Chapter 2: Program and Graphical User Interface Design

MULTIPLE RESPONSE

Modified Multiple Choice

1. Properties are used to describe an object's ____ on the screen.
   a. color
   b. name
   c. size
   d. position

   ANS: A, B, C, D   PTS: 1   REF: 41

2. No ____ are allowed in an object name.
   a. spaces
   b. numbers
   c. special characters
   d. letters

   ANS: A, C   PTS: 1   REF: 42

3. Once a GUI object is placed on a Windows Form object, dragging its corner sizing handle allows you to change its ____.
   a. vertical border resolution
   b. height
   c. width
   d. center point

   ANS: B, C   PTS: 1   REF: 45

4. To place a .NET component from the Toolbox in the Windows Form object, you can ____.
   a. right-click the component in the Toolbox
   b. double-tap or double-click the component in the Toolbox
   c. drag it from the Toolbox
   d. tap or click the component in the Toolbox and then tap or click the Windows Form object at the desired location

   ANS: B, C, D   PTS: 1   REF: 48

5. The program development life cycle includes ____.
   a. designing the user interface
   b. testing the program
   c. coding the program
   d. documenting the system

   ANS: A, B, C, D   PTS: 1   REF: 75

MODIFIED TRUE/FALSE

1. When you enter a value in the Text property for a Label object, the value will be displayed in the <u>Text</u> object. _____

   ANS: F, Label

   PTS: 1   REF: 50

2. When a Label object on a Windows Form object is selected, it has a <u>red</u> border. _____

   ANS: F, dotted

PTS: 1   REF: 52

3. A GUI object must be <u>selected</u> in order to delete it. _____

ANS: T   PTS: 1   REF: 56

4. By setting the <u>Resize</u> property for a Button object to True, the Button object will automatically expand or contract to accommodate the amount of text entered in the Text property. _____

ANS: F, AutoSize

PTS: 1   REF: 70

5. A <u>red</u> snap line indicates that the sides of objects are aligned vertically. _____

ANS: F, blue

PTS: 1   REF: 72

MULTIPLE CHOICE

1. Visual Basic contains _____ tools that are used in the design process.
   a. RAD   c. HTTP
   b. ERD   d. EFT

   ANS: A   PTS: 1   REF: 34

2. The _____ is the window that appears on every screen when the program is running.
   a. library   c. project
   b. service   d. user interface

   ANS: D   PTS: 1   REF: 34

3. Windows Store apps can only be written and executed using _____.
   a. Windows 7   c. Visual Studio
   b. Windows 8   d. Visual Basic

   ANS: B   PTS: 1   REF: 34

4. A(n) _____ is equivalent to a single program created using Visual Studio.
   a. application   c. command
   b. project   d. matrix

   ANS: B   PTS: 1   REF: 36

5. A program whose interface will be a window created using the Windows operating system, and which will allow the user to interact with the program by using this window, is created by selecting a _____ project in Visual Studio.
   a. Web Application   c. Windows Application
   b. Console Application   d. Custom Control

   ANS: C   PTS: 1   REF: 36

6. To create a new project using Visual Studio, you must specify both the type of application you will create and the ____ that you wish to use.
   a. color scheme
   b. programming language
   c. font size
   d. window size

   ANS: B   PTS: 1   REF: 36

7. The project name will be displayed on the ____ of the Visual Studio window.
   a. status bar
   b. title bar
   c. toolbar
   d. Toolbox

   ANS: B   PTS: 1   REF: 38

8. When creating a program in Visual Studio, the Windows Form object you are designing will appear in the ____ of the Visual Studio window.
   a. task area
   b. design area
   c. form area
   d. work area

   ANS: D   PTS: 1   REF: 38

9. When creating a program in Visual Studio, the ____ is the window that you use to build the program and which will display on your screen when the program is executed.
   a. Windows Form object
   b. Windows Screen object
   c. Windows Program object
   d. Windows Application object

   ANS: A   PTS: 1   REF: 39

10. The ____ is the fundamental object in the graphical user interface you will create using Visual Studio tools.
   a. Windows Form object
   b. user space
   c. work area
   d. user window

