

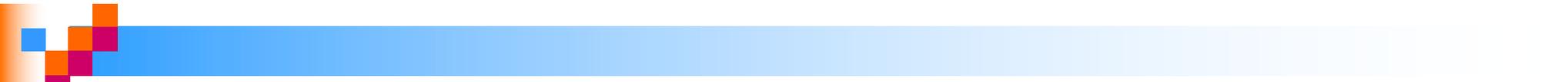
Modern Systems Analysis and Design

Seventh Edition

Jeffrey A. Hoffer
Joey F. George
Joseph S. Valacich

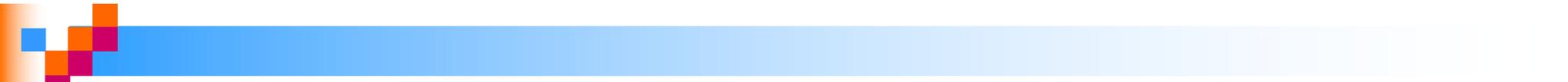
Chapter 10

Designing Forms and Reports



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.



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.

Designing Forms and Reports

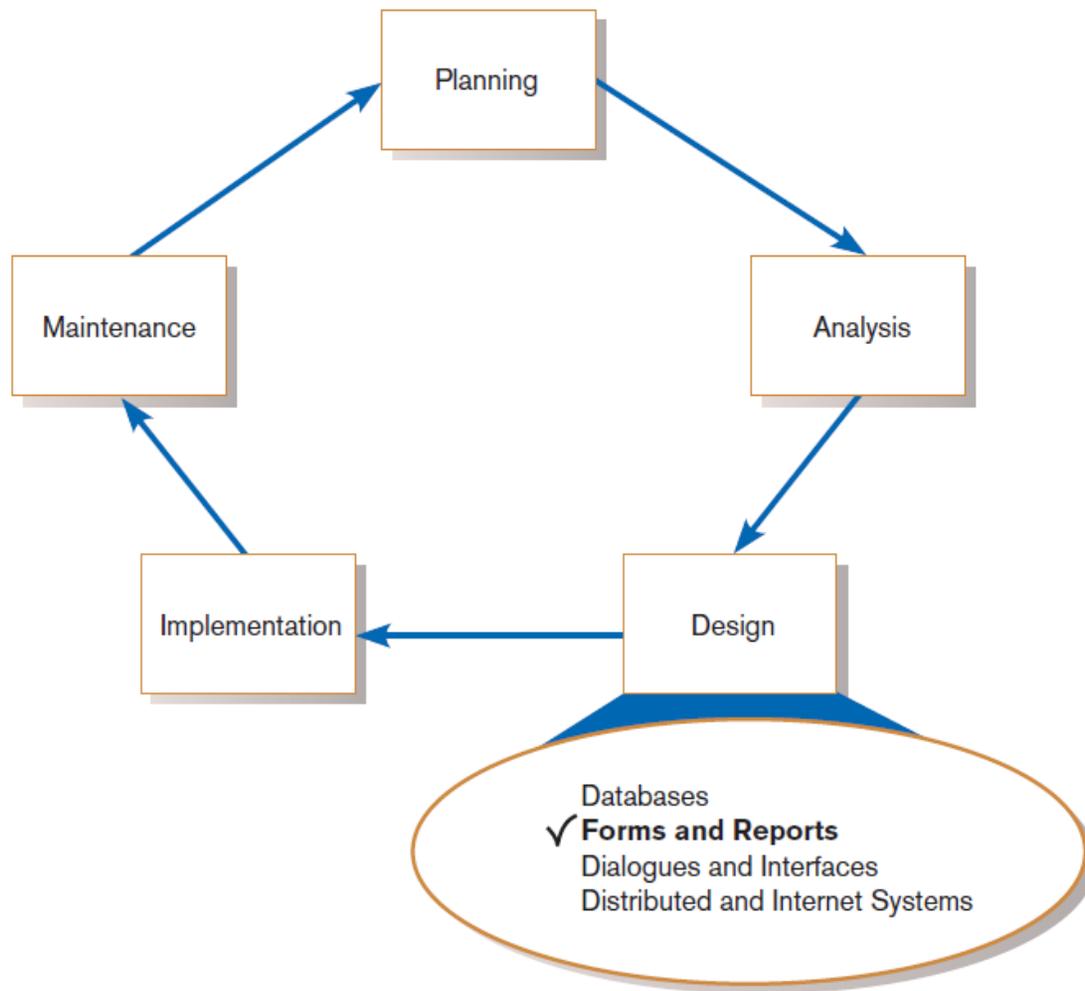
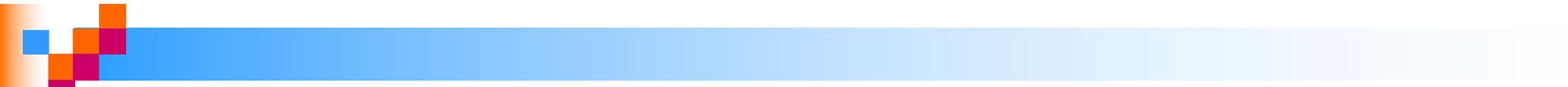
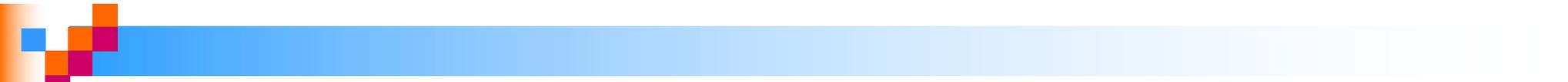


FIGURE 10-1
Systems development life cycle with logical design phase highlighted



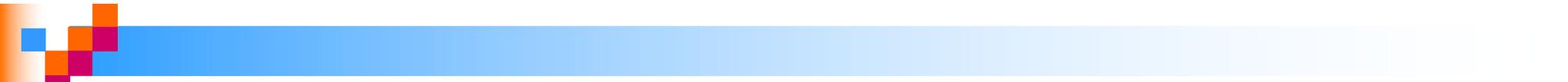
Designing Forms and Reports (Cont.)

