Modern Systems Analysis and Design

Eighth Edition, Global Edition

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Designing Forms and Reports

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Learning Objectives

- ✔ Explain the process of designing forms and reports and the deliverables for their creation.
- ✔ Apply the general guidelines for formatting forms and reports.
- ✔ Use color and know when color improves the usability of information.
- ✔ Format text, tables, and lists effectively.

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Learning Objectives (Cont.)

- ✔ Explain how to assess usability and describe how variations in users, tasks, technology, and environmental characteristics influence the usability of forms and reports.
- ✔ Discuss guidelines for the design of forms and reports for Internet-based electronic commerce systems.

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Designing Forms and Reports

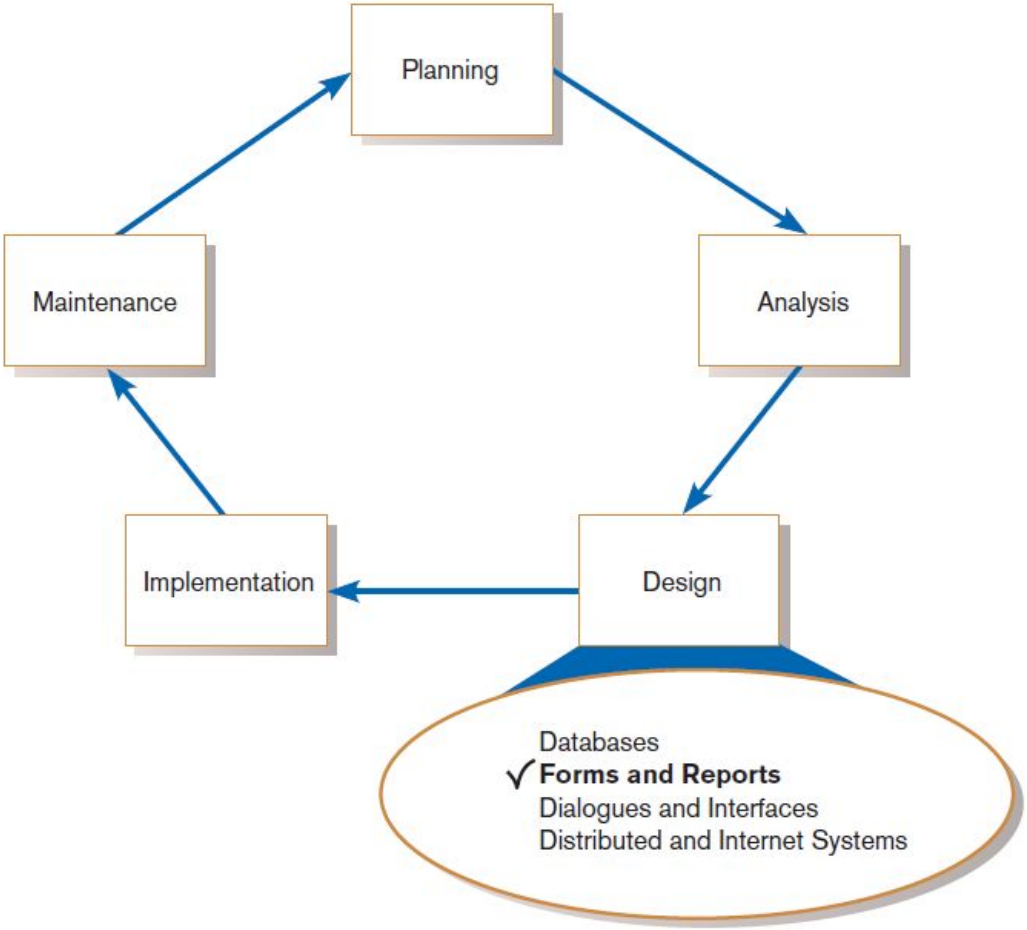

FIGURE 10-1
Systems development life cycle with logical design phase highlighted

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Designing Forms and Reports (Cont.)

- **Form**: a business document that contains some predefined data and may include some areas where additional data are to be filled in
  - An instance of a form is typically based on one database record.

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Designing Forms and Reports (Cont.)

- **Report**: a business document that contains only predefined data
  - It is a passive document used solely for reading or viewing data.
- A report typically contains data from many unrelated records or transactions.

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Designing Forms and Reports (Cont.)

- Common Types of Reports:
  - *Scheduled:* produced at predefined time intervals for routine information needs
  - *Key-indicator*: provides summary of critical information on regular basis
  - *Exception*: highlights data outside of normal operating ranges
  - *Drill-down*: provides details behind summary of key-indicator or exception reports
  - *Ad-hoc*: responds to unplanned requests for non-routine information needs

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The Process of Designing Forms and Reports

- Is a user-focused activity.
- Follows a prototyping approach.
  - First steps are to gain an understanding of the intended user and task objectives by collecting initial requirements during requirements determination.
- Wireframe
  - A simple design to show the placement of information elements on a screen and the space needed for each element

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The Process of Designing Forms and Reports

- Requirements determination:
  - Who will use the form or report?
  - What is the purpose of the form or report?
  - When is the report needed or used?
  - Where does the form or report need to be delivered and used?
  - How many people need to use or view the form or report?

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The Process of Designing Forms and Reports (Cont.)

- Prototyping
  - Initial prototype is designed from requirements.
  - Users review prototype design and either accept the design or request changes.
  - If changes are requested, the construction-evaluation-refinement cycle is repeated until the design is accepted.

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The Process of Designing Forms and Reports (Cont.)

- A coding sheet is an “old” tool for designing forms and reports, usually associated with text-based forms and reports for mainframe applications.
- Visual Basic and other development tools provide computer-aided GUI form and report generation.

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The Process of Designing Forms and Reports (Cont.)