   ANS: A   PTS: 1   REF: 39

11. The ____ is the primary tool you use to place objects such as buttons on the Windows Form object.
   a. toolbar
   b. task bar
   c. Toolbox
   d. Properties window

   ANS: C   PTS: 1   REF: 39

12. TextBox, Label, and PictureBox in the accompanying figure are _____ components.
    a. .NET
    b. display
    c. command
    d. category

    ANS: A   PTS: 1   REF: 39

13. Graphical elements called _____ can be placed on a Windows Form object using the elements in the accompanying figure, when you are designing the user interface.
    a. linked items
    b. common keys
    c. commands
    d. .NET controls

    ANS: D   PTS: 1   REF: 40

14. The Auto Hide button on the Toolbox title bar contains a _____ icon which indicates the status of the Toolbox.
    a. Lock
    b. Checkmark
    c. Minimize
    d. Pushpin

    ANS: D   PTS: 1   REF: 40

15. _____ are used to control the color, size, name, and position on the screen of an object.
    a. Attributes
    b. Properties
    c. Symbols
    d. Indices

    ANS: B   PTS: 1   REF: 41

16. By default, the Properties window is displayed in the _____ section of the Visual Studio window.
    a. upper-right
    b. upper-left
    c. lower-left
    d. lower-right

    ANS: D   PTS: 1   REF: 41

17. You are designing a form that will be used to record the mileage driven by a sales representative. Which of the following is the best name for this form?
    a. MilesForm
    b. Form1
    c. frmSalesRep
    d. frmMilesDriven

    ANS: D   PTS: 1   REF: 42

18. Which prefix should be used to name a Windows Form object?
    a. form
    b. frm
    c. wfm
    d. win

    ANS: B   PTS: 1   REF: 42

19. The ____ property of a Form object can be used to set the value that will appear on the form's title bar.
    a. Title
    b. Text
    c. Caption
    d. Label

    ANS: B   PTS: 1   REF: 42

20. The default text value for the first Windows Form object created in a project is ____.
    a. 1Form
    b. Form
    c. Form1
    d. ThisForm

    ANS: C   PTS: 1   REF: 44

21. You can drag a vertical ____ to change the width of a window.
    a. dimension
    b. leader line
    c. resolution
    d. border

    ANS: D   PTS: 1   REF: 45

22. The ____ property of a Windows Form object can be used to change the width of the form.
    a. WindowState
    b. TabStop
    c. Size
    d. BorderStyle

    ANS: C   PTS: 1   REF: 45

23. The ____ object is used to display a message or put a name on an item in a window.
    a. Label
    b. TextBox
    c. PictureBox
    d. Button

    ANS: A   PTS: 1   REF: 47

24. The Label object appears in the ____ category in the Toolbox.
    a. Common Controls
    b. Text
    c. Commands
    d. Options

    ANS: A   PTS: 1   REF: 47

25. A prefix of ____ should be used when naming Label objects.
    a. lab
    b. lbe
    c. lbl
    d. lal

    ANS: C   PTS: 1   REF: 48

26. The ____ property of a Label object can be used to change the contents of the Label object.
    a. Caption
    c. Text

b. Label   d. Title

ANS: C   PTS: 1   REF: 50

27. You can use the _____ property to change the style or size of the text in a Label object.
a. Text   c. Style
b. Font   d. Format

ANS: B   PTS: 1   REF: 52

28. When you click the Font property in the Properties window, a(n) _____ button indicates multiple choices for the property will be made available when you tap or click the button.
a. ellipsis   c. comma
b. caret   d. percent sign

ANS: A   PTS: 1   REF: 52

29. A Label object can be centered on the Windows Form object by using choices on the _____ menu.
a. FILE   c. FORMAT
b. EDIT   d. TOOLS

ANS: C   PTS: 1   REF: 54

30. An object on a Windows Form object can be deleted by selecting it and pressing the _____ key.
a. DELETE   c. BACKSPACE
b. F3   d. F5

