Microsoft Excel 2007 - Illustrated

UNIT
P
Excel 2007

Programming with Excel

Objectives

- View VBA code
- Analyze VBA code
- Write VBA code
- Add a conditional statement

Objectives

- Prompt the user for data
- Debug a macro
- Create a main procedure
- Run a main procedure

Unit Introduction

- Excel macros are written in a programming language called Visual Basic for Applications, or VBA
  - Create a macro with the Excel macro recorder
  - The recorder writes the VBA instructions for you
    - Enter VBA instructions manually
  - Sequence of VBA statements is called a procedure

Viewing VBA Code

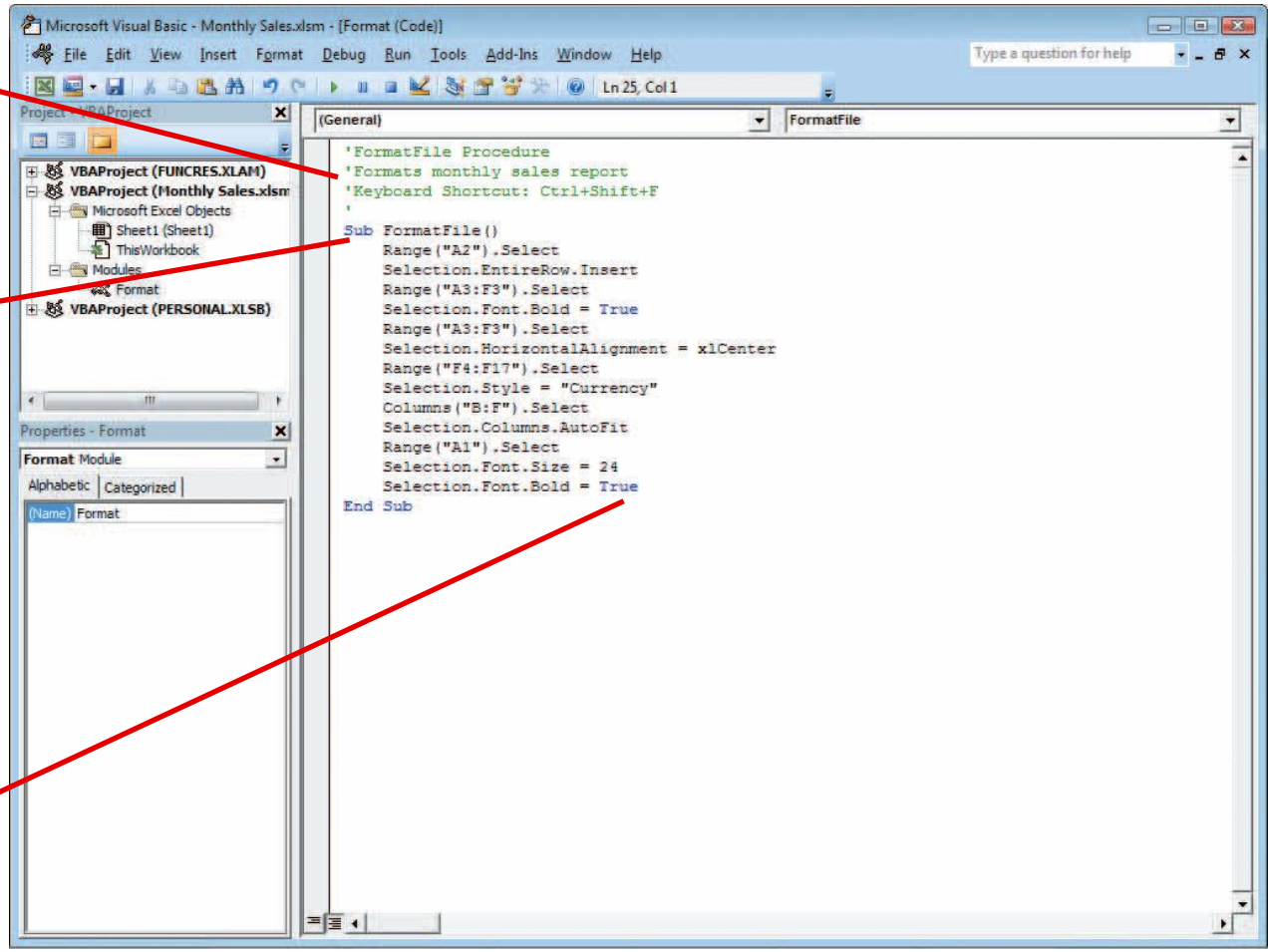
- View existing VBA code to learn the language
  - To view VBA code, open the Visual Basic Editor
    - Contains a Project Explorer window, a Properties window, and a Code window
  - VBA code appears in the Code window
    - The first line of a procedure is called the procedure header
    - Items displayed in blue are keywords
    - Green notes explaining the code are called comments

