長干行　～李白

妾髮初覆額，折花門前劇；
郎騎竹馬來，遶床弄青梅。
同居長干里，兩小無嫌猜。
十四為君婦，羞顏未嘗開；
低頭向暗壁，千喚不一回。
十五始展眉，願同塵與灰；
常存抱柱信，豈上望夫臺？

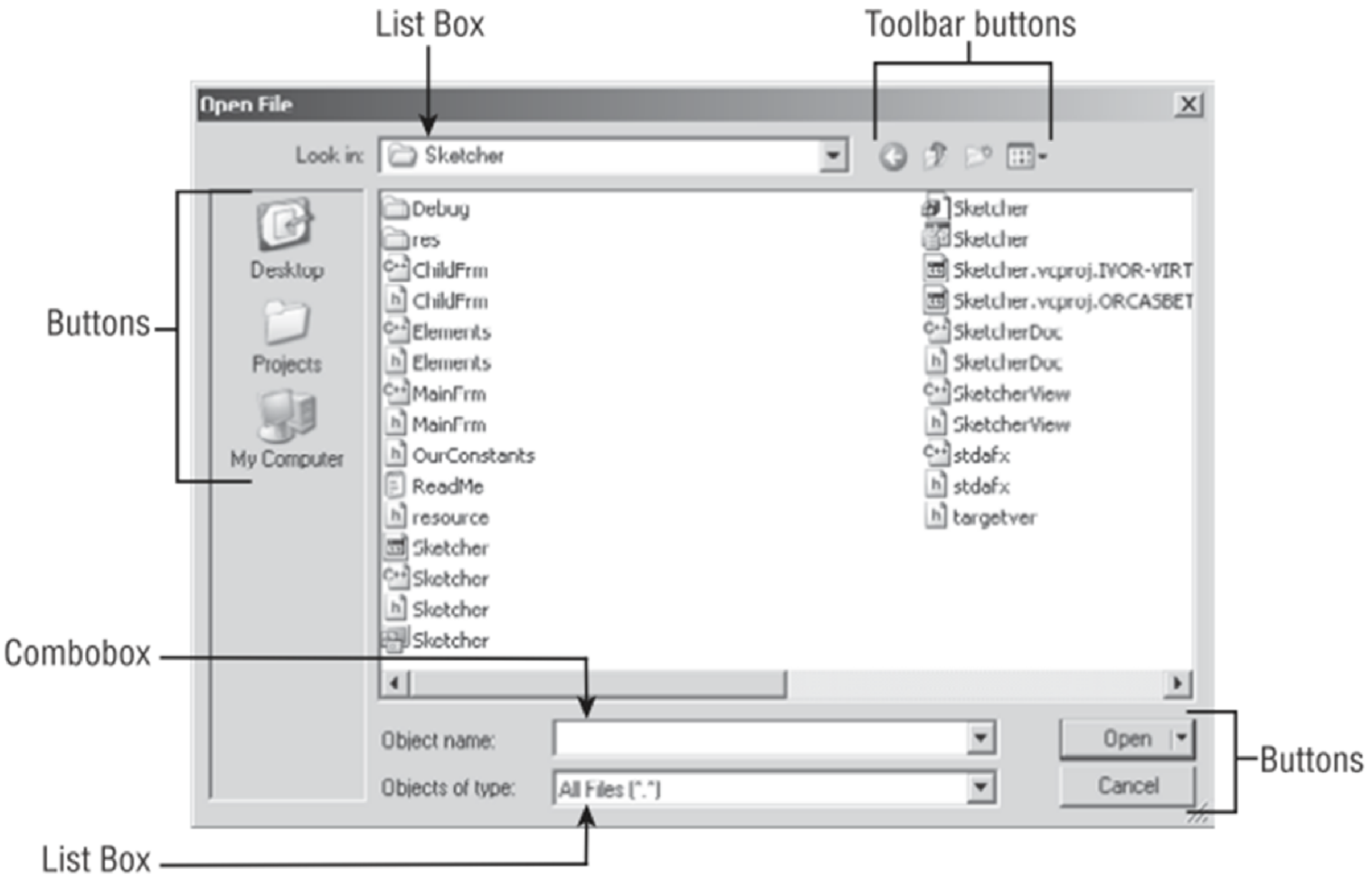
十六君遠行，瞿塘灩澦堆；
五月不可觸，猿鳴天上哀。
門前遲行跡，一一生綠苔；
苔深不能掃，落葉秋風早。
八月蝴蝶來，雙飛西園草；
感此傷妾心，坐愁紅顏老。
早晚下三巴，預將書報家；
相迎不道遠，直至長風沙。

