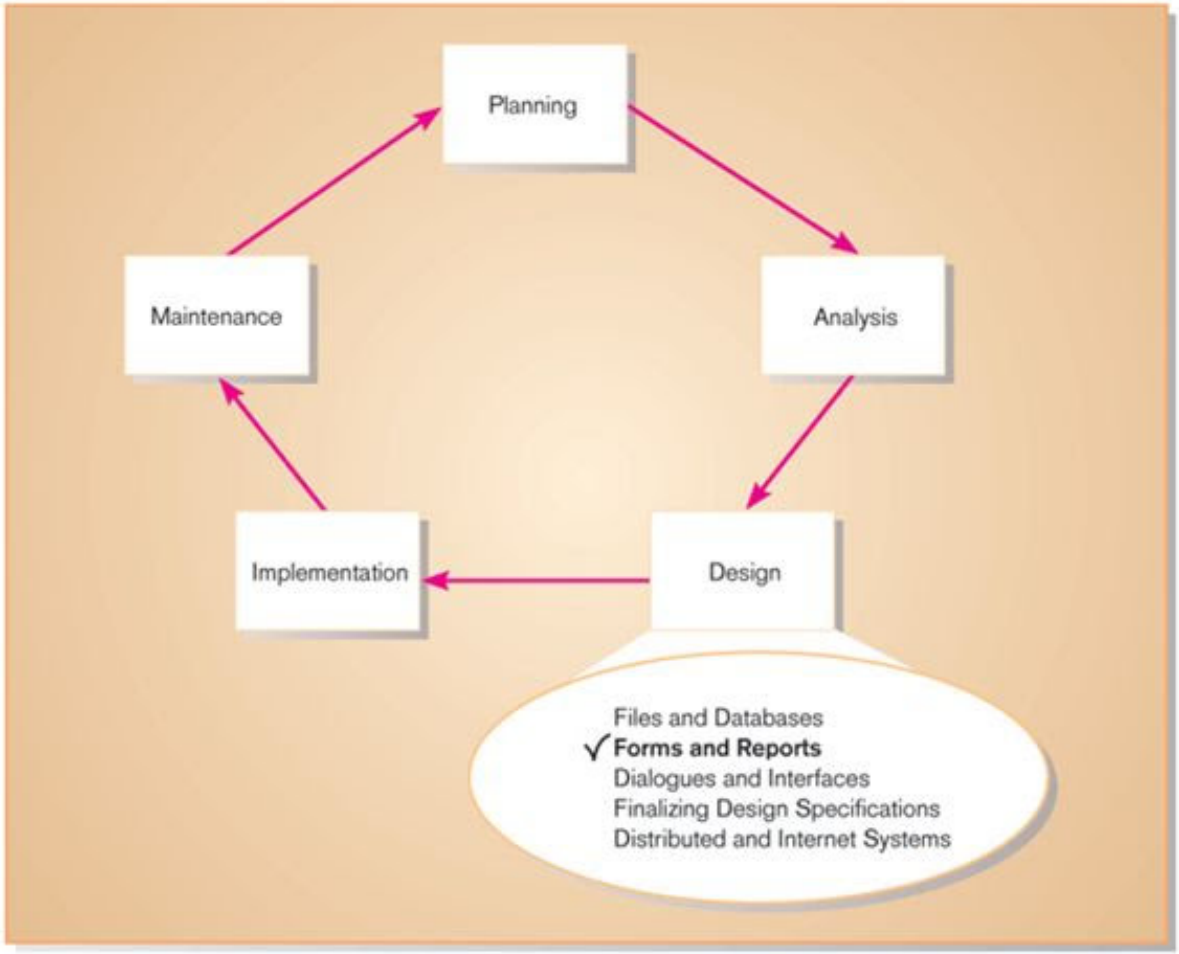
Designing Forms and Reports

Figure 11-1 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 (daily, weekly or monthly) for routine information needs of an organization.
  - *Key-indicator*: provide summary of critical information on regular basis.

Designing Forms and Reports (Cont.)

- *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.
- First steps are to gain an understanding of the intended user and task objectives by collecting initial requirements during requirements determination.
- Answers to the questions of “who, what, when, where and how”.

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.)

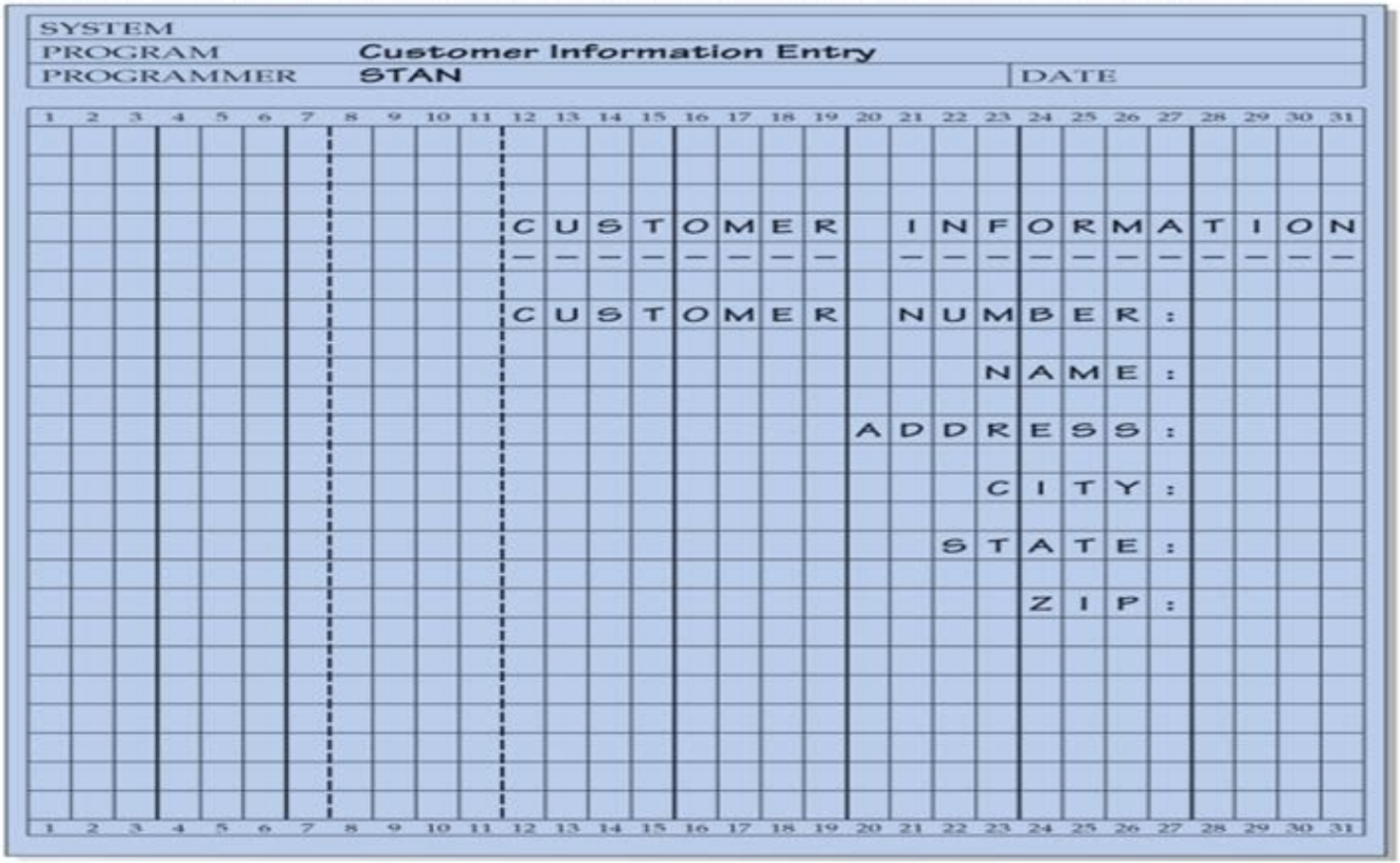
- Prototyping (structuring and refining the information)
  - Initial prototype is designed from requirements.
  - Users review prototype design and either accept the design or request changes.
  - If changes are requested, the construction-evaluation-refinement cycle is repeated until the design is accepted.