- **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.



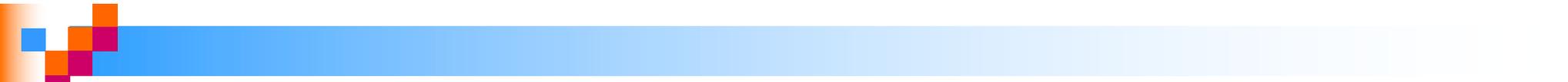
Designing Forms and Reports (Cont.)

- **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.



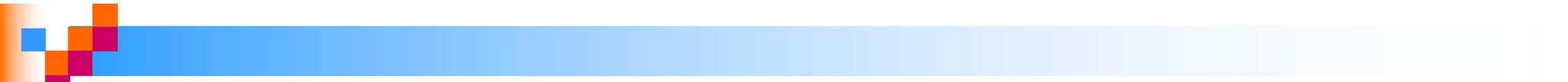
Designing Forms and Reports (Cont.)

- 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



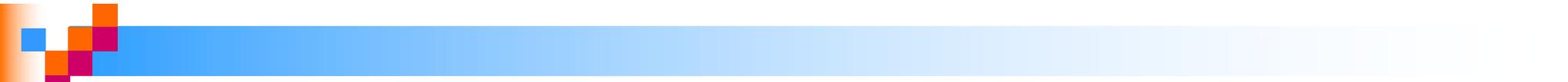
The Process of Designing Forms and Reports

- 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.



The Process of Designing Forms and Reports

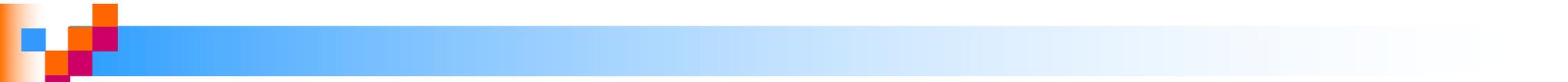
- Requirements determination:
 - Who will use the form or report?
 - What is the purpose of the form or report?
 - When is the report needed or used?
 - Where does the form or report need to be delivered and used?
 - How many people need to use or view the form or report?



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.



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.

The Process of Designing Forms and Reports (Cont.)

Customer Information Entry

Customer Information Today: 11-OCT-14

CUSTOMER INFORMATION

Customer Number: 1273

Name: Contemporary Designs

Address: 123 Oak Street

City: Austin

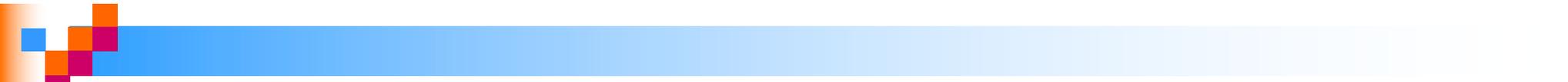
State: TX

Zip: 28384

Save Help Exit

FIGURE 10-3

A data input screen designed in Microsoft's Visual Basic .NET
(Source: Microsoft Corporation.)



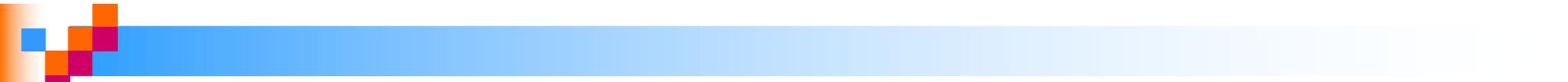
Deliverables and Outcomes

- Design specifications are the major deliverables and inputs to the system implementation phase.



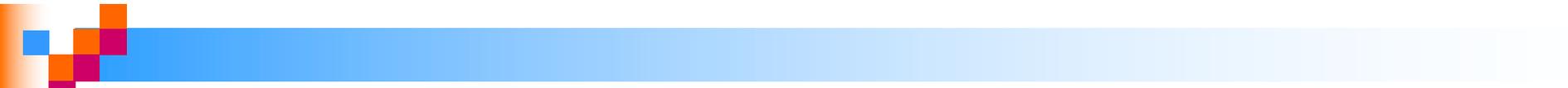
Deliverables and Outcomes (Cont.)

- 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.)



Formatting Forms and Reports

- *Meaningful titles* — use clear, specific, version information, and current date
- *Meaningful information* — include only necessary information, with no need to modify



Formatting Forms and Reports (Cont.)

- *Balanced layout* — use adequate spacing, margins, and clear labels
- *Easy navigation system* — show how to move forward and backward, and where you are currently

Formatting Forms and Reports (Cont.)

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

(a) Poorly designed form

The screenshot shows a window titled "Pine Valley Furniture" containing a form with the following data:

CUSTOMER INFORMATION		
CUSTOMER NO:	1273	
NAME:	CONTEMPORARY DESIGNS	
ADDRESS:	123 OAK ST.	
CITY-STATE-ZIP:	AUSTIN, TX 28384	
YTD-PURCHASE:	47,285.00	
CREDIT LIMIT:	10,000.00	
YTD-PAYMENTS:	42,656.65	
DISCOUNT %:	5.0	
PURCHASE:	21-JAN-14	22,000.00
PAYMENT:	21-JAN-14	13,000.00
PURCHASE:	03-MAR-14	16,000.00
PAYMENT:	03-MAR-14	15,500.00
PAYMENT:	23-MAY-14	5,000.00
PURCHASE:	12-JUL-14	9,285.00
PAYMENT:	12-JUL-14	3,785.00
PAYMENT:	22-SEP-14	5,371.65
STATUS:	ACTIVE	

Annotations on the form:

- "Vague title" points to the window title "Pine Valley Furniture".
- "Difficult to read: information is packed too tightly" points to the dense layout of the transaction list.
- "No navigation information" points to the bottom of the form.
- "No summary of account activity" points to the bottom of the transaction list.