Chapter 18

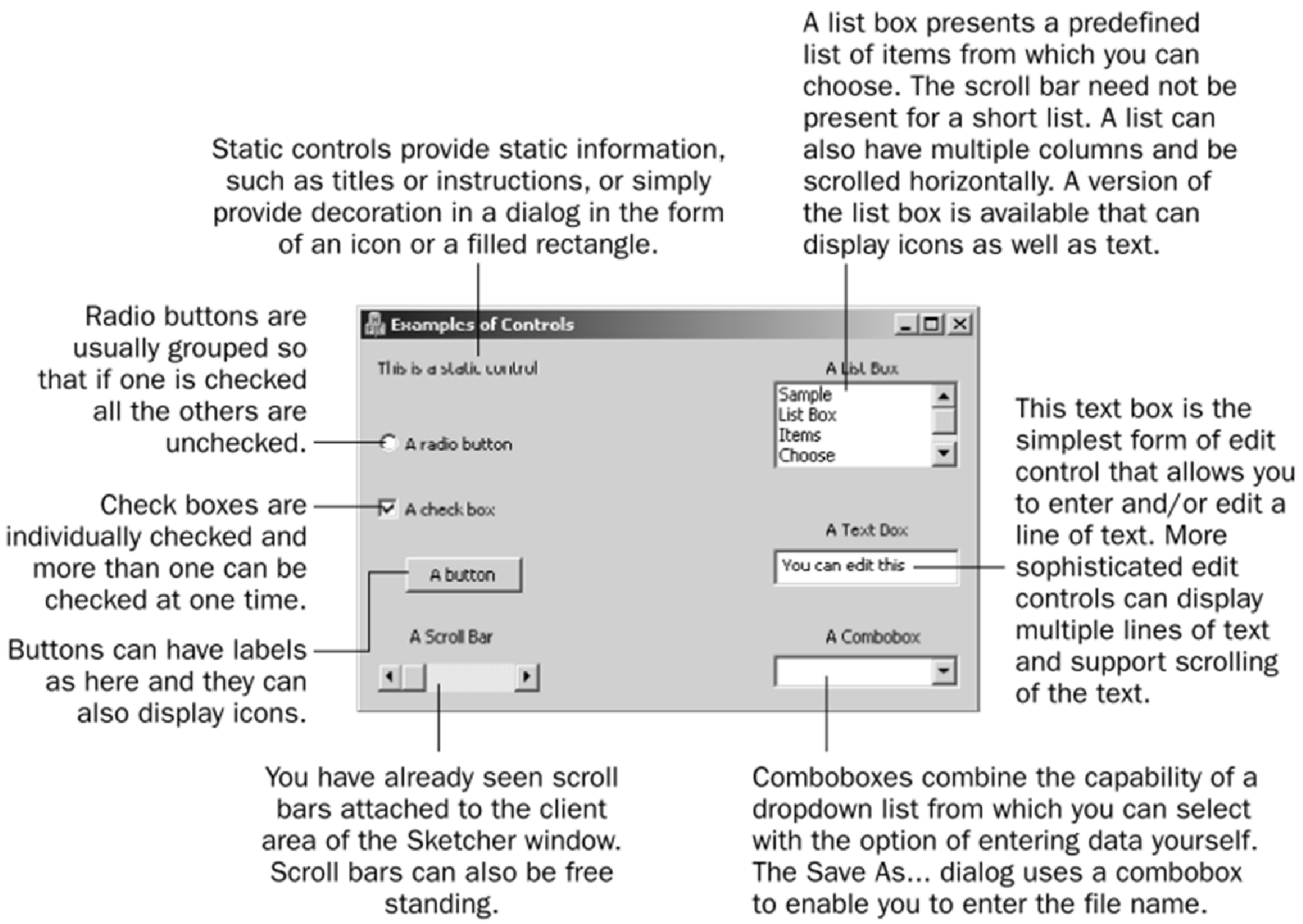
Working with Dialogs and Controls

Controls in a Dialog Box

File > Open > File



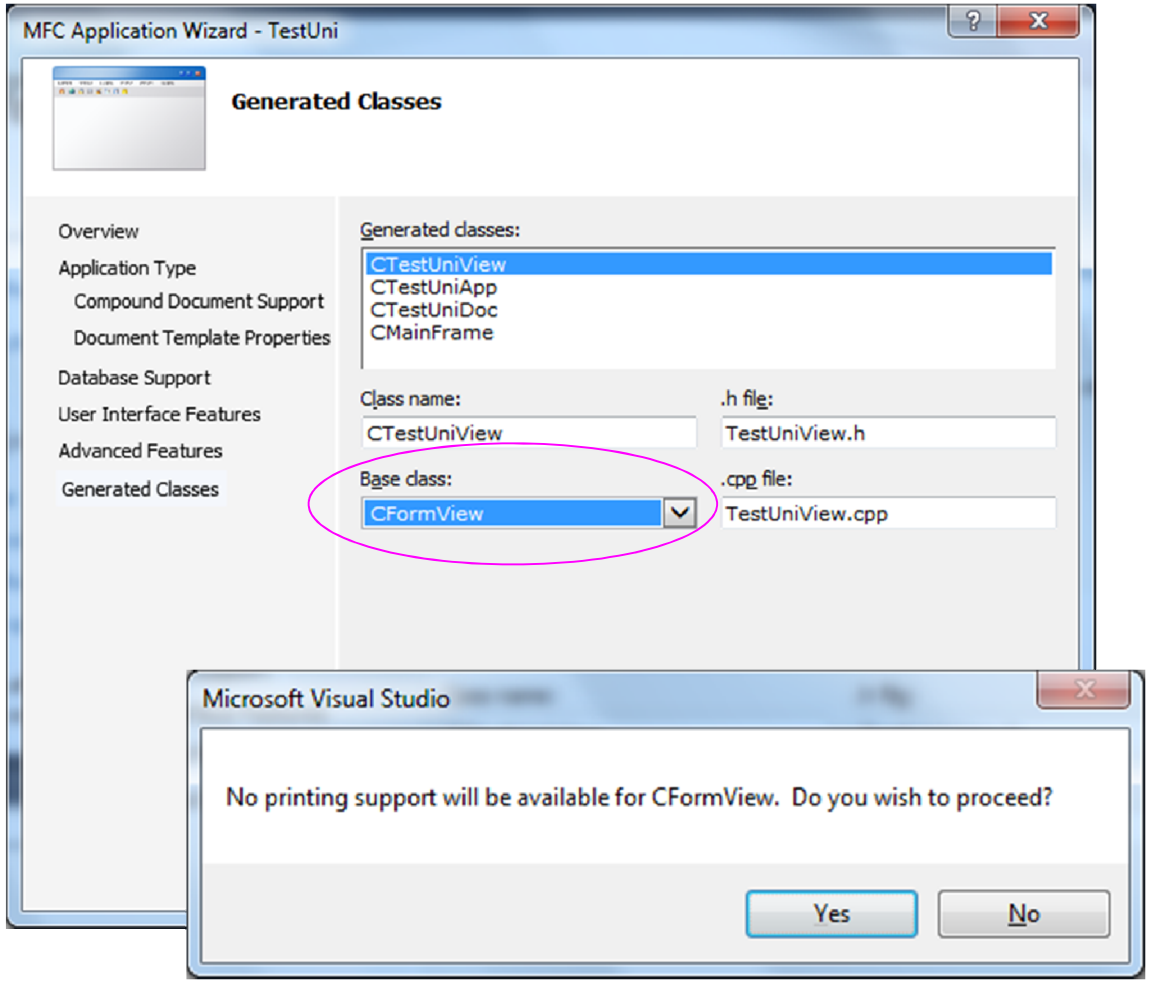
Common Controls (P.1060)



