



Modern Systems Analysis and Design

Sixth Edition

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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

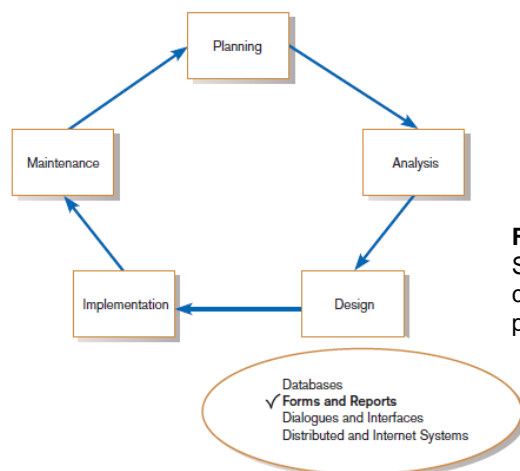


FIGURE 10-1
Systems development life cycle with logical design phase highlighted

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 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.)

Customer Information Entry

Customer Information Today: 2-Nov-10

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

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)

(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:	42,666.66	
DISCOUNT %:	5.0	
PURCHASE:	21-JAN-10	22,000.00
PAYMENT:	21-JAN-10	13,000.00
PURCHASE:	02-MAR-10	16,000.00
PAYMENT:	02-MAR-10	15,500.00
PAYMENT:	23-MAY-10	5,000.00
PURCHASE:	12-JUL-10	9,285.00
PAYMENT:	12-JUL-10	3,785.00
PAYMENT:	1-SEP-10	5,371.66
STATUS:	ACTIVE	

Formatting Forms and Reports (Cont.)

FIGURE 10-5 (continued)

(b) 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: 2-Nov-10

Customer Number: 1273

Name: Contemporary Designs

DATE	PURCHASE	PAYMENT	CURRENT BALANCE
01-Jan-08			0.00
21-Jan-08	(22,000.00)		(22,000.00)
21-Jan-08		13,000.00	(9,000.00)
02-Mar-08	(16,000.00)		(25,000.00)
02-Mar-08		15,500.00	(9,500.00)
23-May-08		5,000.00	(4,500.00)
12-Jul-08	(9,285.00)		(13,785.00)
12-Jul-08		3,785.00	(10,000.00)
21-Jul-08		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

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)

DATE	PURCHASE	PAYMENT	CURRENT BALANCE
01-Jan-08			0.00
21-Jan-08	(22,000.00)		(22,000.00)
21-Jan-08		13,000.00	(9,000.00)
02-Mar-08	(16,000.00)		(25,000.00)
02-Mar-08		15,500.00	(9,500.00)
23-May-08		5,000.00	(4,500.00)
12-Jul-08	(9,285.00)		(13,785.00)
12-Jul-08		3,785.00	(10,000.00)
21-Jul-08		5,371.65	(4,628.35)
YTD-SUMMARY	(47,285.00)	42,656.65	(4,628.35)

Color vs. No Color

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

Displaying Text (Cont.)

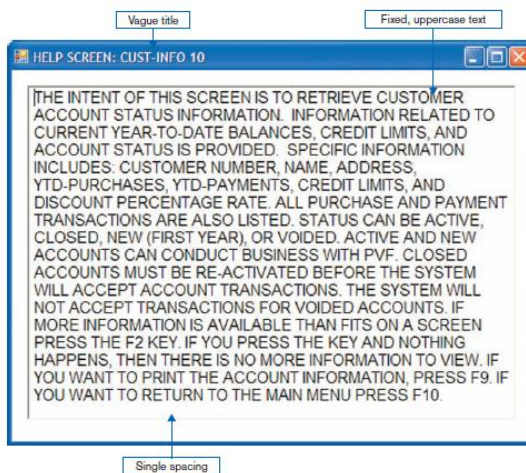


FIGURE 10-7
Contrasting the display of textual help information

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

Displaying Text (Cont.)

