

윈도우 모바일 GUI 프로그래밍 (C# 기반)

강대기

동서대학교 컴퓨터정보공학부

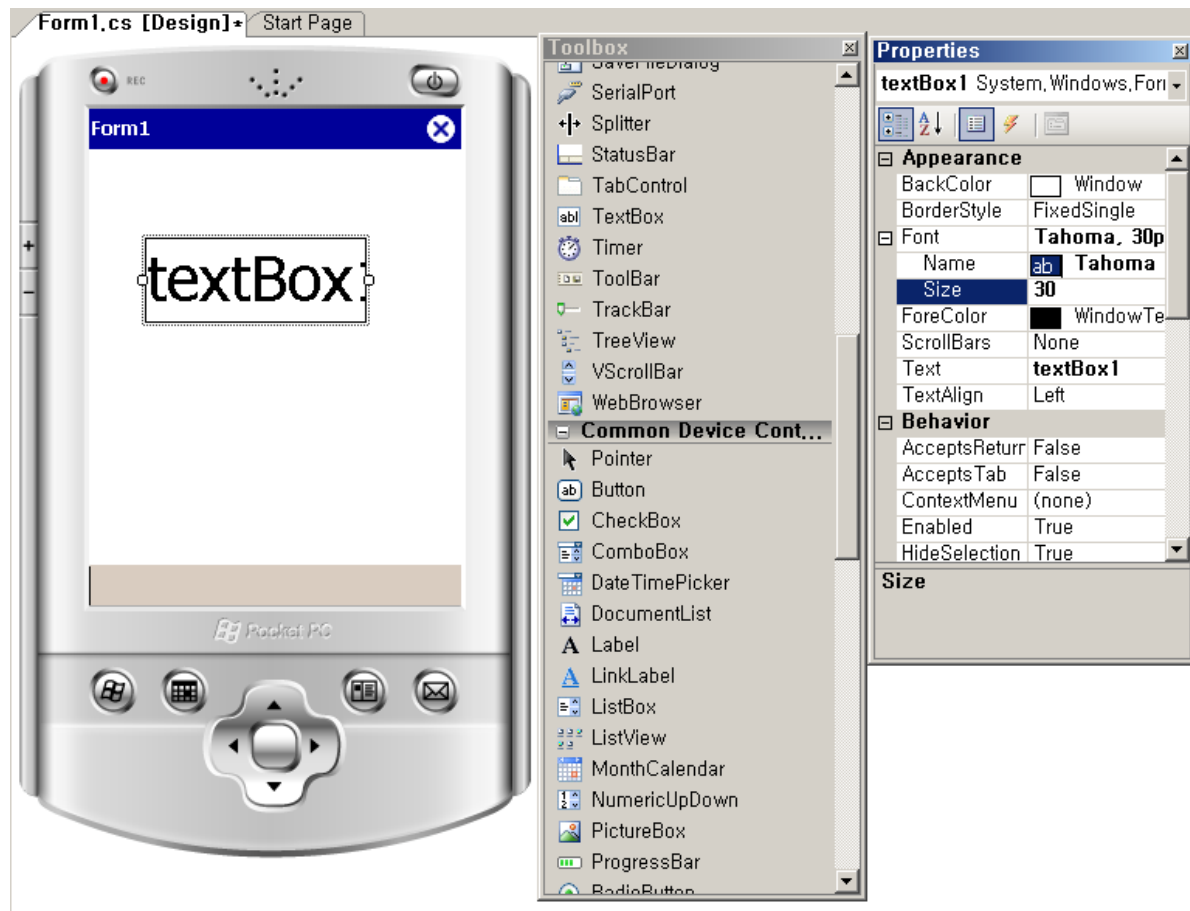
차례

- MessageBox.Show()
- TextBox, Label, Button
- CheckBox, RadioButton, ComboBox, ListBox
- 라디오박스 데모
- 콤보박스 데모
- DataGrid, ListView, TreeView, Timer, TrackBar
- 타이머 데모

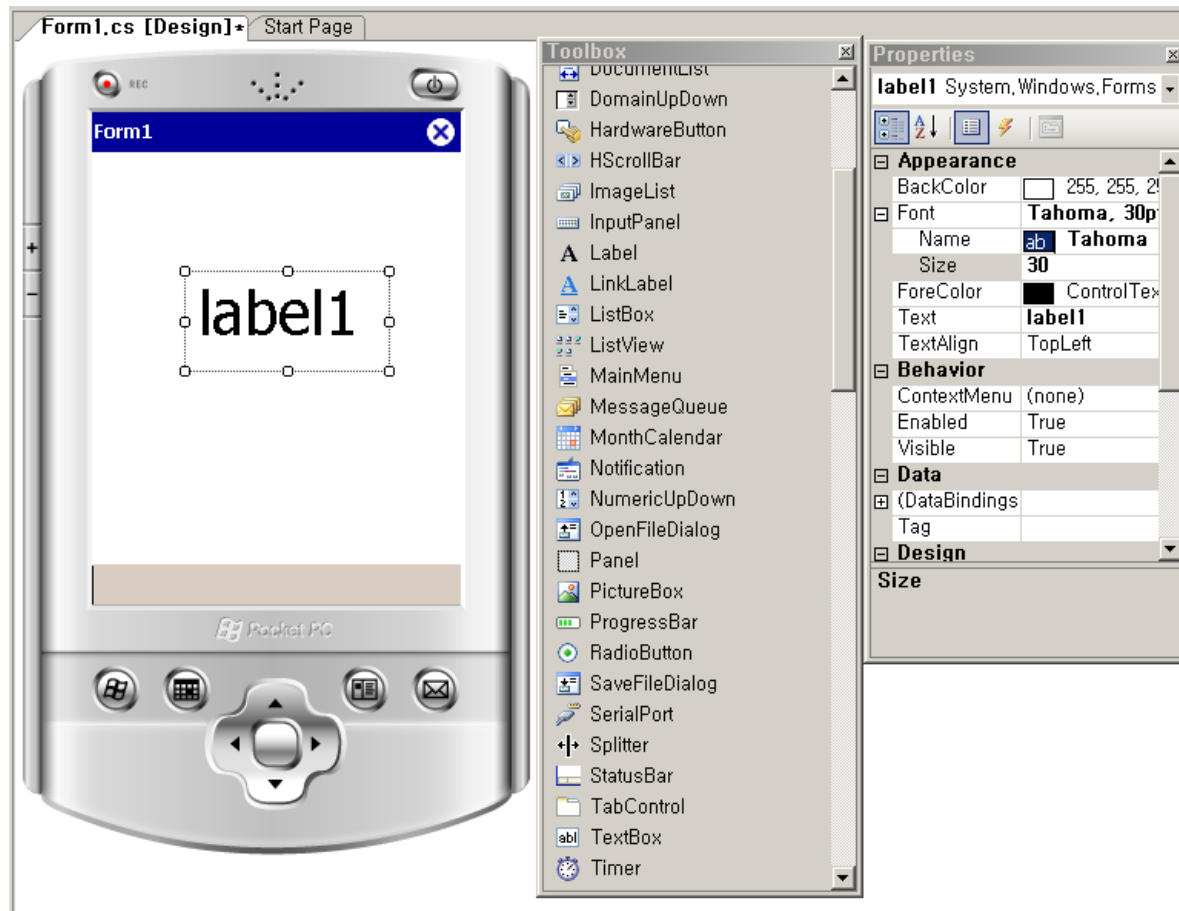
MessageBox.Show()

```
private void button1_Click(...)  
{  
    string str = "Hello, World";  
    MessageBox.Show(str);  
}
```