- Static Controls
- Button Controls
- Scrollbars
- List Boxes
- Edit Controls
- Combo boxes

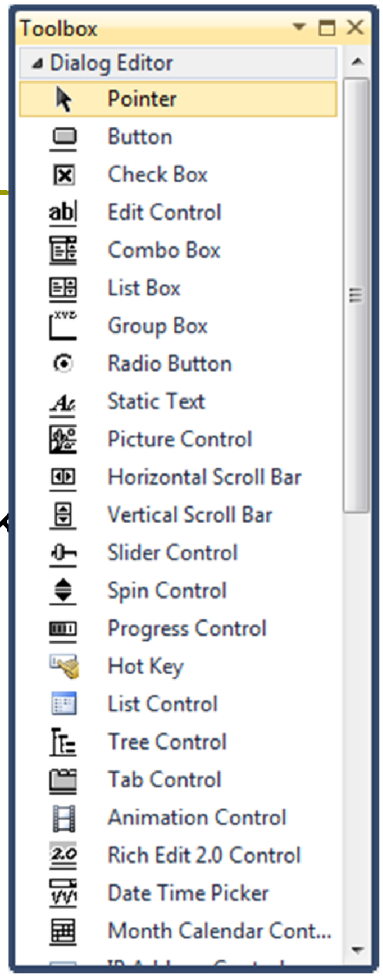
Create a Project with Controls

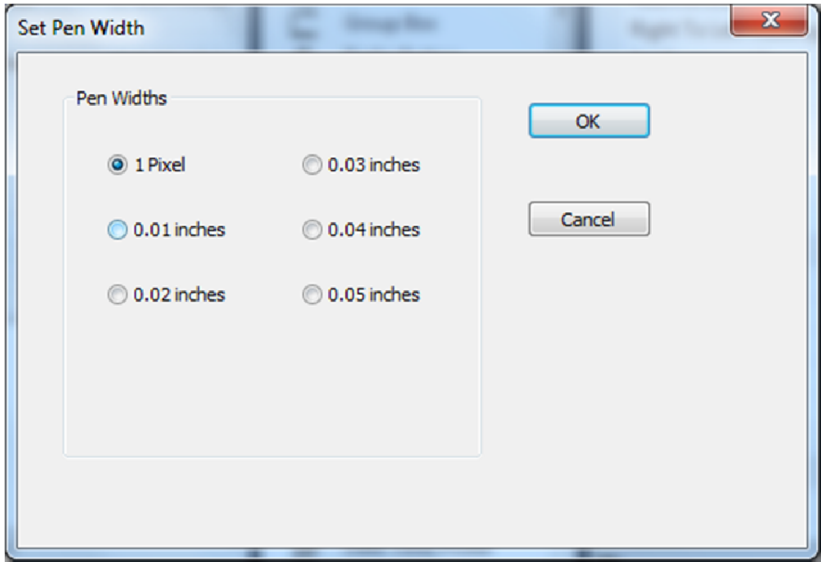
- Generate your project based on the CFormView class, which provide easy support to controls



Adding New Controls

- Adding new controls is easy.
  - You can drag the control from the toolbox.
  - You can click the control and then click in the dialog.
  - You can double-click the control.

