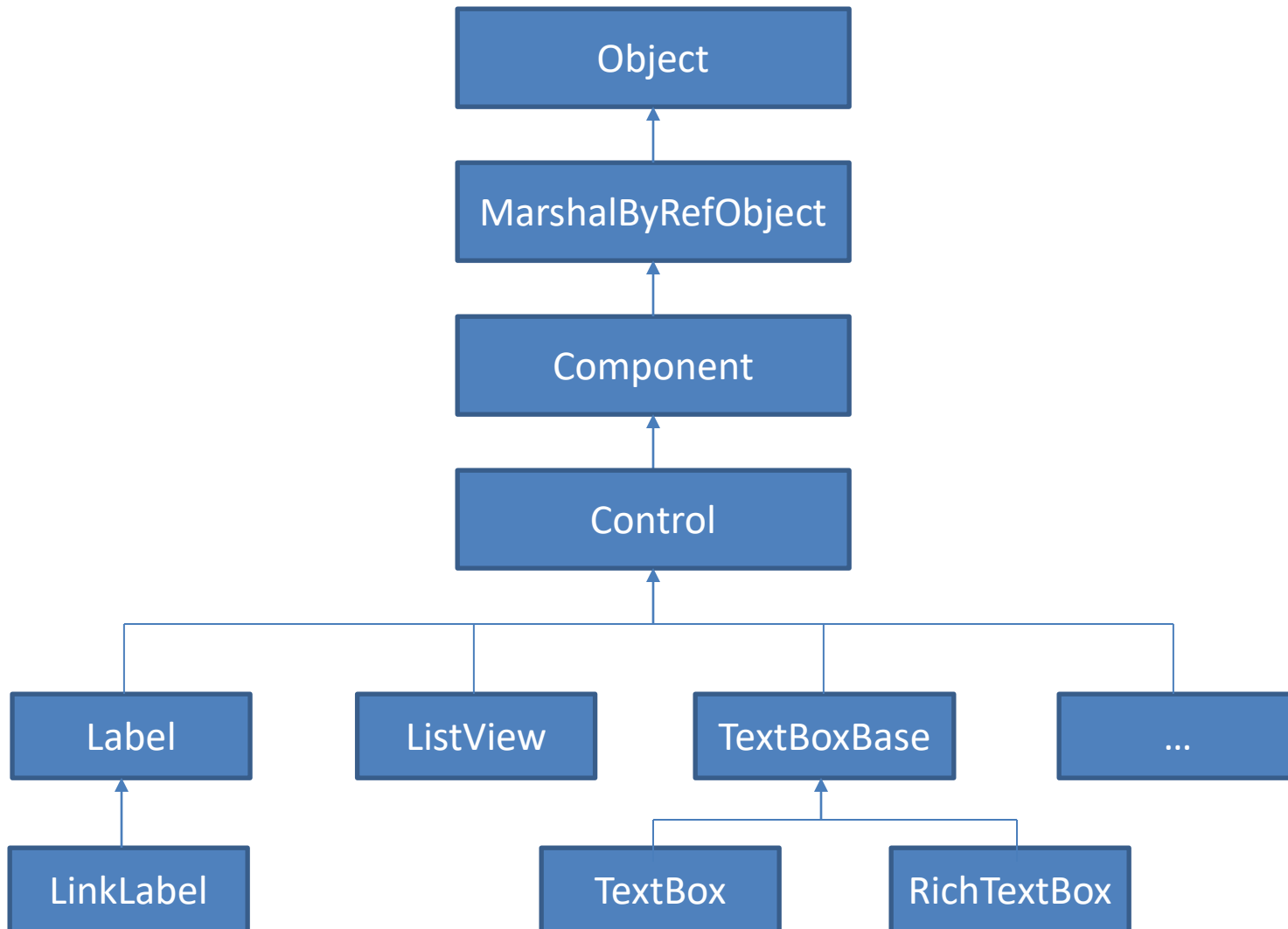
Controls are used for following:

- Displaying information e.g. [Lable](#), [LinkLabel](#)
- Triggering Events e.g. [Button](#)
- Entering text in application e.g. [TextBox](#)
- Displaying and Changing current state e.g. [RadioButton](#) and [CheckButton](#)
- Listing details e.g. [ListBox](#), [ListView](#)
- Grouping other controls e.g. [TabControl](#), [GroupBox](#)