ANS: A   PTS: 1   REF: 56

31. A(n) _____ object is used to hold an image on a Windows Form object.
a. Frame   c. PictureBox
b. Image   d. GraphicObject

ANS: C   PTS: 1   REF: 57

32. A prefix of _____ should be used when naming a PictureBox object.
a. img   c. pcb
b. pbx   d. pic

ANS: D   PTS: 1   REF: 59

33. To select multiple objects on a Windows Form object, you must hold down the _____ key while clicking the objects to be selected.
a. ALT   c. DELETE
b. CTRL   d. SHIFT

ANS: B   PTS: 1   REF: 62

34. A blue line, called a _____ line, that appears when you are dragging a GUI object on a Windows Form object indicates that the object being dragged is horizontally aligned with the object connected by the blue line.
a. key   c. hot
b. base   d. snap

ANS: D   PTS: 1   REF: 72

35. You should _____ as the first phase of the program development life cycle.

a. design the user interface
b. gather and analyze the program requirements
c. code the program
d. document the program

ANS: B   PTS: 1   REF: 75

36. You should _____ as the second phase in the program development life cycle, after the program requirements have been gathered and analyzed.
a. design the program processing objects   c. design the user interface
b. code the program   d. document the program

ANS: C   PTS: 1   REF: 75

37. _____ is the last phase of the program development life cycle.
a. Documenting the program/system   c. Discarding the program/system
b. Testing the program/system   d. Maintaining the program/system

ANS: D   PTS: 1   REF: 76

38. _____ a program means writing down in a prescribed manner the instructions for using the program, the way in which the program performs its tasks, and other items that users, other developers, and management might require.
a. Documenting   c. Indexing
b. Labeling   d. Texting

ANS: A   PTS: 1   REF: 76

39. A _____ document identifies the purpose of the program being developed, the application title, the procedures to be followed when using the program, any equations and calculations required, any conditions within the program that must be tested, and any notes and restrictions that must be followed by the program.
a. notes   c. restrictions
b. requirements   d. matrix

ANS: B   PTS: 1   REF: 77

40. _____ is another name for the user interface.
a. PictureBox   c. Presentation layer
b. Windows Form   d. Application matter

ANS: C   PTS: 1   REF: 79

TRUE/FALSE

1. Visual Studio 2012 is an integrated development environment.

ANS: T   PTS: 1   REF: 32

2. Before beginning to design the user interface, the developer should know how to use certain Visual Studio and Visual Basic RAD tools because these tools are used in the design process.

ANS: T   PTS: 1   REF: 34

3. A project created in Visual Studio is equivalent to a single screen at runtime.

ANS: F   PTS: 1   REF: 36

4. When creating a new project using Visual Studio, you first must select the programming language to be used.

ANS: T   PTS: 1   REF: 36

5. A Windows Application project will create a program that is designed to run using an Internet browser.

ANS: F   PTS: 1   REF: 36

6. The Windows Form object is the fundamental object in the graphical user interface you will create using Visual Studio tools.

ANS: T   PTS: 1   REF: 39

7. The Toolbar contains the GUI components that you can use when designing the form.

ANS: F   PTS: 1   REF: 40

8. The Auto Display button controls whether or not the Toolbox is permanently open.

ANS: F   PTS: 1   REF: 40

9. When the Toolbox is in Dockable mode, it cannot be moved.

ANS: F   PTS: 1   REF: 40

10. By default, the Properties window is shown in the upper-right section of the Visual Studio window.

ANS: F   PTS: 1   REF: 41

11. If the Solution Explorer window is not displayed on your screen, you can display the window by tapping or clicking VIEW on the menu bar and then tapping or clicking Solution Explorer on the VIEW menu.

ANS: T   PTS: 1   REF: 41

12. It can become confusing if you do not have unique identifying names for each Form object you have within a project.

ANS: T   PTS: 1   REF: 44

13. The Caption property is used to set the contents of the title bar of a Windows Form object.

ANS: F   PTS: 1   REF: 44

14. You do not have to select a property in order to change it.

ANS: F   PTS: 1   REF: 44

15. The size of a GUI object can only be changed by using the Size property.

ANS: F   PTS: 1   REF: 45

16. You can add a .NET component to a Windows Form object by double-tapping or double-clicking the .NET component in the Toolbox.