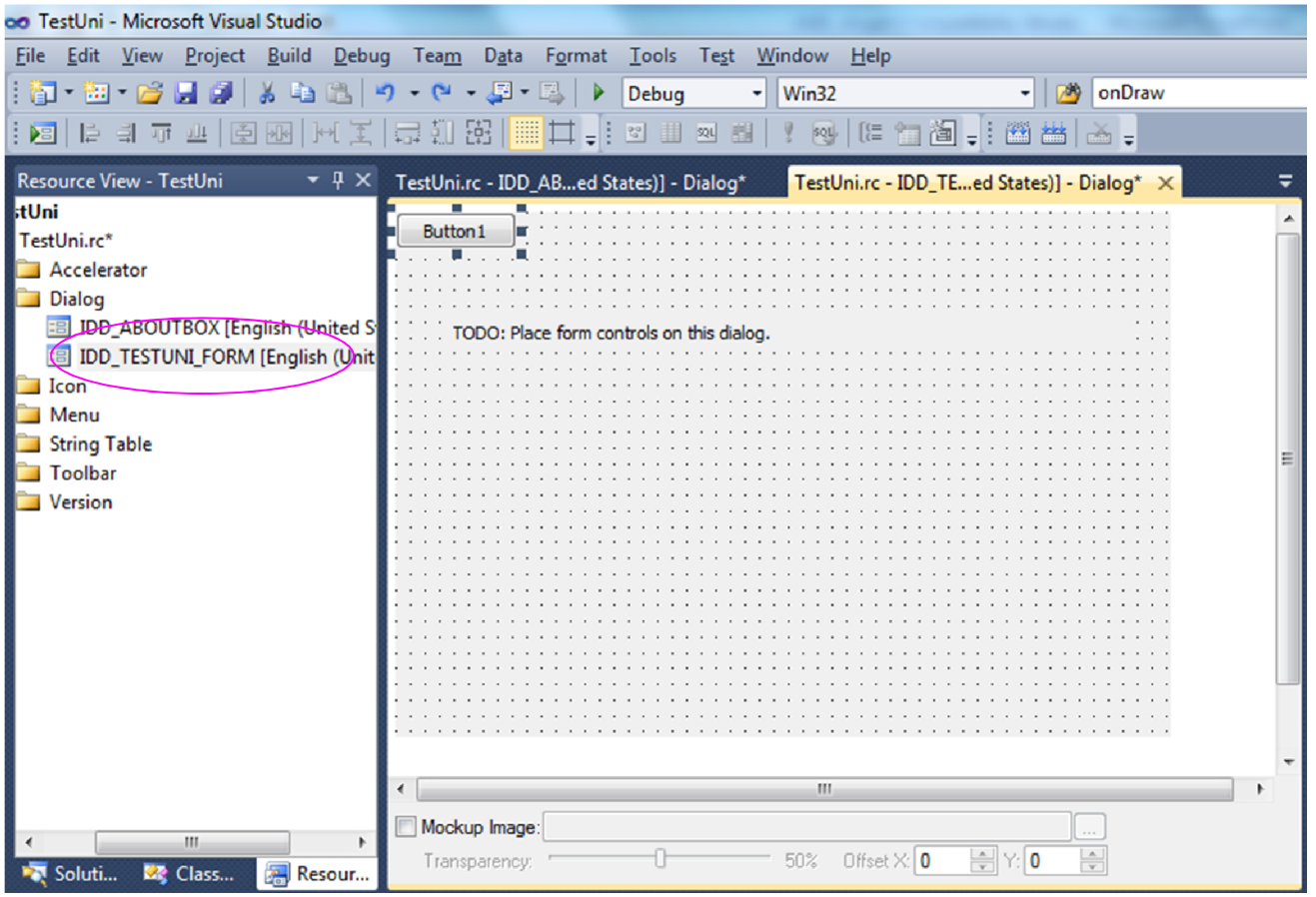




Change the Button Caption

Create a Button on the Form

- Resource View
- Click the Dialog folder to expand.
- Click the form to modify its design.



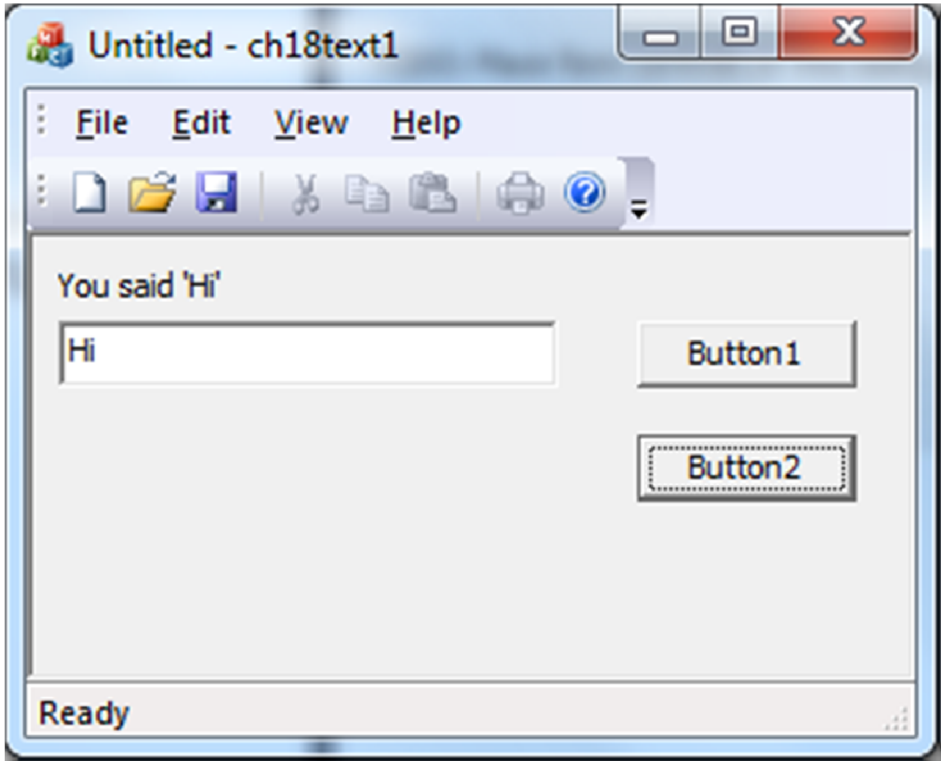
OnBnClickedButton1()

```
void Cch18puzzle1View::OnBnClickedButton1()
{
        static bool shown = false;

        CWnd* pBtn = GetDlgItem(IDC_BUTTON1);
        if (shown)
                pBtn->SetWindowText( _T("&Bye Bye") );
        else
                pBtn->SetWindowText( _T("H&ello") );
        shown = !shown;
}
```

Try this!

Using an Edit Box Control (P.1096)

- Mouse clicks are convenient for users to make choices, however, when the programs need more detailed information, you'll need to get text input from the user.



Set the Contents of an Edit Box

- Create an MFC application based on the `CFormView` class.
- Create an edit box control for input.
- Double-click the button control to create a message handler

```
void Cch18text1View::OnBnClickedButton1()
{
  GetDlgItem(IDC_EDIT1)->SetWindowTextA("Hello");
}
```

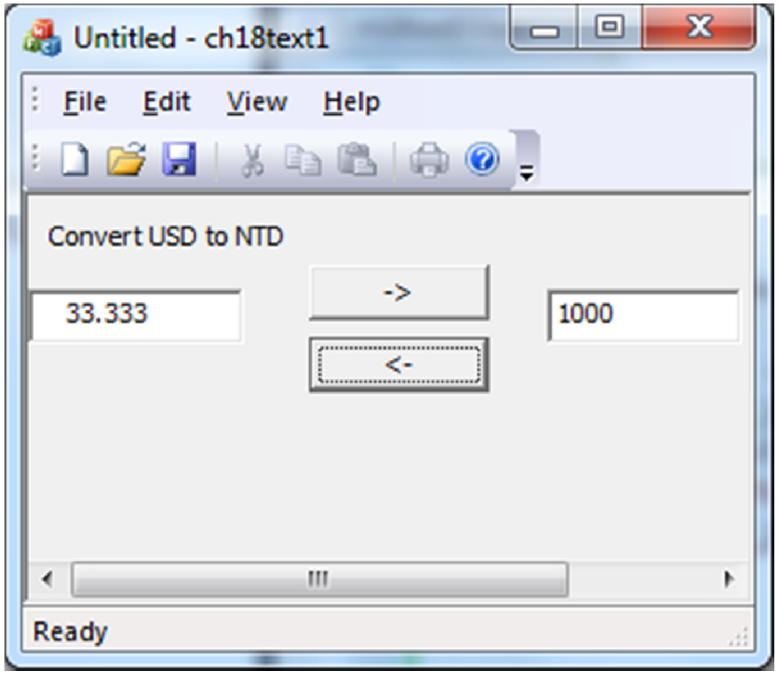
Get the Contents of an Edit Box

```
void Cch18text1View::OnBnClickedButton2()
{
  CString str;

  GetDlgItem(IDC_EDIT1)->GetWindowTextA(str);
  int i = atoi(str);
  str.Format("The value is %d", i);

  GetDlgItem(  STATIC)->SetWindowTextA(str);
}
```

Similar to sprintf(str, "%d", i);

Exercise: Currency Converter

- Design an application to convert US dollars to NT dollars (assume 1 USD = 30 NT dollars), and vice versa.
- Note that the input may not always be integers.
  - Hint: Use `atof()`.