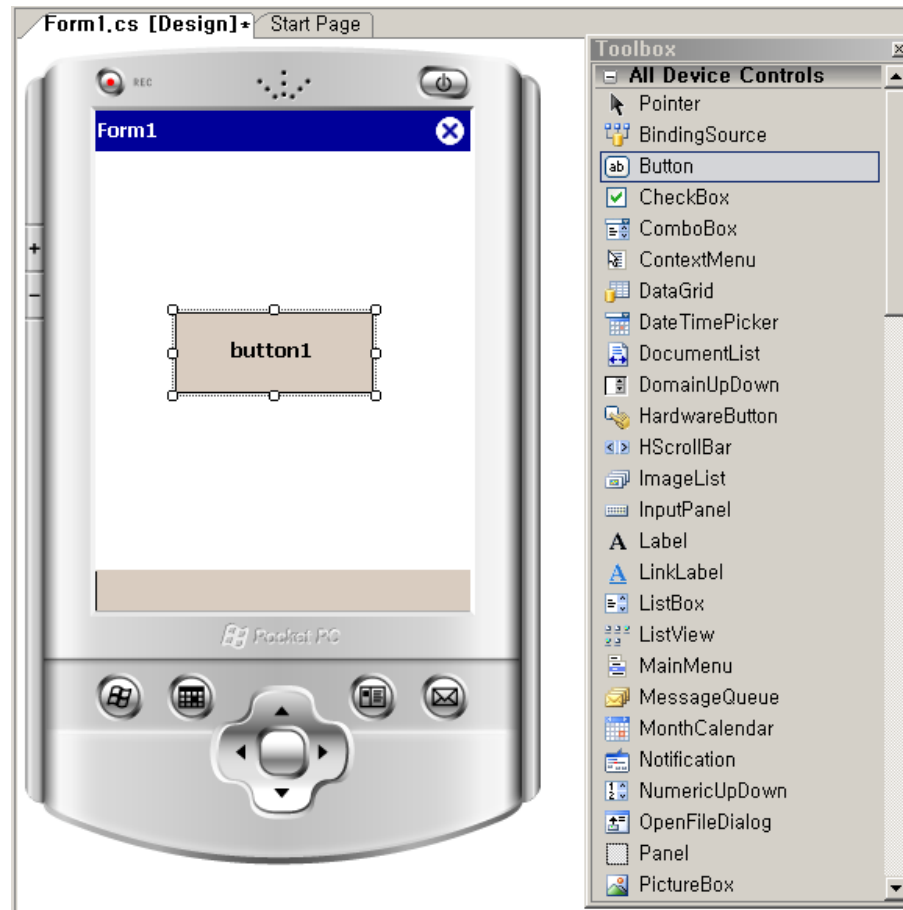
TextBox 컨트롤



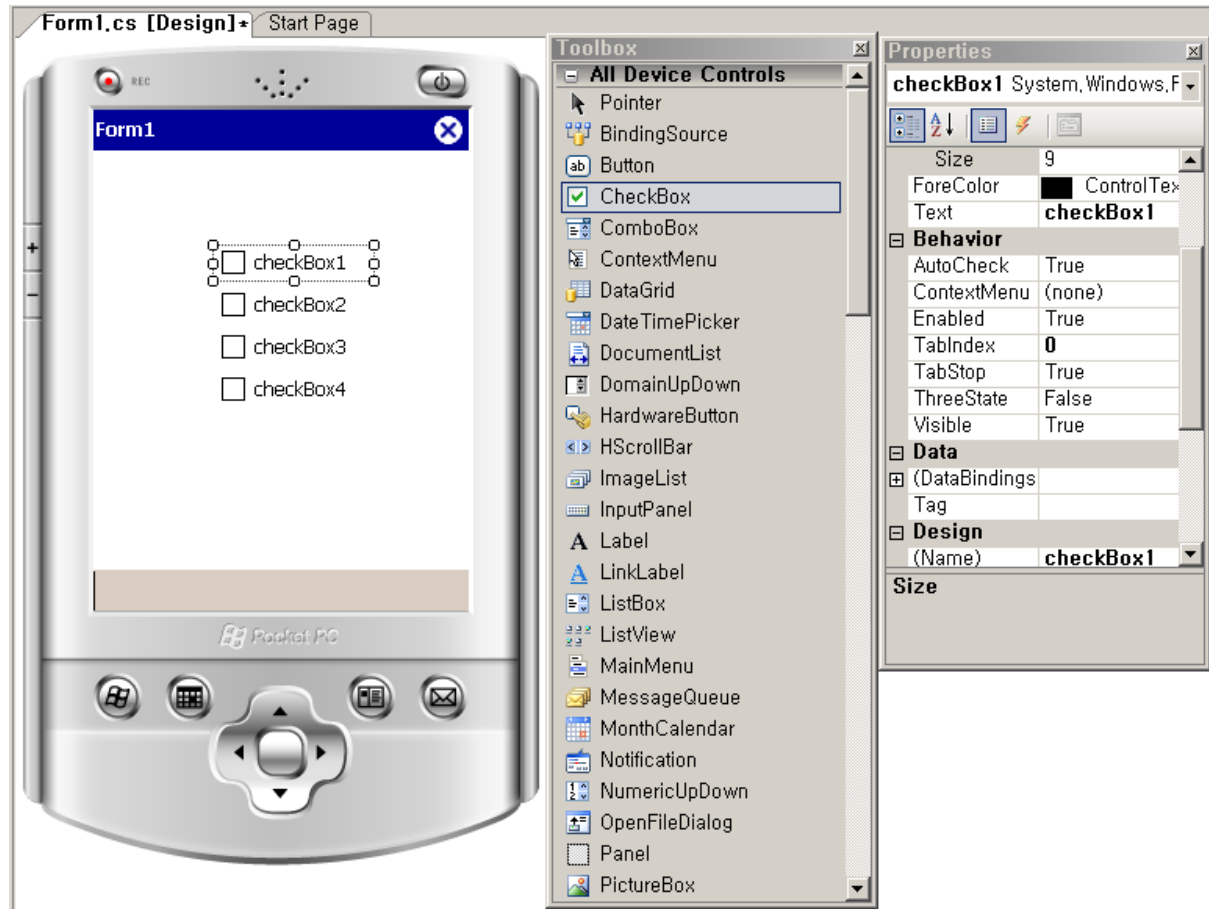
Label 컨트롤



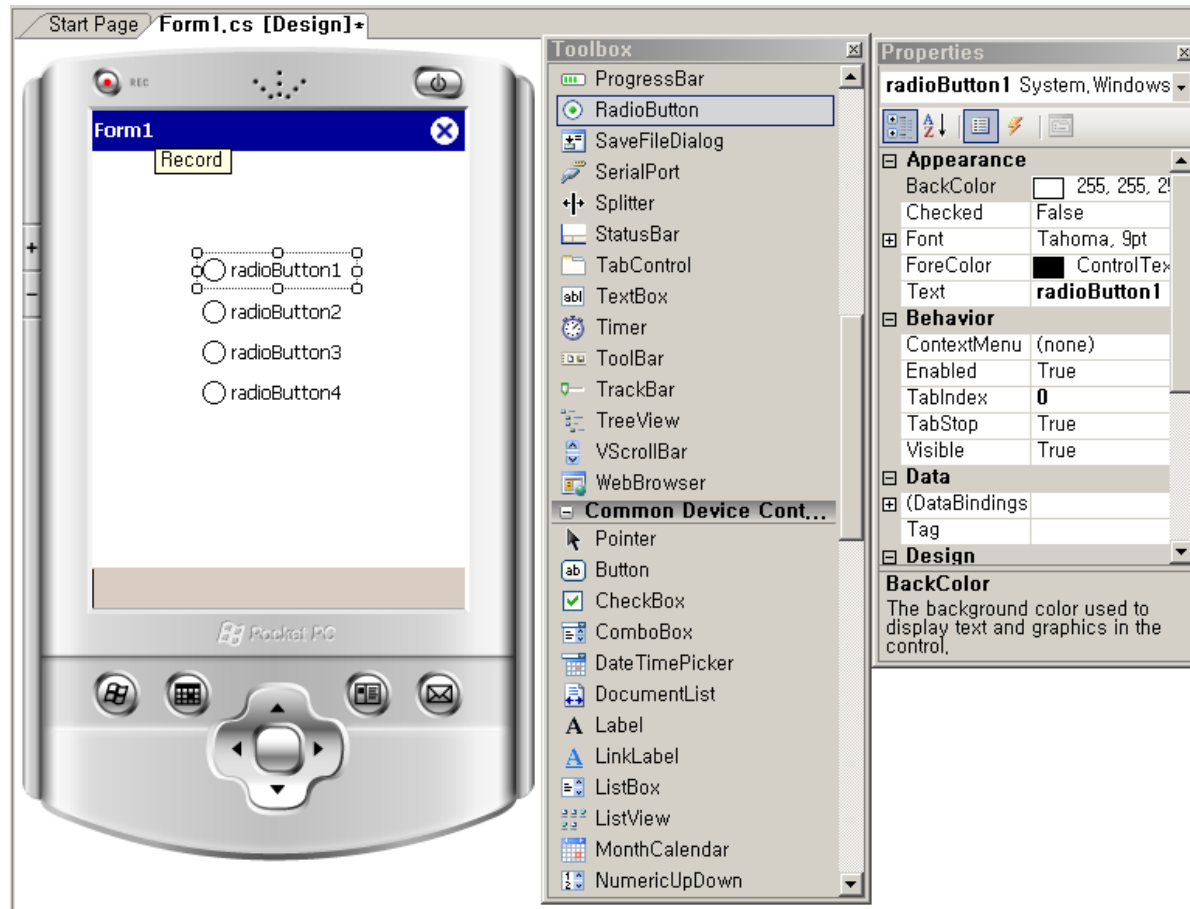
Button 컨트롤



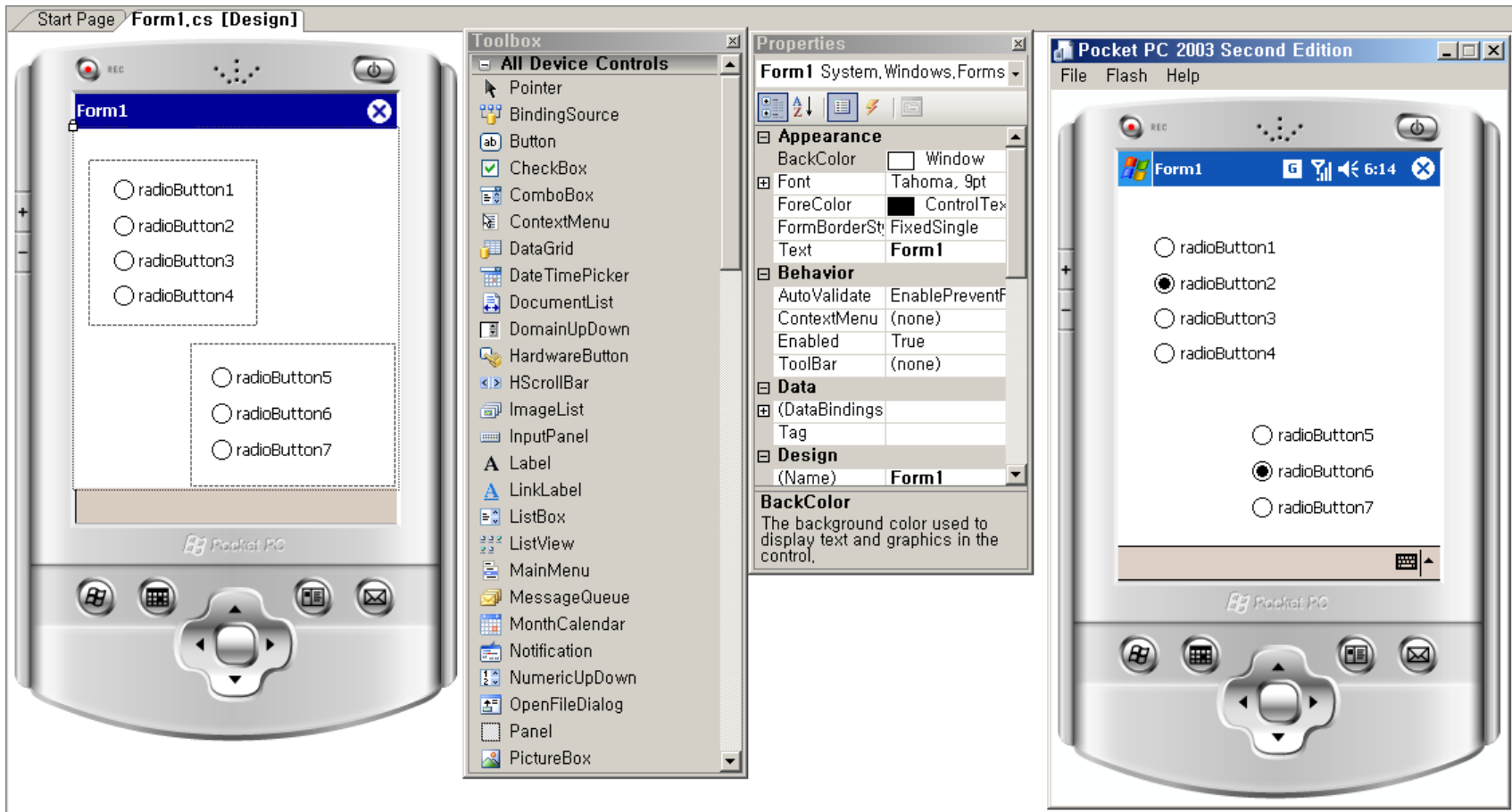
CheckBox 컨트롤



RadioButton 컨트롤



RadioButton 컨트롤과 Panel 컨트롤



RadioButton 컨트롤과 Panel 컨트롤

```
this.panel1 = new System.Windows.Forms.Panel();
this.panel2 = new System.Windows.Forms.Panel();
this.radioButton1 = new System.Windows.Forms.RadioButton();
this.radioButton2 = new System.Windows.Forms.RadioButton();
this.radioButton3 = new System.Windows.Forms.RadioButton();
this.radioButton4 = new System.Windows.Forms.RadioButton();
this.radioButton5 = new System.Windows.Forms.RadioButton();
this.radioButton6 = new System.Windows.Forms.RadioButton();
// panel1
this.panel1.Controls.Add(this.radioButton3);
this.panel1.Controls.Add(this.radioButton2);
this.panel1.Controls.Add(this.radioButton1);
// panel2
this.panel2.Controls.Add(this.radioButton6);
this.panel2.Controls.Add(this.radioButton5);
this.panel2.Controls.Add(this.radioButton4);
```

라디오박스 데모 - button1_Click

```
private void button1_Click(object sender, EventArgs e)
{
    this.label1.Text = "오늘은 ";