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 form and report generation.

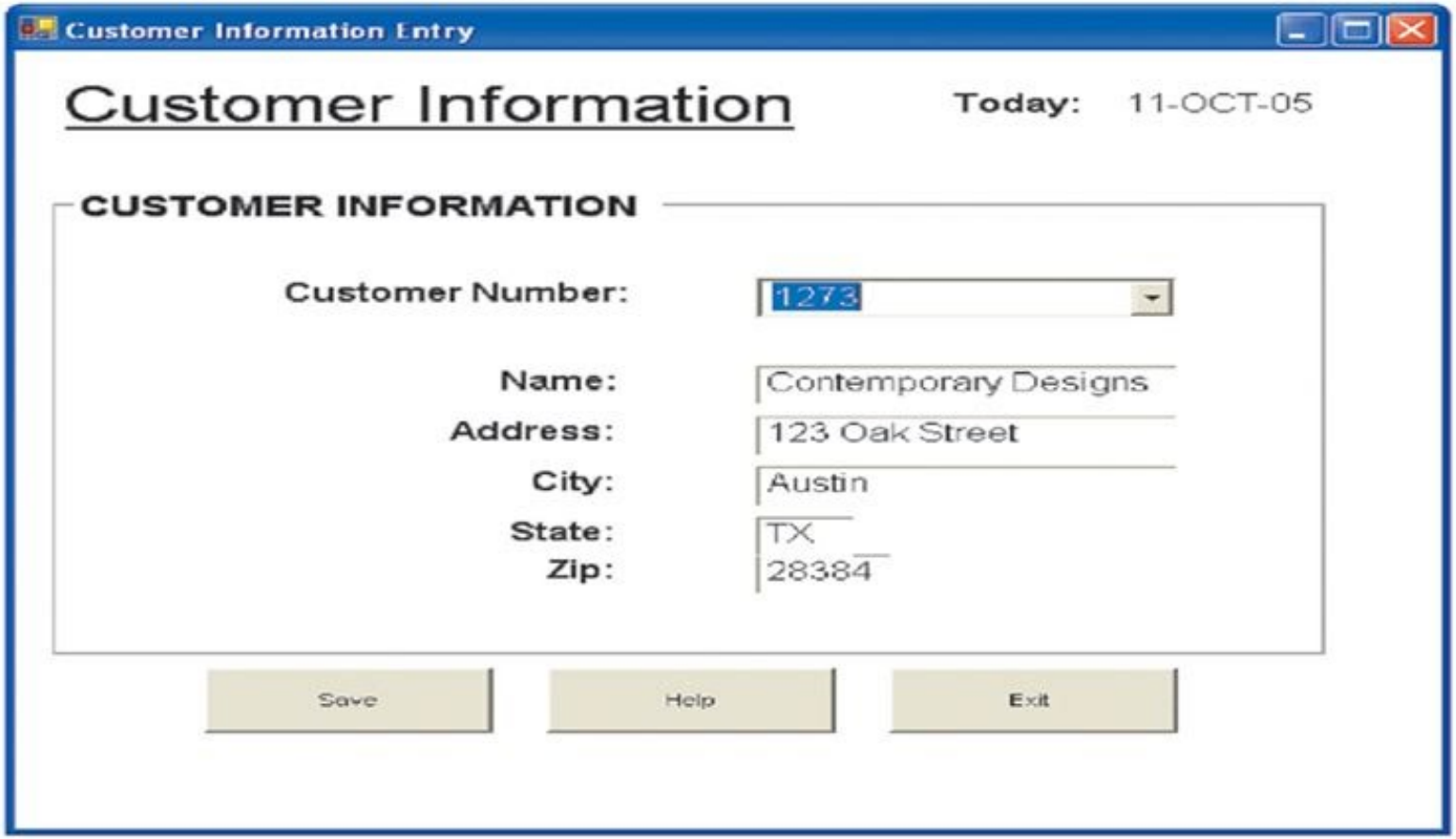
The Process of Designing Forms and Reports (Cont.)

Figure 11-2 The layout of a data input form using a coding sheet



The Process of Designing Forms and Reports (Cont.)

