EAST WEST UNIVERSITY

CSE347

Information System Analysis and Design

Nishat Tasnim Niloy

Lecturer

Department of Computer Science and Engineering

Faculty of Science and Engineering

Topic: 5

Effective Input Output Design

Input Design Objectives

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

Form Design

Guidelines for good form design:

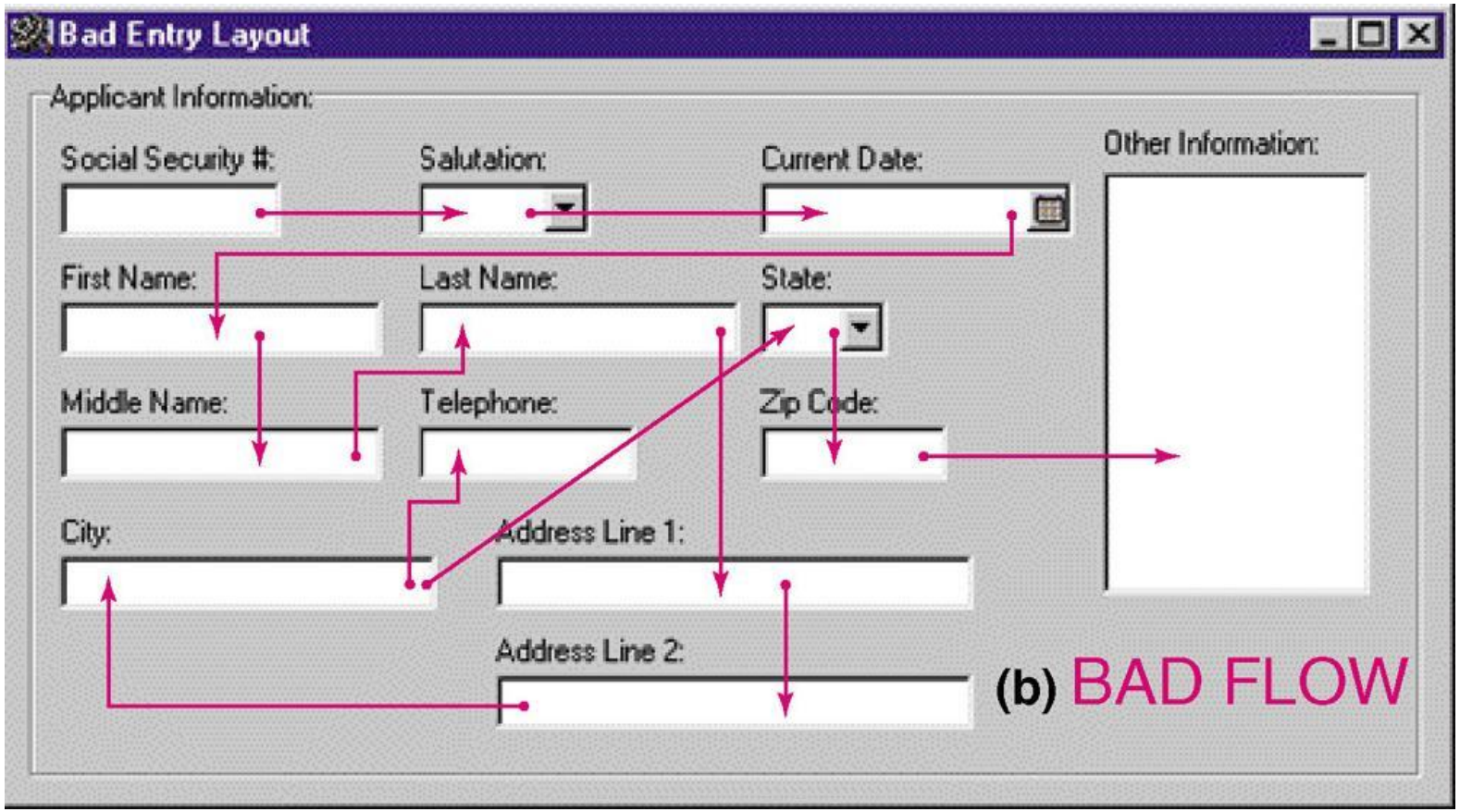
- Make forms easy to fill out.
- Ensure that forms meet the purpose for which they are designed.
- Design forms to assure accurate completion.
- Keep forms attractive.