Viewing VBA Code (cont.)

Comments

Procedure header

Keyword



Viewing VBA Code (cont.)

- Understanding the Visual Basic Editor
  - A module is the Visual Basic equivalent of a worksheet
    - Store macro procedures
    - A module is stored in a workbook, or project, along with worksheets
    - View and edit modules in the Visual Basic Editor

Analyzing VBA Code

- Analyzing VBA code
  - Every element of Excel, including a range, is considered an object
  - A range object represents a cell or a range of cells
  - A property is an attribute of an object that defines one of the object's characteristics, such as size
  - The last line in VBA code is the procedure footer

Analyzing VBA Code (cont.)

Selects range object cell A2

Applies bold formatting to range A3:F3

Sets width of columns B-F to AutoFit

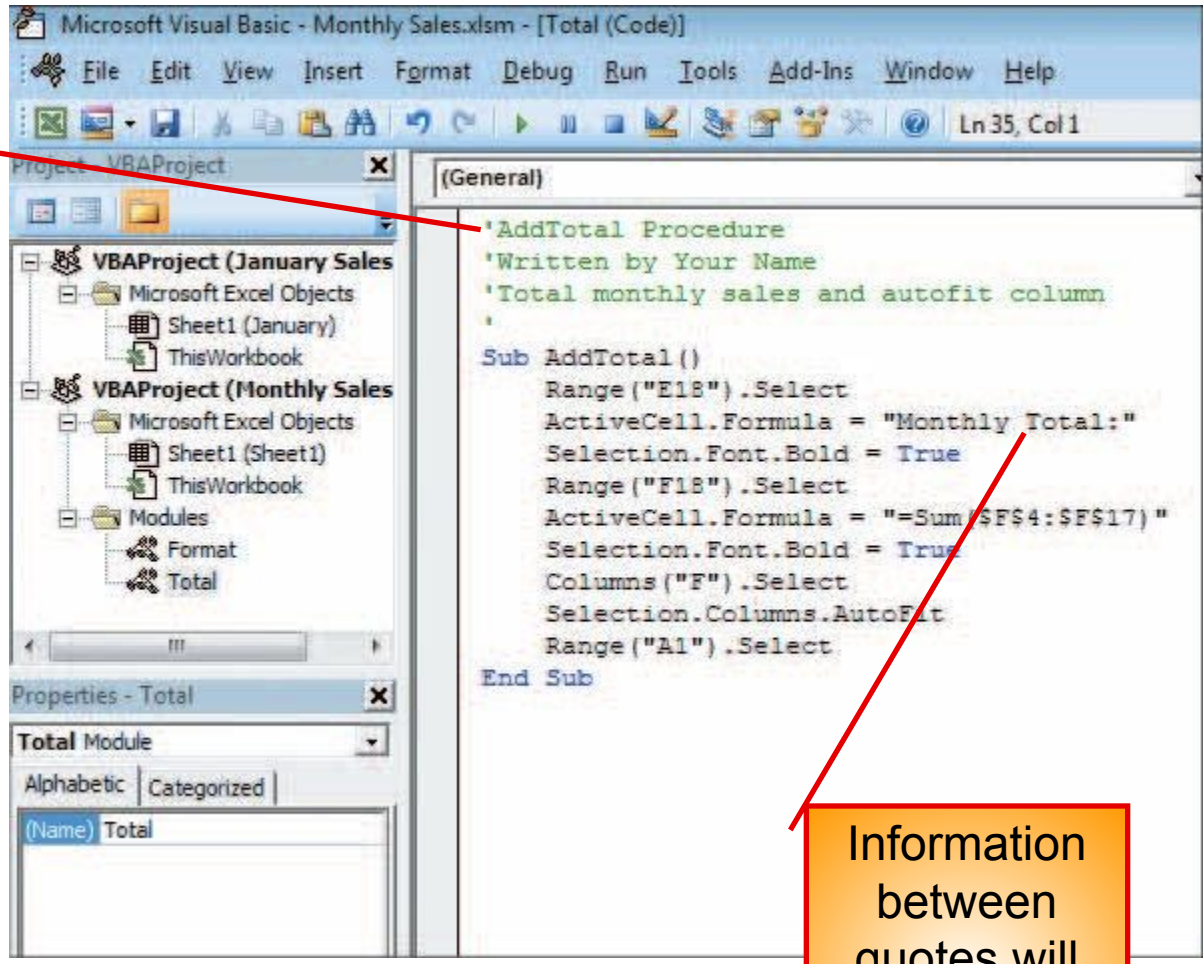
```
'FormatFile Procedure
'Formats monthly sales report
'Keyboard Shortcut: Ctrl+Shift+F
'
Sub FormatFile()
    Range("A2").Select
    Selection.EntireRow.Insert
    Range("A3:F3").Select
    Selection.Font.Bold = True
    Range("A3:F3").Select
    Selection.HorizontalAlignment = xlCenter
    Range("F4:F17").Select
    Selection.Style = "Currency"
    Columns("B:F").Select
    Selection.Columns.AutoFit
    Range("A1").Select
    Selection.Font.Size = 24
    Selection.Font.Bold = True
End Sub
```

Writing VBA Code

- To write your own code, open the Visual Basic Editor and add a module to the workbook