Figure 11-3
A data input screen designed in Microsoft's Visual Basic .NET



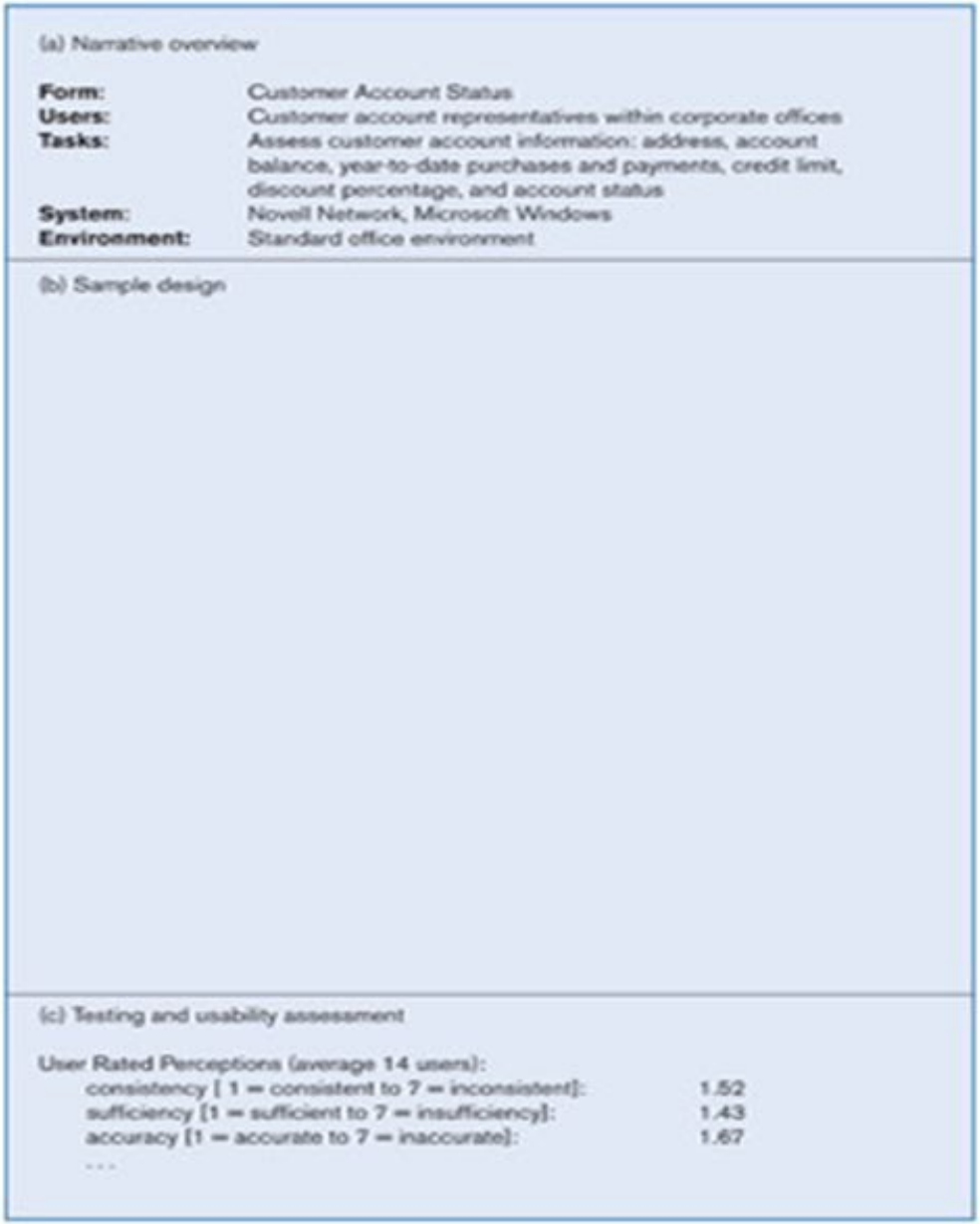
Deliverables and Outcomes

- Design specifications are the major deliverables and inputs to the system implementation phase.
- Design specifications have three sections:
  - *Narrative overview*: characterizes users, tasks, system, and environmental factors.

Deliverables and Outcomes (Cont.)

- *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.).

Fig. 11-4 Design specification



(a) Narrative overview

Form:	Customer Account Status
Users:	Customer account representatives within corporate offices
Tasks:	Assess customer account information: address, account balance, year-to-date purchases and payments, credit limit, discount percentage, and account status
System:	Novell Network, Microsoft Windows
Environment:	Standard office environment

(b) Sample design

(c) Testing and usability assessment

User Rated Perceptions (average 14 users):

consistency [1 = consistent to 7 = inconsistent]:	1.52
sufficiency [1 = sufficient to 7 = insufficiency]:	1.43
accuracy [1 = accurate to 7 = inaccurate]:	1.67
. . .	

Formatting Forms and Reports

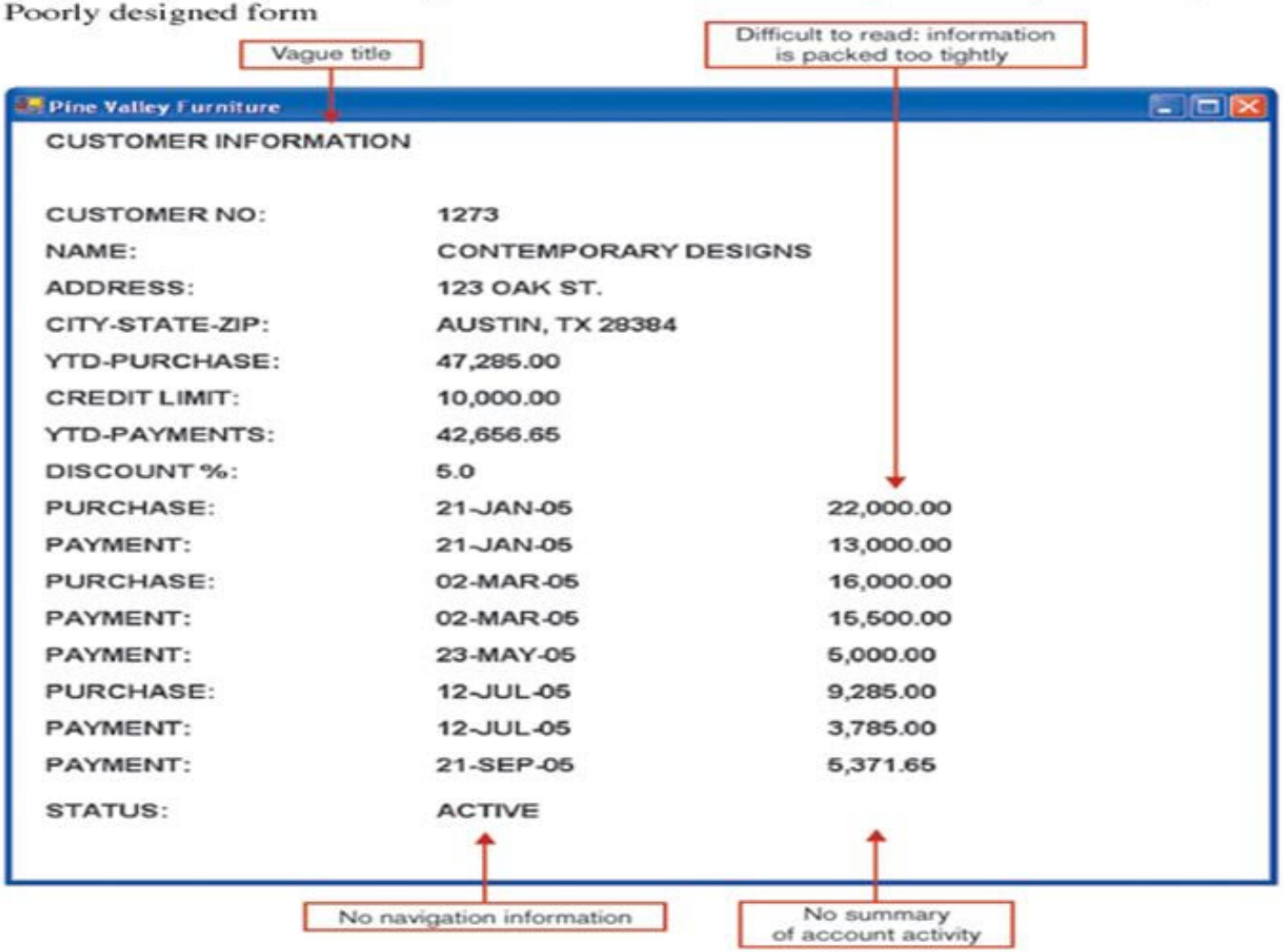
- *Meaningful titles*: clear, specific, version information, current date, valid date.
- *Meaningful information*: include only necessary information, with no need to modify.