Form Completion

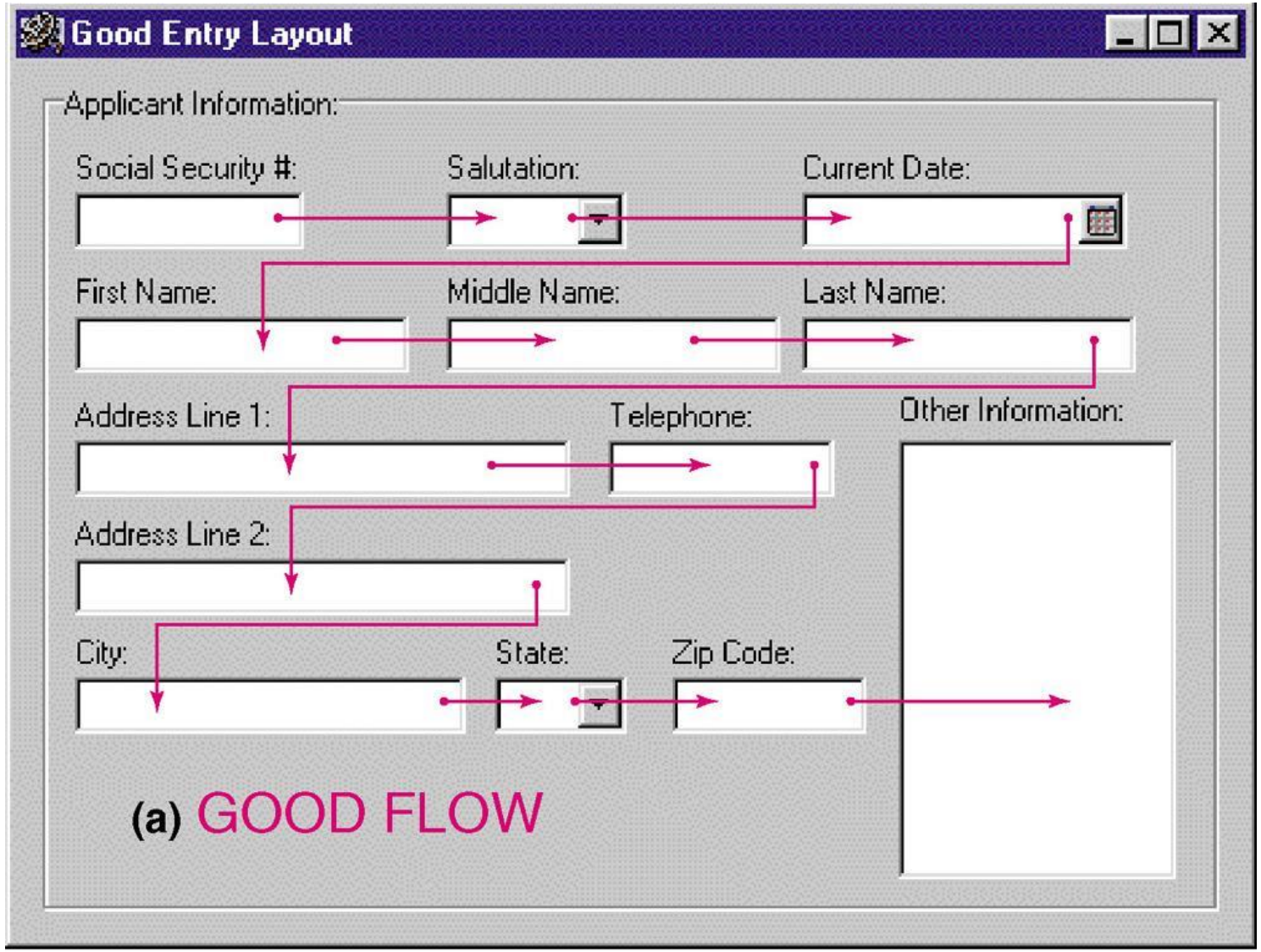
To make forms easy to fill out, the following techniques are used:

- First, design forms with proper flow, from left to right and top to bottom.
- Second, group information logically using the seven sections of a form.
- Third, provide people with clear captions.
  - Captions tell the person completing the form what to put on a blank line, space, or box.

Bad Flow in a Form



Good Flow in a Form



Seven Sections of a Form

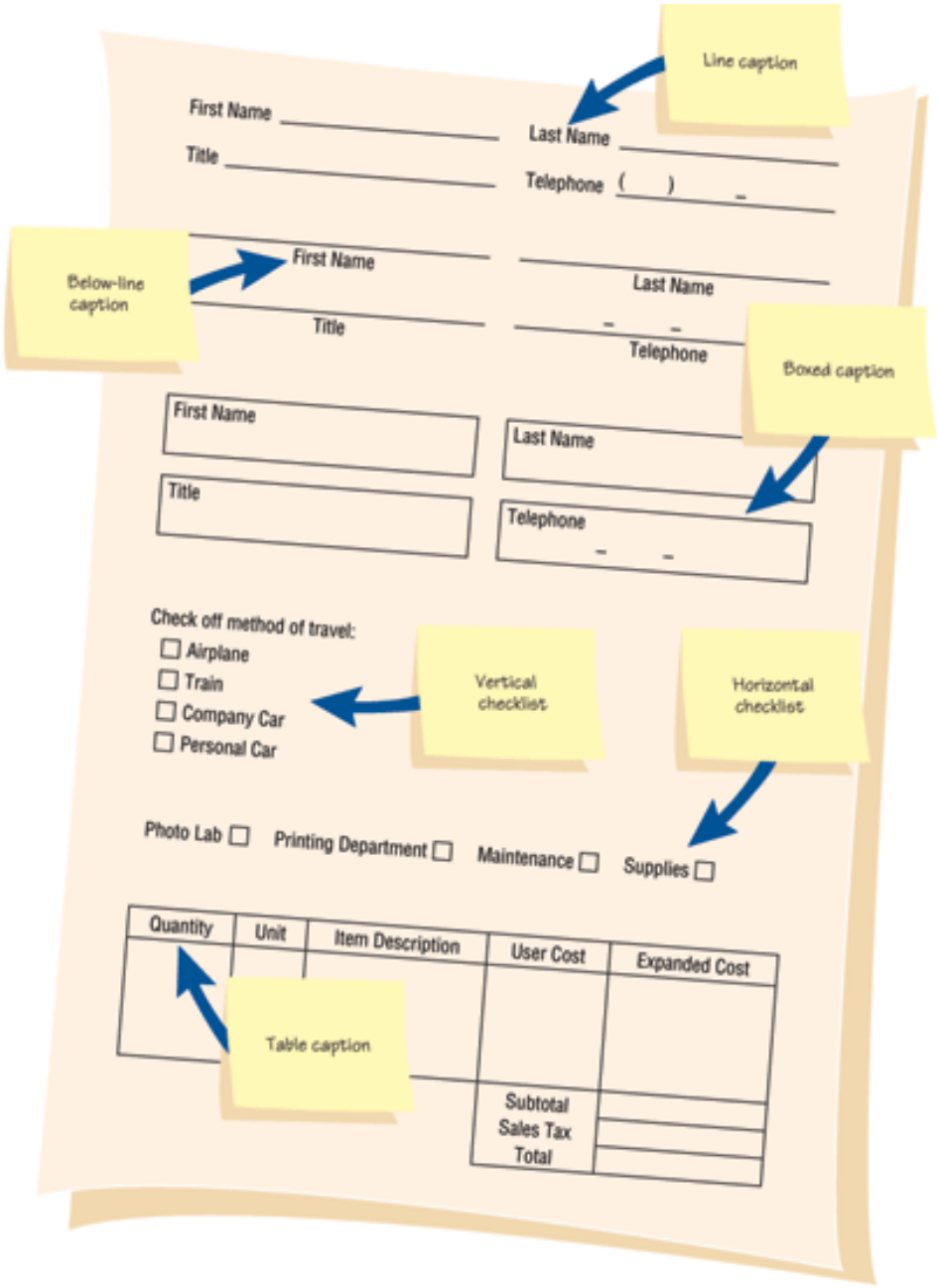
The seven sections of a form are:

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

Caption Types

Captions may be one of the following:

- Line caption, putting the caption on the same line or below the line.
- Boxed caption, providing a box for data instead of a line.
- Vertical check off, lining up choices or alternatives vertically.
- Horizontal check off, lining up choices or alternatives horizontally.



Meeting the Intended Purpose

- Systems analysts may use different types of specialty forms for different purposes.
- Specialty forms can also mean forms prepared by a stationer.

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.
- To encourage people to complete forms, systems analysts should keep forms attractive.

Attractive Forms

- To be more attractive, forms should look uncluttered, and elicit information in the expected order.
- Aesthetic forms or usage of different fonts and line weights within the same form can help make it more attractive.

Computer Form Design Software

- Numerous microcomputer form design software is available.
- Features of electronic form design software:
  - Ability to design paper, electronic, or Web- based forms.
  - Form design using templates.
  - Form design by cutting and pasting familiar shapes and objects.
- Features of the electronic form design software
  - Facilitates completion through the use of software.
  - Permits customized menus, toolbars, keyboards, and macros.
  - Supports popular databases.
  - Enables broadcasting of electronic forms.
  - Permits sequential routing of forms.
  - Assists form tracking.
  - Encourages automatic delivery and processing.
  - Establishes security for electronic forms.

Controlling Business Forms

- Controlling forms include:
  - Making sure that each form in use fulfills its specific purpose.
  - Making sure that the specified purpose is integral to organizational functioning.
  - Preventing duplication of information collected and the forms that collect it.
  - Designing effective forms.
  - Deciding on reproduce forms in the most economical way
    - Establishing stock control and inventory procedures that make forms available when needed, at the lowest possible cost

Display Design Guidelines

Guidelines for good display design:

- First, keep the display simple.
- Second, keep the display presentation consistent.
- Third, facilitate user movement among display screens.
- Finally, create an attractive display.

Three Screen Sections

To keep the screen simple, it is divided into three sections:

- Heading.
- Body.
- Comments and instructions.

Display Design Concepts for Simplicity

- Displaying a few necessary basic commands using windows or hyperlinks is another way to keep screens simple.
- For the occasional user, only 50 percent of the screen should contain useful information.
- Simplistic design includes maximizing or minimizing the window size as needed.
- Use context-sensitive help and other pop-up menus.
- Consistency is achieved by displaying information in the same area or by grouping information logically.

Facilitating Movement

Guidelines for facilitating movement from one page to another:

- Clicking--the three clicks rule says that users should be able to get to the screens they need within three mouse or keyboard clicks.
- Scrolling--using arrows or PgDn keys.
- Using context-sensitive pop-up windows.
- Using onscreen dialogue .

Designing an Attractive Screen

To make the screen attractive use:

- Different thickness of separation lines between subcategories.
- Inverse video and blinking cursors.
- Different combinations of colors.
- Different type fonts.