Controls

- `System.Windows.Forms` namespace
- Most controls derive from `System.Windows.Forms.Control`
- Types of Control
 - Custom / User Controls: `System.Windows.Forms.UserControl`
 - Web UI Controls: `System.Web.UI.Control`

Control Class Hierarchy



Control – Common Properties

Name	Description
Anchor	Specifies how control should behave when window resized. It refers to the position a control has relative to the edges of the form.
BackColor	Specifies background color.
Bottom	Distance from top of the window to bottom of control.
Dock	Specifies which control borders are docked to its parent control .
Enable	true/ false. True means control can receive user input.
Visible	Whether control is visible at run time.
Parent	Parent of the control.
Name	Internal name, which can be referred in code.
Text	Text associated with Control.

Control - Events

- **Click**
- **DoubleClick**
- **DragDrop**: When drag and drop operation is completed
- **DragEnter / DragLeave / DragOver**
- **KeyDown**: Occurs before KeyPress and Keyup
- **KeyPress**
- **GetFocus**: when control receives focus
- **LostFocus**
- **Paint**: Occurs when control is redrawn

Button Control

- `System.Windows.Forms.ButtonBase` class
 - Implements basic button functionality
 - Controls derived from
 - Button
 - CheckBox
 - RadioButton
- Buttons can be used for
 - Closing dialog e.g. Ok, Cancel
 - To perform action e.g. Data entry on Submit
 - To launch other dialog box or application

Button Properties

Name	Description
FlatStyle	Pop up style, Button will appear flat until mouse is moved over. After mouse over, button pops up
Enabled	True / False. False, button will be grayed. No input will be received.
Image	Image can be specified to the button.
ImageAlign	Image alignment on button

Label and Link Label

- **Label** (Standard Windows Label):
 - Used to display text on Form
- **Link Label**
 - Derived from Label
 - Represented as **Internet link** (a hyperlink)

TextBox Control

- Basic controls to accept Text
 - TextBox
 - RichText Box
- Both controls derived from **TextBoxBase**
- **TextBox**
 - Provides functionality for text manipulation e.g.
 - Selecting text
 - Cut + Paste from Clipboard

TextBox properties

Name	Description
CausesValidation	If true, fires Validating and Validated events on receiving focus
CharacterCasing	Lower / Normal / Upper
MaxLength	0 means unlimited. Indicates maximum no of characters allowed in TextBox
Multiline	Ability to show text in multiple lines format
PasswordChar	will show data in encrypted format
Scrollbars	Whether to display scrollbars in case of multiline
ReadOnly	If true, text will be shown in read only format

TextBox Events

- Focus change events
 - Enter
 - Leave
 - Validating
 - Validated
- Key Events
 - Key up (Receives Key code corresponding to key)
 - Key Press (receives the character of Key e.g. 'a' or 'A')
 - Key Down (Receives Key code corresponding to key)

RadioButton

- Used for allowing single selection
E.g. Specify Sex: Male or Female

Name	Description
Appearance	Radio button display either as label with circular check or as Standard button
AutoCheck	Black point is displayed when user selects option, else will have to do programmatically.
CheckAlign	Alignment
Checked	Indicates the status of control. True if value is selected.

RadioButton Events

Name	Description
CheckedChanged	Triggered when selection is changed.
Click	Triggers every time Radio button is clicked.

CheckBox

- CheckBox is used when user wants to choose one or more options.
- E.g. Select languages you know.

