System Design

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System Design

- Output Design
- Input Design

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Output Design Objectives

- Output is essential to ensuring the use and acceptance of the information system.
  - Serve a specific user or organizational purpose
  - Useful to the user
  - Deliver the appropriate quantity of output
  - Make sure the output is where it is needed
  - Provide output on time
  - Choosing the most effective output method

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Relating Output Content to Method

- Content of output must be considered as interrelated to the output method.
  - External—going outside the business
  - Internal—staying within the business

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External Output

- Examples:
  - Utility bills
  - Advertisements
  - Paychecks
- Differs from internal output in:
  - Distribution
  - Design
  - Appearance

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Internal Output

- Examples:
  - Summary reports
  - Detailed reports
  - Historical reports
  - Exception reports
- Might consist of material available on an intranet

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Output Technologies

- Printers
- Display screen
- Video, audio, and podcasts
- DVD and CD-ROM
- Electronic output

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Printers

- The trend in printers is toward increased flexibility.
- Key factors of printers:
  - Reliability
  - Compatibility with software and hardware
  - Manufacturing support

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Display Screen

- Advantages:
  - Result in cost savings
  - May be desirable from the user's standpoint
  - Easier to keep up to date
- Disadvantages:
  - Different screen resolutions
  - Fonts

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Electronic Output

- Email
- Faxes
- Bulletin board messages

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RSS (Really Simple Syndication)

- A way of gathering and distributing news and other content from multiple sources
- RSS news readers can either stand alone or be integrated with your browser as plug-ins.
- Has the advantage of efficiently organizing news and other information from a variety of sources chosen by the user

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Push and Pull Technology

- Pull technology allows the user to take formatted data from the Web.
- Push technology sends solicited or unsolicited information to a customer or client.

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Factors to Consider When Choosing Output Technology

- Who will use the output?
- How many people need the output?
- Where is the output needed?
- What is the purpose?
- What is the speed with which output is needed?
- How frequently will the output be accessed?
- How long will the output be stored?
- Regulations depicting output produced, stored, and distributed
- Initial and ongoing costs of maintenance and supplies
- Human and environmental requirements

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Output Bias

- Analysts must avoid unnecessarily biasing output and make users aware of the possible biases in output.
- Bias is introduced in three main ways:
  - How information is sorted
  - Setting of acceptable limits
  - Choice of graphics

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Avoiding Bias in the Design Output

- Be aware of the sources of bias.
- Design of output that includes users.
- Work with users so that they are informed of the output's biases.
- Creating output that is flexible and allows users to modify limits and ranges.
- Train users to rely on multiple output for conducting "reality tests" on system output.

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Designing Printed Output

- Detailed reports
  - Print a report line for every record on the master file.
- Exception reports
  - Print a line for all records that match a certain condition.
- Summary reports
  - Print one line for a group of records that are used to make decisions.

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Report Design Conventions

- Constant information remains the same whenever the report is printed.
- Variable information can vary each time the report is printed.
- Paper quality, type, and size

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Designing Printed Reports

- Functional attributes
- Stylistic considerations
- Well organized

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Designing Output for Displays

- Keep the display simple.
- Keep the presentation consistent.
- Facilitate user movement among displayed output.
- Create an attractive and pleasing display.

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Graphical Output in Screen Design

- The purpose of the graph
- The kind of data to be displayed
- The audience
- The effects on the audience of different kinds of graphical output

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Input Design Objectives

- The quality of system input determines the quality of system output.
- Input design objectives:
  - Effectiveness
  - Accuracy
  - Ease of use
  - Consistency
  - Simplicity
  - Attractiveness

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Major Topics

- Input design
- Form design
- Display design
- GUI screen design
- GUI controls
- Web design guidelines

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Good Form Design

1. Make forms easy to fill in.
2. Ensure that forms meet the purpose for which they are designed.
3. Design forms to assure accurate completion.
4. Keep forms attractive.