Initial Contents of an EditBox

- Put the following code in CView::OnInitialUpdate()

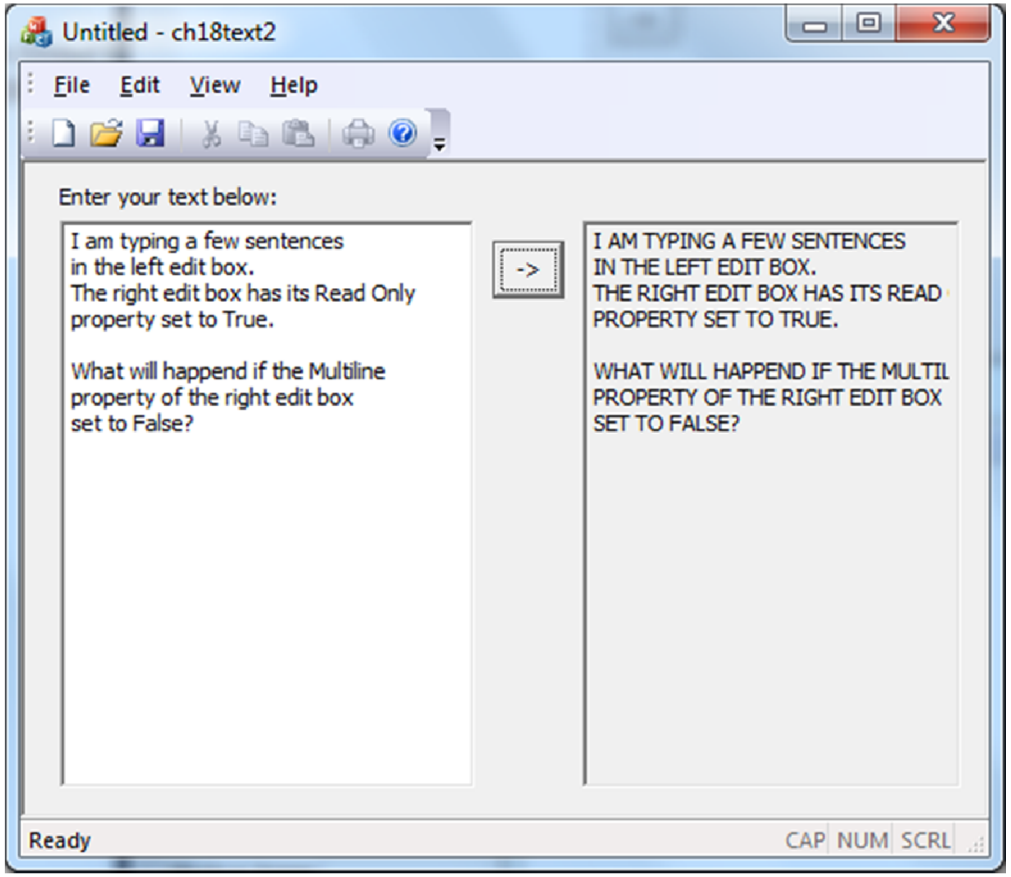
```
CWnd* pEditBox =
  static_cast<CWnd*>(GetDlgItem(IDC_EDIT1));
pEditBox->SetWindowText(
  _T("Please type a string here") );
```

Properties of an Edit Box Control

- Multiline
  - The text you enter can span more than one line.
- Align text
  - Left/Center/Right
- Want return
  - Insert a RETURN character into the text string.
  - If False, pressing enter will select the default control (generally the OK button).
- Auto HScroll
- Auto VScroll

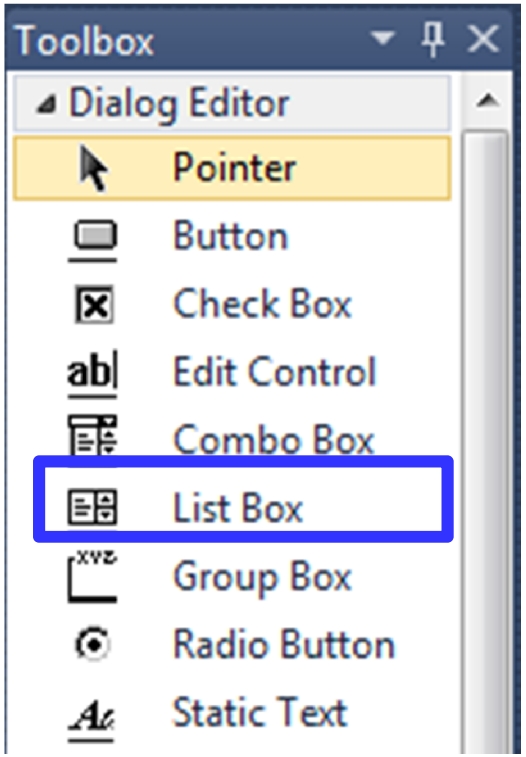
Exercise: Multiline Edit Box

- Design an application which will convert all the English alphabets (a-z) from lowercase to uppercase.
  - Hint: Use CString member function MakeUpper() and MakeLower().