Formatting Forms and Reports (Cont.)

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

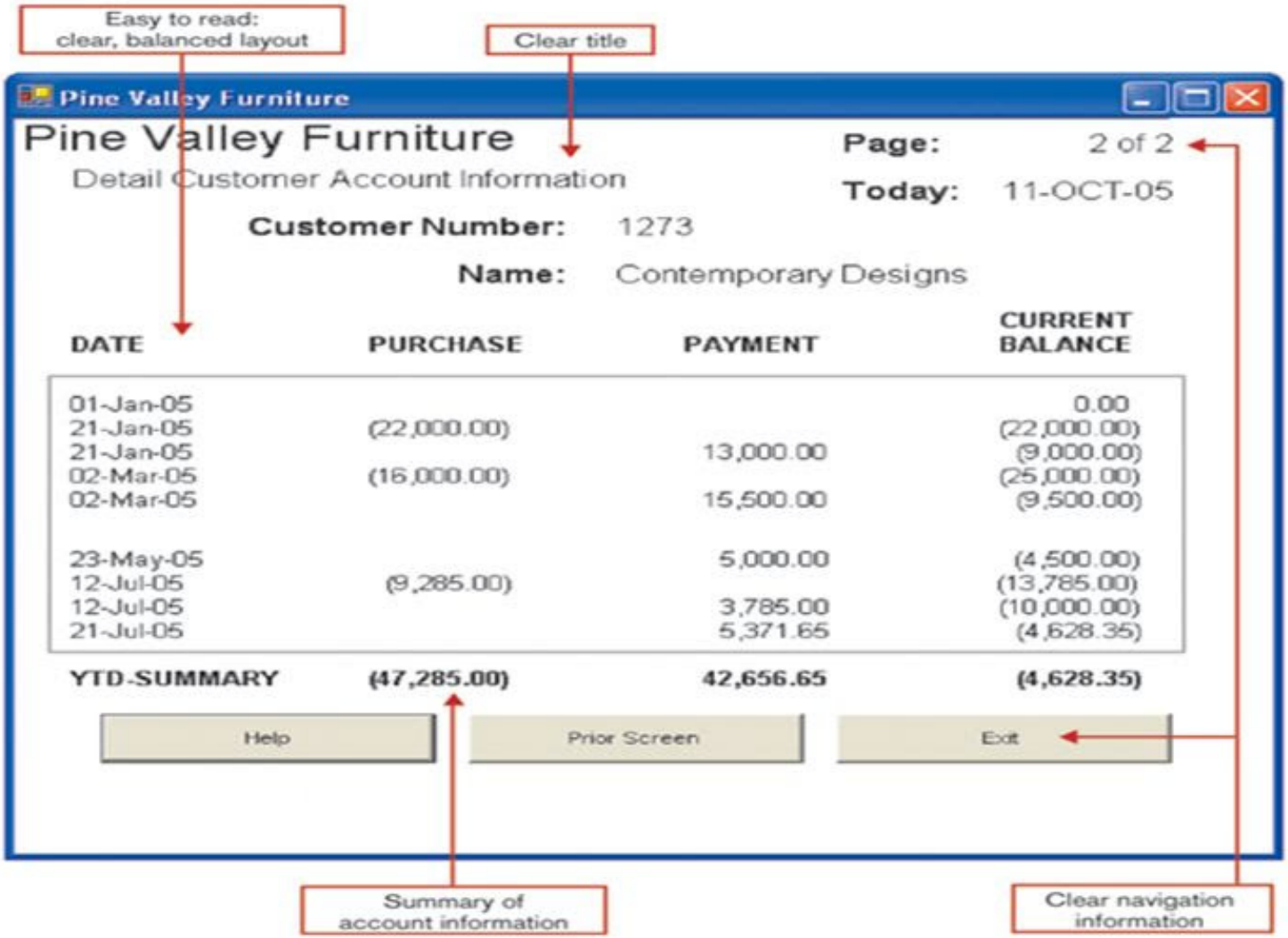
Formatting Forms and Reports (Cont.)

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



Formatting Forms and Reports (Cont.)

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



Highlighting Information (display)