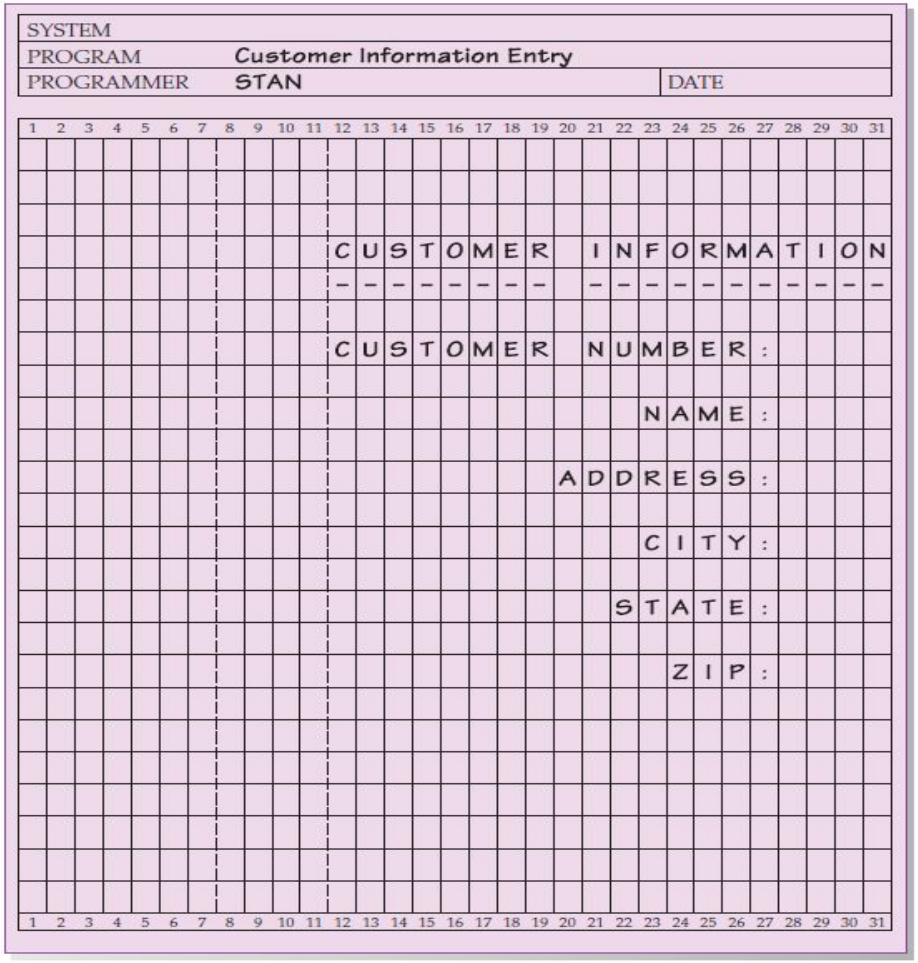

FIGURE 10-2
The layout of a data input form using a coding sheet

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The Process of Designing Forms and Reports (Cont.)

Figure 10-3A
A data input screen designed as a wireframe

FIGURE 10-3B
A data input screen designed in Microsoft's Visual Basic .NET (*Source:* Microsoft Corporation.)

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Deliverables and Outcomes

- Design specifications are the major deliverables and serve as inputs to the system implementation phase.
- The forms, reports, and designed databases we've talked about so far are part of the design specifications.

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Deliverables and Outcomes (Cont.)

- Design specifications have three sections:
  - *Narrative overview*: characterizes users, tasks, system, and environmental factors
  - *Sample design*: image of the form (from coding sheet or form building development tool)
  - *Testing and usability assessment*: measuring test/usability results (consistency, sufficiency, accuracy, etc.)

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Formatting Forms and Reports

- General Guidelines
  - *Meaningful titles* — use clear, specific, version information, and current date
  - *Meaningful information* — include only necessary information, with no need to modify
  - *Balanced layout* — use adequate spacing, margins, and clear labels
  - *Easy navigation system* — show how to move forward and backward, and where you are currently

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Formatting Forms and Reports (Cont.)