Formatting Forms and Reports (Cont.)

FIGURE 10-5 (continued)

(b) Improved design for form

The screenshot shows a window titled "Pine Valley Furniture" with the subtitle "Detail Customer Account Information". The window displays the following information:

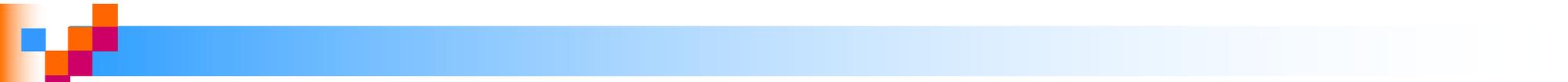
- Page:** 2 of 2
- Today:** 11-OCT-14
- Customer Number:** 1273
- Name:** Contemporary Designs

DATE	PURCHASE	PAYMENT	CURRENT BALANCE
01-Jan-14			0.00
21-Jan-14	(22,000.00)		(22,000.00)
21-Jan-14		13,000.00	(9,000.00)
03-Mar-14	(16,000.00)		(25,000.00)
03-Mar-14		15,500.00	(9,500.00)
23-May-14		5,000.00	(4,500.00)
12-Jul-14	(9,285.00)		(13,785.00)
12-Jul-14		3,785.00	(10,000.00)
22-Sep-14		5,371.65	(4,628.35)
YTD-SUMMARY	(47,285.00)	47,656.65	(4,628.35)

At the bottom of the window are three buttons: "Help", "Prior Screen", and "Exit".

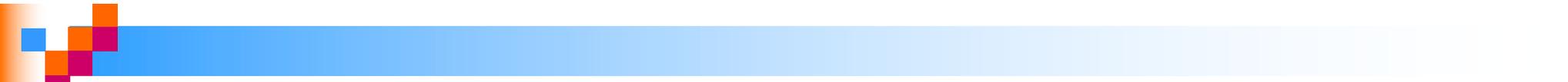
Callouts in the image point to specific design features:

- "Easy to read: clear, balanced layout" points to the overall layout of the report.
- "Clear title" points to the window title "Pine Valley Furniture".
- "Summary of account information" points to the "YTD-SUMMARY" row in the table.
- "Clear navigation information" points to the "Exit" button.



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.



Highlighting Information (Cont.)

Highlighting can include use of

- upper case
- bold
- italics
- underlining
- boxing
- size and color differences
- all capital letters
- blinking
- reverse video
- audible tones
- intensity differences
- offsetting nonstandard information

Highlighting Information (Cont.)

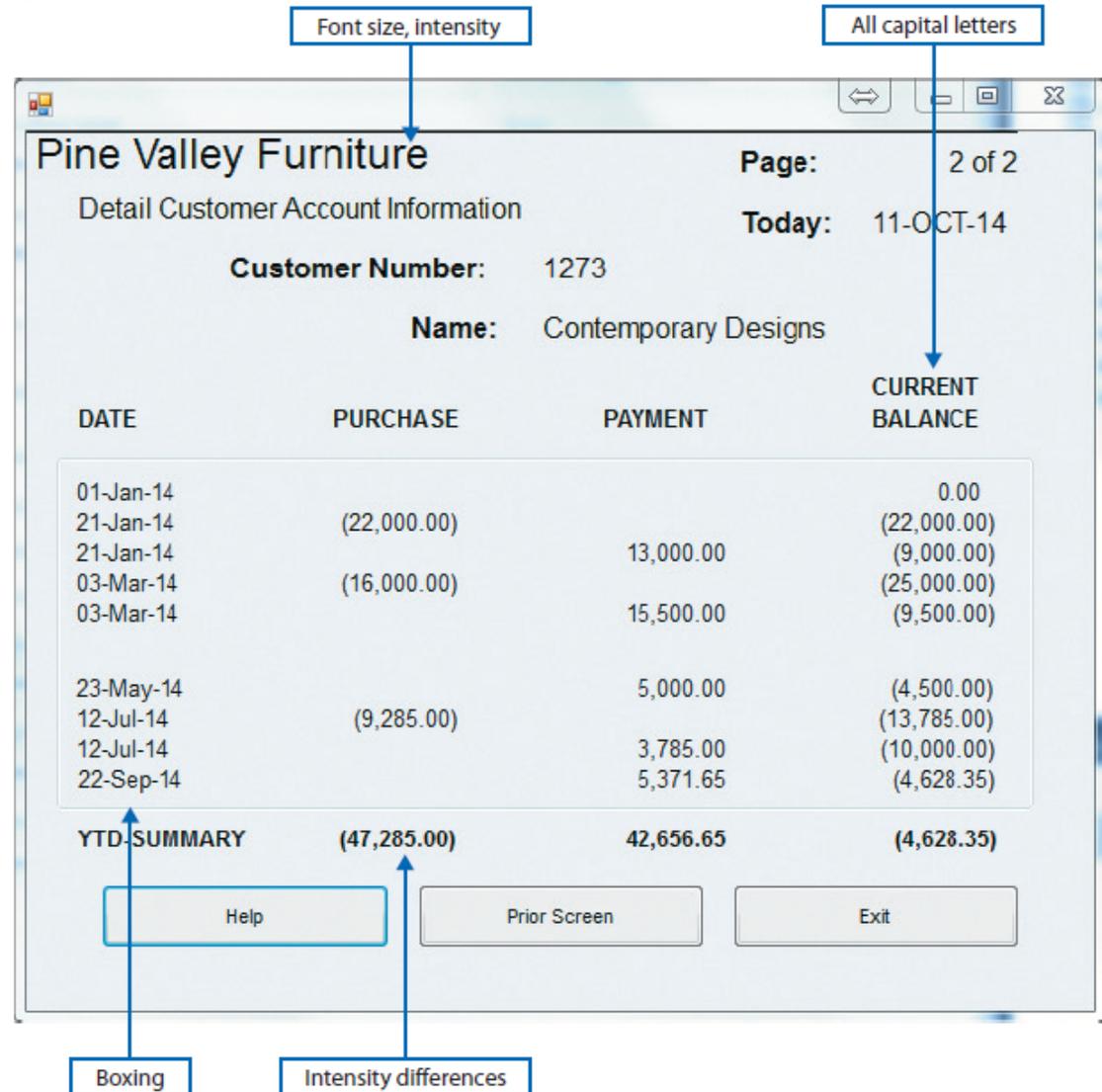
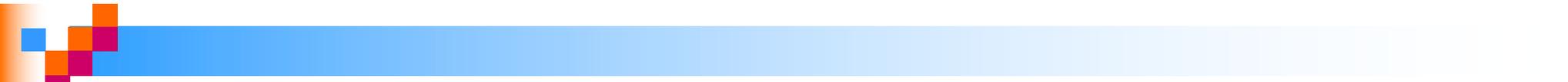