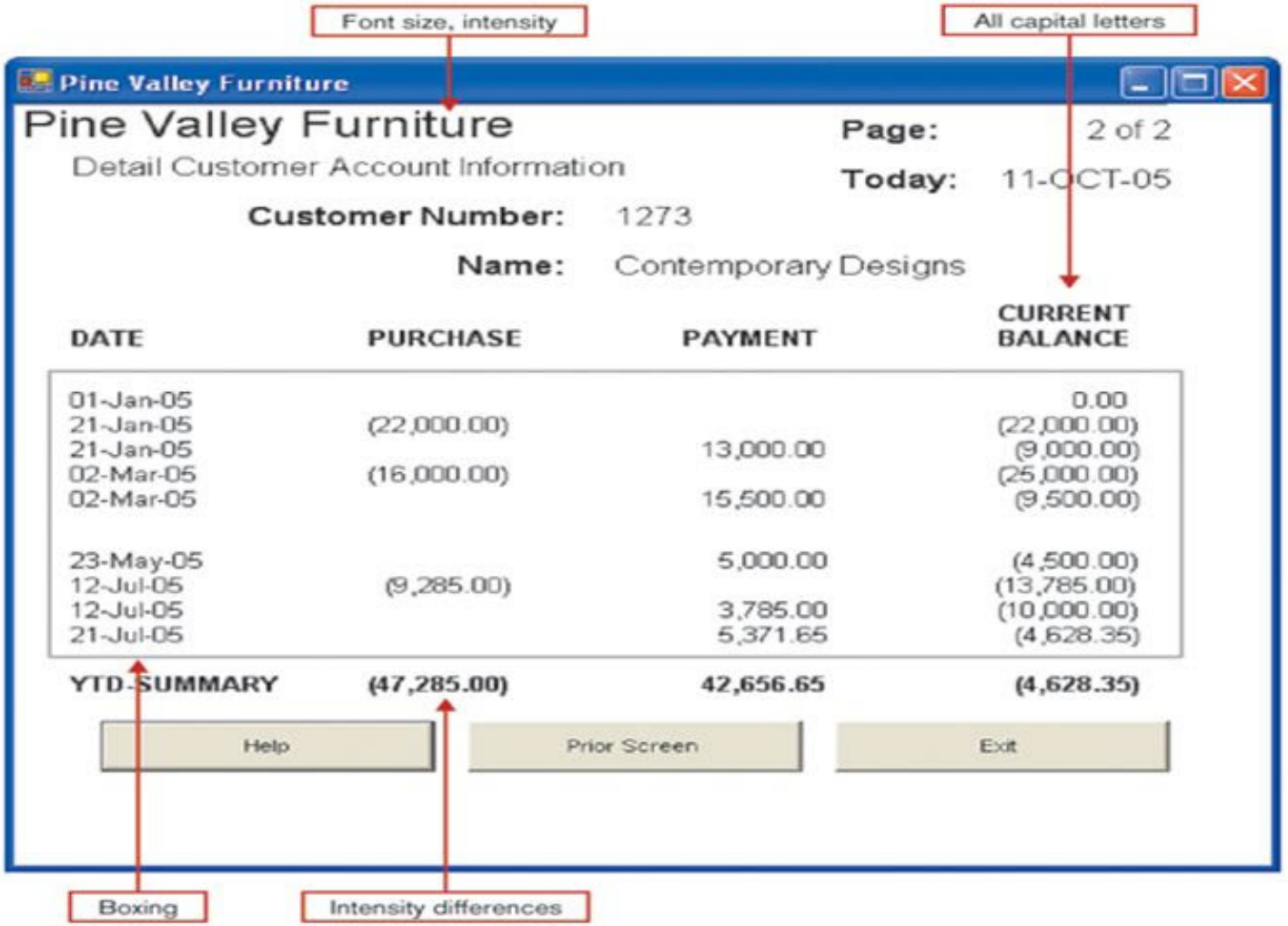
- Notify users of errors in data entry or processing.
- Provide warnings regarding possible problems.
- Draw attention to keywords, commands, high-priority messages, unusual data values.

Highlighting Information (Cont.)

- Highlighting can include:
  - use of upper case, font size differences, bold, italics, underline, boxing, and all capital letters.
  - Use of blinking, reverse video, audible tones, and intensity differences.
  - And other approaches.

Highlighting Information (Cont.)

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



Color vs. No Color

- Benefits from 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.)

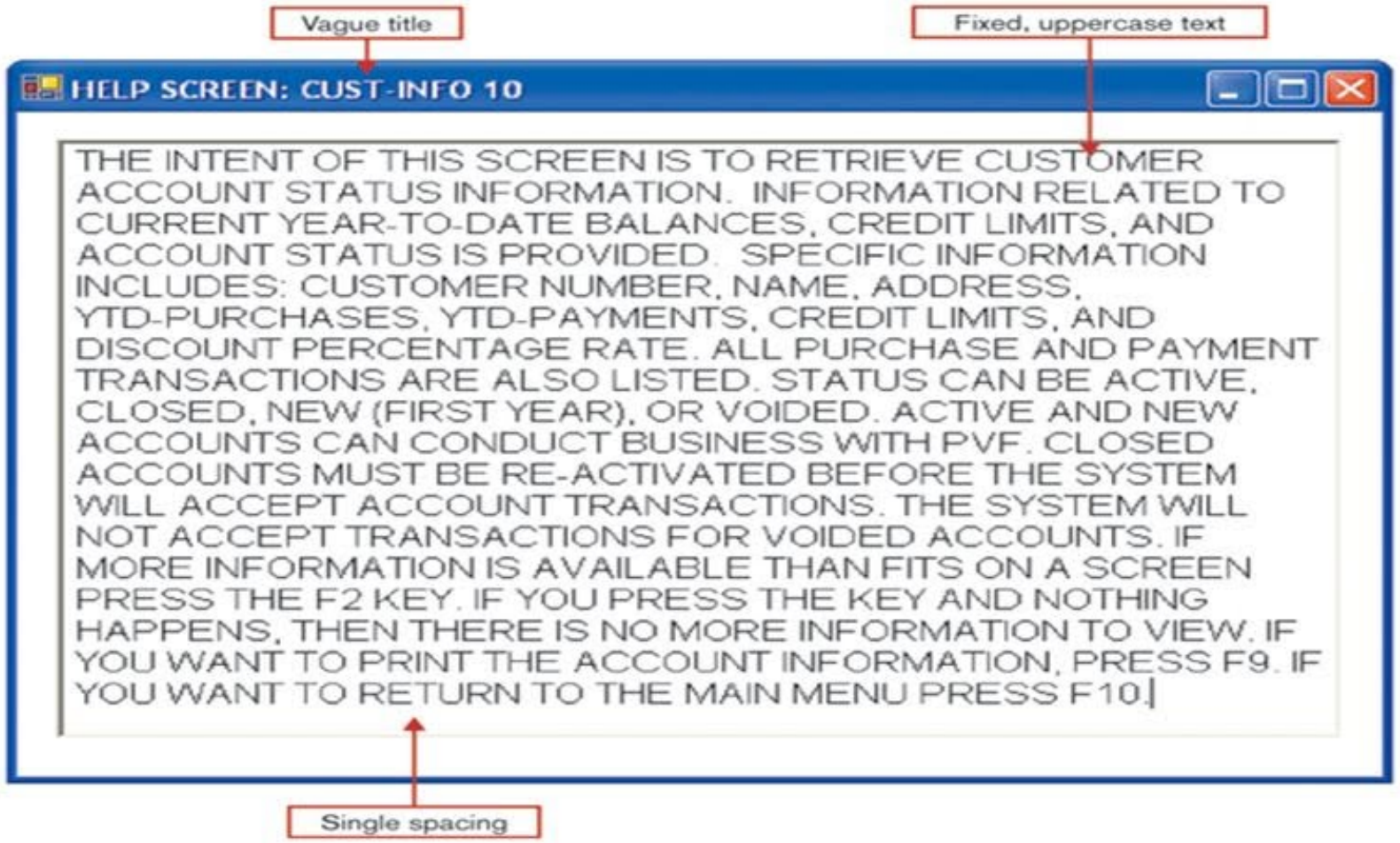
- Problems from Using Color
  - Color pairings may wash out or cause problems for some users.
  - Resolution may degrade with different displays.
  - Color fidelity may degrade on different displays.
  - Printing or conversion to other media may not easily translate.

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.