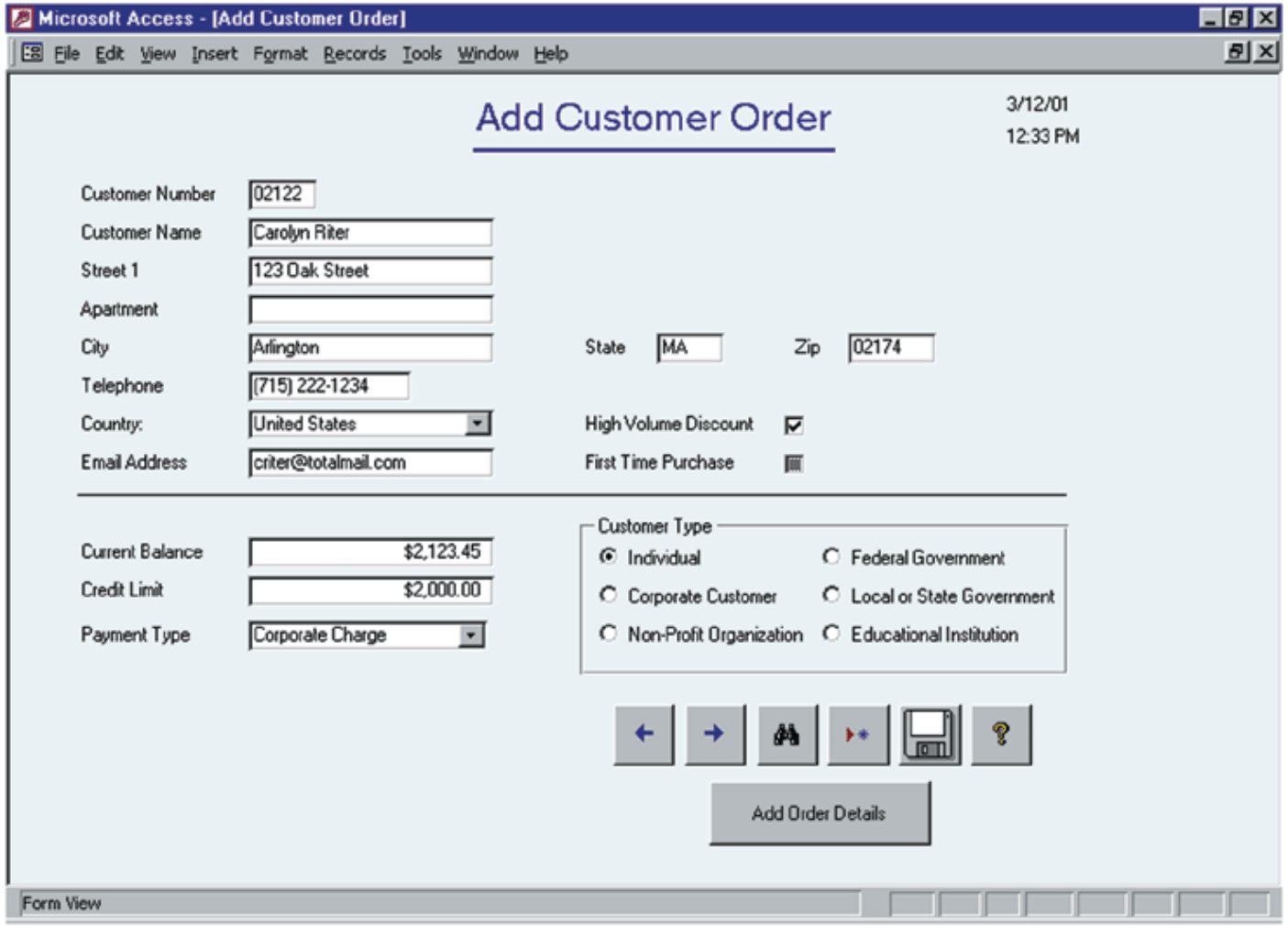
Using Icons in Screen Design

- Icons are used in graphical screens to run programs and execute commands.
- Graphical User Interface (GUI) are used in conjunction with a mouse, keyboard, lightpen, or joystick for making selections and entering data.

Graphical User Interface (GUI) Controls

GUI controls or fields:

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

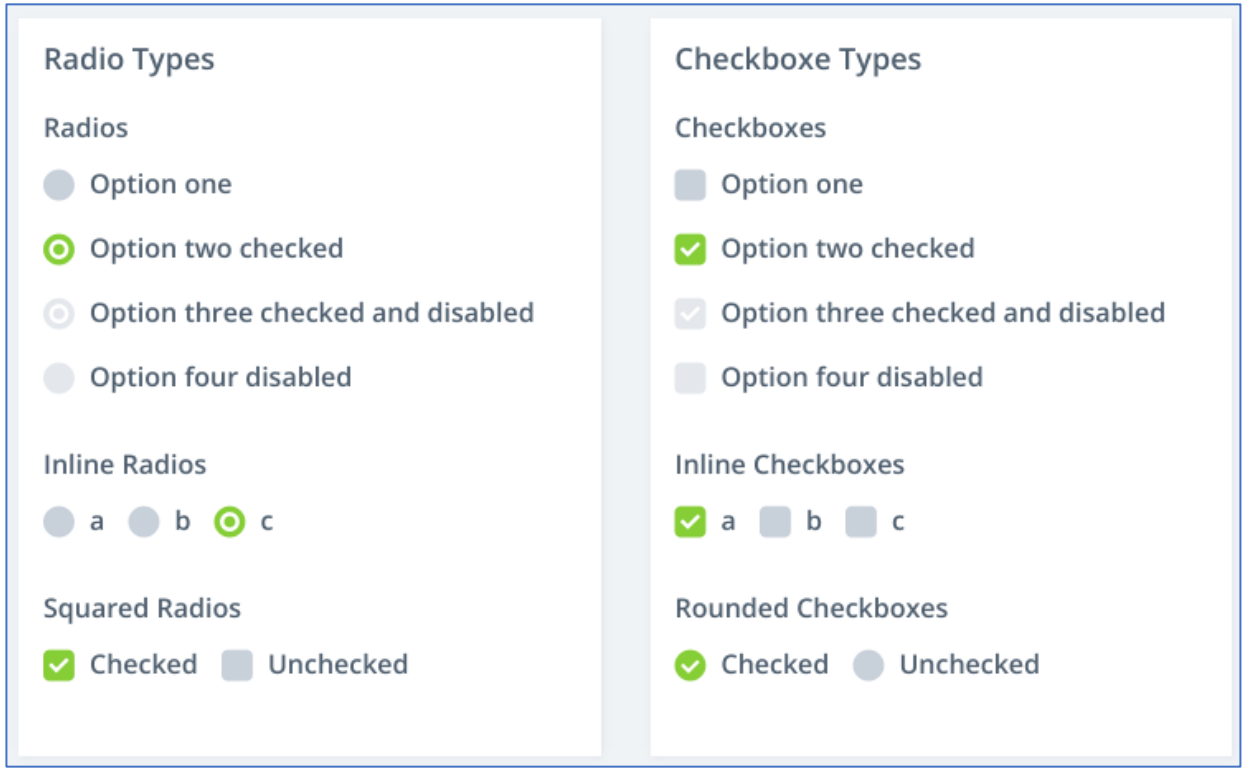


Text Boxes

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

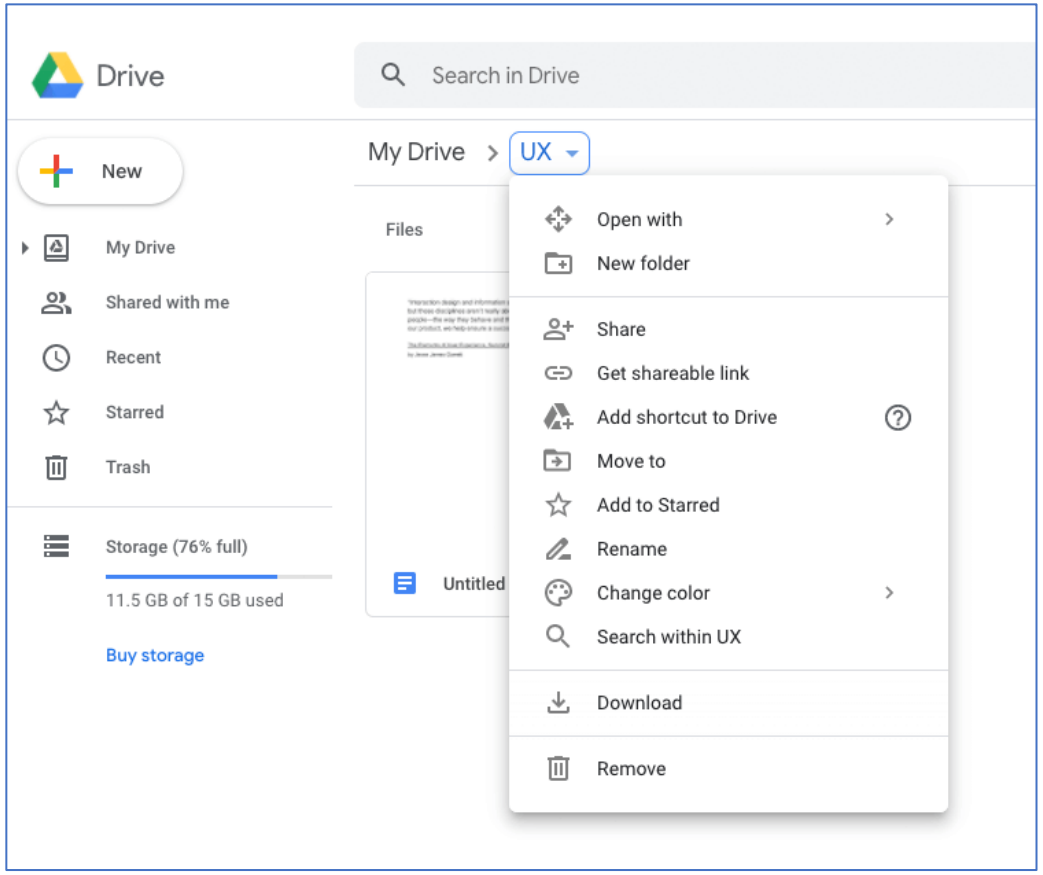
Check Boxes

- 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 10 check boxes, group in a bordered box.