FIGURE 10-6
Customer account status display using various highlighting techniques (Pine Valley Furniture)

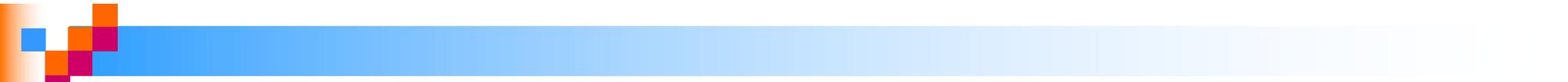
(Source: Microsoft Corporation.)



Color vs. No Color

■ Benefits — Color:

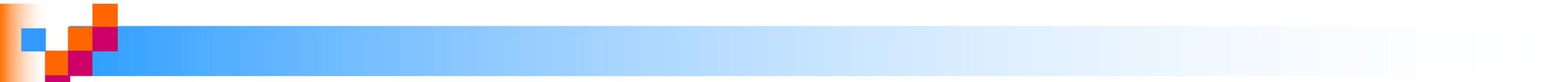
- Soothes or strikes the eye.
- Accents an uninteresting display.
- Facilitates subtle discriminations in complex displays.
- Emphasizes the logical organization of information.
- Draws attention to warnings.
- Evokes more emotional reactions.



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.



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

Displaying Text (Cont.)

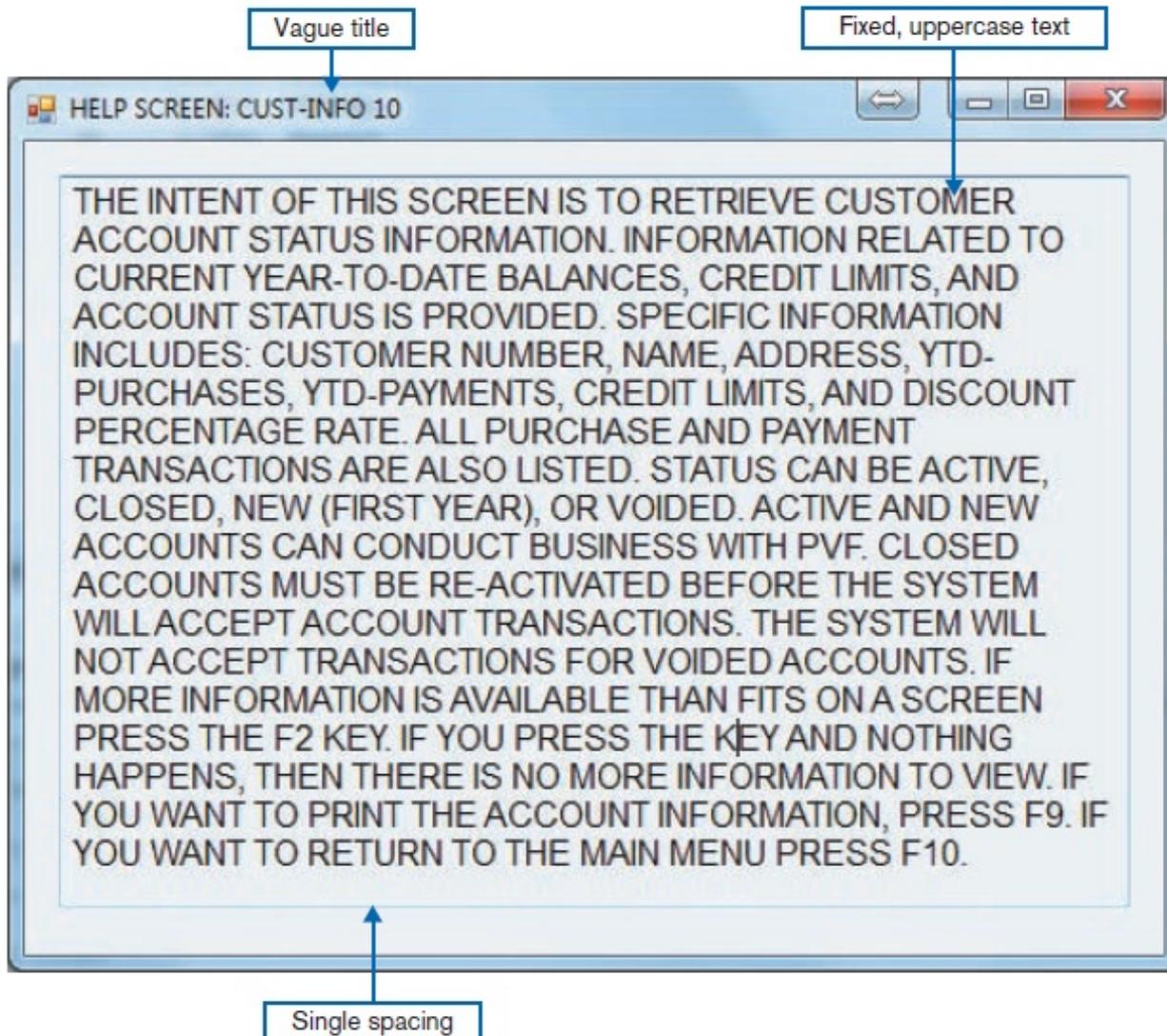


FIGURE 10-7

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

Displaying Text (Cont.)

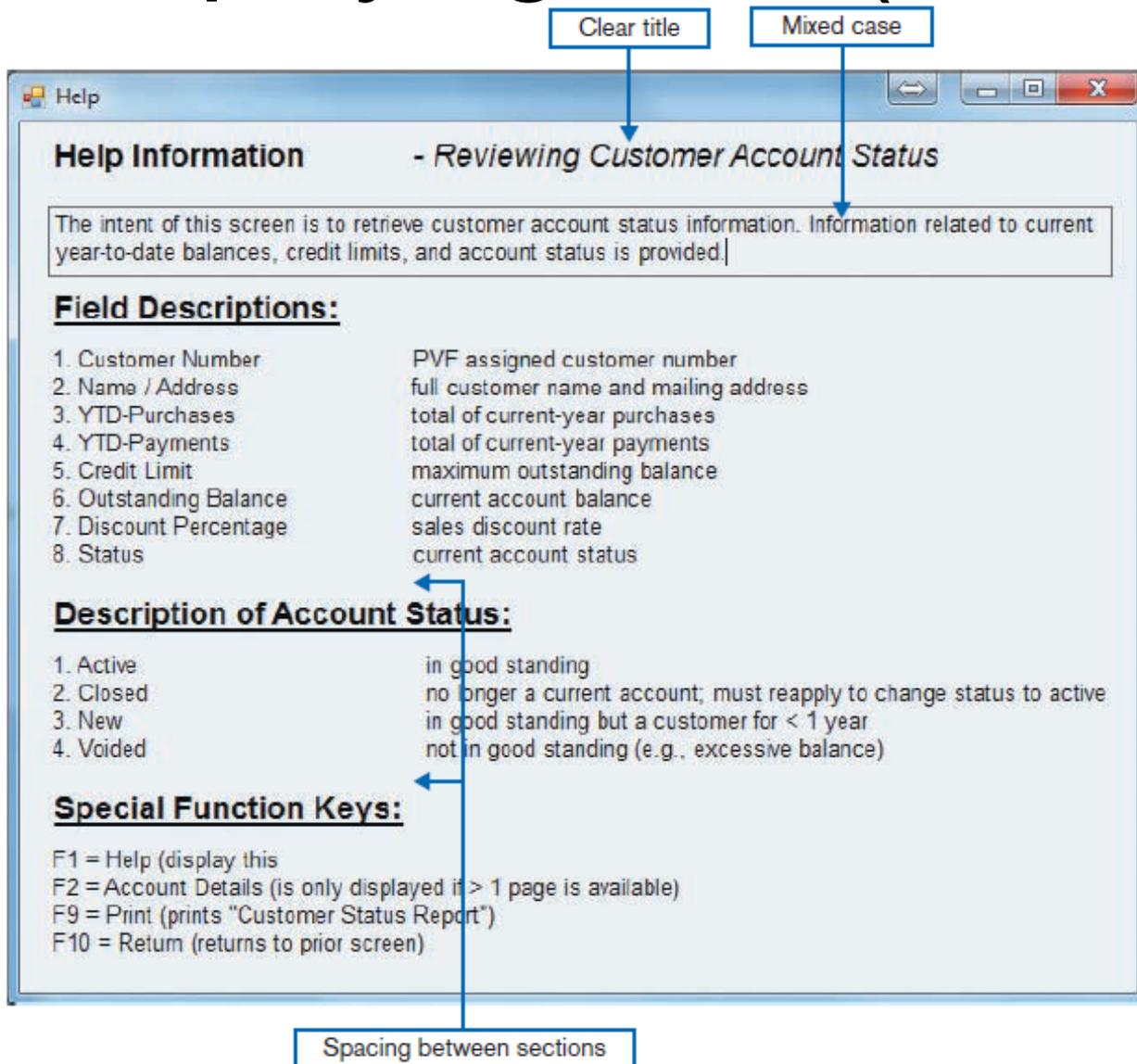
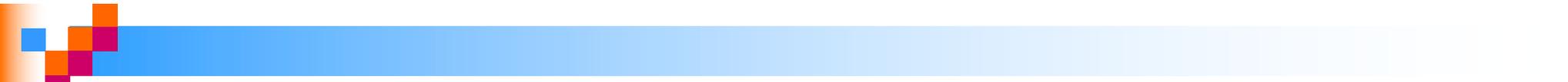


FIGURE 10-7 (continued)

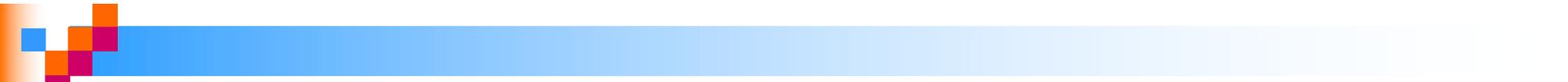
(b) An improved design for a help screen



Designing Tables and Lists

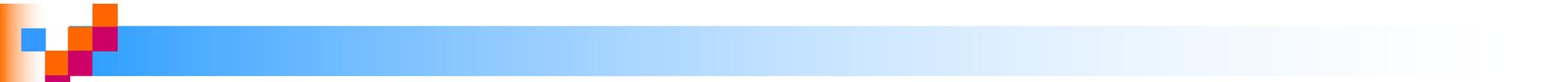
■ Labels

- 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.



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.



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.

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

CUSTOMER INFORMATION		
CUSTOMER NO:	1273	
NAME:	CONTEMPORARY DESIGNS	
ADDRESS:	123 OAK ST.	
CITY-STATE-ZIP:	AUSTIN, TX 28384	
YTD-PURCHASE:	47,285.00	
CREDIT LIMIT:	10,000.00	
YTD-PAYMENTS:	42,656.65	
DISCOUNT %:	5.0	
PURCHASE:	21-JAN-14	22,000.00
PAYMENT:	21-JAN-14	13,000.00
PURCHASE:	03-MAR-14	16,000.00
PAYMENT:	03-MAR-14	15,500.00
PAYMENT:	23-MAY-14	5,000.00
PURCHASE:	12-JUL-14	9,285.00
PAYMENT:	12-JUL-14	3,785.00
PAYMENT:	22-SEP-14	5,371.65
STATUS:	ACTIVE	

Designing Tables and Lists (Cont.)

Clear and separate column labels for each data type

Pine Valley Furniture Page: 2 of 2
 Detail Customer Account Information Today: 11-OCT-14
 Customer Number: 1273
 Name: Contemporary Designs

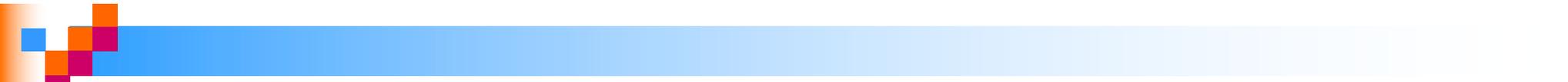
DATE	PURCHASE	PAYMENT	CURRENT BALANCE
01-Jan-14			0.00
21-Jan-14	(22,000.00)		(22,000.00)
21-Jan-14		13,000.00	(9,000.00)
03-Mar-14	(16,000.00)		(25,000.00)
03-Mar-14		15,500.00	(9,500.00)
23-May-14		5,000.00	(4,500.00)
12-Jul-14	(9,285.00)		(13,785.00)
12-Jul-14		3,785.00	(10,000.00)
22-Sep-14		5,371.65	(4,628.35)
YTD-SUMMARY	(47,285.00)	42,656.65	(4,628.35)

Buttons: Help, Prior Screen, Exit

Numeric data are right justified

FIGURE 10-8 (continued)

(b) Improved design for form



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.

Designing Tables and Lists (Cont.)

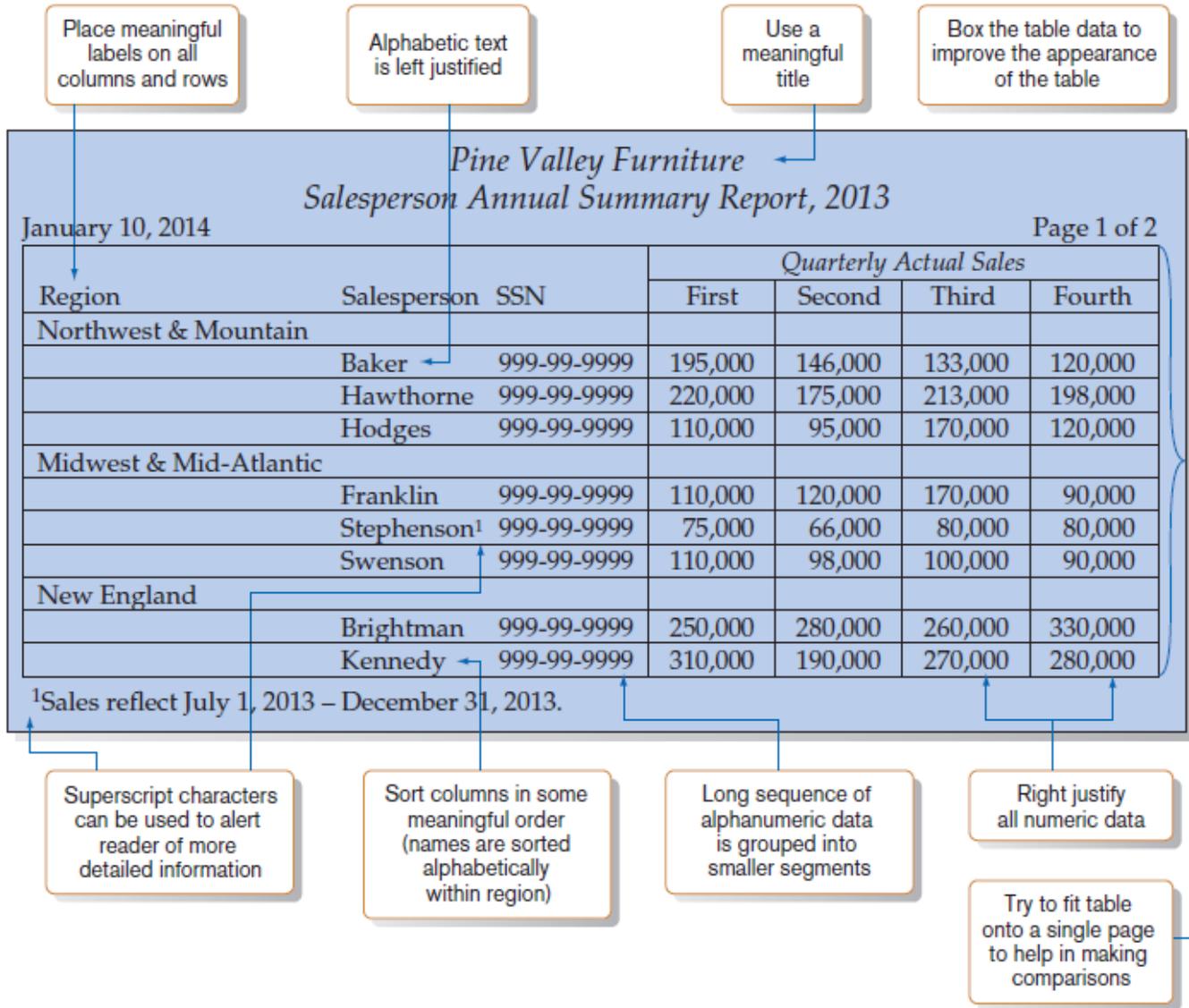


FIGURE 10-9
Tabular report illustrating numerous design guidelines
(Pine Valley Furniture)

Designing Tables and Lists (Cont.)