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Make Forms Easy to Fill in

- Form flow
- Seven sections of a form
- Captioning

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Form Flow

- Can minimize the time and effort expended by employees in form completion
- Should flow from left to right and top to bottom

227

Seven Sections of a Form

- Heading
- Identification and access
- Instructions
- Body
- Signature and verification
- Totals
- Comments

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Caption Types

- Line caption
  - Putting the caption on the same line or below the line
- Boxed caption
  - Providing a box for data instead of a line
- Check off caption
  - Lining up choices or alternatives vertically
- Horizontal check off caption
  - Lining up choices or alternatives horizontally
- Table caption
  - Work well in the body of a form
- Combination

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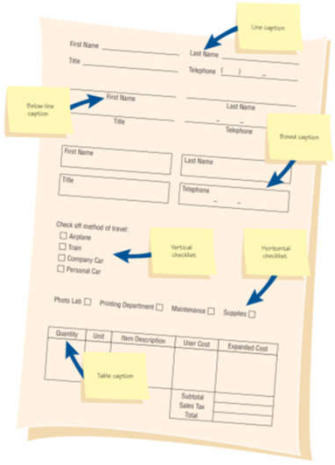
Major Captioning Alternatives



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Meeting the Intended Purpose

- Systems analysts may use different types of specialty forms for different purposes.
- Specialty forms
  - Multiple-part
  - Continuous-feed
  - Perforated

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Ensuring Accurate Completion

- To reduce error rates associated with data collection, forms should be designed to assure accurate completion.
- Design forms to make people do the right thing with the form.

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Keeping Forms Attractive

- Aesthetic forms draw people into them and encourage completion.
- Forms should look uncluttered and elicit information in the expected order.
- Using different fonts and line weights within the same form can help make it more attractive for users.

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Computer-Assisted Form Design

- Numerous form design packages are available for PCs.
- There are tools to set up:
  - Fields
  - Check boxes
  - Lines
  - Boxes

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Graphical User Interface (GUI) Controls

- Text boxes
- Check boxes
- Option or radio buttons
- List and drop-down list boxes
- Sliders and spin buttons
- Image maps
- Text area
- Message boxes

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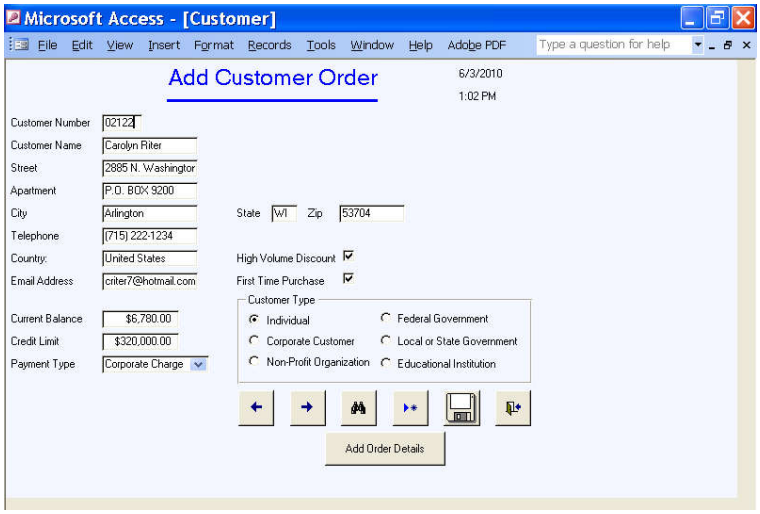
The Designer Has Many GUI Components that Allow Flexibility in Designing Input Screens for the Web or Other Software Packages: This Example Is from Microsoft Access



236

Text Boxes

- Text boxes should be large enough to accommodate all the characters.
- Captions should be to the left of the text box.
- Character data is left-aligned within the box.
- Numeric data is right-aligned.