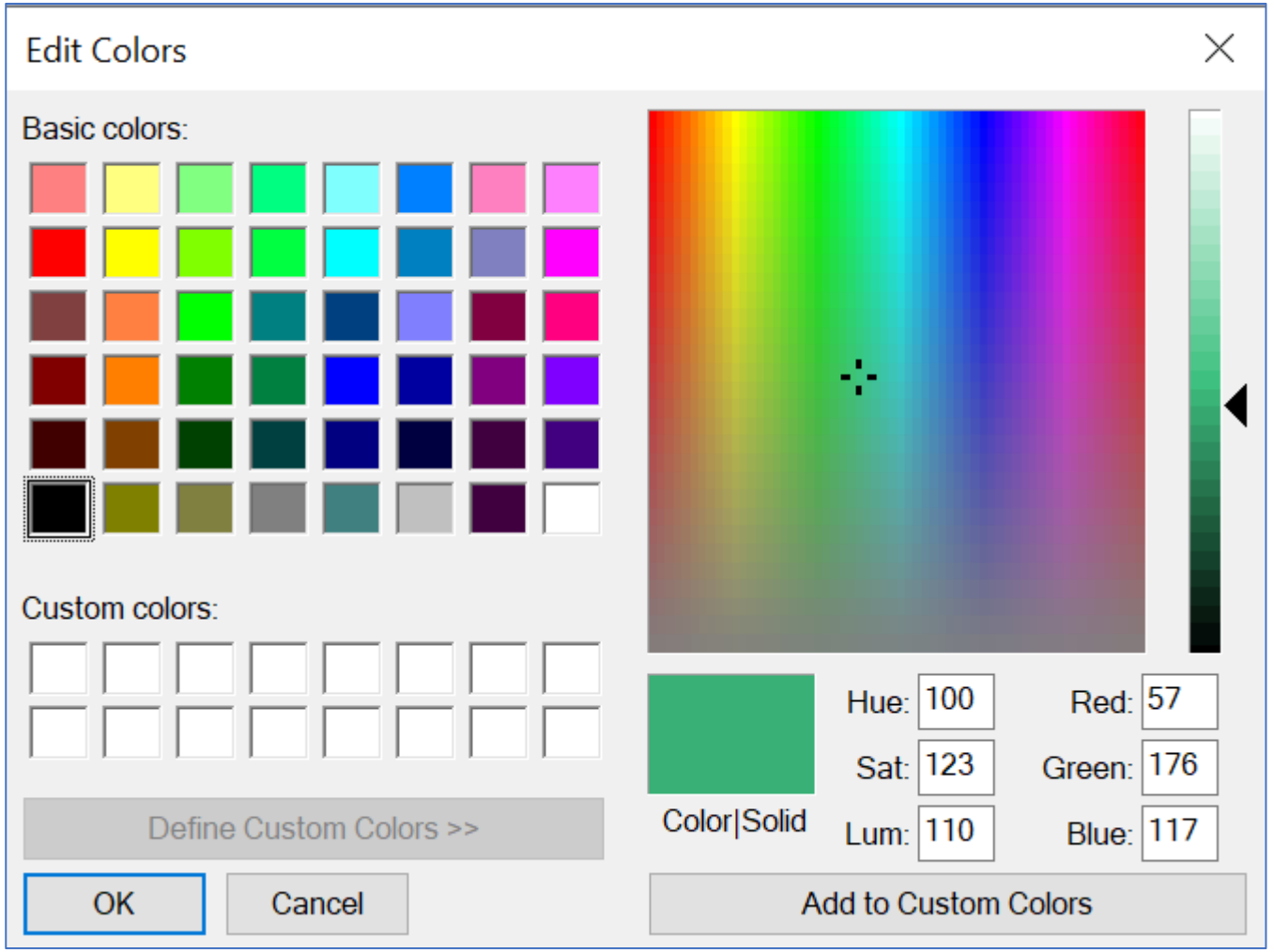
Option Buttons and Drop-down List Boxes

- Option or radio buttons are used for exclusive choices.
- Often they are placed in a rectangle called an option group.
- List and drop-down list boxes are used to select one choice out of many.



Sliders, Spin Buttons, and Image Maps

- Sliders and spin buttons are used to change data that have a continuous range of values.
- Image maps are used to select values within an image.
  - The x and y coordinates are sent to the program.



Text Area

- A text area is used for entering a larger amount of text.
- These areas may have text that wraps when the text reaches the end of the box.
- There are two ways to handle the text:
  - Hard return is used to force new lines.
  - Use word wrap within the text area.

Message Boxes and Command Buttons

- Message boxes are used to display warning and other messages in a rectangular window.
- Command buttons perform an action.