    if (this.radioButton1.Checked) this.label1.Text += "골라먹는 재미";
    else if (this.radioButton5.Checked) this.label1.Text += "먹고 또 먹고";
    else if (this.radioButton2.Checked) this.label1.Text += "우리식당";
    else this.label1.Text += "세계맥주";
    this.label1.Text += "에서 ";
    if (this.radioButton3.Checked) this.label1.Text += "김치찌개";
    else if (this.radioButton6.Checked) this.label1.Text += "된장찌개";
    else if (this.radioButton4.Checked) this.label1.Text += "삼겹살";
    else this.label1.Text += "비빔밥";
    this.label1.Text += " 먹고 ";
    if (this.radioButton9.Checked) this.label1.Text += "커피";
    else if (this.radioButton10.Checked) this.label1.Text += "녹차";
    else if (this.radioButton11.Checked) this.label1.Text += "요거트";
    else this.label1.Text += "팔빙수";
    this.label1.Text += " 마시자 ";
}
```

라디오박스 데모 - button2_Click (1)

```
private void button2_Click(object sender, EventArgs e) {
    this.label1.Text = "오늘은 ";
    Random r1 = new Random();
    int 음식점 = r1.Next(4);
    switch (음식점) {
        case 0: this.label1.Text += "골라먹는 재미"; this.radioButton1.Checked = true; break;
        case 1: this.label1.Text += "먹고 또 먹고"; this.radioButton5.Checked = true; break;
        case 2: this.label1.Text += "우리식당"; this.radioButton2.Checked = true; break;