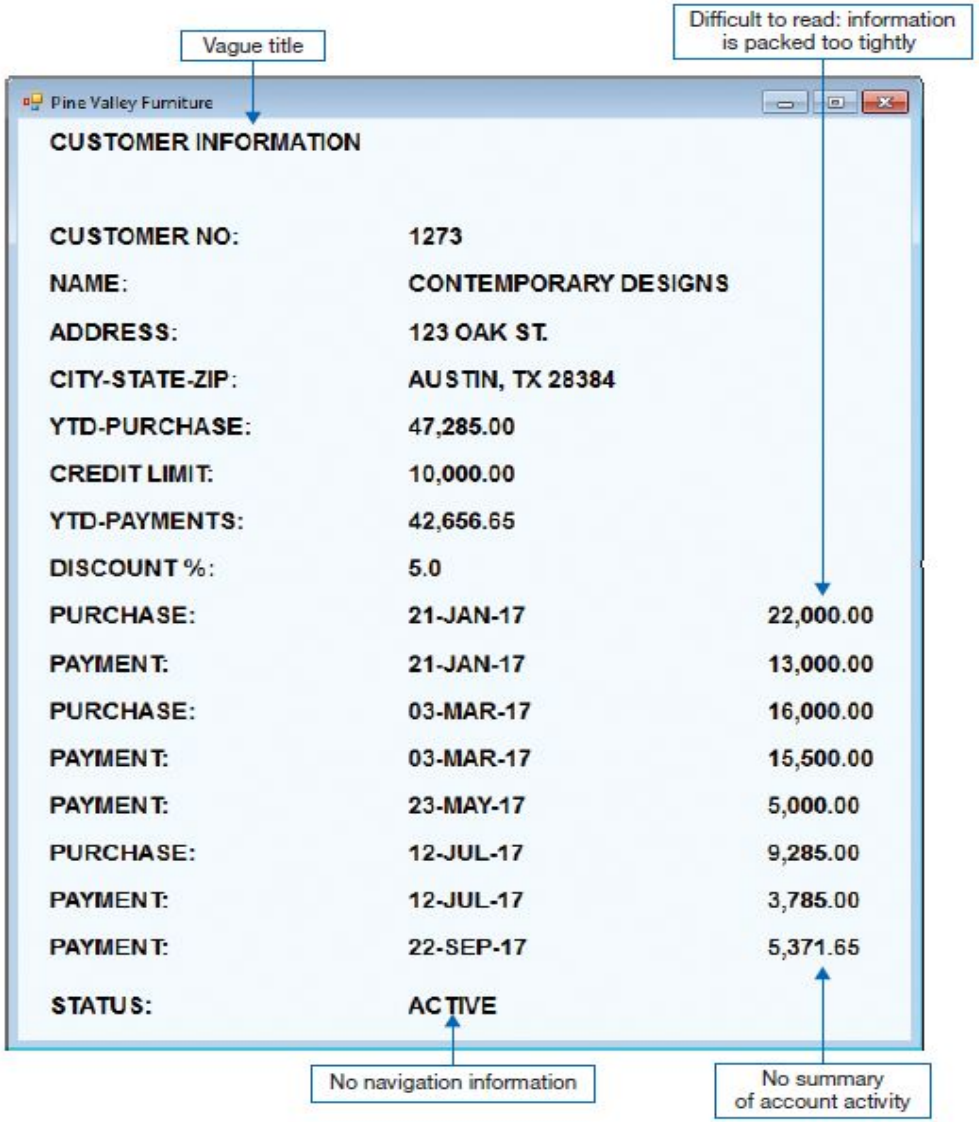

FIGURE 10-5
Contrasting customer information forms (Pine Valley Furniture) (*Source:* Microsoft Corporation.)

(a) Poorly designed form

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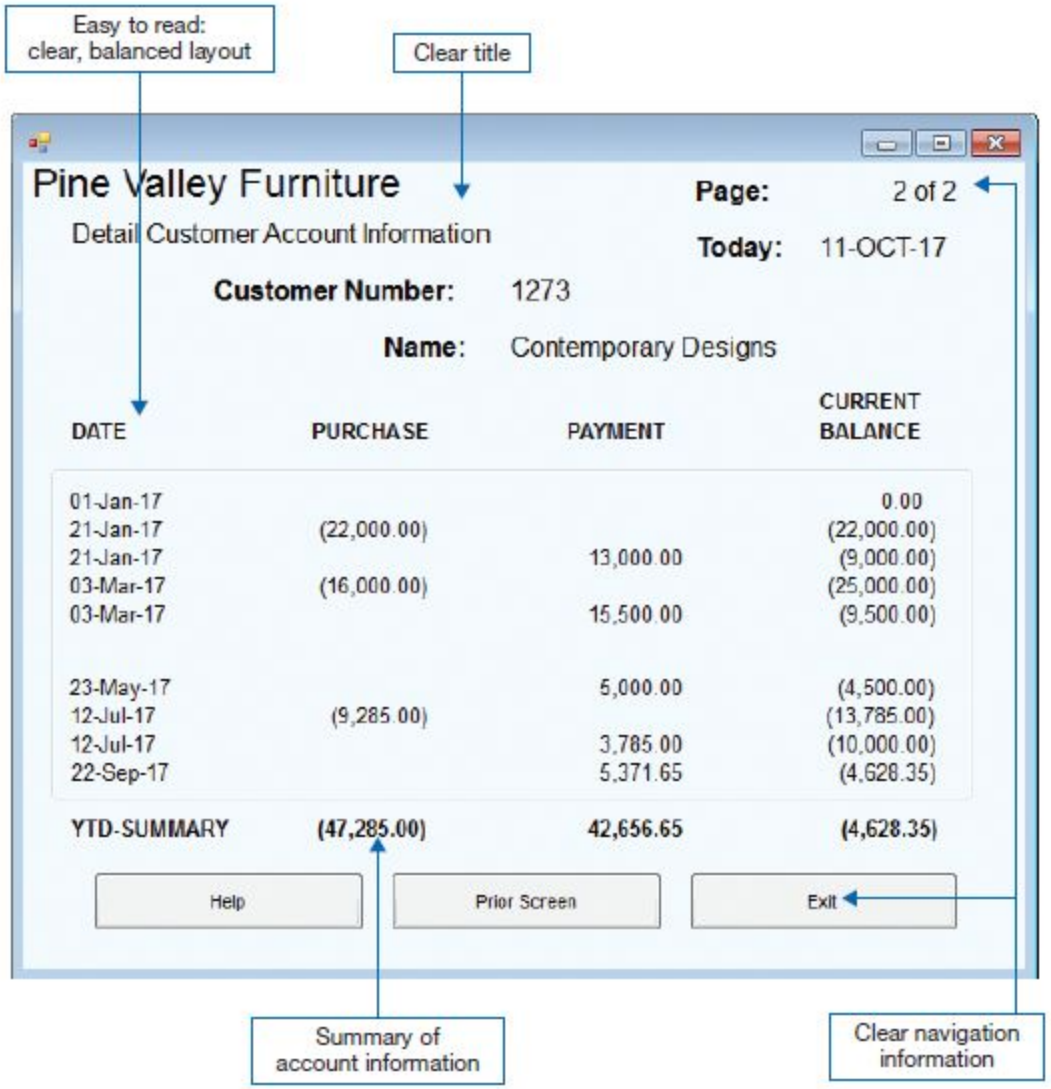
Formatting Forms and Reports (Cont.)