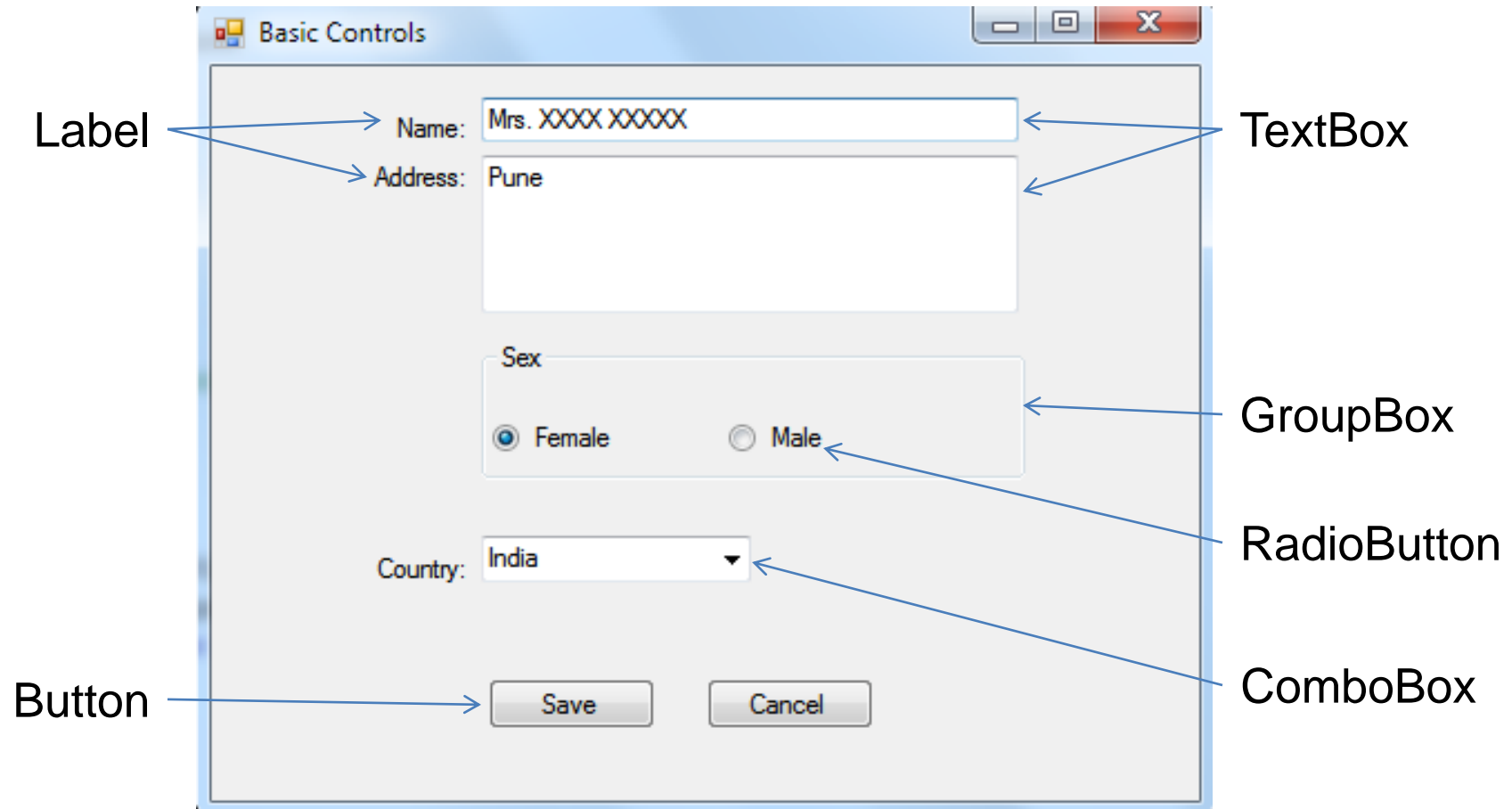
CheckBox Properties

Name	Description
CheckState	CheckBox has Three states. 1. Checked 2. UnChecked 3. Indeterminate Indeterminate state is similar to showing a value which is no more valid. Text is shown in gray color
ThreeState	If false, then CheckState value can not be set to Indeterminate.

CheckBox Event

Name	Description
CheckedChanged	Occurs whenever Checked property of checkbox changes. When ThreeState property is true, its possible to click the checkbox, without changing the checked property. This happens when checkbox changes from checked to indeterminate state
CheckStateChanged	Event is raised every time when state changes from Checked to unchecked or to indeterminate or vice versa.