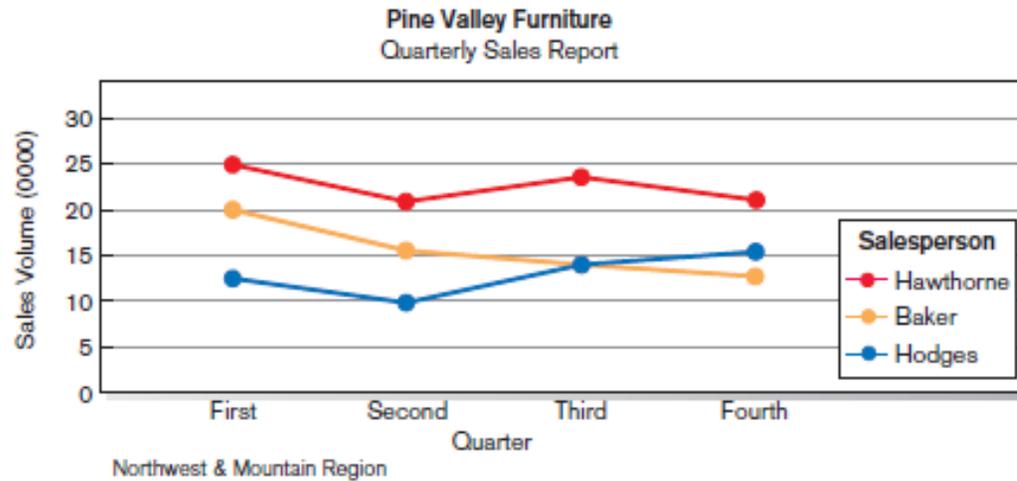
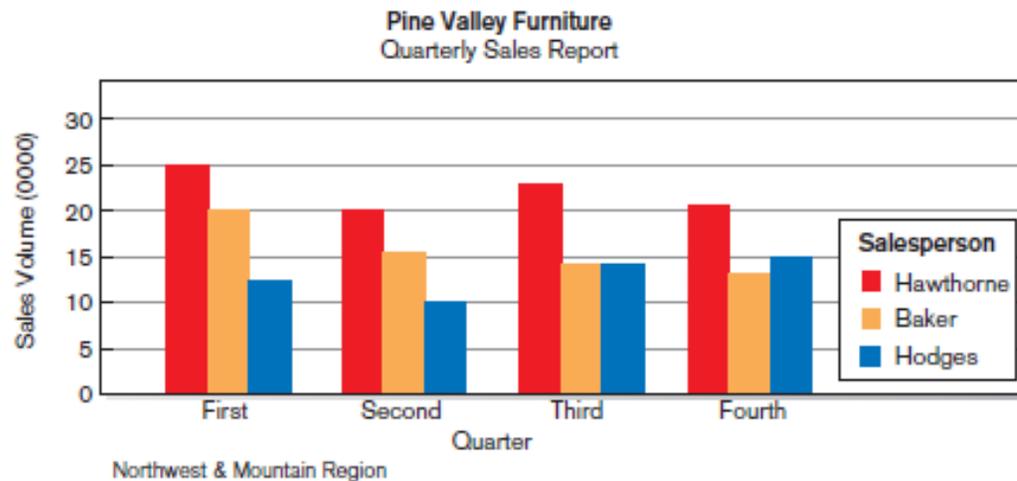
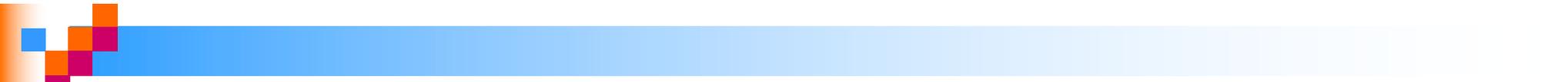


FIGURE 10-10
Graphs for comparison

(a) Line graph

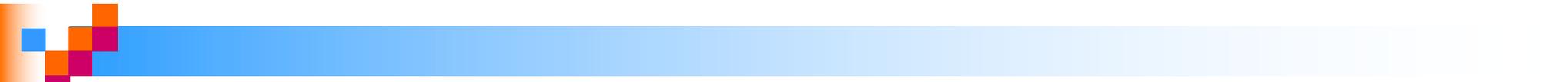


(b) Bar graph



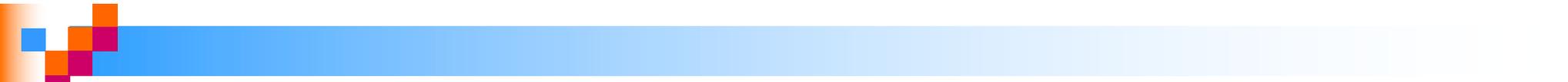
Assessing Usability

- Objective for designing forms, reports and all human-computer interactions is usability.
- There are three characteristics:
 - *Speed* — Can you complete a task efficiently?
 - *Accuracy* — Does the output provide what you expect?
 - *Satisfaction* — Do you like using the output?



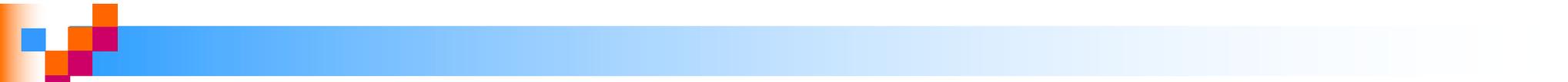
Assessing Usability (Cont.)