        case 3: this.label1.Text += "세계맥주"; this.radioButton8.Checked = true; break;
    }
    this.label1.Text += "에서 ";
    int 음식 = r1.Next(4);
    switch (음식) {
        case 0: this.label1.Text += "김치찌개"; this.radioButton3.Checked = true; break;
        case 1: this.label1.Text += "된장찌개"; this.radioButton6.Checked = true; break;
        case 2: this.label1.Text += "삼겹살"; this.radioButton4.Checked = true; break;
        case 3: this.label1.Text += "비빔밥"; this.radioButton7.Checked = true; break;
    }
    this.label1.Text += " 먹고 ";
}
```

라디오박스 데모 - button2_Click (2)

```
int 음료수 = r1.Next(4);
switch (음료수) {
    case 0: this.label1.Text += "커피"; this.radioButton9.Checked = true; break;
    case 1: this.label1.Text += "녹차"; this.radioButton10.Checked = true; break;
    case 2: this.label1.Text += "요거트"; this.radioButton11.Checked = true; break;
    case 3: this.label1.Text += "팥빙수"; this.radioButton12.Checked = true; break;
}
this.label1.Text += " 마시자 ";
}
```

Microsoft Visual Studio interface showing a mobile application design for a restaurant menu. The application is titled "HelloMessageBox" and is running on a simulated mobile device.