Basic Controls - Demo



ListBox and CheckListBox

Demo

The screenshot shows a Windows-style application window titled "Restaurant: Place Order". The window has a standard title bar with minimize, maximize, and close buttons. The main content area is divided into three sections:

- Menu Card:** A list of menu items, each with a checkbox. The items are: Soup (checked), Salad (checked), Starters (checked), MainCourse (checked and highlighted with a blue background), Desert (unchecked), and Juice (unchecked).
- Buttons:** Two buttons are located between the two lists: "Add >>" and "Remove <<".
- Selected Menu:** A list of the items currently selected, which are: Soup, Salad, Starters, and MainCourse.

RichTextBox

- Derived from TextBoxBase.
- Used to display and enter Formatted Text.
- Follows Rich Text Format (RTF) standards.
- RTF
 - Rich Text Format (RTF) is a standardized way to encode various text formatting properties, such as bold characters and typefaces, as well as document formatting and structures.
 - Following RTF convention, ensures that document can be opened in any RTF compliant word processors

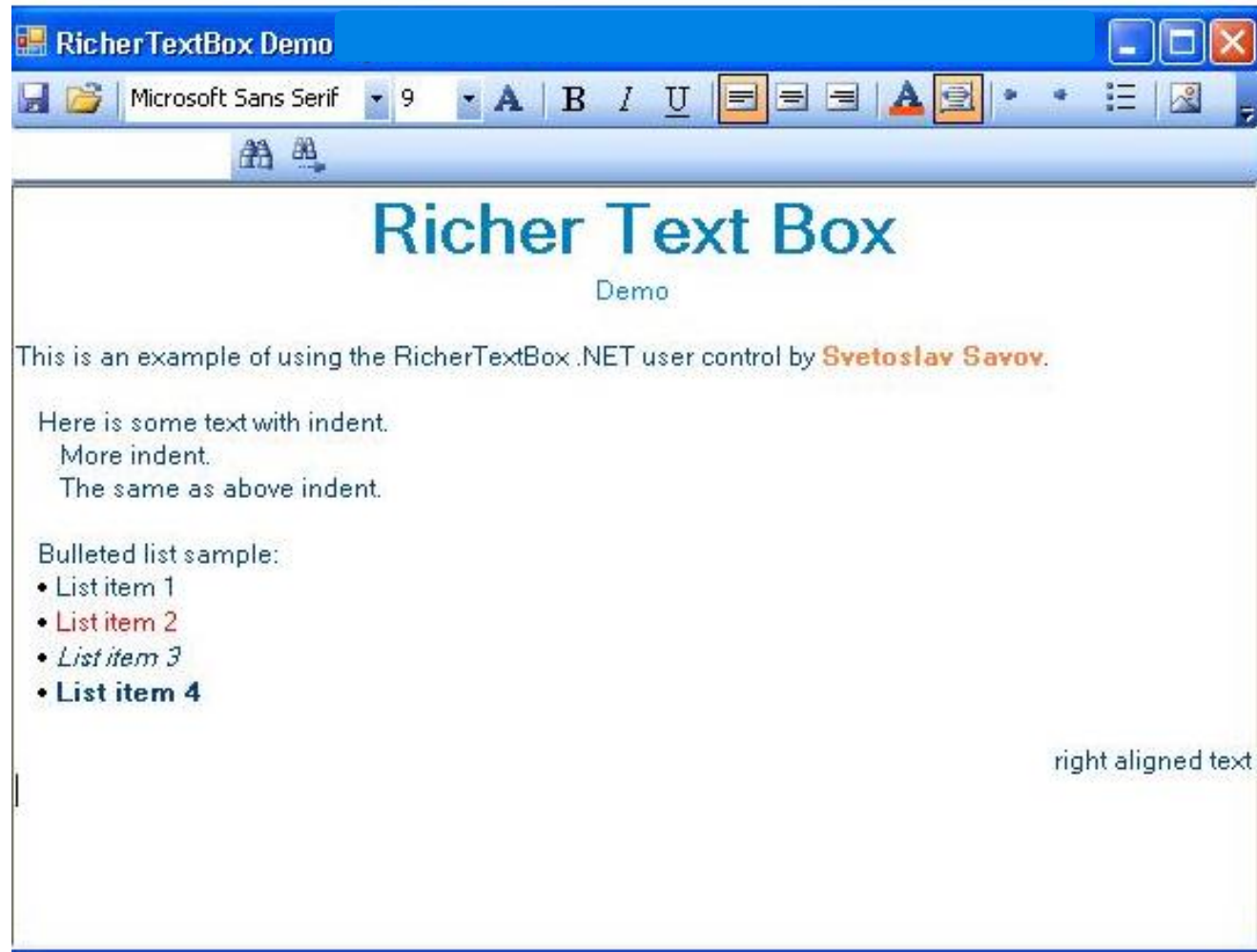
RichTextBox Properties

Name	Description
SelectedText	This property can be used to get / set selected text. All formatting will be lost in this.
SelectedRtf	This property can be used to get / set selected text. All formatting will be retained.
SelectionFont	Allows to change font of the selected text.
SelectionColor	Allows to change the color of the text in selection
DetectUrl	If true, then control detects urls in the text and format them (e.g. underline as in browser)

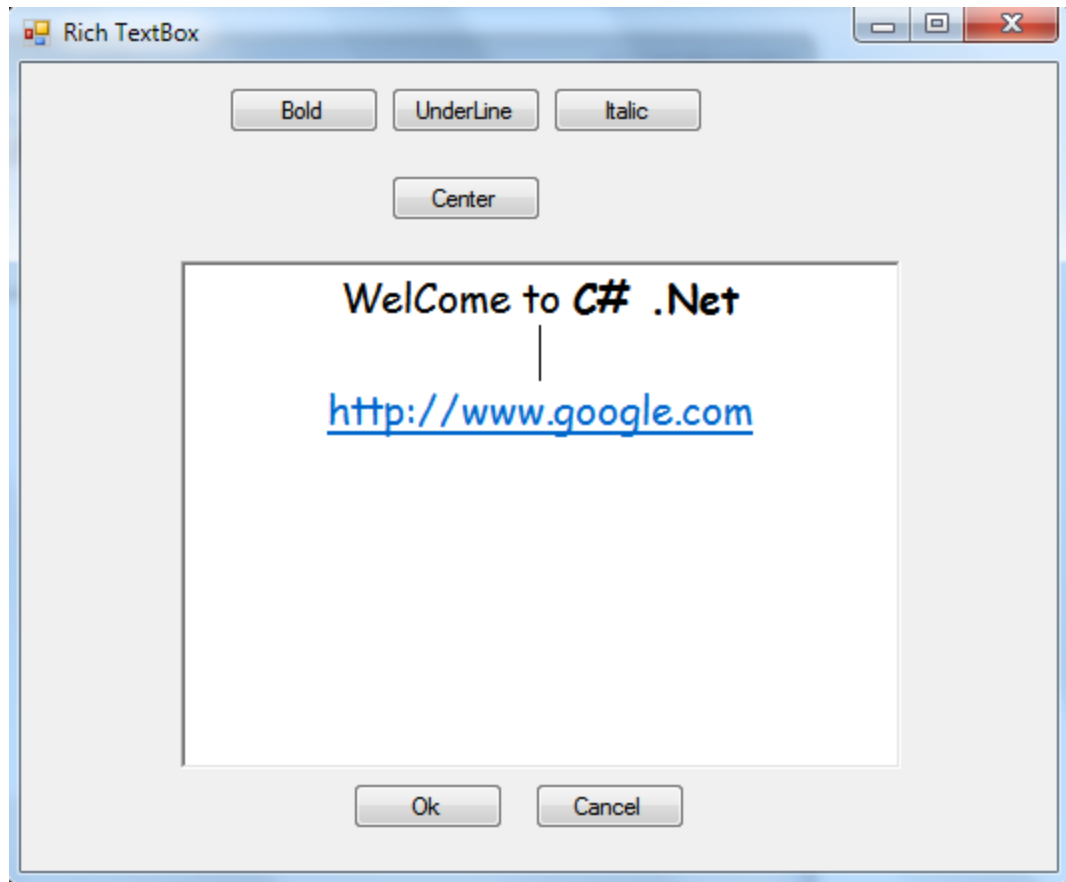
RichTextBox Events

Name	Description
LinkClicked	Event gets triggered when url from the text is clicked
Protected	Events get triggered when user tries to modify protected text.
SelectionChanged	Event gets triggered when text selection changes.