- **Usability:** an overall evaluation of how a system performs in supporting a particular user for a particular task



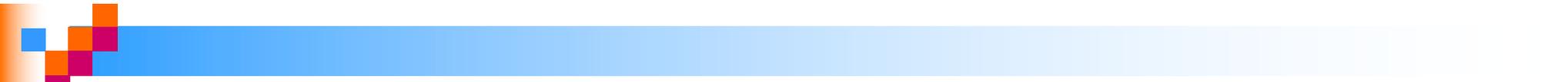
Usability Success Factors

- **Consistency** — of terminology, formatting, titles, navigation, response time
- **Efficiency** — minimize required user actions
- **Ease** — self-explanatory outputs and labels
- **Format** — appropriate display of data and symbols
- **Flexibility** — maximize user options for data input according to preference



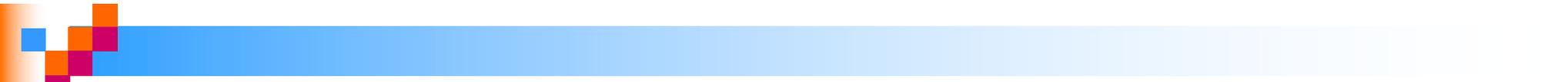
Usability Success Factors (Cont.)

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



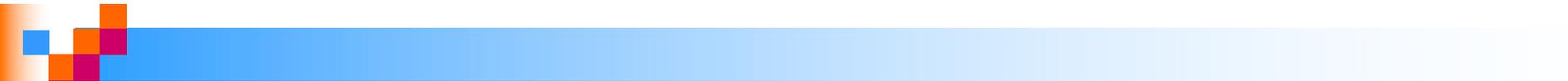
Measures of Usability

- Time to learn
- Speed of performance
- Rate of errors
- Retention over time
- Subjective satisfaction
- Consistency of layout



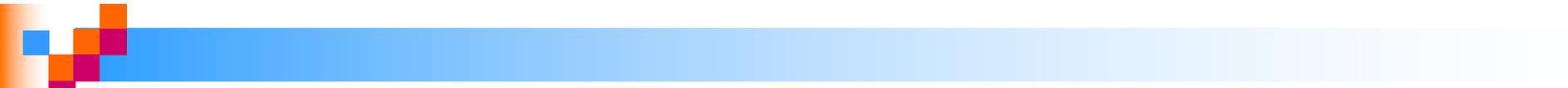
Measures of Usability (Cont.)

- The layout of information should be consistent both within and across applications, whether information is delivered on screen display or on a hard-copy report.



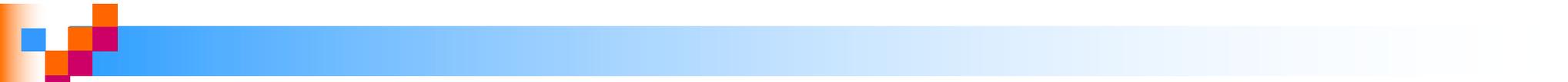
Electronic Commerce Application: Designing Forms and Reports for Pine Valley Furniture WebStore

- 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.



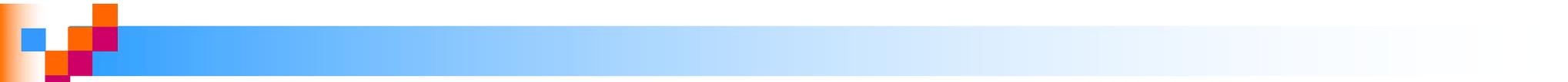
Designing Forms and Reports at Pine Valley Furniture

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



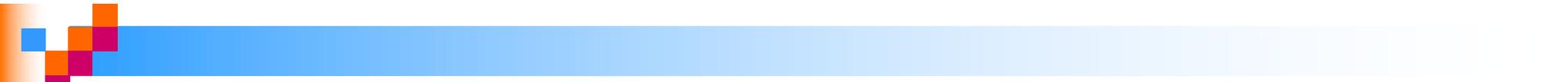
Lightweight Graphics

- **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 WebStore longer



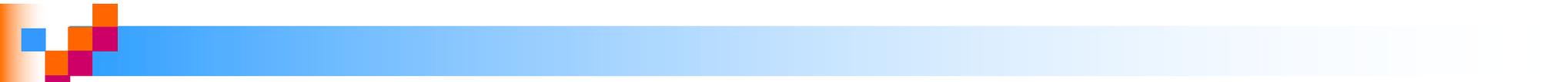
Forms and Data Integrity Rules

- 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.



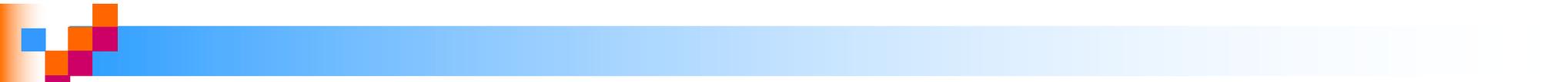
Template-Based HTML

- **Template-based HTML:** templates to display and process common attributes of higher-level, more abstract items
 - Creates an interface that is very easy to maintain
 - Advantageous to have a “few” templates that could be used for entire product line
 - Not every product needs its own page



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.



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.



This work is protected by United States copyright laws and is provided solely for the use of instructors in teaching their courses and assessing student learning. Dissemination or sale of any part of this work (including on the World Wide Web) will destroy the integrity of the work and is not permitted. The work and materials from it should never be made available to students except by instructors using the accompanying text in their classes. All recipients of this work are expected to abide by these restrictions and to honor the intended pedagogical purposes and the needs of other instructors who rely on these materials.

Copyright © 2014 Pearson Education, Inc.
Publishing as Prentice Hall