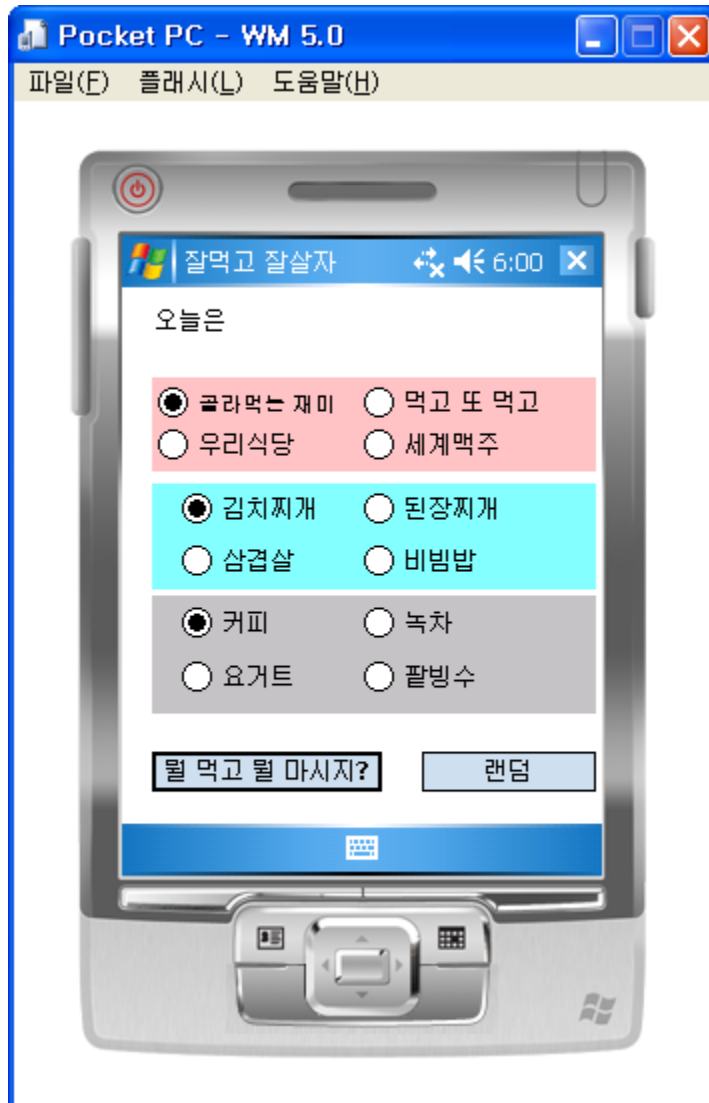
The application screen displays a menu titled "잘먹고 잘살자" (Eat well, live well). The menu items are organized into sections:

- 오늘은 (Today):
 - 콜라먹는 재미 (Fun of drinking cola) / 먹고 또 먹고 (Eat and eat again)
 - 우리식당 (Our restaurant) / 세계맥주 (World beer)
- 김치찌개 (Kimchi stew) / 된장찌개 (Doenjang stew)
- 삼겹살 (Bulgog) / 비빔밥 (Bibimbab)
- 커피 (Coffee) / 녹차 (Green tea)
- 요거트 (Yogurt) / 꿀빙수 (Honey bingsu)

Buttons at the bottom of the screen include "말먹고 말 마시지" (Don't eat and don't drink) and "랜덤" (Random).

The Visual Studio interface includes the following components:

- Toolbox (도구 상자):** Lists various Windows Forms controls such as NumericUpDown, OpenFileDialog, Panel, PictureBox, ProgressBar, RadioButton, SaveFileDialog, SerialPort, Splitter, StatusBar, TabControl, TextBox, Timer, Toolbar, TrackBar, TreeView, VScrollBar, WebBrowser, and a section for "공용 장치 컨트롤" (Common Device Controls) including "포인터" (Pointer) and "Button".
- 속성 (Properties):** Shows the properties for the selected "hardwareButton1" control, including (Name) hardwareButton1, GenerateMemb True, and Modifiers Private.
- Output Window (출력):** Shows the output of the application, currently displaying "준비" (Ready).



ComboBox 컨트롤

The image displays the Visual Studio development environment for a Pocket PC application. The main window shows the design view of a form named 'Form1'. The form is a Pocket PC device with a screen and a navigation pad. A ComboBox control is placed on the screen, displaying a list of items: Menu 1, Menu 2, Menu 3, Menu 4, and Menu 5.

The **Toolbox** window shows the 'All Device Controls' category, with the ComboBox control selected. The **Properties** window shows the properties for the selected ComboBox control:

Property	Value
ContextMenu	(none)
Enabled	True
TabIndex	0
TabStop	True
Visible	True
Data	
(DataBindings)	
DataSource	
DisplayMemb	(none)
Items	(Collection)
Tag	
ValueMember	
Design	
(Name)	comboBox1
GenerateMem	True
Locked	False

The **String Collection Editor** window is open, showing the list of strings for the ComboBox:

```
Enter the strings in the collection (one per line):  
Menu 1  
Menu 2  
Menu 3  
Menu 4  
Menu 5
```

The **Items** property of the ComboBox is described as: "The items in the combo box."

ComboBox 컨트롤

```
this.comboBox1 = new  
    System.Windows.Forms.ComboBox();  
this.comboBox1.Items.Add("Menu 1");  
this.comboBox1.Items.Add("Menu 2");  
this.comboBox1.Items.Add("Menu 3");  
this.comboBox1.Items.Add("Menu 4");  
this.comboBox1.Items.Add("Menu 5");
```