FIGURE 10-5 (continued)

(b) Improved design for form



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Highlighting Information

- Notify users of errors in data entry or processing.
- Provide warnings regarding possible problems.
- Draw attention to keywords, commands, high-priority messages, unusual data values.

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Highlighting Information (Cont.)

Highlighting methods:

- Blinking and audible tones
- Color differences
- Intensity differences
- Size differences
- Font differences
- Reverse video
- Boxing
- Underlining
- All capital letters
- Offsetting the position of nonstandard information

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Highlighting Information (Cont.)

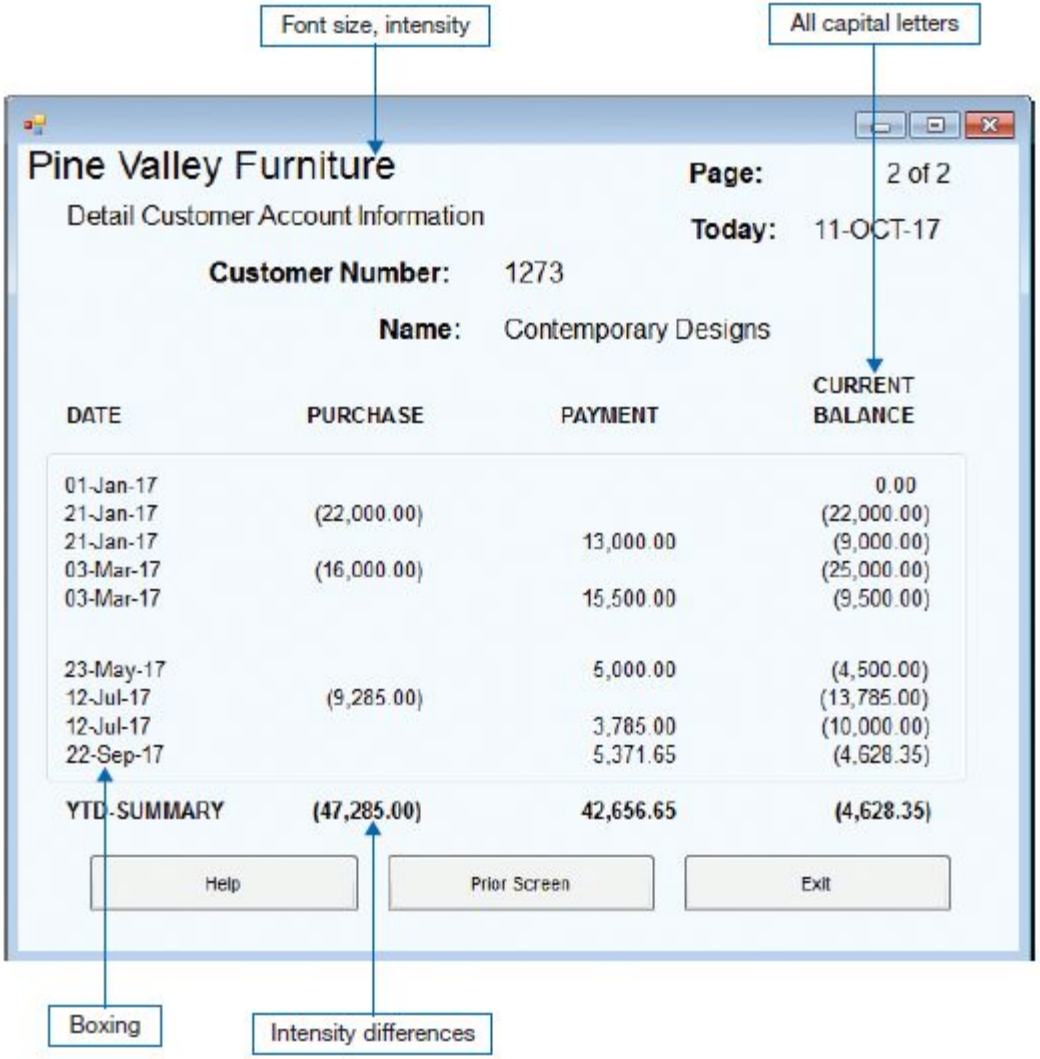

FIGURE 10-6
Customer account status display using various highlighting techniques
(Pine Valley Furniture)

(*Source:* Microsoft Corporation.)

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Color vs. No Color

- Benefits — Color:
  - Soothes or strikes the eye.
  - Accents an uninteresting display.
  - Facilitates subtle discriminations in complex displays.
  - Emphasizes the logical organization of information.
  - Draws attention to warnings.
  - Evokes more emotional reactions.

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Color vs. No Color (Cont.)

- Problems from Using Color
  - Color pairings may wash out or cause problems for some users.
  - Resolution may degrade with different displays.
  - Color fidelity may degrade on different displays.
  - Printing or conversion to other media may not easily translate.

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Displaying Text

- **Case**: display in mixed upper and lower case, use conventional punctuation
- **Spacing**: use double spacing if possible, otherwise blank lines between paragraphs
- **Justification**: left justify text, ragged right margins
- **Hyphenation:** don't hyphenate words between lines
- **Abbreviations**: use only when widely understood and significantly shorter than full text

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Displaying Text (Cont.)