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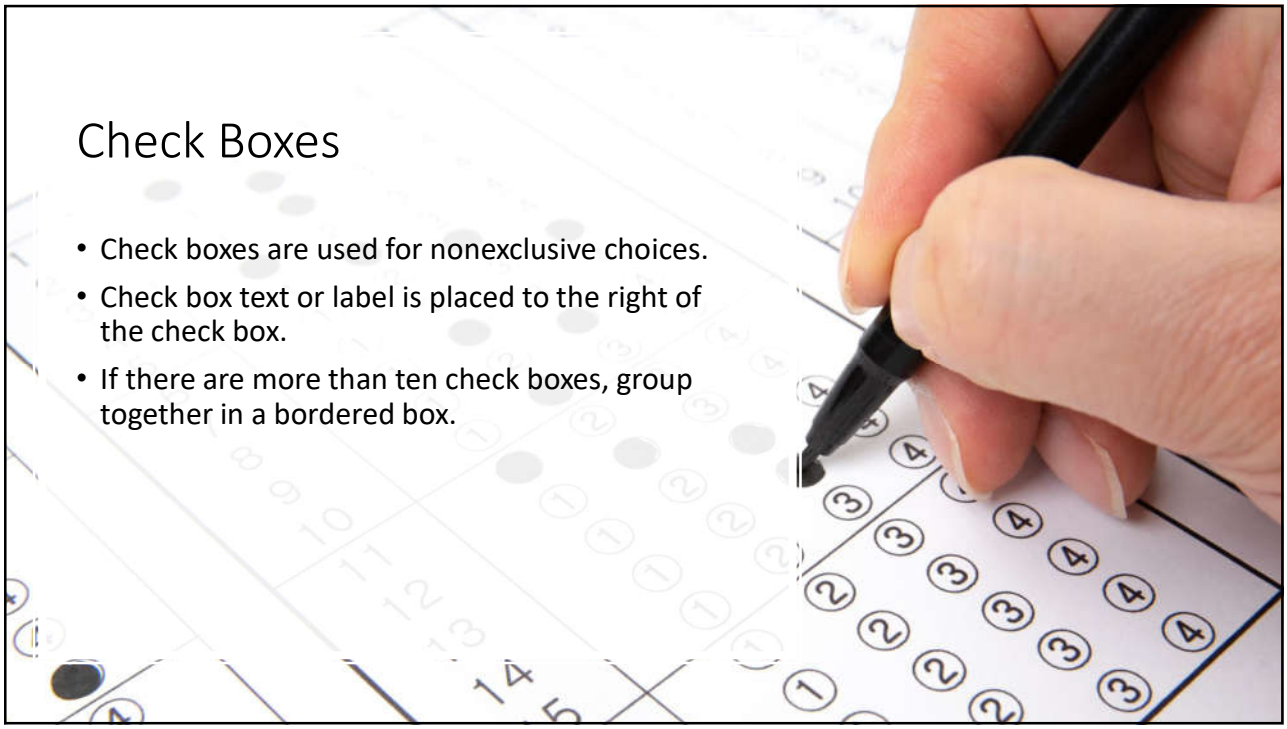
Check Boxes

- Check boxes are used for nonexclusive choices.
- Check box text or label is placed to the right of the check box.
- If there are more than ten check boxes, group together in a bordered box.



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Option Buttons

- Option or radio buttons are used for exclusive choices.
- Choices are listed to the right of the button, in some sequence.
- Often they are placed in a rectangle called an option group.
- If more than six option buttons are used, a list box or drop-down list box should be implemented.

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List and Drop-Down List Boxes

- Used when there is little room available on the page
- If there is a commonly selected choice, it is usually displayed in the drop-down list by default.

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Tab Control Dialogue Boxes

- Create a separate tab for each unique feature.
- Place the most commonly used tabs in front and display them first.
- Consider including three basic buttons in your design:
  - OK
  - Cancel
  - Help

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Text Area

- A text area is used for entering a larger amount of text.
- Can view data larger then the box area
- Handling text:
  - Hard return is used to force new lines.
  - Use word wrap within the text area.

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Message Boxes and Command Buttons

- Message boxes are used to warn users and provide feedback messages in a dialog box.
- Command buttons perform an action when the user selects it.

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Form Controls and Values

- Each control in a GUI interface stores data associated with the control.
- Web pages use a name and value pair that are transmitted to the server or in an email sent along with the form.

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Hidden Fields

- Not visible to the viewer
- Do not take up any space on the Web page
- Can only contain a name and value
- Used to store values sent from one Web form to the server

245

Event-Response Charts

- Used to:
  - List the variety of events that can occur.
  - Show what should happen.
  - Build a Web form that requires minimal action from the user.
  - Explore improvements to the Web page.
- Events may be used to:
  - Control navigation between Web pages.
  - Change the contents of drop-down lists.

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