Using a List Box (P.1093)

- Create a List Box Control on your form.
- The default value of the `Sort` property is True.
  - Set it to False if you want to keep the sequence as items are appended to the list.
    - e.g. "Jan", "Feb", "Mar"



Initialize a List Box

- Put the initialization in `OnInitialUpdate()` instead of the constructor of CView.

```
void CQuiz13View::OnInitialUpdate()
{
  CFormView::OnInitialUpdate();
  GetParentFrame()->RecalcLayout();
  ResizeParentToFit();

  CListBox* pListBox = static_cast<CListBox*>(GetDlgItem(IDC_LIST1));
  CString str;
  for (int i=0; i<3; i++)
  {
    str.Format(_T("Month %d"), i);
    pListBox->AddString(str);
    }
  pListBox->SetCurSel(0);
}
```

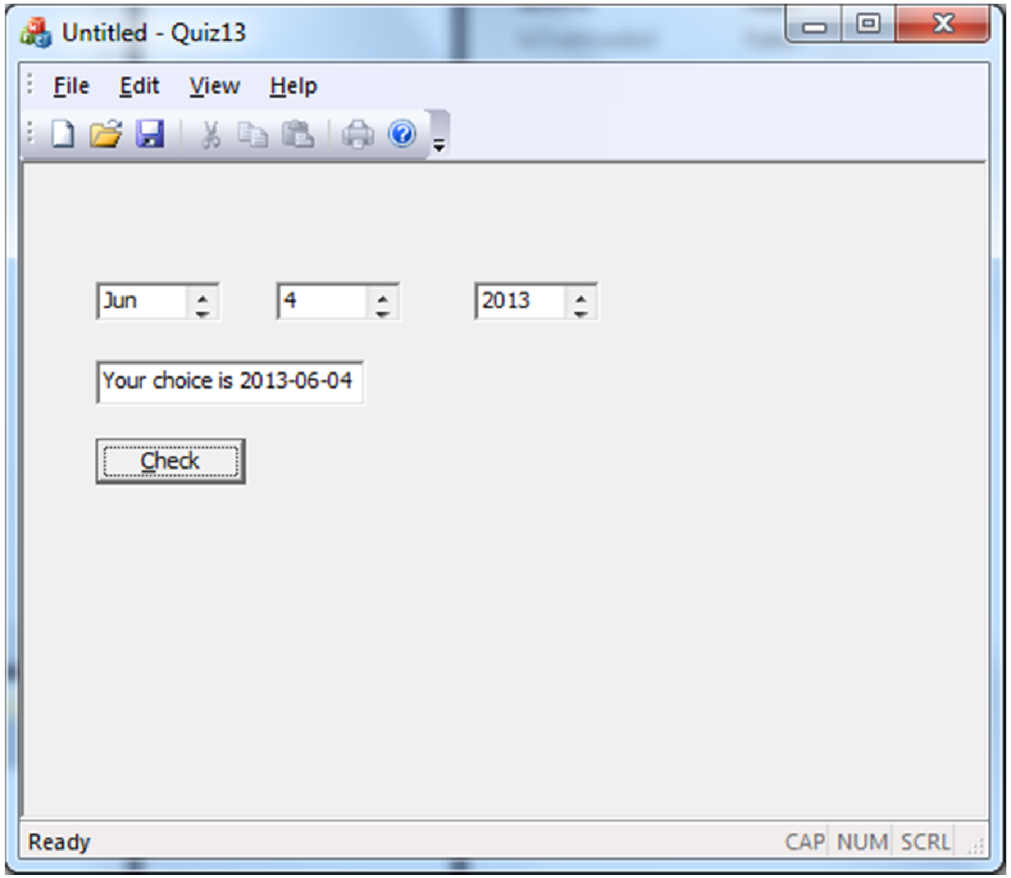
Get the Index of the Selected Item

```
void Cch18listView::OnBnClickedButton1()
{
  CListBox* pListBox =
    static_cast<CListBox*>(GetDlgItem(IDC_LIST1));
  int i = pListBox->GetCurSel();
  CString str;
  str.Format("You selected Month %d", i);
  GetDlgItem(IDC_STATIC_RESULT)->SetWindowTextA(str);
}
```

GetCurSel() returns the index of your selection, based on zero.

Exercise: List Box Controls

- Use three list boxes to represent Month, Day, and Year, respectively.
- When the user click the button, show the date chosen by the year.



CListBox Member Functions

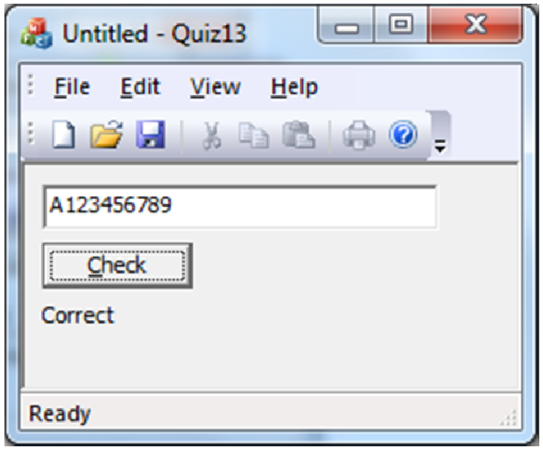
- GetCount
  - Returns the number of strings in a list box.
- GetTextLen
  - Returns the length in bytes of a list-box item.
- DeleteString
  - Deletes a string from a list box.

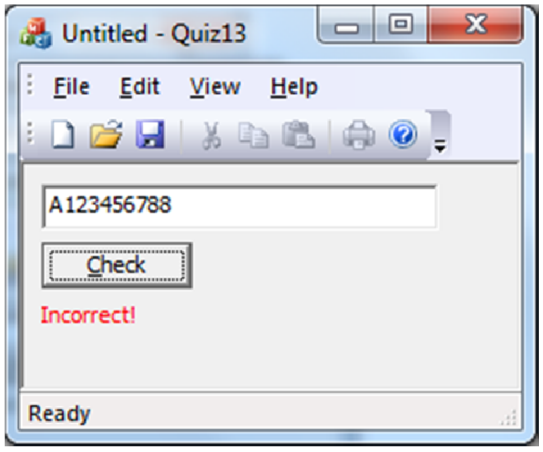
Exercise: Dynamically Change a List

- Modify your HW27, so that
  - When the user selects a month, your program will automatically adjust the list for days.
    - January – 31 days
    - April – 30 days
    - June – 30 days
    - etc.
  - When the user click the button, your program will calculate what day the selected day is, and show a sentence like "2013-06-04 is Tuesday".