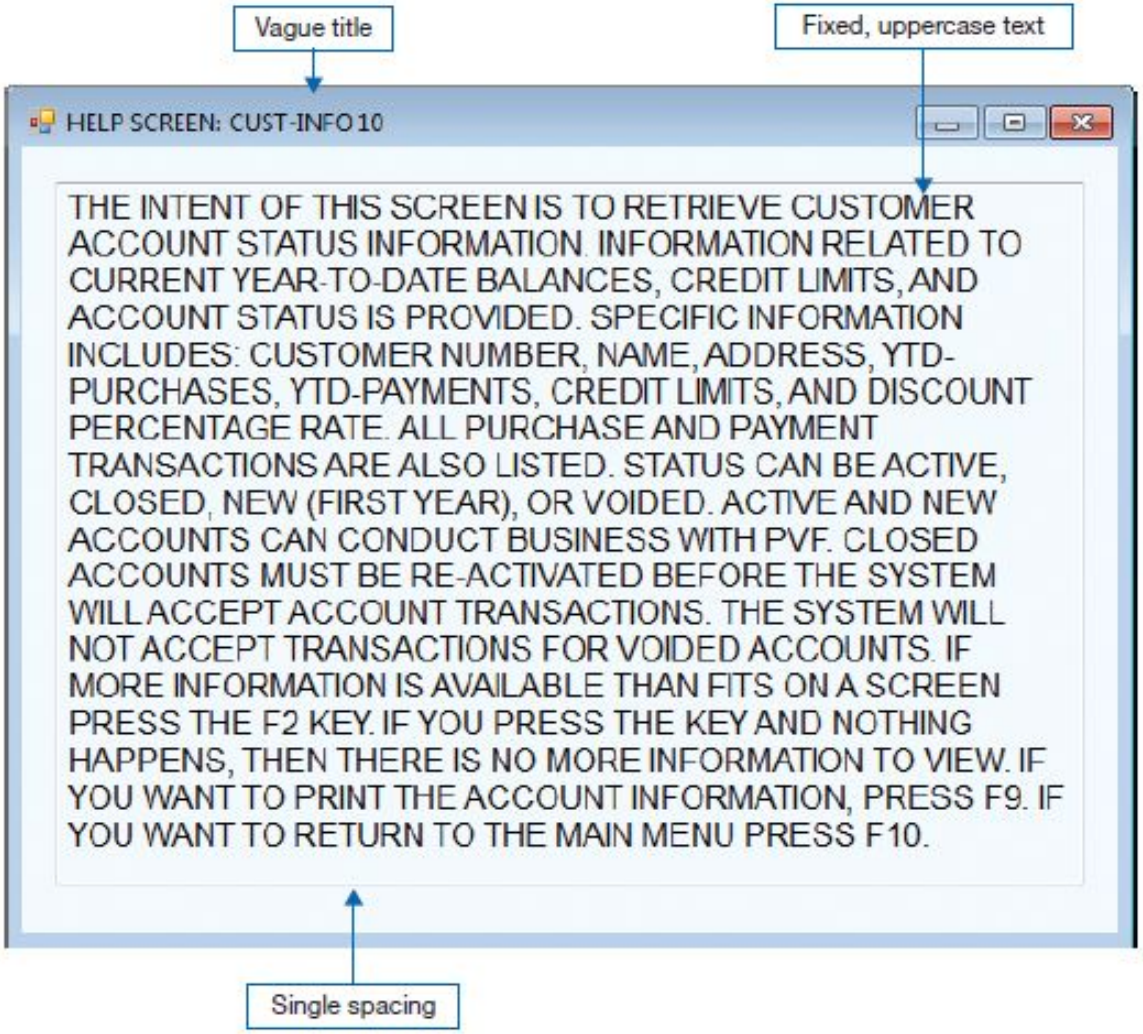

FIGURE 10-7
Contrasting the display of textual help information (*Source:* Microsoft Corporation.)

(a) Poorly designed help screen with many violations of the general guidelines for displaying text

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Displaying Text (Cont.)