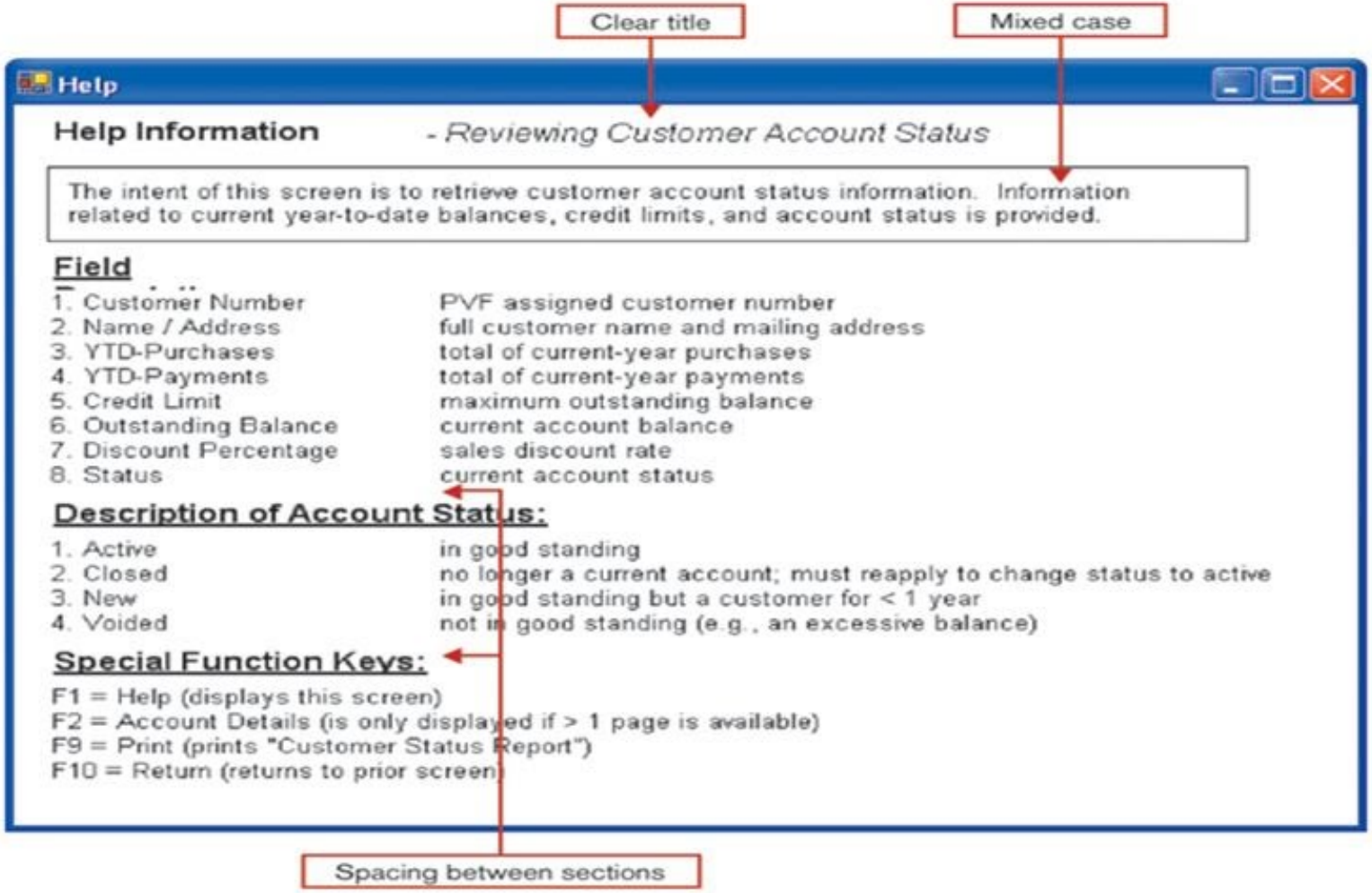
Displaying Text (Cont.)

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



Displaying Text (Cont.)

Figure 11-7b Contrasting the display of textual help information - 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.

Designing Tables and Lists (Cont.)

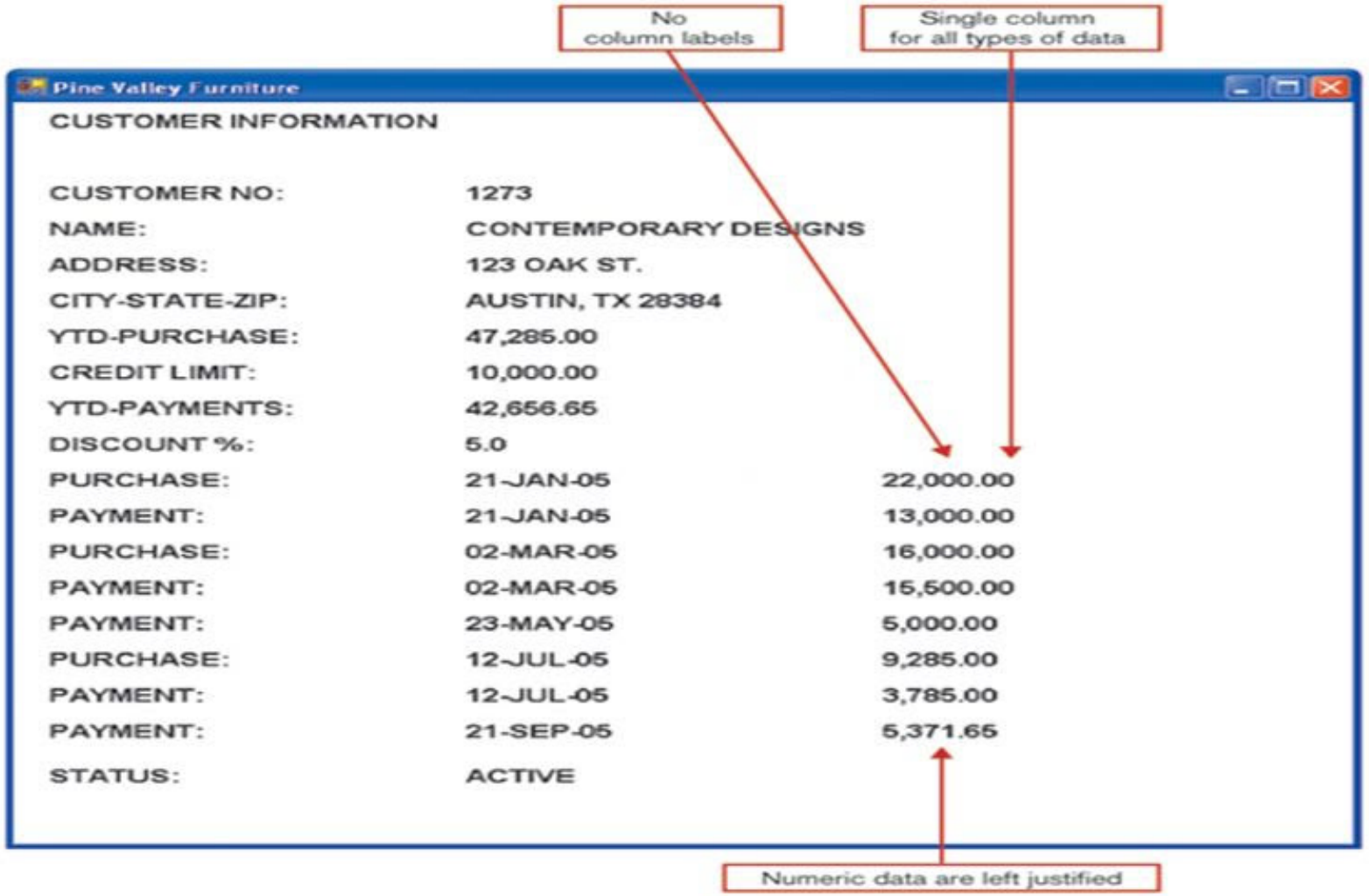
- Columns should have at least two spaces between them.
- Allow white space on printed reports for user to write notes.
- Use a single typeface, except for emphasis.
- Use same family of typefaces within and across displays and reports.
- Avoid overly fancy fonts.

