Solutions for Programming with Microsoft Visual Basic 2017 8th Edition by Zak

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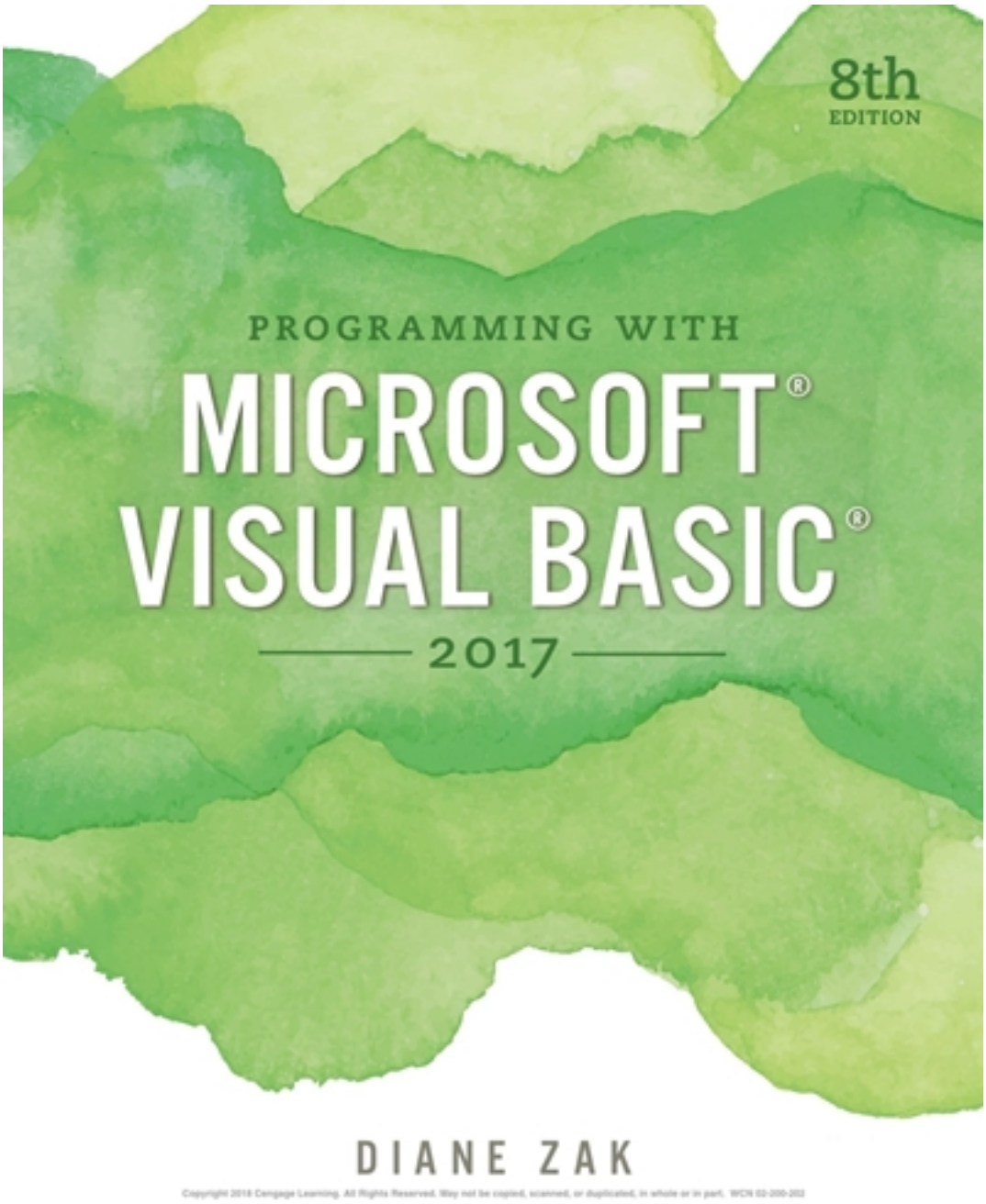

Solutions

Chapter 2

Review Questions

1. a True
2. b An identifying label should be positioned either above or to the right of the control it identifies.
3. c TabIndex
4. d Text
5. a &Display
6. c text box
7. c txt
8. d None of the above.
9. a Alt+r
10. c FixedSingle
11. d None
12. b Fixed3D
13. b False
14. d True
15. a 11
16. d All of the above.
17. d TextAlign
18. To provide keyboard access to a text box, assign an access key to its identifying label control. Then set the label control's TabIndex property to a value that is one number less than the text box's TabIndex value
19. Sentence capitalization refers to capitalizing only the first letter in the first word and in any words that are customarily capitalized.
20. 2 Identify the items that the user must provide.
    1 Identify the application's purpose.
    5 Draw a sketch of the user interface.
    4 Determine how the user and the application will provide their respective items.
    3 Identify the items that the application must provide.