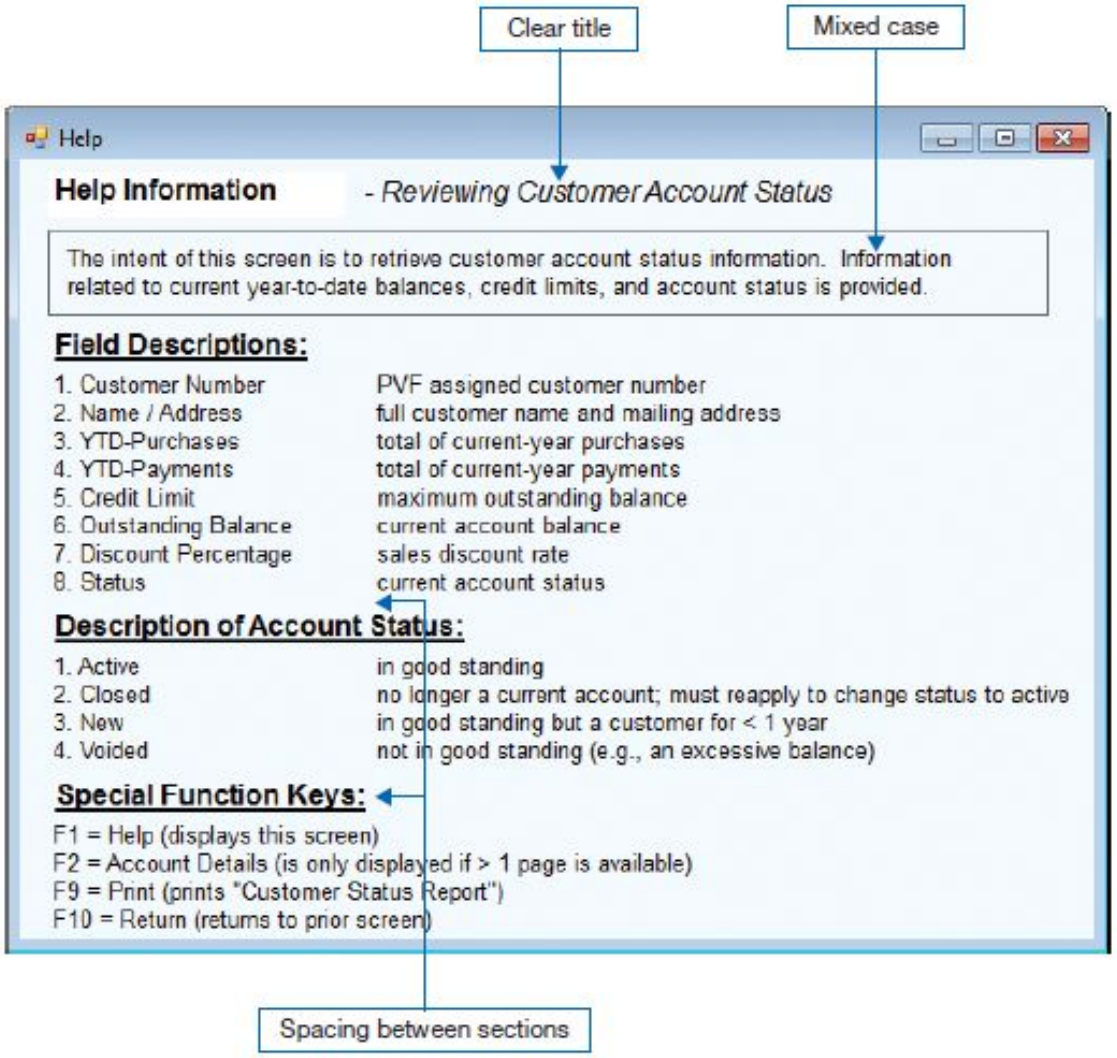

FIGURE 10-7 (continued)

(b) An improved design for a help screen

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Designing Tables and Lists

- Labels
  - All columns and rows should have meaningful labels.
  - Labels should be separated from other information by using highlighting.
  - Redisplay labels when the data extend beyond a single screen or page.

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Designing Tables and Lists (Cont.)

- Formatting columns, rows and text:
  - Sort in a meaningful order.
  - Place a blank line between every five rows in long columns.
  - Similar information displayed in multiple columns should be sorted vertically.
  - Columns should have at least two spaces between them.
  - Allow white space on printed reports for user to write notes.
  - Use a single typeface, except for emphasis.
  - Use same family of typefaces within and across displays and reports.
  - Avoid overly fancy fonts.

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Designing Tables and Lists (Cont.)

- Formatting numeric, textual and alphanumeric data:
  - Right justify numeric data and align columns by decimal points or other delimiter.
  - Left justify textual data. Use short line length, usually 30 to 40 characters per line.
  - Break long sequences of alphanumeric data into small groups of three to four characters each.

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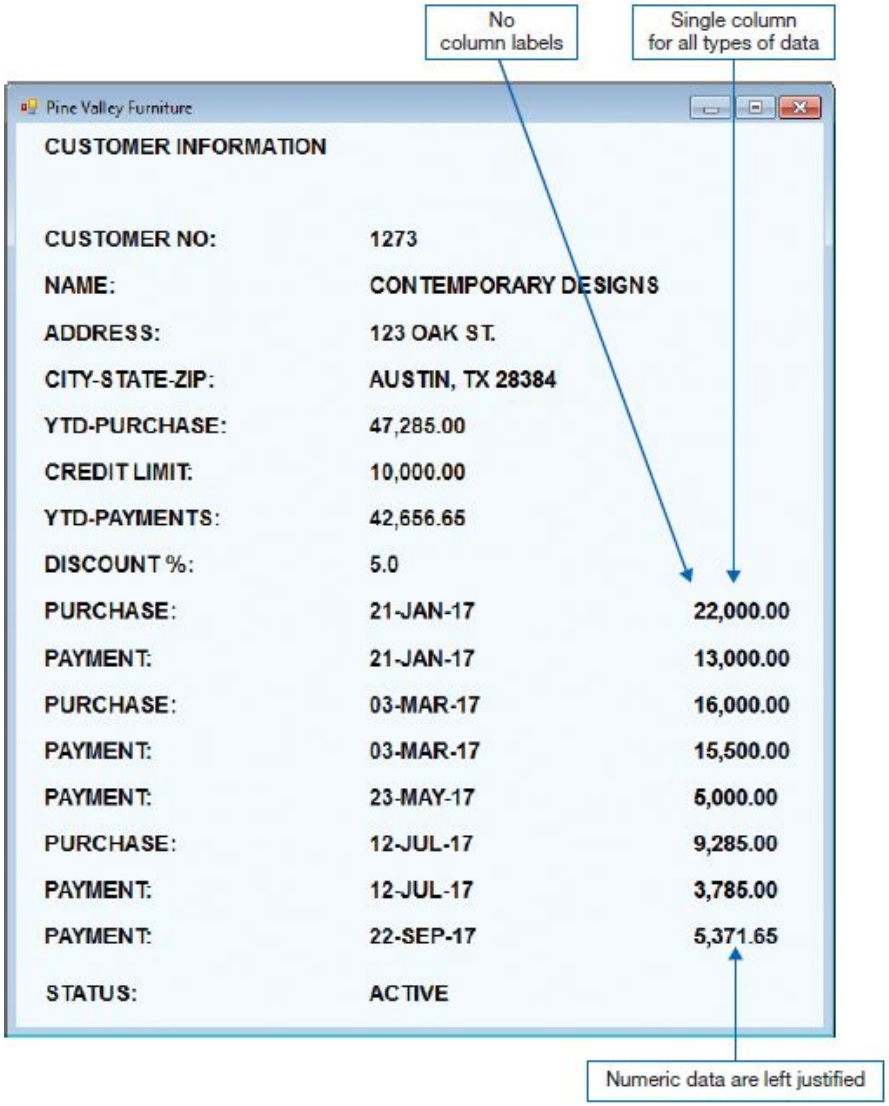
Designing Tables and Lists (Cont.)

FIGURE 10-8
Contrasting the display of tables and lists (Pine Valley Furniture) (*Source:* Microsoft Corporation.)