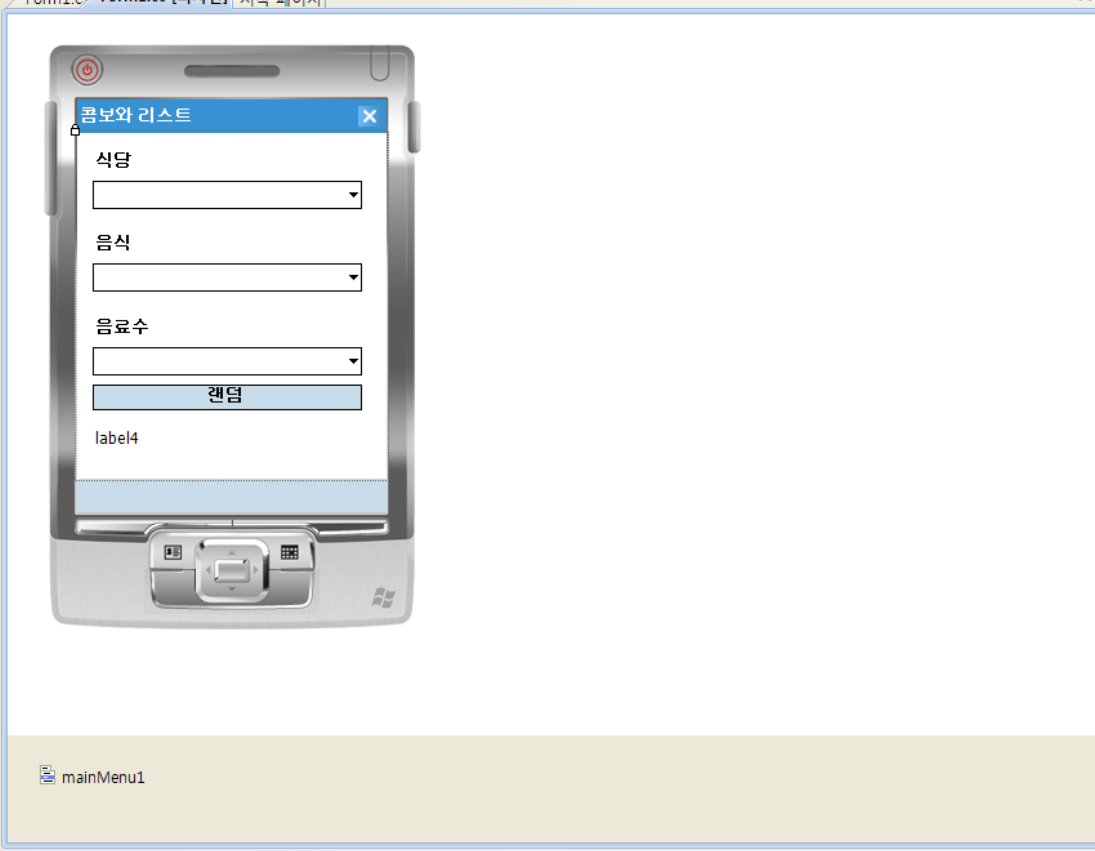
콤보박스 데모

```
private void Form1_Load(object sender, EventArgs e)
{
    this.comboBox1.SelectedIndex = 0;
    this.comboBox2.SelectedIndex = 0;
    this.comboBox3.SelectedIndex = 0;
}
```

```
private void button1_Click(object sender, EventArgs e)
{
    Random r = new Random();
    this.comboBox1.SelectedIndex = r.Next(this.comboBox1.Items.Count);
    this.comboBox2.SelectedIndex = r.Next(this.comboBox2.Items.Count);
    this.comboBox3.SelectedIndex = r.Next(this.comboBox3.Items.Count);
}
```

솔루션 탐색기 - ComboB...

- 솔루션 'ComboBoxApp' (1 프로...
- ComboBoxApp
 - Properties
 - 참조
 - Form1.cs
 - Form1.Designer.cs
 - Form1.resx
 - Program.cs



도구 상자

모든 장치 컨트롤

- 포인터
- BindingSource
- Button
- CheckBox
- ComboBox
- ContextMenu
- DataGrid
- DataSet
- DateTimePicker
- DocumentList
- DomainUpDown
- HardwareButton
- HScrollBar
- ImageList
- InputPanel
- Label
- LinkLabel
- ListBox
- ListView
- MainMenu

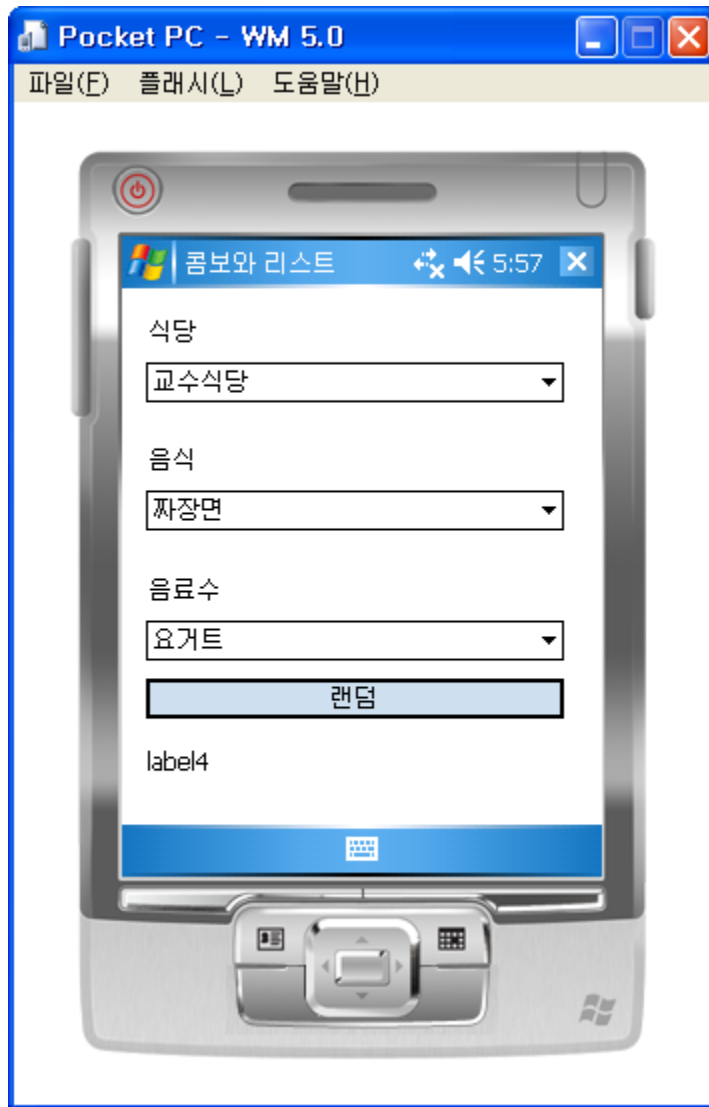
속성

Form1 System.Windows.Forms.For...

- Skin True
- 레이아웃
 - AutoScaleMode Dpi
 - AutoScroll True
 - AutoScrollMarg 0, 0
 - Location 0, 26
 - Size 240, 268
 - WindowState Normal
- 모양
 - BackColor Window
 - Font Tahoma, 9pt
 - ForeColor ControlText
 - FormBorderStyle FixedSingle
 - Text 콤보와 리스트
- 창 스타일
 - ControlBox True
- Text
 - 컨트롤에 포함된 텍스트입니다.

출력 보기 선택(S): 빌드

----- 배포 시작: 프로젝트: ComboBoxApp, 구성: Debug Any CPU -----
 'C:\Documents and Settings\student\My Documents\Visual Studio 2008\Projects\ComboBoxApp\ComboBoxApp\bin\Debug\ComboBoxApp.exe'을(를) 배포하고 있습니다...
 ===== 배포: 성공 1, 실패 0, 생략 0 =====



Listbox 컨트롤

The image shows a screenshot of the Visual Studio IDE in Design mode for a mobile application. The main window displays a mobile device simulator with a list box containing the following text items:

- 모바일 프로그래밍
- 프로그래밍 언어
- 객체지향 프로그래밍
- 고급 객체지향 프로그래밍
- 알고리즘

The **Toolbox** window is open, showing the **All Device Controls** category. The **ListBox** control is selected and highlighted.

The **Properties** window is also open, showing the properties for the selected **listBox1** control. The **Appearance** section is expanded, showing the **BackColor** property set to **Window**. The **Behavior** section shows **Enabled** is **True** and **Visible** is **True**. The **Data** section shows **Items** as a **(Collection)**.

Section	Property	Value
Appearance	BackColor	Window
	Font	Tahoma, 9pt
	ForeColor	WindowTe
Behavior	ContextMenu	(none)
	Enabled	True
	TabIndex	0
	TabStop	True
Data	(DataBindings)	
	DataSource	
	DisplayMemb	(none)
	Items	(Collection)

DataGrid 컨트롤

The screenshot displays the Visual Studio IDE with a Windows Forms application in design mode. The main window shows a form titled 'Form1' with a DataGrid control. The 'Toolbox' on the left lists various controls, with 'DataGrid' selected. The 'Properties' window on the right shows the properties for the selected 'dataGrid1' control. Below the main window, two dialog boxes are open: 'DataGridTableStyle Collection Editor' and 'DataGridColumnStyle Collection Editor'.

Form1.cs+ Form1.Designer.cs+ Form1.cs [Design]+

Toolbox

- All Device Controls
- Pointer
- BindingSource
- Button
- CheckBox
- ComboBox
- ContextMenu
- DataGrid
- DateTimePicker
- DocumentList
- DomainUpDown
- HardwareButton
- HScrollBar
- ImageList
- InputPanel
- Label
- LinkLabel
- ListBox
- ListView

Properties

dataGrid1 System, Windows, Forms, DataGrid

- TabStop: True
- Visible: True
- Colors**
 - BackColor: Window
 - BackgroundColor: 128, 128, 128
 - ForeColor: WindowText
 - GridLineColor: Control
 - HeaderBackColor: Control
 - HeaderForeColor: ControlText
 - SelectionBackColor: ActiveCaption
 - SelectionForeColor: ActiveCaptionText
- Data**
 - (DataBindings):
 - DataSource:
 - TableStyles: (Collection)
 - Tag:
- Design**
 - (Name): dataGrid1
 - GenerateMember: True
 - Locked: False

DataGridTableStyle Collection Editor

Members:

- 0 dataGridTableStyle1

dataGridTableStyle1 properties:

- Design**
 - (Name): dataGridTableStyle1
 - GenerateMember: True
 - Modifiers: Private
- Misc**
 - GridColumnStyles: (Collection)
 - MappingName:

DataGridColumnStyle Collection Editor

Members:

- 0 dataGridTextBoxColumn1
- 1 dataGridTextBoxColumn2
- 2 dataGridTextBoxColumn3

dataGridTextBoxColumn1 properties:

- Design**
 - (Name): dataGridTextBoxColumn1
 - GenerateMember: True
 - Modifiers: Private
- Display**
 - HeaderText: 헤더 1
 - NullText: 없다
- Layout**
 - Width: 50
- Misc**
 - MappingName:

DataGrid 컨트롤과 DataTable 클래스

- DataGridView 컨트롤 객체를 만들고
 - DataTable 클래스 객체를 만든 후
 - DataGridView 컨트롤 객체의 DataSource에 연결
-
- `DataTable dt = new DataTable();`
 - `datagrid1.DataSource = dt;`

Listview 컨트롤

The screenshot displays the Visual Studio .NET IDE with a mobile device form named 'Form1' in design view. The form contains a Listview control with two columns and two rows of text: '1번이요~' and '2번이요'. The 'Toolbox' window shows the 'All Device Controls' category, with 'ListView' selected. The 'Properties' window shows the properties for 'listView1', including 'Appearance', 'Behavior', and 'Data' sections. The 'View' property is set to 'Details'.

Form1.cs [Design]*

Toolbox

- All Device Controls
 - Pointer
 - BindingSource
 - Button
 - CheckBox
 - ComboBox
 - ContextMenu
 - DataGrid
 - DateTimePicker
 - DocumentList
 - DomainUpDown
 - HardwareButton
 - HScrollBar
 - ImageList
 - InputPanel
 - Label
 - LinkLabel
 - ListBox
 - ListView**
 - MainMenu
 - MessageQueue
 - MonthCalendar
 - Notification
 - NumericUpDown
 - OpenFileDialog
 - Panel
 - PictureBox

Properties

listView1 System, Windows, Forms, ListView

Appearance

BackColor	Window
CheckBoxes	False
Font	Tahoma, 9pt
ForeColor	WindowText
FullRowSelect	True

View Details

Behavior

Activation	Standard
Columns	(Collection)
ContextMenu	(none)
Enabled	True
HeaderStyle	Clickable
Items	(Collection)
LargeImageList	(none)
SmallImageList	(none)
TabIndex	0
TabStop	True
Visible	True

Data

(DataBindings)

View

Selects one of five different views that items can be shown in,

TreeView 컨트롤

The screenshot displays the Visual Studio IDE with a Windows Forms application named 'Form1.cs [Design]*'. The main design area shows a 'Pocket PC' form with a 'Form1' window. The 'Toolbox' on the left lists various controls, with 'TreeView' selected. The 'Properties' window on the right shows the properties for the selected 'treeView1' control.

Properties window for treeView1:

- Appearance**
 - CheckBoxes: False
 - Font: Tahoma, 9pt
 - ForeColor: WindowText
- Behavior**
 - ContextMenu: (none)
 - Enabled: True
 - ImageIndex: (none)
 - ImageList: (none)
 - Indent: 19
 - Nodes: (Collection)
 - PathSeparator: (none)
 - SelectedImageIndex: (none)
 - ShowLines: True
 - ShowPlusMinus: True
 - ShowRootLines: True
 - TabIndex: 0
 - TabStop: True
 - Visible: True
- Data**
 - (DataBindings)
- Nodes**

The 'TreeNode Editor' dialog is open, showing a tree structure with 'Node0' as the root and 'Node1', 'Node2', 'Node3', and 'Node4' as children. The 'Node0 Properties' window is also open, showing the following properties:

Node0 Properties:

- Appearance**
 - BackColor: (default)
 - ForeColor: (default)
 - Text: Node0
- Behavior**
 - Checked: False
 - ImageIndex: (default)
- Text**
 - The text displayed in the label of the tree node.

Buttons for 'Add Root', 'Add Child', 'Delete', 'OK', and 'Cancel' are visible in the dialog.

Timer 컨트롤

The screenshot displays the Visual Studio IDE with a mobile form named 'Form1' on the left. The form contains a text box with the text 'Hello'. The 'Toolbox' is open, showing various controls. The 'Timer' control is highlighted under the 'Device Dialogs' category. The 'Properties' window is also open, showing the properties for the selected text box.

Toolbox

- Panel
- TabControl
- Device Menus & Tool...
- Pointer
- ContextMenu
- MainMenu
- StatusBar
- ToolBar
- Device Data
- Pointer
- BindingSource
- DataGrid
- Device Components
- Pointer
- HardwareButton
- ImageList
- InputPanel
- MessageQueue
- Notification
- SerialPort
- Timer
- Device Dialogs
- Pointer
- OpenFileDialog
- SaveFileDialog
- General

Properties

textBox1 System, Windows, Forms, TextBox

Property	Value
BackColor	Window
BorderStyle	FixedSingle
Font	Tahoma, 9pt
ForeColor	WindowText
ScrollBars	None
Text	Hello
TextAlign	Left
AcceptsReturn	False
AcceptsTab	False
ContextMenu	(none)
Enabled	True
HideSelection	True
MaxLength	32767
Multiline	False
PasswordChar	
ReadOnly	False
TabIndex	0
TabStop	True
Visible	True

Text
The text contained in the control.

타이머 데모

```
private int index;
public Form1() { InitializeComponent(); this.index = 0; this.timer1.Enabled = true; }
private void timer1_Tick(object sender, EventArgs e) {
    this.index++;
    if (this.index == 5) this.index = 0;
    ShowImage();
}
private void ShowImage() {
    switch (this.index) {
        case 0: this.label1.Text = "당신의 장래의 남편은 종현"; this.pictureBox1.BringToFront(); break;
        case 1: this.label1.Text = "당신의 장래의 남편은 Key"; this.pictureBox2.BringToFront(); break;
        case 2: this.label1.Text = "당신의 장래의 남편은 민호"; this.pictureBox3.BringToFront(); break;
        case 3: this.label1.Text = "당신의 장래의 남편은 온유"; this.pictureBox4.BringToFront(); break;
        case 4: this.label1.Text = "당신의 장래의 남편은 태민"; this.pictureBox5.BringToFront(); break;
    }
}
private void button1_Click(object sender, EventArgs e) {
    if (this.timer1.Enabled) this.timer1.Enabled = false; else this.timer1.Enabled = true;
}
```

TimerApp - Microsoft Visual Studio

파일(F) 편집(E) 보기(V) 프로젝트(P) 빌드(B) 디버그(D) 데이터(A) 서식(O) 도구(T) 테스트(S) 분석(N) 창(W) 도움말(H)

Debug Any CPU

KOR Windows Mobile 5,0 Pocket PC

솔루션 탐색기 - TimerApp

- TimerApp
 - Properties
 - AssemblyInfo.cs
 - Resources.resx
 - 참조
 - Form1.cs
 - Form1.Designer.cs
 - Form1.resx
 - Program.cs

Form1.cs [디자인] 시작 페이지

이름: 이상형

당신의 장래의 남편은?

둘러둘러

mainMenu1 timer1

도구 상자

- Notification
- NumericUpDown
- OpenFileDialog
- Panel
- PictureBox
- ProgressBar
- RadioButton
- SaveFileDialog
- SerialPort
- Splitter
- StatusBar
- TabControl
- TextBox
- Timer
- ToolBar
- TrackBar
- TreeView
- VScrollBar
- WebBrowser
- 공용 장치 컨트롤
 - 포인터

속성

Form1 System.Windows.Forms.Form

Skin	True
레이아웃	
AutoScaleMode	Dpi
AutoScroll	True
AutoScrollMarg	0, 0
Location	0, 26
Size	240, 268
WindowState	Normal
모양	
BackColor	Window
Font	Tahoma, 9pt
ForeColor	ControlText
FormBorderStyle	FixedSingle
Text	이상형
창 스타일	
ControlBox	True

Text

컨트롤에 포함된 텍스트입니다.

저장되었습니다.

54, 92 240 x 268



TrackBar 컨트롤

The screenshot displays the Visual Studio IDE with a Pocket PC form named 'Form1'. The form contains a 'label1' and a TrackBar control. The Toolbox on the left lists various controls, including 'TrackBar'. The Properties window on the right shows the configuration for the selected 'trackBar1' control.

Toolbox

- LinkLabel
- ListBox
- ListView
- MainMenu
- MessageQueue
- MonthCalendar
- Notification
- NumericUpDown
- OpenFileDialog
- Panel
- PictureBox
- ProgressBar
- RadioButton
- SaveFileDialog
- SerialPort
- Splitter
- StatusBar
- TabControl
- TextBox
- Timer
- ToolBar
- TrackBar
- TreeView
- VScrollBar
- WebBrowser
- Common Device Cont...
- Pointer

Properties

trackBar1 System, Windows, Forms, TrackBar

Appearance

BackColor	255, 255, 255
Orientation	Horizontal
SmallChange	1
TickFrequency	1
TickStyle	BottomRight

Behavior

ContextMenu	(none)
Enabled	True
LargeChange	5
Maximum	10
Minimum	0
TabIndex	0
TabStop	True
Value	0
Visible	True

Data

(DataBindings)	
Tag	

Design

(Name)	trackBar1
--------	-----------

Value

The position of the slider.

C#을 위한 참고서적들

- C# 입문
 - 오세만 등저 | 생능출판사
- C#과 닷넷 플랫폼 (제2판) : C# and the .NET Platform
 - Andrew Troelsen 저/장시형 역 | 지앤선(志&嬋)
- Effective C# : 강력한 C# 코드를 구현하는 개발지침 50가지
 - 빌 와그너 저/김명신 역 | 한빛미디어
- 윈도우 모바일 애플리케이션 개발 가이드
 - 앤디 위글리, 대니얼 모스, 피터 풋 공저/김홍중, 홍선숙 공역 | 에이콘출판사
- 찰스 페졸드의 WPF : C#과 XAML을 이용한 .NET 3.0 윈도우 프로그래밍양장
 - 찰스 페졸드 저/최세영, 황상철, 김인기, 신희철 공역 | 에이콘출판사
- Programming Microsoft Windows Forms : C#의 능률적인 활용
 - Charles Petzold 저/서우석 역 | 정보문화사
- C# 객체지향 언어로 배우는 디자인 패턴
 - 신재호 저/플라스틱소프트웨어 감수 | 정보문화사