  - You must follow the formatting rules, or syntax, of the VBA programming language exactly
  - A misspelled keyword of variable name will cause a procedure to fail

Writing VBA Code (cont.)

Comments begin with apostrophes



Information between quotes will be inserted in the active cell

Writing VBA Code (cont.)

- Entering code using AutoComplete
  - To assist you in entering the VBA code, the Editor often displays a list of words that can be used in the macro statement
  - Typically the list appears after you press period [.]

Adding a Conditional Statement

- Sometimes you may want a procedure to take an action based on a certain condition or set of conditions
  - One way to add this type of statement is by using an If...Then…Else statement
  - The syntax for this statement is: If *condition* then *statements* Else [*else statements*]

Adding a Conditional Statement (cont.)

Elements of the If…then…Else statement appear in blue

```
'SalesStatus Procedure
'Written by Your Name
'Tests whether total sales meets the monthly quota
'
Sub SalesStatus()
    Range("E20").Select
    ActiveCell.Formula = "Sales Status:"
    Selection.Font.Bold = True
    'If the total is less than 900000 then
    'insert "Missed Quota" in cell F20
    If Range("F18") <= 900000 Then
        Range("F20").Select
        ActiveCell.Formula = "Missed Quota"
    'otherwise, insert "Met Quota" in cell F20
    Else
        Range("F20").Select
        ActiveCell.Formula = "Met Quota"
    End If
    Range("A1").Select
End Sub
```