(a) Poorly designed form



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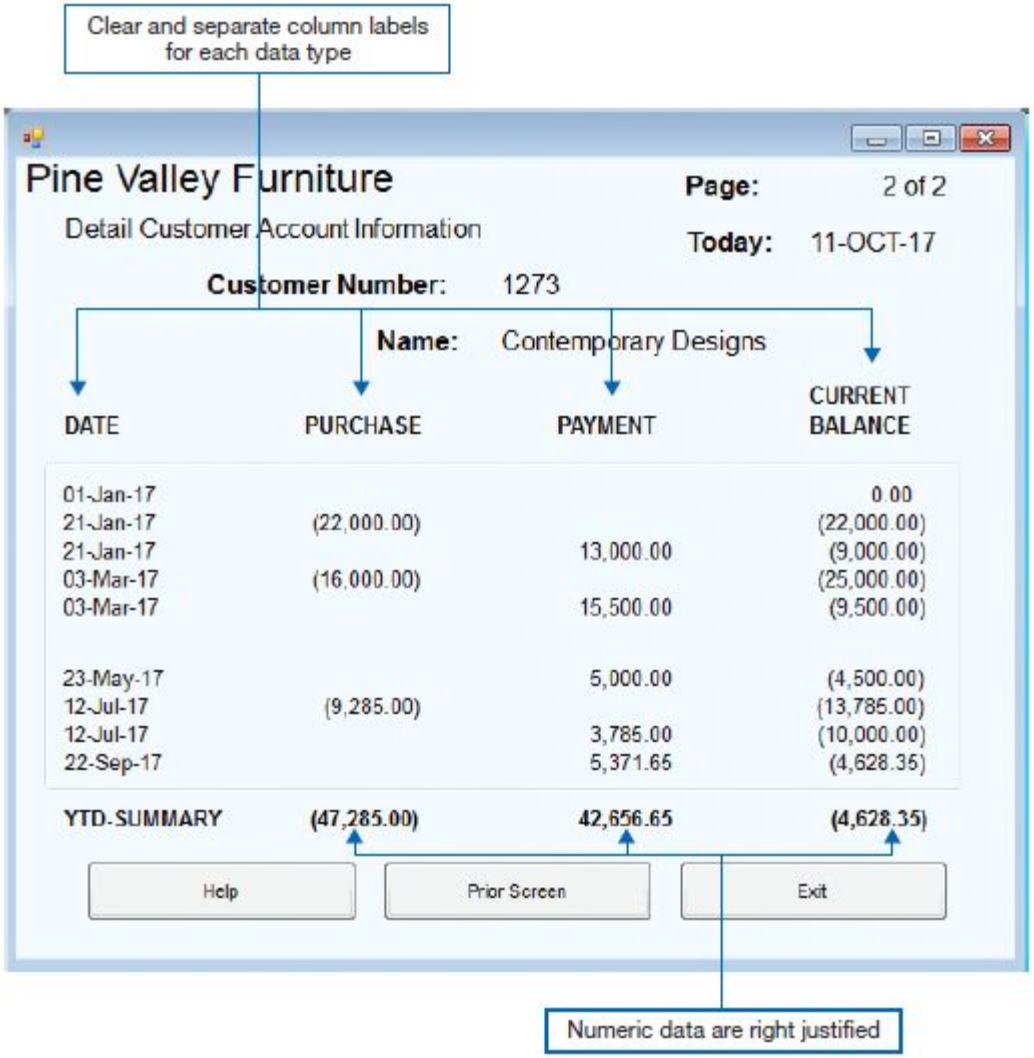
Designing Tables and Lists (Cont.)

FIGURE 10-8 (continued)

(b) Improved design for form



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Designing Tables and Lists (Cont.)

- Use tables for reading individual data values.
- Use graphs for:
  - Providing quick summary.
  - Displaying trends over time.
  - Comparing points and patterns of variables.
  - Forecasting activity.
  - Simple reporting of vast quantities of information.

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Designing Tables and Lists (Cont.)

Place meaningful labels on all columns and rows

Alphabetic text is left justified

Use a meaningful title

Box the table data to improve the appearance of the table

Pine Valley Furniture
Salesperson Annual Summary Report, 2016

January 10, 2017 — Page 1 of 2

Region	Salesperson	SSN	*Quarterly Actual Sales* First	Second	Third	Fourth
Northwest & Mountain						
	Baker	999-99-9999	195,000	146,000	133,000	120,000
	Hawthorne	999-99-9999	220,000	175,000	213,000	198,000
	Hodges	999-99-9999	110,000	95,000	170,000	120,000
Midwest & Mid-Atlantic						
	Franklin	999-99-9999	110,000	120,000	170,000	90,000
	Stephenson[1]	999-99-9999	75,000	66,000	80,000	80,000
	Swenson	999-99-9999	110,000	98,000	100,000	90,000
New England						
	Brightman	999-99-9999	250,000	280,000	260,000	330,000
	Kennedy	999-99-9999	310,000	190,000	270,000	280,000

[1]Sales reflect July 1, 2016 – December 31, 2016.

Superscript characters can be used to alert reader of more detailed information

Sort columns in some meaningful order (names are sorted alphabetically within region)

Long sequence of alphanumeric data is grouped into smaller segments

Right justify all numeric data

Try to fit table onto a single page to help in making comparisons

FIGURE 10-9
Tabular report illustrating numerous design guidelines

(Pine Valley Furniture)

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Designing Tables and Lists (Cont.)