Exercises

1. See the VB2017\Chap02\Amlie Solution files. The organization of the interface will vary.
2. See the VB2017\Chap02\Moonbucks Solution files. The interface will vary.
3. See the VB2017\Chap02\Tax Solution files. The student should submit a sketch of the interface, which will vary and may contain an image.

Planning Chart for the Property Tax application	
Purpose: Calculate and display a homeowner's property tax.	
	How?
User-provided 1. assessed value	user will enter in txtAssessed
Application-provided 1. property tax of 1.35% 2. button for ending the application	btnCalc_Click will calculate and display in lblTax btnExit_Click will end the application

4. See the VB2017\Chap02\Area Solution files. The student should submit a sketch of the interface, which will vary and may contain an image.

Planning Chart for the Rectangle Area application	
Purpose: Calculate and display the area of a rectangle in both square feet and square yards.	
	How?
User-provided 1. rectangle's length in feet 2. rectangle's width in feet Application-provided 1. area in square feet 2. area in square yards 3. button for ending the application	 user will enter in txtLength user will enter in txtWidth btnCalc_Click will calculate and display in lblSqFeet btnCalc_Click will calculate and display in lblSqYards btnExit_Click will end the application

5. See the VB2017\Chap02\Salary Solution files. The student should submit a sketch of the interface, which will vary and may contain an image.

Planning Chart for the Raises and New Salaries application	
Purpose: Calculate and display two raise amounts and two new salary amounts.	
	How?
User-provided 1. current salary Application-provided 1. 5% raise 2. 8% raise 3. new salary with 5% raise 4. new salary with 8% raise 5. button for clearing the user input and the calculated results 6. button for ending the application	 user will enter in txtCurrentSalary btnCalc_Click will calculate and display in lblRaise5 btnCalc_Click will calculate and display in lblRaise8 btnCalc_Click will calculate and display in lblNewSalary5 btnCalc_Click will calculate and display in lblNewSalary8 btnClear_Click will clear the user input and the calculated results btnExit_Click will end the application

6. See the VB2017\Chap02\Kramden Solution files. The student should submit a sketch of the interface, which will vary and may contain an image.

Planning Chart for the Kramden Inc. application	
Purpose: Calculate and display the total cost of expense allowances.	
	How?
User-provided 1. number of salespeople 2. expense allowance Application-provided 1. total cost of expenses allowances 2. button for ending the application	 user will enter in txtSalespeople user will enter in txtAllowance btnCalc_Click will calculate and display in lblTotalCost btnExit_Click will end the application

7. See the VB2017\Chap02\Grade Solution files. The student should submit a sketch of the interface, which will vary and may contain an image.

Planning Chart for the Grade Percentages application	
Purpose: Calculate and display the percentage of students receiving a P grade and the percentage receiving an F grade.	
	How?
User-provided 1. number of students with a P grade 2. number of students with an F grade Application-provided 1. percentage of P grade students 2. percentage of F grade students 3. button for ending the application	 user will enter in txtGradeP user will enter in txtGradeF btnCalc_Click will calculate and display in lblPercentP btnCalc_Click will calculate and display in lblPercentF btnExit_Click will end the application

8. See the VB2017\Chap02\Sales Solution files. The student should submit a sketch of the interface, which will vary.

Planning Chart for the Sales Percentages application	
Purpose: Calculate and display the percentage of the total sales made by each of three salespeople.	
	How?
User-provided 1. Jim's sales 2. Karen's sales 3. Martin's sales Application-provided 1. percentage of total sales made by Jim 2. percentage of total sales made by Karen 3. percentage of total sales made by Martin 4. button for ending the application	 user will enter in txtJim user will enter in txtKaren user will enter in txtMartin btnCalc_Click will calculate and display in lblJim btnCalc_Click will calculate and display in lblKaren btnCalc_Click will calculate and display in lblMartin btnExit_Click will end the application

9. The OnYourOwn Solution files will vary. However, the application must adhere to the minimum guidelines listed in Figure 2-22 in the book.
10. See the VB2017\Chap02\FixIt Solution files. The correct tab order is Label1, txtFirst, Label2, txtMiddle, Label3, txtLast, and btnExit.