Enable a Button

- We want to design an application which requires the user to input his/her ID number for validation.
- When the application starts, it shows a message in the edit box to prompt the user typing an ID number.
- Initially, the button was disabled. When the user types a 10-character string, the button will be enabled.
- When the button was clicked, following this rule to validate the ID number.
  - If it is valid, change the static text control to show "Correct".
  - If it is invalid, change the static text control to show "Incorrect!"





CView::OnInitialUpdate()

- Initialize an Edit Box control
  - `CWnd* pEditBox = static_cast<CWnd*>(GetDlgItem(IDC_EDIT1));`
  - `pEditBox->SetWindowText( _T("Please type your ID here") );`
- Disable a Button
  - `GetDlgItem(IDC_BUTTON1)->EnableWindow(FALSE);`

Check the Input String Length

- Create a handler for the message EN_CHANGE.

```
CView:: OnEnChangeEdit1()
{
  int len =
    GetDlgItem(IDC_EDIT1)->GetWindowTextLength();

  if (len == 10)
    GetDlgItem(IDC_BUTTON1)->EnableWindow(TRUE);
  else
    GetDlgItem(IDC_BUTTON1)->EnableWindow(FALSE);
  }
```

Change the Color of Edit Box /Static Text

- Create a handler for the message WM_CTLCOLOR.
- Add the following code in `CView::OnCtlColor()`

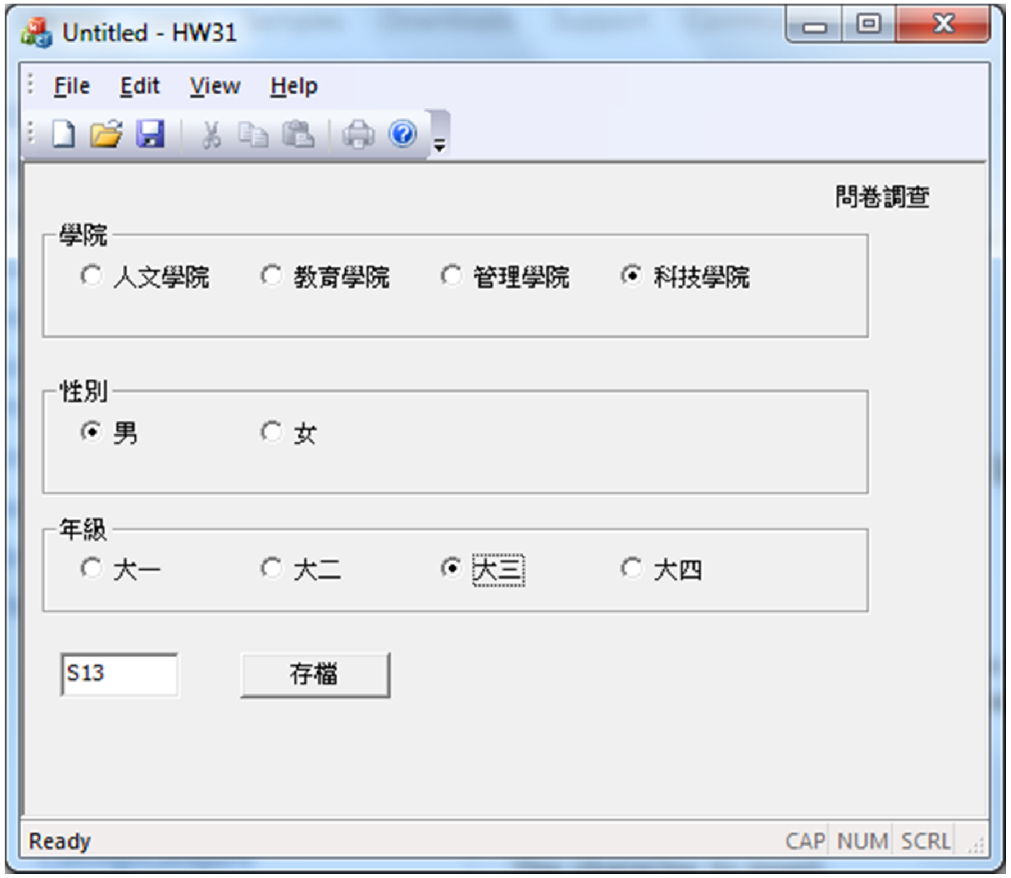
```
if( pWnd->GetDlgCtrlID() == IDC_STATIC &&
m_WrongID)
    pDC->SetTextColor( RGB(255,0,0) );
```

HW: ID Number Validation

- Complete the message handler OnBnClickedButton1().
- If the user inputs lowercase letter like “a123456789”, convert it to uppercase by the MakeUpper() member function of CString.
- If the first character is not an English alphabet, or the other nine characters are not digits, the string is certainly not a valid ID number.
- If the second character is not 1 or 2, it is also invalid.

Using Radio Buttons (P.1062)

- Sometime you want to enclose a few radio buttons in a group box, so that only one member of a group can be checked at any given time.



