

**DESIGNING FORMS AND REPORTS** | System Analysis and Design

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**Introduction**

Designing Forms and Reports

Formatting Forms and Reports

Assessing Usability

Electronic Commerce Applications

### 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.
- ✓ 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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    graph TD
      Planning --> Analysis
      Analysis --> Design
      Design --> Implementation
      Implementation --> Maintenance
      Maintenance --> Planning
      Design --- DesignSub[Database  
Forms and Reports  
Dialogues and Interfaces  
Distributed and Internet Systems]
  
```

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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Introduction

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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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Introduction

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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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Introduction

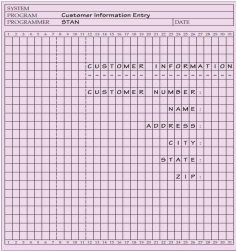
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## THE PROCESS OF DESIGNING FORMS AND REPORTS (CONT.)

The layout of a data input form using a coding sheet



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## THE PROCESS OF DESIGNING FORMS AND REPORTS (CONT.)

A data input screen designed as a wireframe



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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## 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.)

Customer account status display using various highlighting techniques (Pine Valley Furniture)  
 (Source: Microsoft Corporation.)

DATE	PURCHASE	PAYMENT	CURRENT BALANCE
01-Jan-17			0.00
21-Jan-17	(22,000.00)		(22,000.00)
03-Mar-17	(6,000.00)	13,000.00	(5,000.00)
03-Mar-17		10,000.00	(1,000.00)
23-May-17		8,000.00	(1,000.00)
10-Jul-17	(5,000.00)		(13,700.00)
10-Jul-17		2,000.00	(10,000.00)
20-Sep-17		2,771.00	(4,000.00)
<b>YTD SUMMARY</b>	<b>(67,200.00)</b>	<b>42,654.00</b>	<b>(6,000.00)</b>

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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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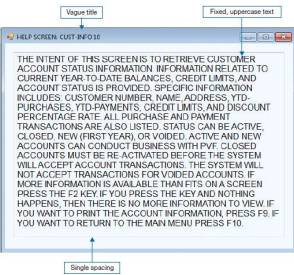
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## DISPLAYING TEXT (CONT.)



THE INTENT OF THIS SCREEN IS TO RETRIEVE CUSTOMER ACCOUNT STATUS INFORMATION. INFORMATION RELATED TO CURRENT YEAR TO DATE BALANCES, CREDIT LIMITS, AND ACCOUNT STATUS IS PROVIDED. SPECIFIC INFORMATION INCLUDES: CUSTOMER NUMBER, NAME, ADDRESS, YTD PURCHASES, YTD PAYMENTS, CREDIT LIMITS, AND DISCOUNT PERCENTAGE RATE. ALL PURCHASE AND PAYMENT TRANSACTIONS ARE ALSO LISTED. STATUS CAN BE ACTIVE, CLOSED, NEW (FIRST YEAR), OR VOIDED. ACTIVE AND NEW ACCOUNTS CAN CONDUCT BUSINESS WITH PVT. CLOSED ACCOUNTS MUST BE REACTIVATED BEFORE THE SYSTEM WILL ACCEPT ACCOUNT TRANSACTIONS. THE SYSTEM WILL NOT ACCEPT TRANSACTIONS FOR VOIDED ACCOUNTS. IF MORE INFORMATION IS AVAILABLE THAN FITS ON A SCREEN PRESS THE F2 KEY. IF YOU PRESS THE KEY AND NOTHING HAPPENS, THEN THERE IS NO MORE INFORMATION TO VIEW. IF YOU WANT TO PRINT THE ACCOUNT INFORMATION, PRESS F8. IF YOU WANT TO RETURN TO THE MAIN MENU PRESS F10.

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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## 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.)

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 78784		
YTD PURCHASE:	47,285.00		
CREDIT LIMIT:	10,000.00		
YTD PAYMENTS:	42,856.65		
DISCOUNT %:	5.0		
PURCHASE:	21-JAN-17	22,000.00	
PAYMENT:	21-JAN-17	13,000.00	
PURCHASE:	03-MAR-17	16,000.00	
PAYMENT:	03-MAR-17	16,000.00	
PURCHASE:	23-MAY-17	6,000.00	
PURCHASE:	10-JUL-17	9,285.00	
PAYMENT:	12-JUL-17	3,785.00	
PAYMENT:	22-SEP-17	6,371.65	
STATUS:	ACTIVE		

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## DESIGNING TABLES AND LISTS (CONT.)

(b) Improved design for form

DATE	PURCHASE	PAYMENT	CURRENT BALANCE
01-Jan-17			8.89
21-Jan-17	(22,000.00)		(22,000.00)
21-Jan-17		13,000.00	(9,300.00)
03-Mar-17	(16,000.00)		(25,300.00)
03-Mar-17		16,000.00	(9,500.00)
23-May-17		6,000.00	(4,500.00)
10-Jul-17	(9,285.00)		(13,785.00)
12-Jul-17		3,785.00	(10,000.00)
22-Sep-17		6,371.65	(4,628.35)
YTD SUMMARY	47,285.00	42,856.65	6,428.35

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## PAPER VS. ELECTRONIC REPORTS

Laser and ink-jet printers can print reports that look like display screen

- Same guidelines apply

High-speed impact printers are faster, but less user-friendly in appearance

- Good for large batch reports
- The coding sheet from figure 10-2 may be useful for these types of reports

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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** — self-explanatory outputs and labels

**Format** — appropriate display of data and symbols

**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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## 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

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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 unit 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.
- ✓ 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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