RichTextBox



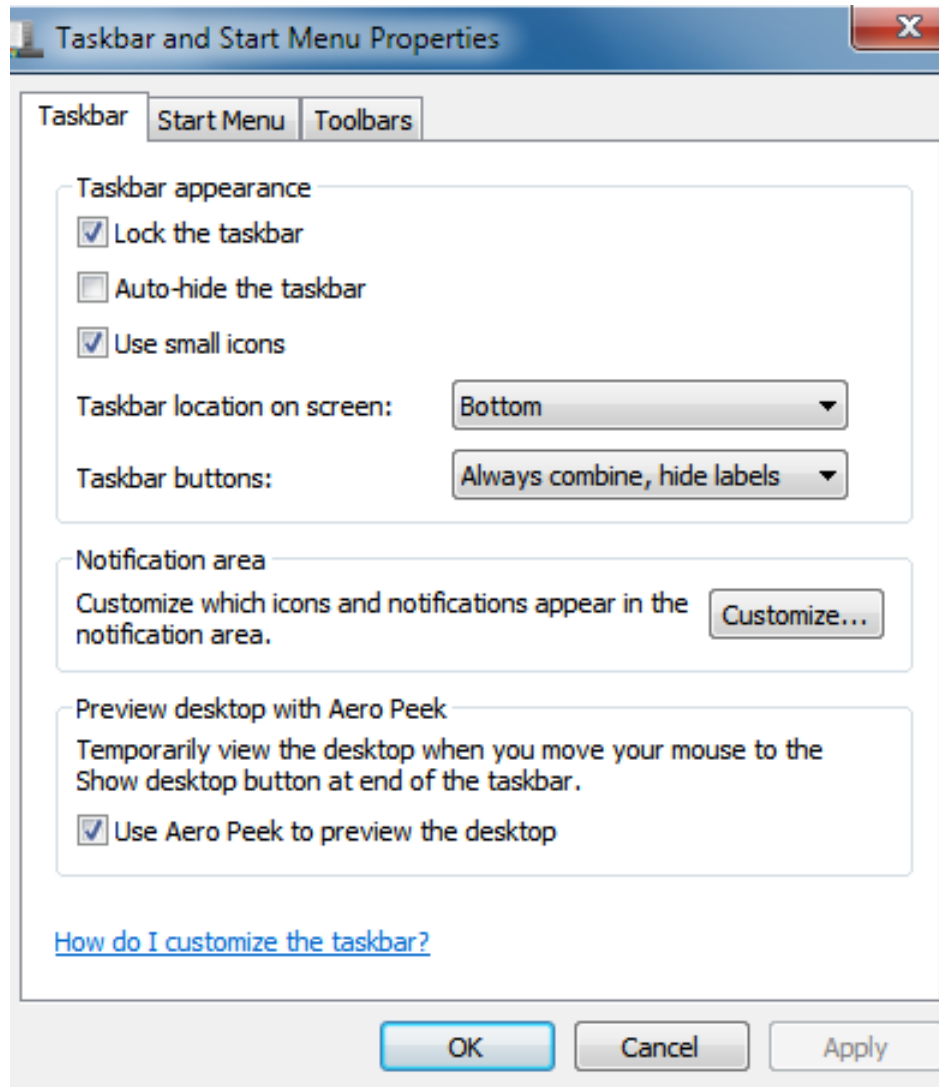
Demo



Tab Control - Container

- Easy way of organizing a dialog into logical parts
- TabControl contains TabPages
- TabPages group controls together