ANS: T   PTS: 1   REF: 48

17. A Label object can only contain one line of text.

ANS: F   PTS: 1   REF: 51

18. You can use the Text property of a Label object to change the size and appearance of the text.

ANS: F   PTS: 1   REF: 52

19. When you change the size of the font used in a Label object, the Label object will automatically expand to accommodate the changed font.

ANS: T   PTS: 1   REF: 54

20. An object must be dragged into position when you want to center it on a Windows Form object.

ANS: F   PTS: 1   REF: 54

21. The Undo button cannot be used to restore an object that has been deleted.

ANS: F   PTS: 1   REF: 57

22. When aligning several GUI objects, the first object selected is the controlling object, and the other objects will be aligned with it.

ANS: T   PTS: 1   REF: 63

23. To change the contents of the text that appears on the face of a Button object, you must use the Caption property.

ANS: F   PTS: 1   REF: 68

24. The mouse pointer changes to a double-headed arrow to indicate that you can drag to change the size of a button object, for example.

ANS: T   PTS: 1   REF: 69

25. When you save a Visual Basic project the first time, you must select the location where the project is to be saved.

ANS: T   PTS: 1   REF: 74

COMPLETION

1. Visual Studio 2012 is the _____ that is used when writing Visual Basic programs.

ANS: integrated development environment

PTS: 1   REF: 32

2. A(n) _____ is a program that will include a user interface whose windows are created using the Windows operating system.

ANS: Windows Application project

PTS: 1   REF: 36

3. The Toolbox is the primary tool you use to place _____ such as buttons on the Windows Form object.

ANS: .NET components

PTS: 1   REF: 39

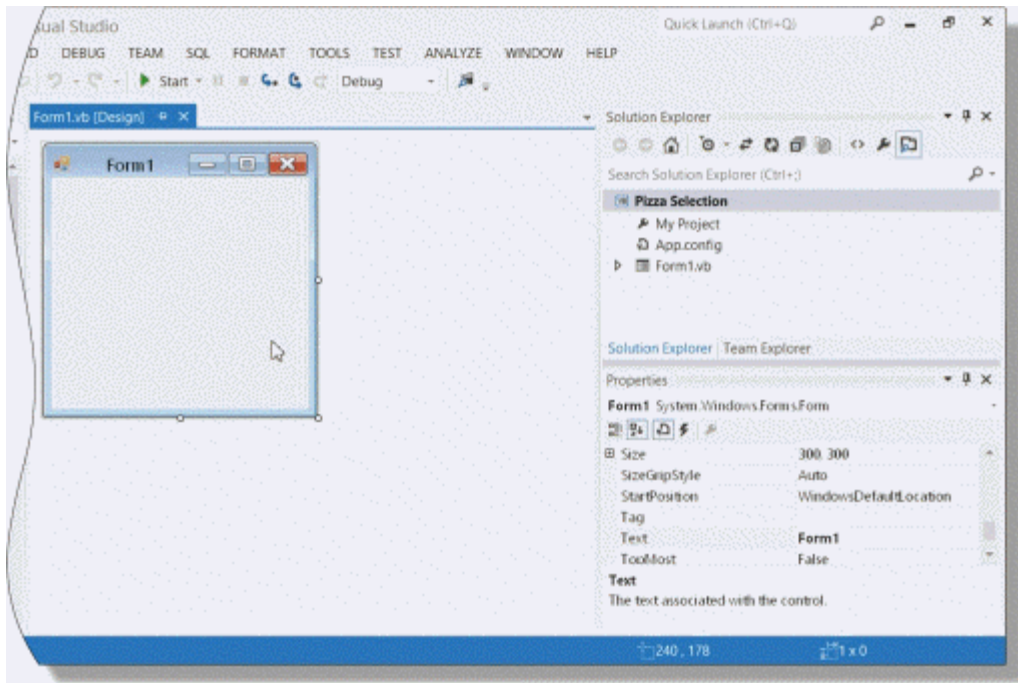4. When the Pushpin icon on the Auto Hide button is vertical, the Toolbox is said to be in _____ mode.