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.

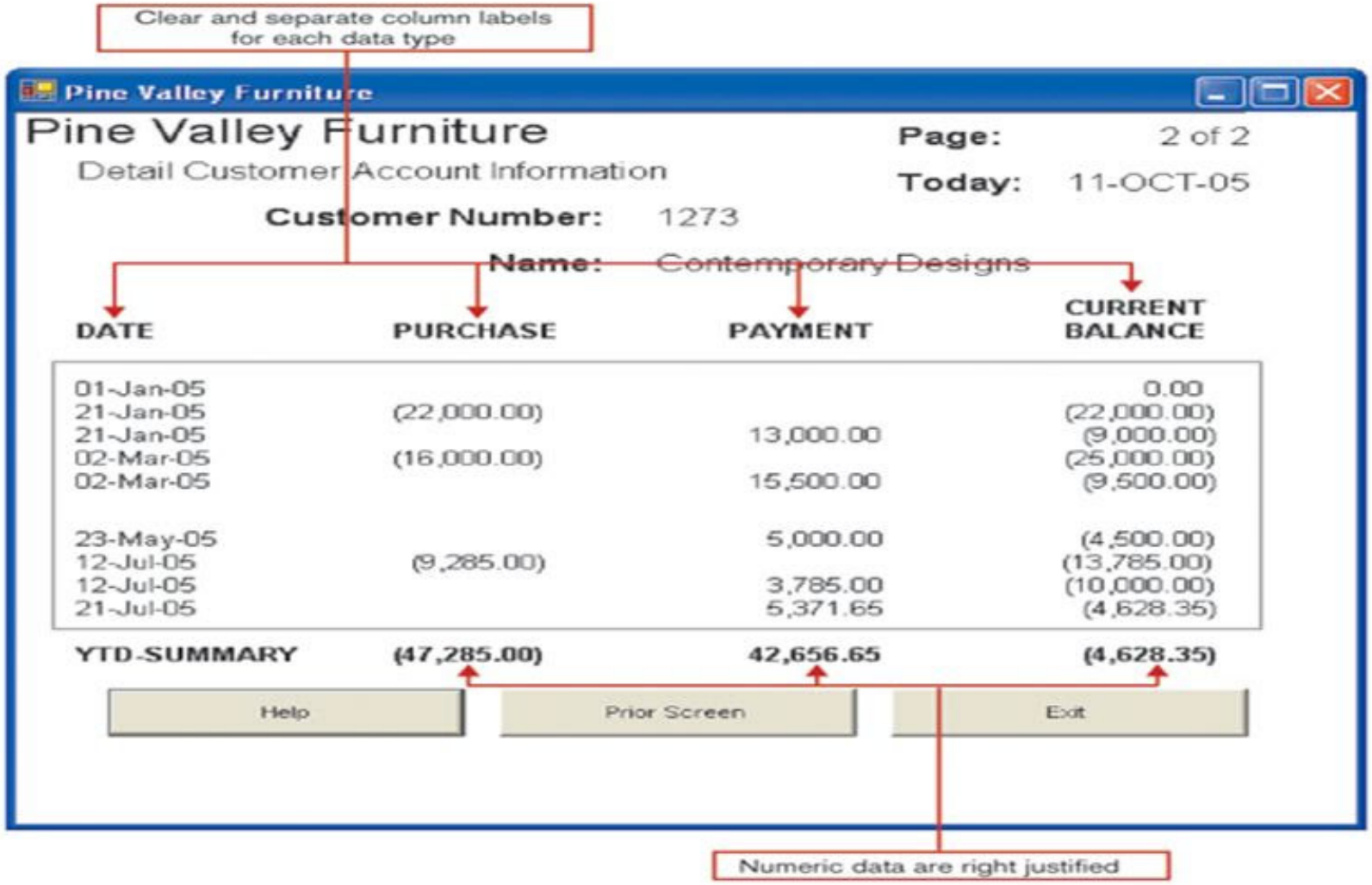
Designing Tables and Lists (Cont.)

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



Designing Tables and Lists (Cont.)