Chapter 2

Planning Applications and Designing Interfaces

A Guide to this Instructor's Manual:

We have designed this Manual to supplement and enhance your teaching experience through classroom activities and a cohesive chapter summary.

This document is organized chronologically, using the same headings that you see in the textbook. Under the headings you will find: lecture notes that summarize the section, Teaching Tips, Class Discussion Topics, and Additional Projects and Resources. Pay special attention to teaching tips and activities geared towards quizzing your students and enhancing their critical thinking skills.

In addition to this Instructor's Manual, our Instructor's Resources also contain PowerPoint Presentations, Test Banks, and other supplements to aid in your teaching experience.

At a Glance

Instructor's Manual Table of Contents

Lecture Notes

Overview

Chapter 2 introduces students to designing applications in Visual Basic 2017. Students learn how to plan for an application, design the interface, and write the code. This chapter contains three lessons:

- Lesson A covers the planning of an object-oriented application using Task, Object, and Event charts.
- Lesson B introduces the design of the user interface.
- Lesson C covers the coding, testing, debugging, and documenting of the application.

Focus on the Concepts Lesson

- F-1 Planning a Windows Forms application
- F-2 Windows standards for interfaces
- F-3 Access keys
- F-4 Tab order

Teaching Tips

F-1 Planning a Windows Forms Application

Teaching Tip	Run the completed Restaurant Tip application to demonstrate how this program will work.

1. Before starting a Windows Forms application, it must be planned. Refer students to Figure 2-1: Steps for planning a Windows Forms application

2. Discuss in detail the process of planning out an application.

3. Spend some time talking about the planning chart: Figures 2-2 and 2-3.

Teaching Tip	Explain that students will learn the benefits they can gain by planning the application before coding.

F-2 Windows Standards Interfaces

1. Discuss the importance of a sketch for the desired User Interface.

2. Go over the various options for user interfaces with the Restaurant Tip application (horizontal vs. vertical).

3. Discuss the guidelines for labels and buttons.
    a. Text in a label control that identifies another control's contents should be meaningful and left aligned
    b. One to three words on a single line
    c. Identifying labels should be positioned above or to the left of the control it identifies
    d. Identifying labels should end with a colon (:)
    e. Use **sentence capitalization** for identifying labels

4. Refer students to Figures 2-4 and 2-5 to view Windows Standards labels.

5. Buttons are identified by the text that appears on the button's face.
    a. Referred to as the Button's caption
    b. Captions should be meaningful
    c. One to three words on a single line
    d. Vertical buttons should be the same height and width
    e. Horizontal buttons should be the same height, but varying widths is okay
    f. Most common buttons should either appear on the top (Vertical) or left (Horizontal)

6. Talk about graphic use in Forms applications.
    a. Remind students to use graphics sparingly, regardless of whether it's for aesthetic purposes or to clarify part of the screen

7. Fonts should be kept to a single style choice; Segoe UI is the most common font.
    a. Use no more than two different sizes of font

8. Color can be very important to an application.
    a. Start designing with black, white, and gray
    b. Remember that some people have color blindness
    c. Remind students that color is subjective
    d. Color meanings by culture are an important thing to remember
    e. Limit colors to three

Mini Quiz 1-1

1. What is the first step in the planning process for a Windows Forms application
   Answer: Identify the application's purpose

2. What type of control is used to display the result of a calculation?
   Answer: Label

3. What type of control is used to identify the contents of a text box?
   Answer: Label

4. Button captions should end with a colon. True or False?
   Answer: False

F-3 Access Keys

1. Introduce the concept of an **access key**.

2. Discuss the three reasons for assigning access keys.

Teaching Tip	Remind students that access keys are another Windows standard that users expect to have.

3. Explain how to assign an access key to a button.

Teaching Tip	Alert students that depending on their system's settings, access keys may not appear underlined unless a Control Panel change is made.

4. Summarize the guidelines for using access keys shown in the GUI Design Tip box.

F-4 Tab Order

1. Introduce the **TabIndex property**.

2. Explain how the **tab order** (tab stops) are created in the order the controls are added to the form.

3. Introduce the concept of **focus**. Point out that not all types of controls can accept user input.

4. Point out that the TabIndex property is set by default based on the order in which controls were added to the form at design time.

Teaching Tip	Remind students that the user interface should support users who want to use only the keyboard. Such users should not have to use access keys to navigate through the screen.