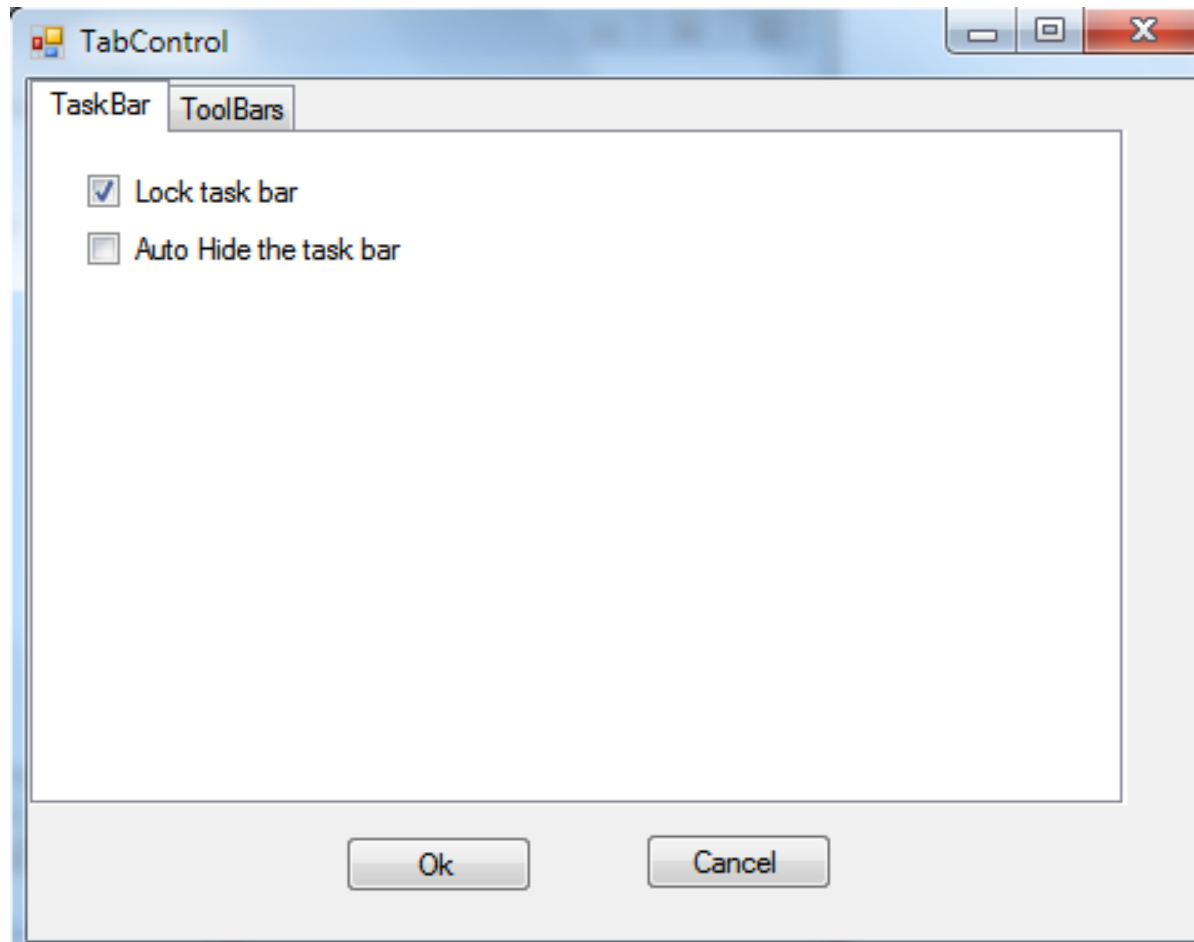
TabControl



TabControl Properties

Name	Description
Alignment	Decides where on the Tab Control the tabs are displayed. Default is Top.
Multiline	If true, several rows are possible.
SelectedIndex	Gets or Sets the index of selected tab.
SelectedTab	Returns the selected tab, or sets the selected tab.
TabCount	Returns the total number of count.
TabPage	Is a collection of TabPages objects. Using this collection one can Add / Remove TabPage objects

Demo



Summary

- **Label** and **LinkLabel** controls should be used to display information.
- **Button** control and its **Click** event is used to inform application to perform some action.
- **TextBox** and **RichTextBox** can be used for entering plain or formatted data.
- **CheckBox** can be used when more than choice can be made.
- Instead **RadioButton** must be used when to avail single choice out of available options.

Summary

- GroupBox to group contents on same form.
- TabControl, to group controls on different pages on the same form that user is able to select at will.

References

- Wikipedia
 - http://en.wikipedia.org/wiki/Rich_Text_Format
- Book referred “Beginning Visual C# 2010” by Wrox publication