Tab Control Dialogue Boxes

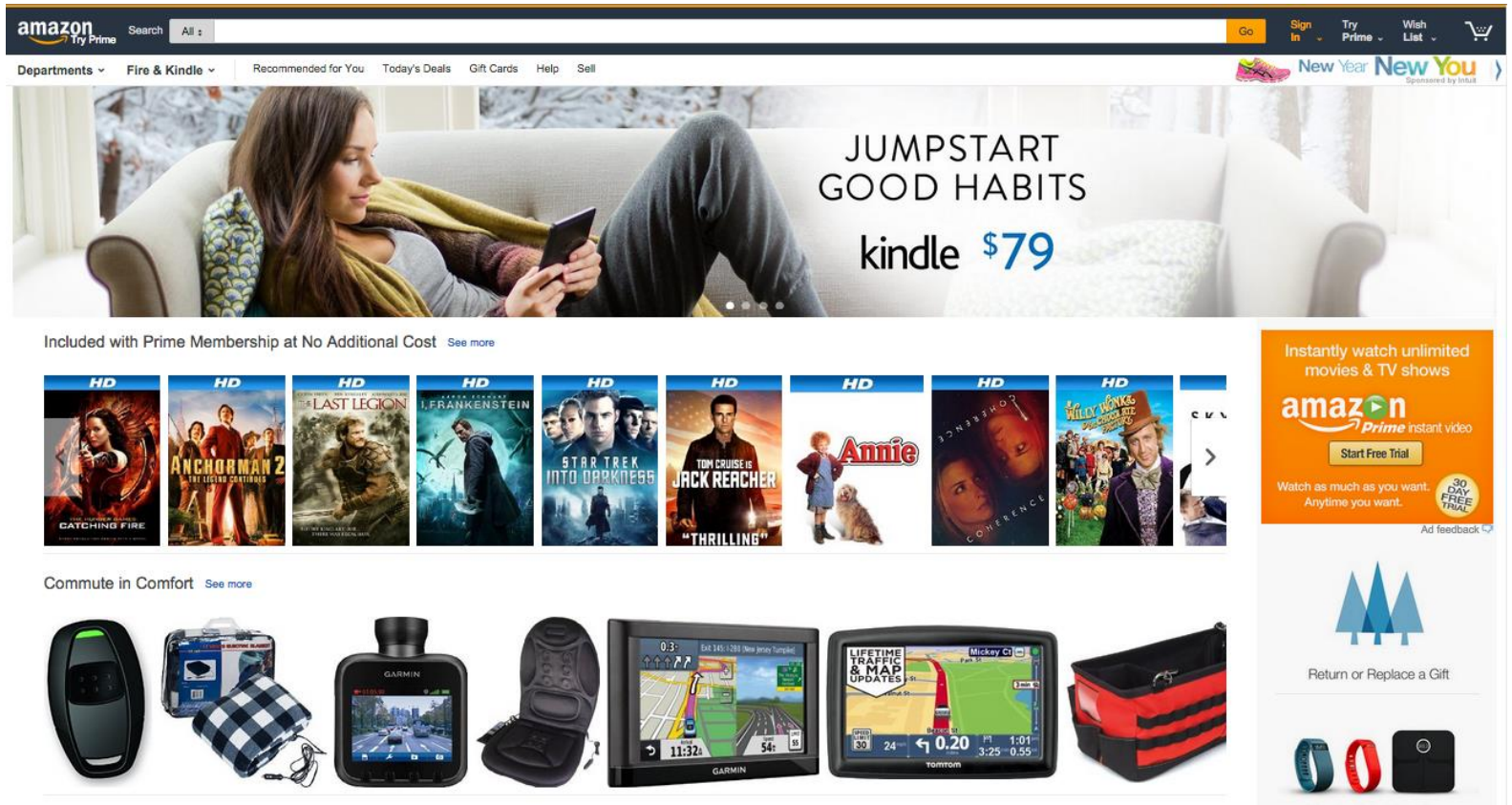
- Tab control dialog boxes help organize GUI features (controls) for users.
- Each tab dialog box should have three basic buttons:
  - OK.
  - Cancel.
  - Help.

Web Page Dialogue Boxes

- A new type of dialogue box has the look and feel of a Web page.
- Buttons are called places and are hyperlinked to items a user would wish to access.

Ecommerce Applications

- Ecommerce applications involve more than just good Web site design.
- Customers need to be confident of the site, including privacy and security.



Internet and Intranet Design Guidelines

Guidelines for creating intranet and Internet input pages:

- Provide clear instructions.
- Use a logical entry sequence for fill-in forms.
- Use a variety of text boxes, push buttons, radio buttons, drop-down lists, and other GUI features.
- Provide a scrolling text box if you are uncertain how much text will be entered.
- Include two basic buttons: Submit and Clear.
- If the form is lengthy, divide it into several simpler forms on separate pages.
- Create a feedback screen that lists error messages if a form has not correctly been filled out

Designing Output

Output should be designed to:

- Serve the intended purpose.
- Be meaningful to the user.
- Deliver the right quantity of output.
- Deliver it to the right place.
- Provide output on time.
- Choose the right output method.

External and Internal Output

- Internal output is used within the corporation.
- External output is used outside the organization.
- External output differs from internal output in its design and appearance.
- A turnaround document is one that is sent out and then returned.

Output Technologies

- Output can be in the form of:
  - Print.
  - Display screen.
  - Audio.
  - CD-ROM or CD-RW.
  - DVD.
  - Electronic output.
- Output technologies differ in their:
  - Speed.
  - Cost.
  - Portability.
  - Flexibility.
  - Storage and retrieval possibilities.

Video Clips

Video clips are useful for:

- Supplementing static, printed output.
- Distance collaboration.
- Showing how to perform an action.
- Providing brief training episodes.
- Shifting the time of an actual event by recording it for later output.
- Preserving an important occasion for addition to an organization’s archives.

Animation

Animation is composed of four elements:

- Elemental symbols.
- Spatial orientation.
- Transition effects.
- Alteration effects.

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.

Factors in Choosing an Output Technology

Factors that must be considered when choosing an output technology are:

- Who will use the output?
- How many people need the output?
- Where is the output needed?
- What is the purpose of the output?
- What is the speed with which output is needed?
- How frequently will the output be accessed?
- How long will the output be stored?
- Under what special regulations is the output produced, stored, and distributed?
- What are the initial and ongoing costs of maintenance and supplies?
- What are the environmental requirements for output technologies?

Output Bias

- Analysts must be aware of sources of output bias and inform users of the possibilities of bias in output.
- Bias is introduced in three main ways:
  - How information is sorted.
  - Setting of acceptable limits.
  - Choice of graphics.

Strategies to Avoid Bias

Strategies to avoid output bias:

- Awareness of the sources of bias.
- Design of output that includes users.
- Working 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.

Report Design Considerations

- Constant information does not change when the report is printed.
- Variable information changes each time the report is printed.
- Paper quality, type, and size should be specified.

Printed Reports

- Design reports using software.
- Design guidelines for printed reports are:
  - Include functional attributes, such as headings, page numbers, and control breaks.
  - Incorporate stylistic and aesthetic attributes, such as extra blank space and grouping data.

Display Screen Design

Guidelines for display design are:

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

Graphical Output

- Primary considerations for designing graphical output:
  - Output must be accurate, easy to understand and use.
- The analyst must determine:
  - 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.