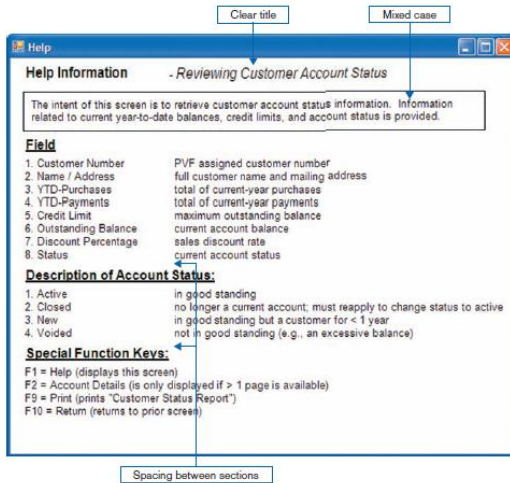


FIGURE 10-7 (continued)

(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.

Designing Tables and Lists (Cont.)

- 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.)

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
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PURCHASE:	12-JUL-10 9,285.00
PAYMENT:	12-JUL-10 3,785.00
PAYMENT:	1-SEP-10 5,371.66
STATUS:	ACTIVE

FIGURE 10-8
Contrasting the display of tables and lists (Pine Valley Furniture)

(a) Poorly designed form

Designing Tables and Lists (Cont.)

FIGURE 10-8 (continued)

(b) Improved design for form

Clear and separate column labels for each data type

Pine Valley Furniture
Detail Customer Account Information
Page: 2 of 2
Today: 2-Nov-10
Customer Number: 1273
Name: Contemporary Designs

DATE	PURCHASE	PAYMENT	CURRENT BALANCE
01-Jan-08			0.00
21-Jan-08	(22,000.00)		(22,000.00)
21-Jan-08		13,000.00	(9,000.00)
02-Mar-08	(16,000.00)		(25,000.00)
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21-Jul-08		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

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.)

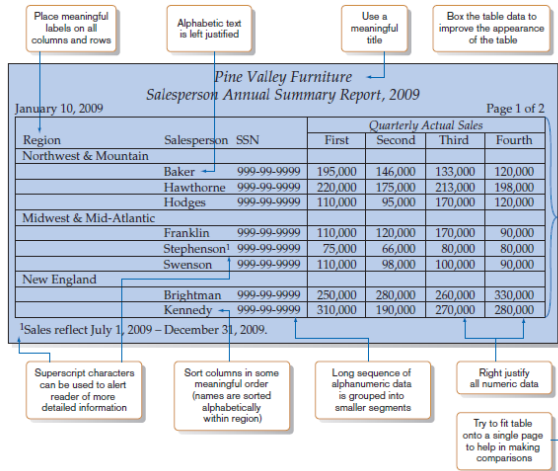


FIGURE 10-9
Tabular report illustrating numerous design guidelines

(Pine Valley Furniture)

Designing Tables and Lists (Cont.)

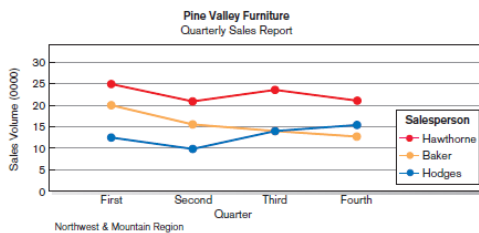
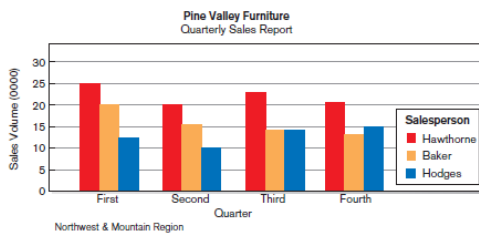


FIGURE 10-10
Graphs for comparison

(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
- Layout of information should be consistent, both within and across applications



Measures of Usability (Cont.)

- 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 Web Store

- 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.
- 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.



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