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

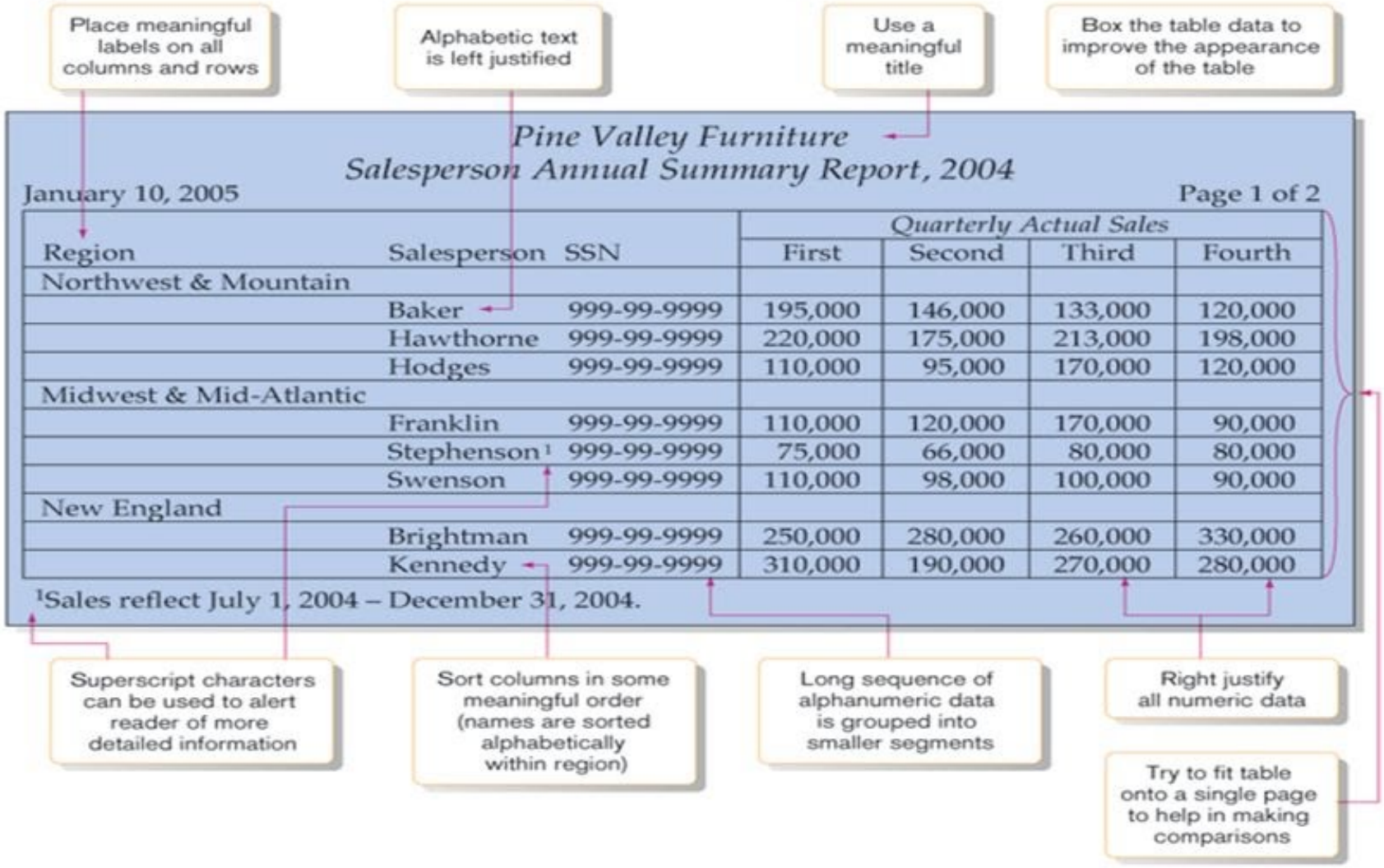


Designing Tables and Lists (Cont.)

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



Designing Tables and Lists (Cont.)

Figure 11-10a Graphs for comparison - Line graph

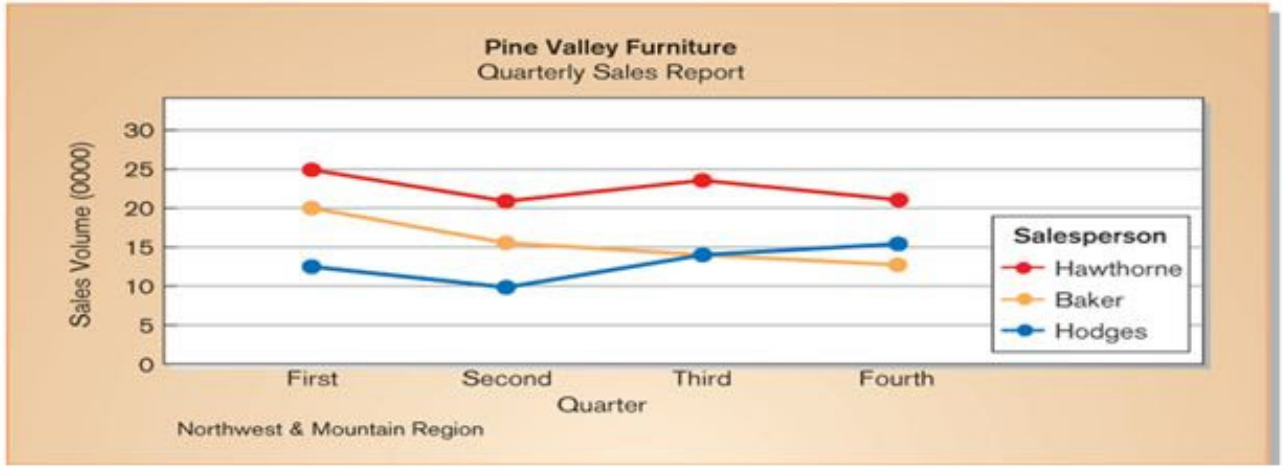
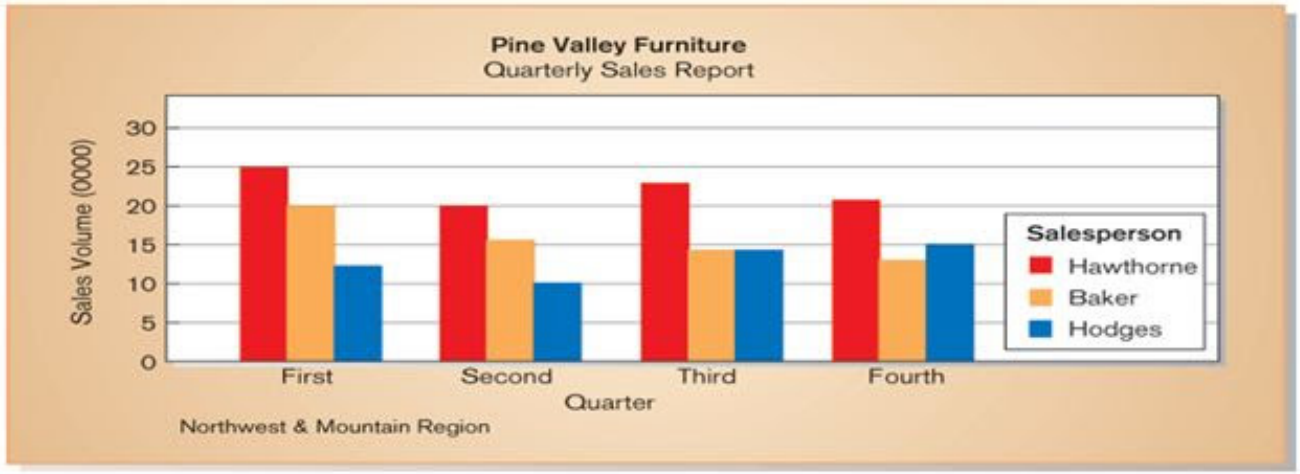


Figure 11-10b Graphs for comparison - Bar graph



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, abbreviations, 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, e.g, lighting, sound, temperature, humidity, task interruptions.

Measures of Usability

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

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 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 can provide 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.