ANS:
dockable
Dockable

PTS: 1   REF: 40

5. If the properties in the Properties window do not appear in alphabetical order, tap or click the _____ button to place them in alphabetical order.

ANS: Alphabetical

PTS: 1   REF: 41

6. When an object is selected in Visual Studio, as shown in the accompanying figure, _____ and a heavier border appear on the outer edges of the object.

   ANS: sizing handles

   PTS: 1   REF: 42

7. When a Windows Form object has been resized, the exact size in numbers of horizontal and vertical pixels is shown on the _____ bar.

   ANS: status

   PTS: 1   REF: 46

8. A(n) _____ object is used in a graphical user interface to provide information about items on the window.

   ANS: Label

   PTS: 1   REF: 47

9. The default contents of a Label object can be changed by using the _____ property.

   ANS: Text

   PTS: 1   REF: 50

10. An object on a Windows Form object can be deleted by selecting it and pressing the _____ key on the keyboard.

   ANS: DELETE

PTS: 1 REF: 56

11. You can resize a GUI object to be the same size as another GUI object by using the Make Same Size command on the _____ menu.

ANS: FORMAT

PTS: 1 REF: 62

12. _____ means that one element in the GUI is lined up horizontally and/or vertically with another element in the window.

ANS: Alignment

PTS: 1 REF: 63

13. A(n) _____ object is generally used on a form to cause an event to occur when the program is executing.

ANS: Button

PTS: 1 REF: 66

14. A prefix of _____ should be used when naming a Button object.

ANS: btn

PTS: 1 REF: 68

15. A snap line that is colored _____ indicates that the text within an object is aligned with the text in another object.

ANS: red

PTS: 1 REF: 70

16. Program _____ consists of the instructions written using a programming language that ultimately can be executed by a computer.

ANS: code

PTS: 1 REF: 75

17. Program and system _____ is the process of changing and updating programs.

ANS: maintenance

PTS: 1 REF: 76

18. A(n) _____ is a sequence of actions a user will perform when using the program.

ANS: use case

PTS: 1 REF: 78

19. A(n) _____ specifies each of the use case sequences of actions by describing what the user will do and how the program will respond.

ANS: Use Case Definition

PTS: 1   REF: 78

20. User interface designs with no functionality, called _____, are created for approval of the design only.

ANS: mock-ups

PTS: 1   REF: 79

MATCHING

Identify the letter of the choice that best matches the phrase or definition.
a. presentation layer
b. Dockable
c. blue
d. sizing handles
e. title bar
f. use case
g. PictureBox
h. lbl
i. red
j. btn

1. Another name for the user interface
2. After a project has been created in Visual Studio, the project name will be displayed on this part of the Visual Studio window
3. The sequence of actions a user will perform when using the program
4. The Pushpin icon on the Auto Hide button of the Toolbox will appear in a vertical position when the Toolbox is in this mode
5. When an object is selected on a Windows Form object, these will appear on the object
6. When the mouse pointer is inside this kind of object, it changes to a crosshair with four arrowheads
7. A Button object's name should have this prefix
8. Kind of snap line that indicates that the edges of two objects are vertically aligned
9. Kind of snap line that indicates text within an object is aligned with the text in another object
10. A Label object's name should have this prefix

1. ANS: A   PTS: 1   REF: 79
2. ANS: E   PTS: 1   REF: 38
3. ANS: F   PTS: 1   REF: 78
4. ANS: B   PTS: 1   REF: 40
5. ANS: D   PTS: 1   REF: 42
6. ANS: G   PTS: 1   REF: 58
7. ANS: J   PTS: 1   REF: 68
8. ANS: C   PTS: 1   REF: 72
9. ANS: I   PTS: 1   REF: 70
10. ANS: H   PTS: 1   REF: 48

ESSAY

1. What are the methods for placing a .NET component from the Toolbox on the Windows Form object?

ANS:
In addition to dragging a .NET component from the Toolbox to the Windows Form object, you can place an object on the Windows Form object by double-tapping or double-clicking the .NET component in the Toolbox. You can move and resize the object after it has been placed on the Windows Form object. You also can tap or click the .NET component in the Toolbox and then click the Windows Form object at the desired location for the object. The object will be placed where you tapped or clicked.