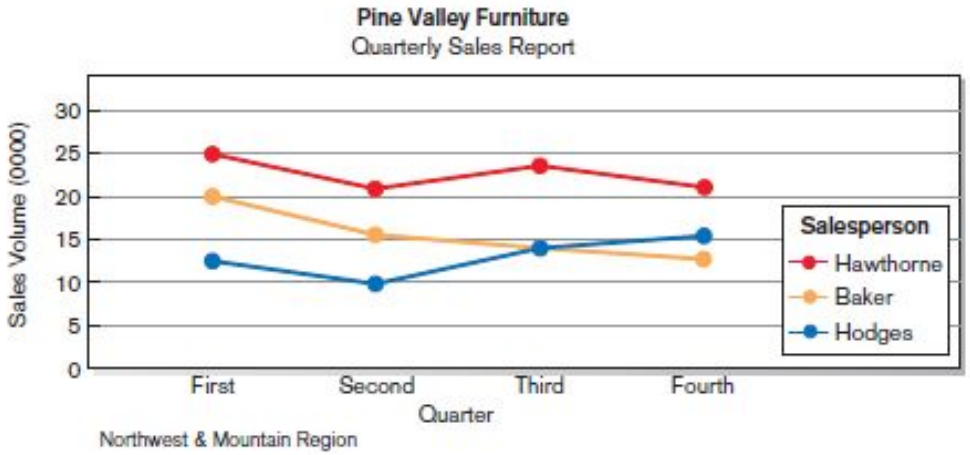
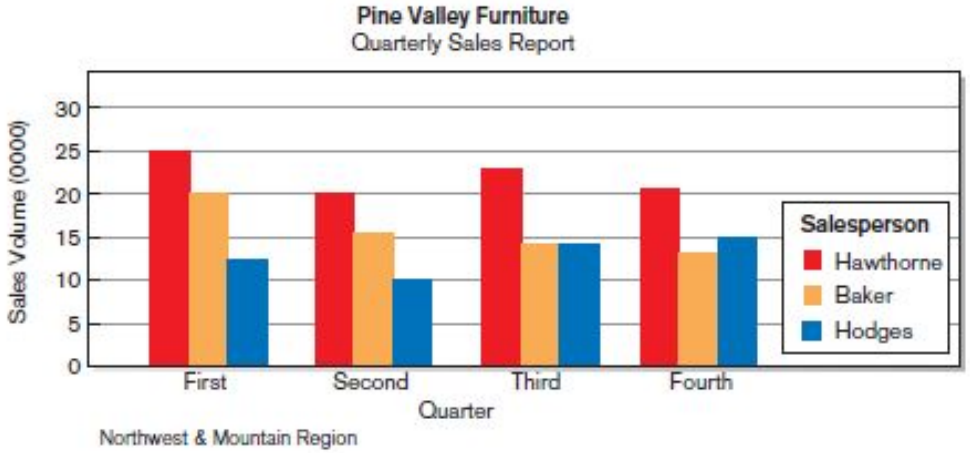


FIGURE 10-10
Graphs for comparison

(a) Line graph



(b) Bar graph

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Assessing Usability

- **Usability**: an overall evaluation of how a system performs in supporting a particular user for a particular task
- Three characteristics of usability:
  - *Speed* — Can you complete a task efficiently?
  - *Accuracy* — Does the output provide what you expect?
  - *Satisfaction* — Do you like using the output?

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Usability Success Factors

- **Consistency** — of terminology, formatting, titles, navigation, response time
- **Organization** — good text/data alignment for efficient navigation and entry
- **Ease/Clarity** — self-explanatory outputs and labels
- **Format** — appropriate display of data and symbols. Special symbols, such as decimal places, dollar signs, and ± signs, should be used as appropriate
- **Flexibility** — maximize user options for data input according to preference

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Usability Success Factors (Cont.)

- Characteristics for consideration:
  - **User**: experience, skills, motivation, education, personality
  - **Task**: time pressure, cost of errors, work durations
  - **System**: platform
  - **Environment**: social and physical issues

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Measures of Usability

- **Learnability** – how difficult to perform the task for the first time?
- **Efficiency** – how quick can user perform task once learned?
- **Error rate** – how frequent are errors, how easy to recover?
- **Memorability** – how easy is it to remember task accomplishment steps?
- **Satisfaction and aesthetics** – does the user enjoy the user experience?

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Electronic Commerce Application: Designing Forms and Reports for Pine Valley Furniture WebStore

- General guidelines for rapid deployment of Internet Web sites have resulted
- Three possible solutions to the problem:
  - Make it possible to design reasonably usable sites without having UI experience.
  - Train more people in good Web design.
  - Live with poorly designed sites that are hard to use.

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Designing Forms and Reports at Pine Valley Furniture

- PVF established the following guidelines:
  - Use lightweight graphics.
  - Establish forms and data integrity rules.
  - Use stylesheet-based HTML.

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Lightweight Graphics

- **Lightweight Graphics**: the use of small, simple images to allow a Web page to more quickly be displayed
  - Quick image download
  - Quick feedback from the Web site will help to keep customers at the PVF website longer
  - Using lightweight graphics allows pages to load quickly and helps users to reach their final location on the site

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Forms and Data Integrity Rules

- All forms that request information should be clearly labeled and provide adequate room for input.
- Specific fields requiring specific information must provide a clear example.
- Forms must designate which fields are optional, required, and which have a range of values.

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Stylesheet-Based HTML

- A web design approach that separates content from the way in which it is formatted and presented
- Makes ongoing maintenance easier
- Facilitates site-wide consistency

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Summary

- In this chapter you learned how to:

✔ Explain the process of designing forms and reports and the deliverables for their creation.

✔ Apply the general guidelines for formatting forms and reports.

✔ Use color and know when color improves the usability of information.

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Summary (Cont.)

- ✔ Format text, tables, and lists effectively.
- ✔ Explain how to assess usability and describe how variations in users, tasks, technology, and environmental characteristics influence the usability of forms and reports.
- ✔ Discuss guidelines for the design of forms and reports for Internet-based electronic commerce systems.

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