Prompting the User for Data

- When automating routine tasks, sometimes you need to pause a macro for user input
  - Use the VBA InputBox function to display a dialog box that prompts the user for information
  - A function is a predefined procedure that returns a value

Prompting the User for Data (cont.)

```
'FooterInput Procedure
'Written by Your Name
'Customize worksheet footer
'
Sub FooterInput()
    'Declares the LeftFooterText string variable
    Dim LeftFooterText As String
    'Prompts user for left footer text and stores
    'response in LeftFooterText variable
    LeftFooterText = InputBox("Enter name:")
    'Inserts contents of LeftFooterText into left footer
    '*****THERE IS AN ERROR IN THE FOLLOWING LINE *****
    Worksheets("January").PageSetup.LeftFooter = LeftFooter
    'Inserts the date in right footer
    Worksheets("January").PageSetup.RightFooter = "&D"
End Sub
```

This text will appear in a dialog box

Comment points out error in next line of the procedure

Debugging a Macro

- When a macro procedure does not run properly, it can be due to an error, called a bug, in the code
  - To help you find bugs in a procedure, the Visual Basic Editor steps through the procedure's code one line at a time
  - When you locate an error, you can debug, or correct it

Debugging a Macro (cont.)

```
'FooterInput Procedure
'Written by Your Name
'Customize worksheet footer
'
Sub FooterInput()
    'Declares the LeftFooterText string variable
    Dim LeftFooterText As String
    'Prompts user for left footer text and stores
    'response in LeftFooter Text variable
    LeftFooterText = InputBox("Enter name:")
    'Inserts contents of LeftFooterText into left footer
    '***** THERE IS AN ERROR IN THE FOLLOWING LINE *****
    Worksheets("January").PageSetup.LeftFooter = LeftFooter
    'Inserts the date in right footer
    Worksheets("January").PageSetup.RightFooter = "&D"
End Sub
```

LeftFooter = Empty

Indicates that the LeftFooter variable is empty

Creating a Main Procedure

- Combine several macros that you routinely run together into a procedure
  - This is a main procedure
  - To create a main procedure, type a Call statement for each procedure you want to run

Creating a Main Procedure (cont.)

MainProcedure calls each procedure in the order shown

```
'MainProcedure Procedure
'Written by Your Name
'Calls sub procedures in sequence
'
Sub MainProcedure()
    Call FormatFile
    Call AddTotal
    Call SalesStatus
    Call FooterInput
End Sub
```

Running a Main Procedure

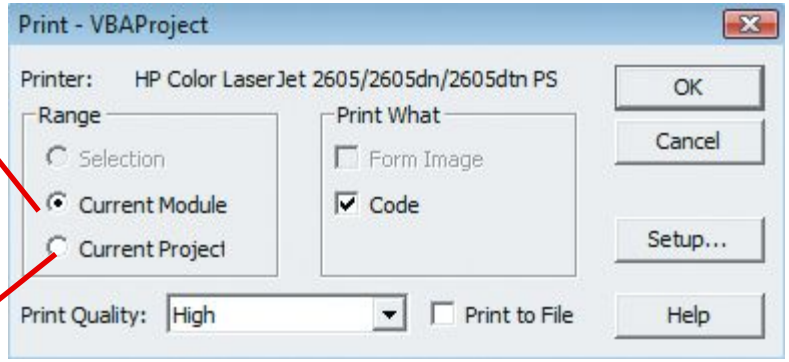
- Running a main procedure allows you to run several macros in sequence
  - Run a main procedure as you would any other macro

Running a Main Procedure (cont.)

Printing Macro Procedures

Current Module button

Current Project button



Summary

- Learn by viewing and analyzing VBA code
- Write VBA code using the Visual Basic Editor
- Use If..Then..Else statements for conditional actions
- Prompt user for data to automate input tasks
- Use the “Step Into” feature of the Visual Basic Editor to debug macros
- Use Main procedures to combine several macros