I have 3 groups of radio buttons, but

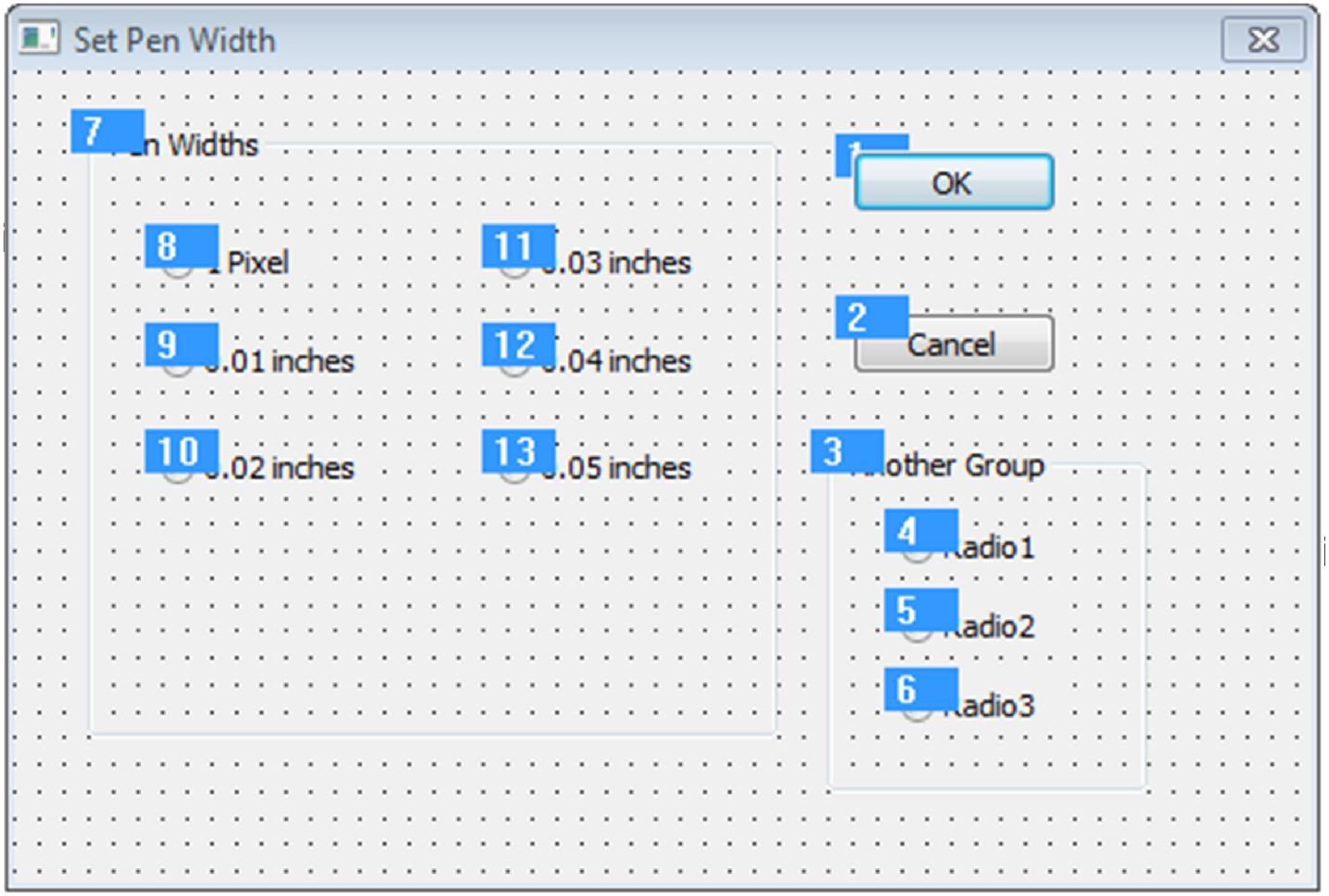
- 框起來只是美觀，實際運作上所有 radio button 還是屬於同一個 group.
- 你得把每個 group 的第一個（由 tab order決定）radio button的 `Group` property設為 True.
  - Ctrl-D可以看 tab order. 再按一次則取消.
  - Ctrl-T 可以測試這個 form 是否介面設計好了。

Radio Buttons in a Group Box

- Only one member of the group can be checked at any given time.
- However, enclosing radio buttons within two group boxes does not make them to join two separate groups.
  - The tab order of the dialog, and the `Group` property completely dictates which radio buttons belong to which groups.
  - Each radio button belongs to the group of the previous main radio button in the tab order. The main radio button has the `Group` property set to True.
  - You can set the tab order by going to the dialog editor and pressing Ctrl+D. You then click on each control from 1 to N in the order you want the tabbing to go.

Dialog Editor (Ctrl-D)

main radi



io button

OnBnClickedRadio1()

- When a radio button is checked, do the following :

```
void CView::OnBnClickedRadio1()
{
  m_str[0] = 'H';
  GetDlgItem(IDC_EDIT1)->SetWindowText(
    CString(m_str) );
}
```

- Your CView class may declare a private data member with initial value _T("000").

Check/Uncheck Radio Buttons in Your Program

- You may have a RESET button to uncheck all radio buttons

```
void CHW31View::OnBnClickedButton2()
{
   // Reset all radio buttons
   CheckDlgButton(IDC_RADIO1, 0);
   CheckDlgButton(IDC_RADIO2, 0);
   CheckDlgButton(IDC_RADIO3, 0);
   CheckDlgButton(IDC_RADIO4, 0);
   CheckDlgButton(IDC_RADIO5, 0);
   CheckDlgButton(IDC_RADIO6, 0);
   CheckDlgButton(IDC_RADIO7, 0);
   CheckDlgButton(IDC_RADIO8, 0);
   CheckDlgButton(IDC_RADIO9, 0);
   CheckDlgButton(IDC_RADIO10, 0);
}
```

1 to check the radio button; 0 to uncheck.

Append Data to a File

```
void CView::OnBnClickedSave()
{
ofstream Log("log.txt", ios::app);
Log << m_str << '\n';
Log.close();

strcpy(m_str, "000");
GetDlgItem(IDC_EDIT1)->SetWindowText(_T("   "));

OnBnClickedReset ();// Reset all radio buttons
}
```

In CView.h
#include <fstream>
using std::ofstream;
using std::ios;

- You may find the file "log.txt" in the same directory as your cpp files.

Terminate an MFC Application

- You may have an Exit button so that your MFC application can terminate itself.

```
void ExitMFCApp()
{
    ASSERT(AfxGetMainWnd() != NULL);
    AfxGetMainWnd()->SendMessage( WM_CLOSE );
}

void CView::OnBnClickedButtonEnd()
{
    ExitMFCApp();
}
```

Principle of Learning

- Tell me and I forgot.
- Show me and I remember.
- Involve me and I understand.

- 不聞不若聞之，
聞之不若見之，
見之不若知之，
知之不若行之，
學至乎行而止矣。
——荀子

- 古人學問無遺力，
少壯工夫老始成。
紙上得來終覺淺，
絕知此事要躬行。
——陸游