PTS: 1   REF: 48   TOP: Critical Thinking

2. Define alignment and explain its significance with regard to PictureBox objects, for example.

ANS:
When designing a graphical user interface, you should consider aligning the elements to create a clean, uncluttered look for the user. Alignment means one element in the GUI is lined up horizontally (left and right) or vertically (up or down) with another element in the window. When you want to align objects already on the Windows Form object, select the objects to align, and then specify the alignment you want. The first object selected is the controlling object; when aligning, this means the other objects that are selected will be aligned on the first object selected.

PTS: 1   REF: 63   TOP: Critical Thinking

3. Discuss three methods for opening a saved project.

ANS:
Method 1: Double-tap or double-click the solution file in the folder in which it is stored. This method will open the solution and allow you to continue your work.
Method 2: With Visual Studio open, click the Open File button on the Standard toolbar, locate the solution file, and open it in the same manner you use for most Windows programs.
Method 3: With Visual Studio open, click FILE on the menu bar and then point to Recent Projects and Solutions on the FILE menu. A list of the projects most recently worked on is displayed. Tap or click the name of the project you want to open. This method might not work well if you are using a computer that is not your own because other projects might be listed.

PTS: 1   REF: 75   TOP: Critical Thinking

CASE

Critical Thinking Questions
Case 2-1

Professor Mackenzie is answering questions from students in her class as she explains the program development life cycle in her introductory Visual Basic course.

1. Some of her students have been confusing the order of the various steps and phases and she wants to correct any misunderstandings about it. Which of the following can the professor give as the correct order for the steps in the program development life cycle?

a. Gather and analyze the program requirements, design the program processing objects, design the user interface, code the program, document the program/system, test the program, and maintain the program/system
b. Design the user interface, design the program processing objects, gather and analyze the

program requirements, code the program, test the program, document the program/system, and maintain the program/system
c. Gather and analyze the program requirements, design the user interface, design the program processing objects, code the program, test the program, document the program/system, and maintain the program/system
d. Gather and analyze the program requirements, code the program, design the user interface, design the program processing objects, test the program, document the program/system, and maintain the program/system

ANS:
C

PTS: 1   REF: 75-76   TOP: Critical Thinking

2. When does Professor Mackenzie tell her students that program documentation should occur?

a. As the program requirements are being gathered and analyzed.	c. As the program is being designed and coded, and after that process is completed.
b. Before the user interface and program processing objects are designed	d. After the program has been successfully tested.

ANS:
C

PTS: 1   REF: 76   TOP: Critical Thinking

Critical Thinking Questions
Case 2-2

You and Ellen are cramming for your exam about the second phase of the program development life cycle, the design of the user interface.

3. As you recount the design principles to Ellen during your study session, which of the following is NOT one that you share with her?

a. If the user interface is too simple to use, the user will not trust that it is sufficiently robust.
b. Use of the interface should feel natural and normal.
c. A good user interface provides the most appropriate object for each requirement.
d. The objects in the interface must be arranged in the sequence in which they are used so the user can move from item to item on the screen in a logical, straightforward manner.

ANS:
A

PTS: 1   REF: 79|80   TOP: Critical Thinking

4. Ellen tells you the percentage of program design time that developers spend on the user interface. You think that she is exaggerating but then you double-check and see that she is right. What range does she give you?

a. 25% to 40%	c. 35% to 60%
b. 30% to 50%	d. 40% to 70%

ANS:
A

PTS: 1   REF: 79   TOP: Critical Thinking

ANS: