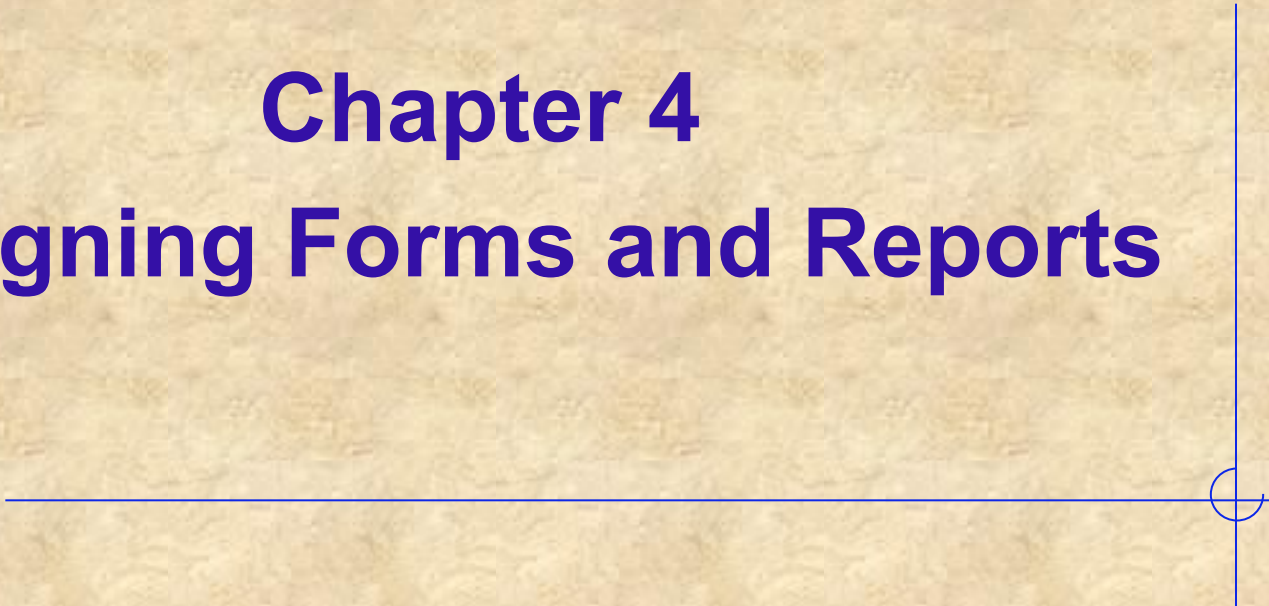




Modern Systems Analysis and Design

Chapter 4

Designing Forms and Reports



Learning Objectives

- ✓ Explain the process of form and report design.
- ✓ Apply general guidelines for formatting forms and reports.
- ✓ Use color and know when color improves the usability of information.
- ✓ Format text, tables, and lists effectively.
- ✓ Explain how to assess usability and describe factors affecting usability.

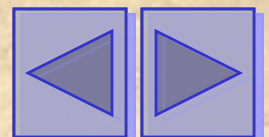
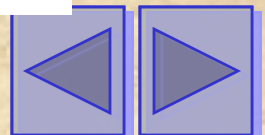
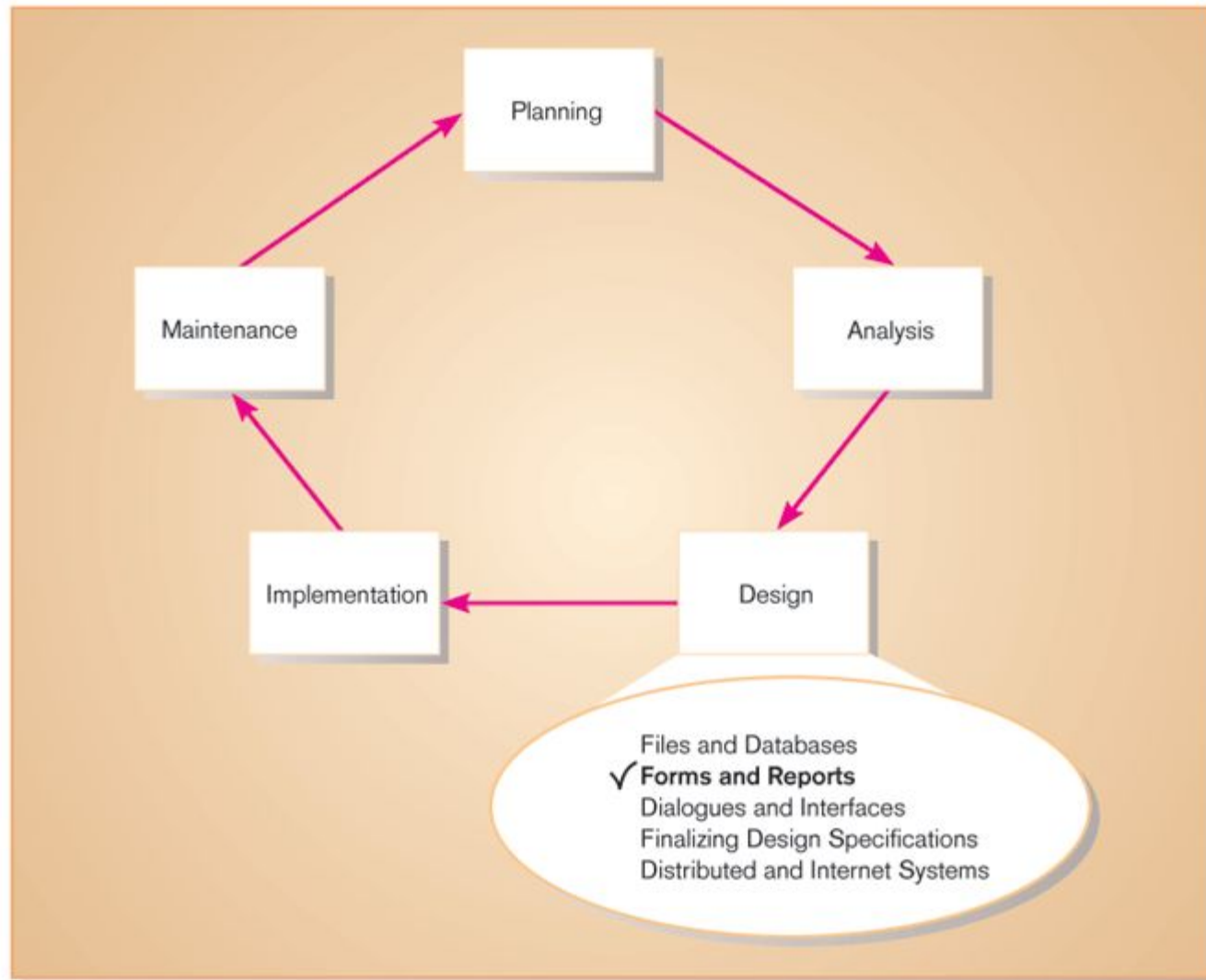


Figure 11-1 Systems development life cycle with logical design phase highlighted



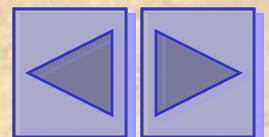
Forms vs. Reports

- Form

- A business document that contains some organizational related 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.

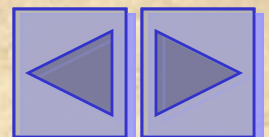
- Report

- A business document that contains only predefined data.
- A passive document for reading or viewing data.
- Typically contains data from many databases records or transactions.



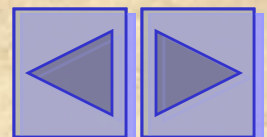
Common Types of Reports

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



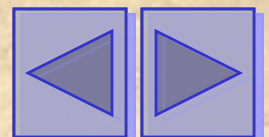
The Process of Designing Forms and Reports

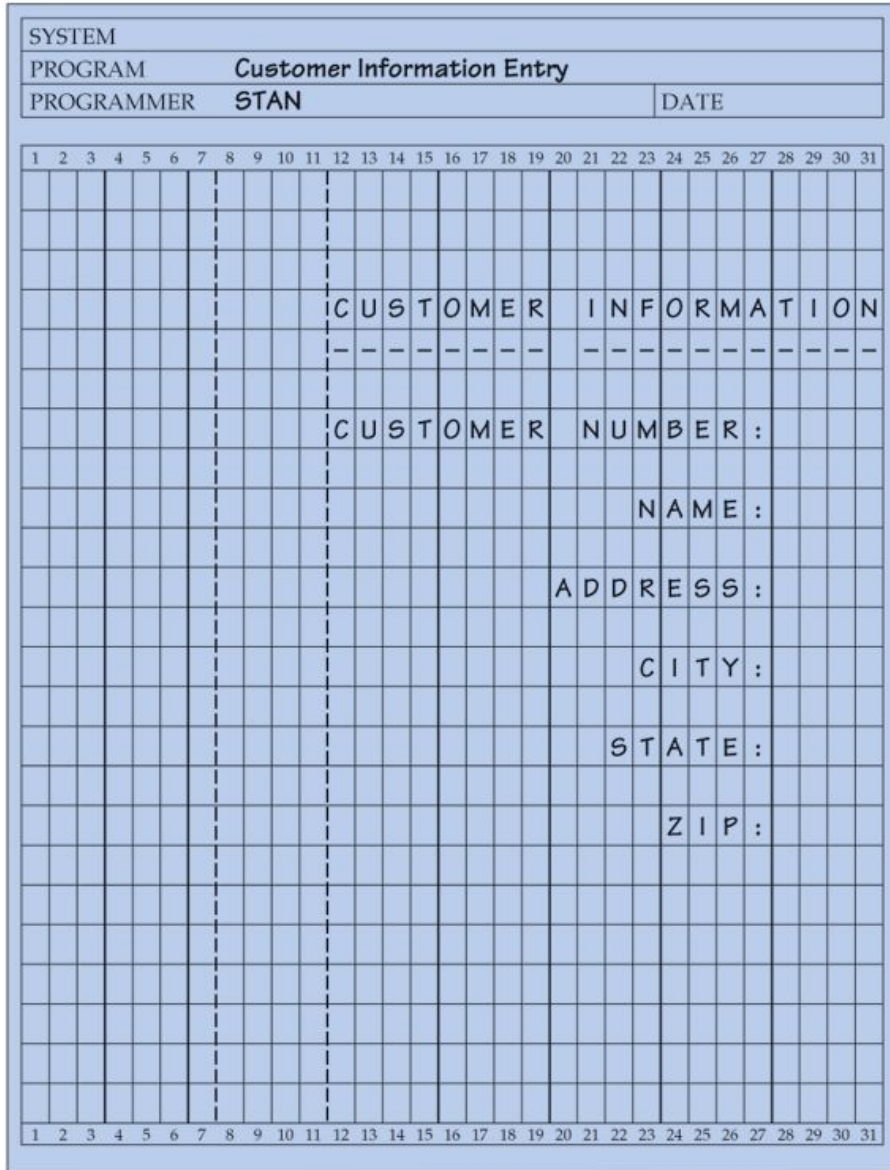
- User-focused activity
- Follows a prototyping approach
- Requirements determination:
 - Who will use the form or report?
 - What is the purpose of the form or report?
 - When is the report needed or used?
 - Where does the form or report need to be delivered and used?
 - How many people need to use 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





A coding sheet is an “old” tool for designing forms and reports, usually associated with text-based forms and reports for mainframe applications.

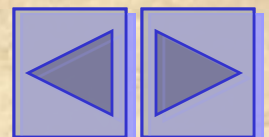


Figure 11-3

A data input screen designed in Microsoft's Visual Basic .NET

Customer Information Entry

Customer Information Today: 11-OCT-05

CUSTOMER INFORMATION

Customer Number: 1273

Name: Contemporary Designs

Address: 123 Oak Street

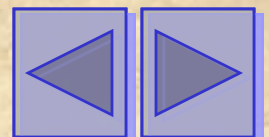
City: Austin

State: TX

Zip: 28384

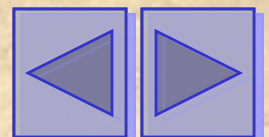
Save Help Exit

Visual Basic and other development tools provide computer aided GUI form and report generation.



Form/Report Design Specification

- The major deliverable of interface design
- Involves three parts:
 - Narrative overview: characterizes users, tasks, system, and environmental factors
 - Sample design: image of the form (from coding sheet or form building development tool)
 - Assessment: measuring test/usability results (consistency, sufficiency, accuracy, etc.)



Guidelines for Form and Report Design

- Meaningful titles: clear, specific, version information, current date
- Meaningful information— include only necessary information
- Balanced layout: adequate spacing, margins, and clear labels
- Easy navigation system: show how to move forward and backward, and where you are currently

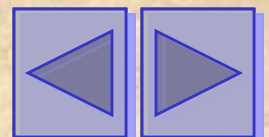


Figure 11-5a Contrasting customer information forms (Pine Valley Furniture) - Poorly designed form

Pine Valley Furniture

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-05 | 22,000.00 |
| PAYMENT: | 21-JAN-05 | 13,000.00 |
| PURCHASE: | 02-MAR-05 | 16,000.00 |
| PAYMENT: | 02-MAR-05 | 15,500.00 |
| PAYMENT: | 23-MAY-05 | 5,000.00 |
| PURCHASE: | 12-JUL-05 | 9,285.00 |
| PAYMENT: | 12-JUL-05 | 3,785.00 |
| PAYMENT: | 21-SEP-05 | 5,371.65 |
| STATUS: | ACTIVE | |

Annotations:

- Vague title
- Difficult to read: information is packed too tightly
- No navigation information
- No summary of account activity

A poor
form
design

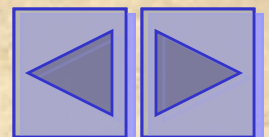


Figure 11-5b Contrasting customer information forms
(Pine Valley Furniture) - Improved design for form

Easy to read:
clear, balanced layout

Clear title

Pine Valley Furniture

Pine Valley Furniture

Detail Customer Account Information

Page: 2 of 2

Today: 11-OCT-05

Customer Number: 1273

Name: Contemporary Designs

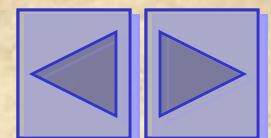
| DATE | PURCHASE | PAYMENT | CURRENT BALANCE |
|--------------------|--------------------|------------------|-------------------|
| 01-Jan-05 | | | 0.00 |
| 21-Jan-05 | (22,000.00) | | (22,000.00) |
| 21-Jan-05 | | 13,000.00 | (9,000.00) |
| 02-Mar-05 | (16,000.00) | | (25,000.00) |
| 02-Mar-05 | | 15,500.00 | (9,500.00) |
| 23-May-05 | | 5,000.00 | (4,500.00) |
| 12-Jul-05 | (9,285.00) | | (13,785.00) |
| 12-Jul-05 | | 3,785.00 | (10,000.00) |
| 21-Jul-05 | | 5,371.65 | (4,628.35) |
| YTD-SUMMARY | (47,285.00) | 42,656.65 | (4,628.35) |

Help Prior Screen Exit

Summary of account information

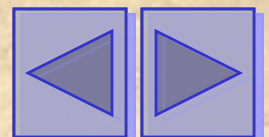
Clear navigation information

A better
form
design



Uses of Highlighting in Forms and Reports

- 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.



Methods for Highlighting

- Blinking
- Audible tones
- Intensity differences
- Size differences
- Font differences
- Boxing
- Underlining
- All capital letters

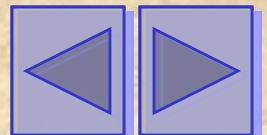


Figure 11-6 Customer account status display using various highlighting techniques (Pine Valley Furniture)

Pine Valley Furniture

Page: 2 of 2

Today: 11-OCT-05

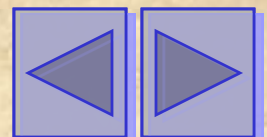
Customer Number: 1273

Name: Contemporary Designs

| DATE | PURCHASE | PAYMENT | CURRENT BALANCE |
|-------------|-------------|-----------|-----------------|
| 01-Jan-05 | | | 0.00 |
| 21-Jan-05 | (22,000.00) | | (22,000.00) |
| 21-Jan-05 | | 13,000.00 | (9,000.00) |
| 02-Mar-05 | (16,000.00) | | (25,000.00) |
| 02-Mar-05 | | 15,500.00 | (9,500.00) |
| 23-May-05 | | 5,000.00 | (4,500.00) |
| 12-Jul-05 | (9,285.00) | | (13,785.00) |
| 12-Jul-05 | | 3,785.00 | (10,000.00) |
| 21-Jul-05 | | 5,371.65 | (4,628.35) |
| YTD-SUMMARY | (47,285.00) | 42,656.65 | (4,628.35) |

Help Prior Screen Exit

Highlighting can include use of upper case, font size differences, bold, italics, underline, boxing, and other approaches.



Guidelines for Displaying Text

- Case: mixed upper and lower case, use conventional punctuation
- Spacing: double spacing if possible, otherwise blank lines between paragraphs
- Justification: left justify text
- Hyphenation: no hyphenated words between lines
- Abbreviations: only when widely understood and significantly shorter than full text

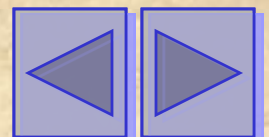
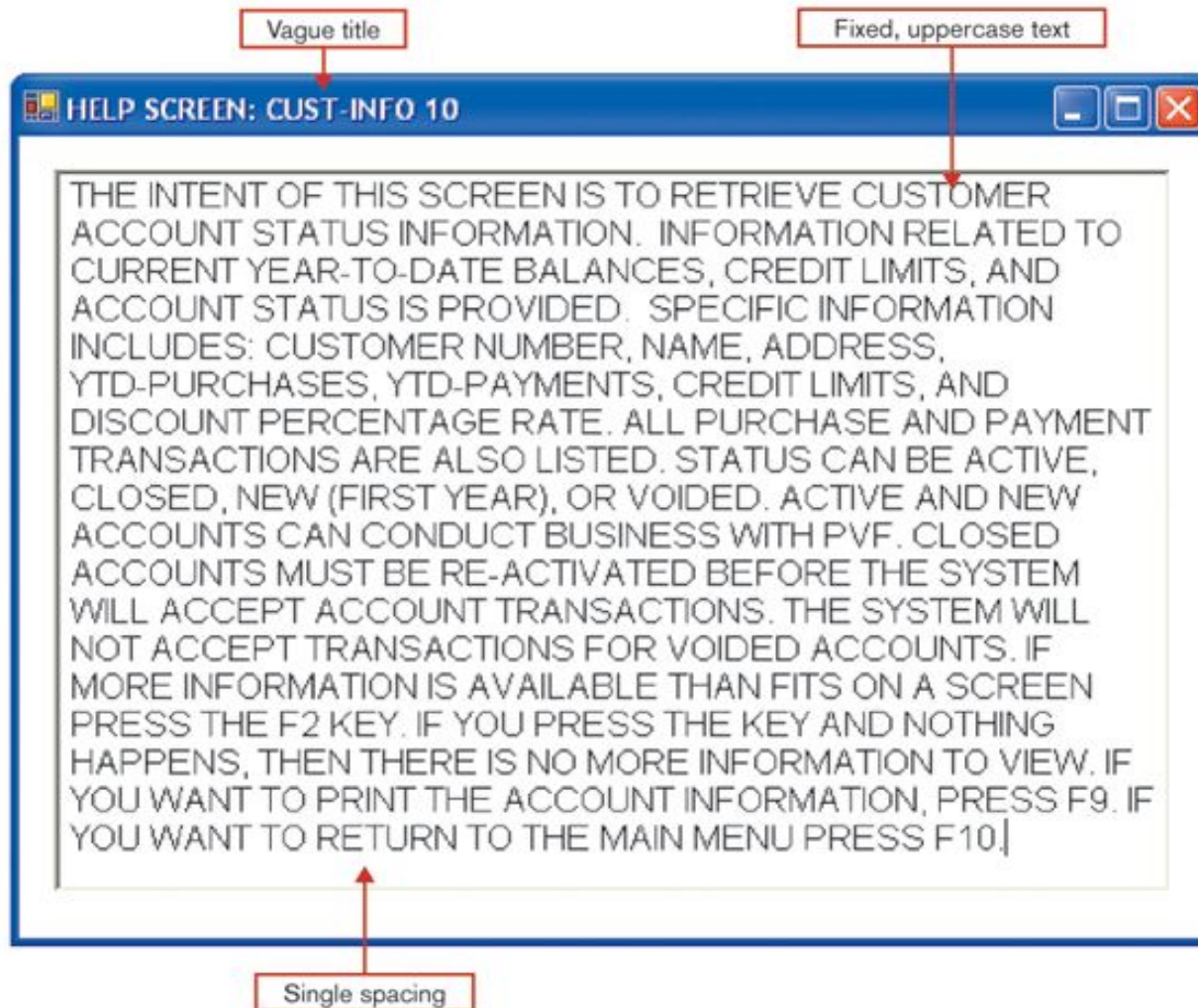


Figure 11-7a Contrasting the display of textual help information - Poorly designed help screen with many violations of the general guidelines for displaying text



A poor
help
screen
design

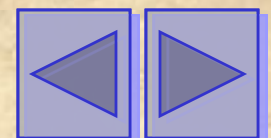
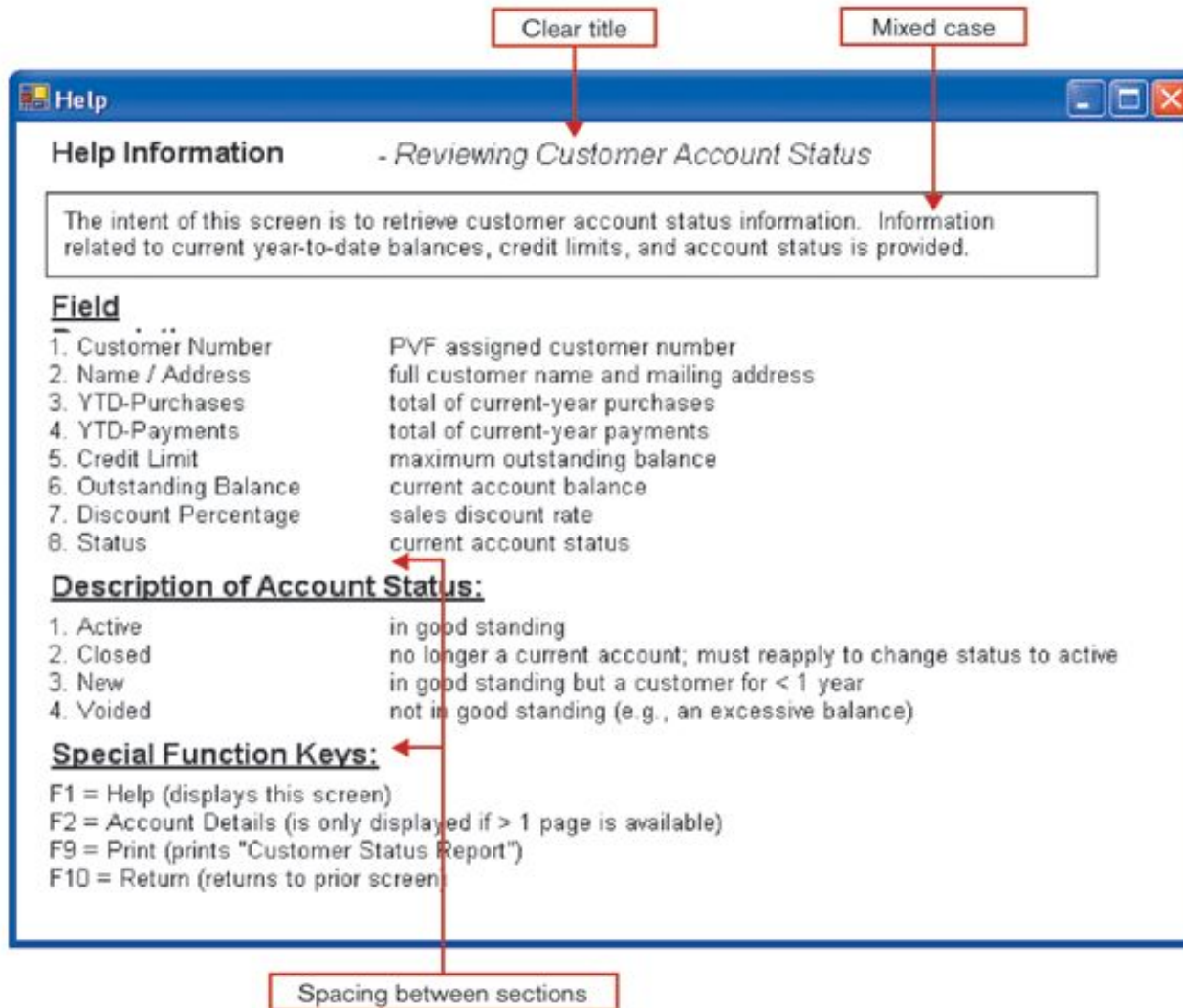
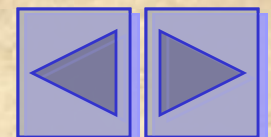


Figure 11-7b Contrasting the display of textual help information -
An improved design for a help screen



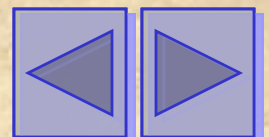
A better
help
screen
design



Guidelines for Tables and Lists

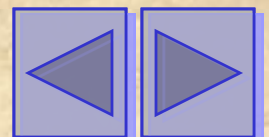
- Labels

- 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.



Guidelines for 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 same family of typefaces within and across displays and reports.
 - Avoid overly fancy fonts.



Guidelines for 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.

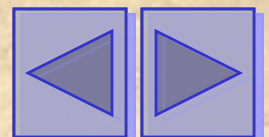


Figure 11-8a Contrasting the display of tables and lists
(Pine Valley Furniture) - Poorly designed form

Pine Valley Furniture

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-05 | 22,000.00 |
| PAYMENT: | 21-JAN-05 | 13,000.00 |
| PURCHASE: | 02-MAR-05 | 16,000.00 |
| PAYMENT: | 02-MAR-05 | 15,500.00 |
| PAYMENT: | 23-MAY-05 | 5,000.00 |
| PURCHASE: | 12-JUL-05 | 9,285.00 |
| PAYMENT: | 12-JUL-05 | 3,785.00 |
| PAYMENT: | 21-SEP-05 | 5,371.65 |
| STATUS: | ACTIVE | |

Annotations:

- No column labels
- Single column for all types of data
- Numeric data are left justified

A poor
table
design

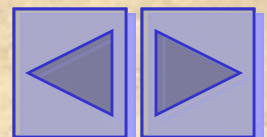


Figure 11-8b Contrasting the display of tables and lists
(Pine Valley Furniture) - Improved design for form

Clear and separate column labels for each data type

Pine Valley Furniture

Page: 2 of 2

Detail Customer Account Information

Today: 11-OCT-05

Customer Number: 1273

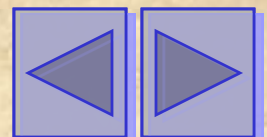
Name: Contemporary Designs

| DATE | PURCHASE | PAYMENT | CURRENT BALANCE |
|--------------------|--------------------|------------------|-------------------|
| 01-Jan-05 | | | 0.00 |
| 21-Jan-05 | (22,000.00) | | (22,000.00) |
| 21-Jan-05 | | 13,000.00 | (9,000.00) |
| 02-Mar-05 | (16,000.00) | | (25,000.00) |
| 02-Mar-05 | | 15,500.00 | (9,500.00) |
| 23-May-05 | | 5,000.00 | (4,500.00) |
| 12-Jul-05 | (9,285.00) | | (13,785.00) |
| 12-Jul-05 | | 3,785.00 | (10,000.00) |
| 21-Jul-05 | | 5,371.65 | (4,628.35) |
| YTD-SUMMARY | (47,285.00) | 42,656.65 | (4,628.35) |

Help Prior Screen Exit

Numeric data are right justified

A better
table
design



Tables vs. Graphs

- 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

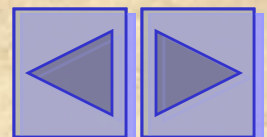


Figure 11-9 Tabular report illustrating numerous design guidelines (Pine Valley Furniture)

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

January 10, 2005

Pine Valley Furniture

Salesperson Annual Summary Report, 2004

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 |

¹Sales reflect July 1, 2004 – December 31, 2004.

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

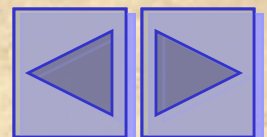
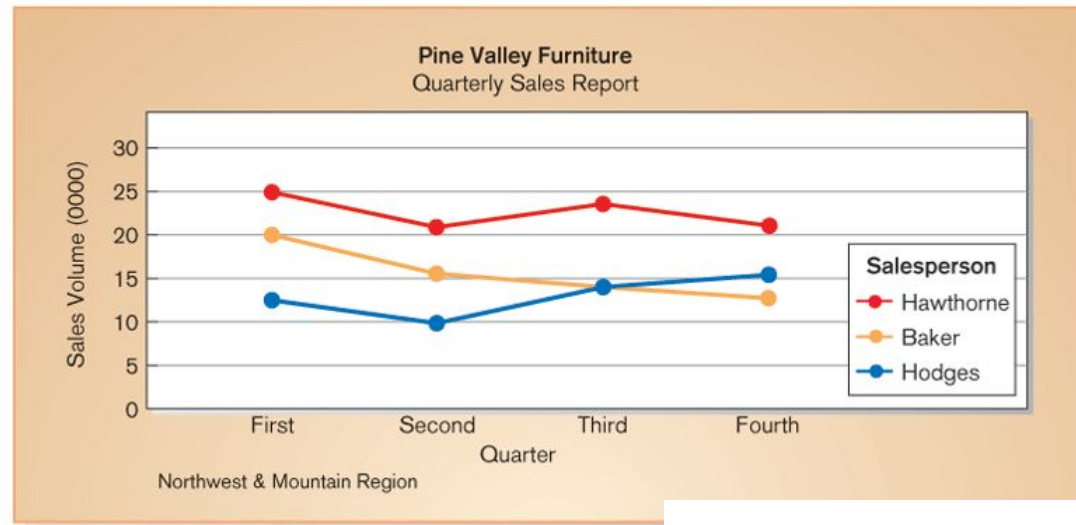
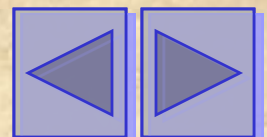
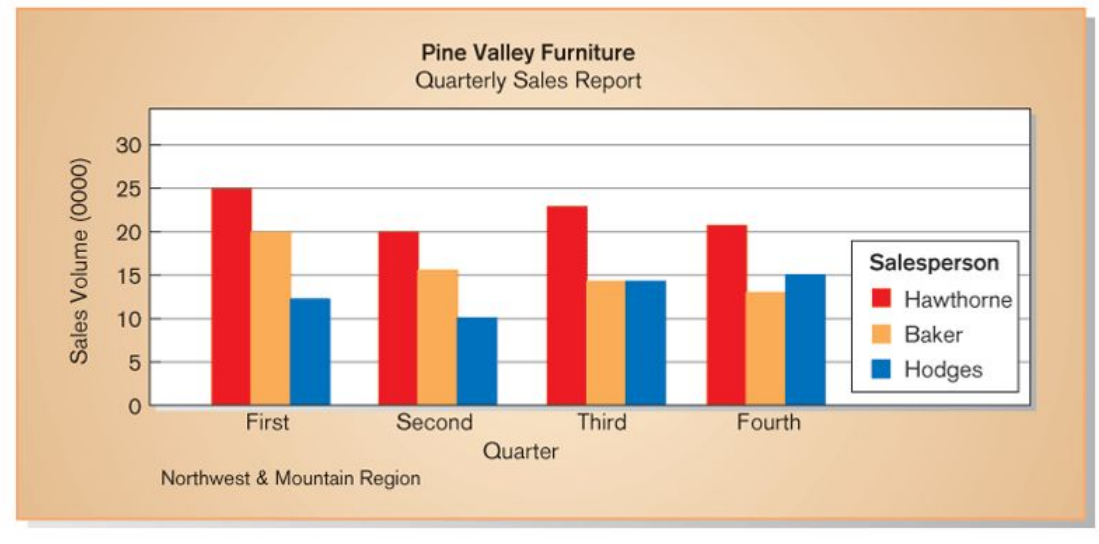


Figure 11-10a Graphs for comparison - Line graph



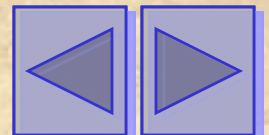
Bar and line graphs give pictorial summary information that can enhance reports and forms.

Figure 11-10b Graphs for comparison - Bar graph



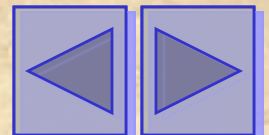
Assessing Usability

- Overall evaluation of how a system performs in supporting a particular user for a particular task
- There are three characteristics
 1. Speed
 2. Accuracy
 3. Satisfaction



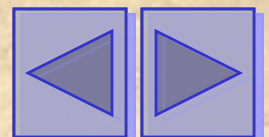
Guidelines for Maximizing Usability

- 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



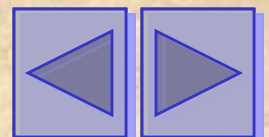
Characteristics for Consideration

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



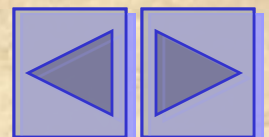
Methods for Assessing Usability

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



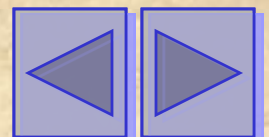
Errors in Web Page Layout Design

- Non-standard widgets
- Appearance of advertising
- Bleeding edge technology
- Scrolling text and looping animations
- Outdated information
- Slow download times
- Fixed formatted text
- Long pages



Good Web Design Practices

- Lightweight Graphics: small images to quick image download
- Forms and Data Integrity
- 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



Summary

- In this chapter you learned how to:
 - ✓ Explain the process of form and report design.
 - ✓ Apply general guidelines for formatting forms and reports.
 - ✓ Use color and know when color improves the usability of information.
 - ✓ Format text, tables, and lists effectively.
 - ✓ Explain how to assess usability and describe factors affecting usability.