5. Review the TabIndex settings required for the sample application shown in Figure 2-6.

6. Describe how to test whether the tab order has been set correctly.

Mini-Quiz 2-2

1. To assign the letter P as the access key for a Print button, what value must be entered in the button's Text property?
   Answer: &Print

2. If a text box's TabIndex value is the number 10, what TabIndex value should its identifying label have?
   Answer: 9

3. Which menu contains an option for displaying the interface's TabIndex boxes?
   Answer: View

4. All controls have a TabIndex property. True or False?
   Answer: False

Apply the Concepts Lesson

- A-1 Create a Planning Chart for a Windows Forms application
- A-2. Design an interface using the Windows standards
- A-3 Add a label control to the form
- A-4 Add a text box to the form
- A-5 Set the tab order

Teaching Tip	Students will find the story here www.jamesshuggins.com/h/tek1/first_computer_bug.htm fascinating. It explains the first computer bug.

A-1 Create a Planning Chart for a Windows Forms Application

1. Walk students through a quick planning chart setup.

2. Refer students to Figure 2-8 in the text.

3. Compare and contrast Figures 2-8 and 2-9.

A-2 Design an Interface Using the Windows Standards

1. Remind students to draw a diagram of the Windows Forms application.
   a. Refer students to Figures 2-10 and 2-11 so they can see Horizontal vs. Vertical layout options
2. Point out how a label will not have an access key because the 1blTotal control cannot accept user input
3. Point students to the partially completed Jacobson Furniture application at VB2017\Chap02\Jacobson Solution folder.

A-3 Add a Label Control to the Form

1. Point students to Figure 2-12 – Most commonly used properties of a label control.
2. Walk students through the 9 steps of adding a label control.
    a. Point out the examples provided in Figures 2-13, 2-14, and 2-15

A-4 Add a Text Box to the Form

1. Demonstrate the TextBox tool for students.
2. Explain that the purpose of a **Text Box** is to provide an area in the form where the user can enter data.
    a. Figure 2-16 shows the most commonly used properties of a text box

A-5 Set the Tab Order

1. Remind students of **Tab Order** and demonstrate it for the students within an application.
2. Point out that tab order numbers begin at 0 and move up. The 10th control will be number 9, and the first control would be number 0.

Mini-Quiz 2-3

1. A text box's access key is defined in its identifying label. True or False?
   Answer: True

2. Which property determines a label's border?
   Answer: BorderStyle

3. Which property specifies the alignment of the text inside a label control?
   Answer: TextAlign

4. TabIndex values begin with the number 1. True or False?
   Answer: False

Summary

- To plan a Windows Forms application, perform the following five steps in the order shown:
    1. Identify the application's purpose.
    2. Identify the items that the user must provide.
    3. Identify the items that the application must provide.
    4. Determine how the user and the application will provide their respective items.
    5. Draw a sketch of the user interface.
- Use a label control to display text that a user is not allowed to edit during run time.
- Use a text box control to provide an area in the form in which a user can enter data.
- To assign an access key to a control, type an ampersand (&) in the Text property of the control or identifying label. The ampersand should appear to the immediate left of the character that you want to designate as the access key.

- Users cannot access label controls while an application is running, so it is inappropriate to include an access key in their identifying labels.
- To provide keyboard access to a text box, assign an access key to the text box's identifying label. Set the identifying label's TabIndex value so that it is one number less than the text box's TabIndex value.
- To employ an access key, press and hold down the Alt key as you tap the access key.
- To set the tab order, use the Tab Order option on the View menu to display the TabIndex boxes. (The Tab Order option is available only when the designer is the active window.) Set each control's TabIndex box to a number (starting with 0) that represents the order in which the control should receive the focus.
- When a control has the focus, it can accept user input.
- Use a label control's BorderStyle property to put a border around the control.
- Use a label control's AutoSize property to specify whether the control should automatically size to fit its current contents.
- Use a label control's TextAlign property to specify the alignment of the text inside the control.
- Look at Figure 2-20 as it lists the GUI design guidelines covered in this chapter.

Key Terms

Access key—the underlined character in an object's identifying label or caption; allows the user to select the object using the Alt key in combination with the underlined character

Focus—indicates that a control is ready to accept user input

Label control—the control used to display text that the user is not allowed to edit while an application is running

Sentence capitalization—the capitalization used for identifying labels and button captions; refers to capitalizing only the first letter in the first word and in any words that are customarily capitalized

Tab order—the order in which each control receives the focus when the user either presses the Tab key or employs an access key while an application is running

Text box—a control that provides an area in the form for the user to enter data