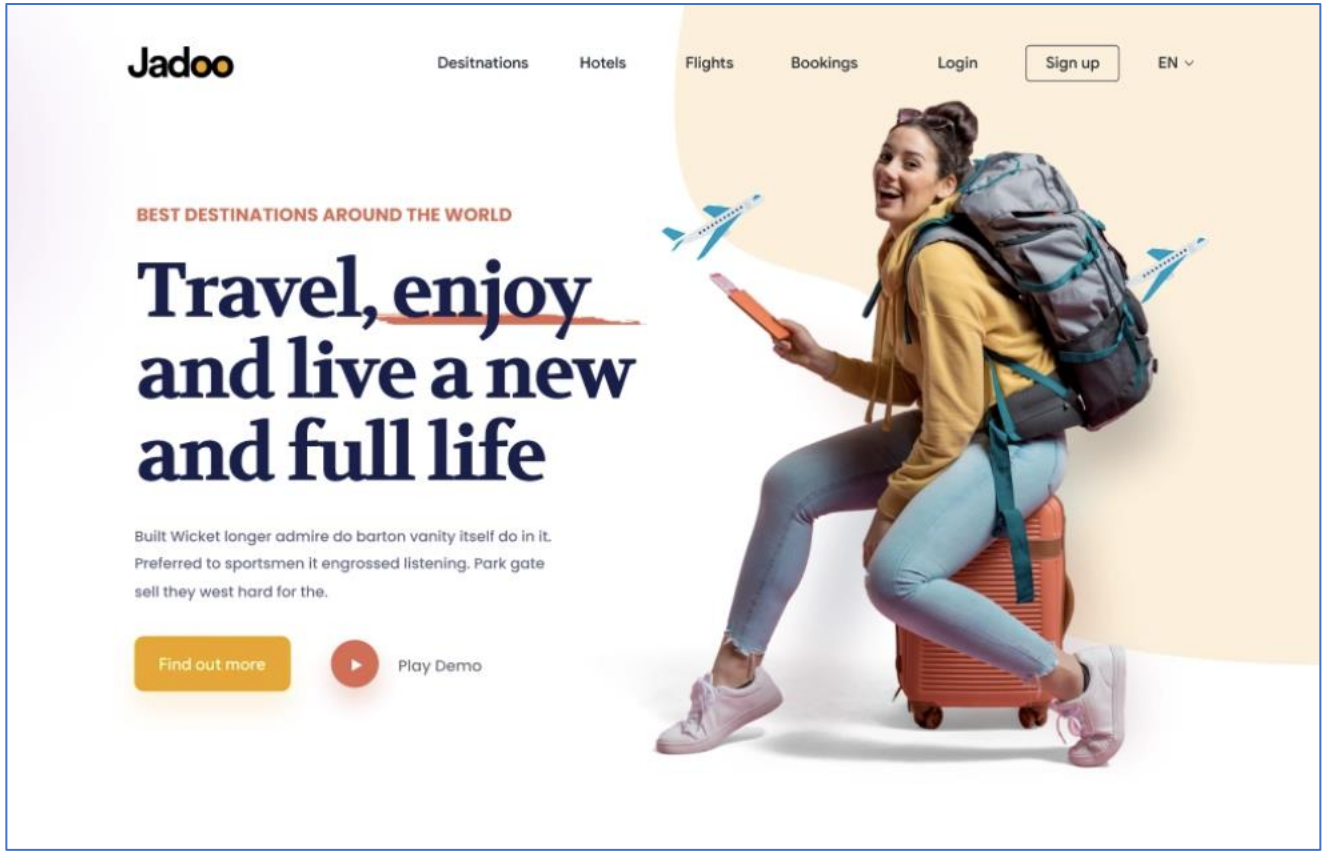
Web Site Design

- Design principles must be used when designing Web sites.
- These include:
  - Using professional tools.
  - Studying other sites.
  - Using Web resources.
  - Examining the sites of professional Web site designers.
- Further principles:
  - Using tools that you are familiar with.
  - Consulting books.
  - Examining of poorly designed pages.
  - Creating Web templates. Style sheets allow you to format all Web pages in a site consistently.
  - Using plug-ins, audio, and video sparingly.

Plan Ahead

Pay attention to:

- Structure.
- Content.
- Text.
- Graphics.
- Presentations style.
- Navigation.
- Promotion.



Web Graphics

Guidelines for using graphics when designing Web sites are:

- Use either JPEG or GIF formats.
- Keep the background simple and readable.
- Create a few professional-looking graphics for use on your page.
- Reuse bullet or navigational buttons.
- Examine your Web site on a variety of monitors and graphics resolutions.

Presentation Style

Guidelines for entry displays for Web sites:

- Provide an entry screen or home page.
- Keep the number of graphics to a reasonable minimum.
- Use large and colorful fonts for headings.
- Use interesting images and buttons for links.
- Use tables to enhance the layout.
- Use the same graphics image on several Web pages.
- Avoid overusing animation, sound, and other “busy” elements.

Navigation

Navigation guidelines:

- Use the three-clicks rule.
- Promote the Web site.
- Encourage your viewers to bookmark your site.

Output Production and XML

- An XML document may be transformed into different media types.
- There are two methods:
  - Using cascading style sheets (CSS).
  - Using Extensible Style Language Transformations (XSLT).

Cascading Style Sheets (CSS)

- CSS allows you to specify the font family, color, size, and so on.
- Styles may be set up for different media, such as display, print, or handheld devices.
- Styles do not allow you to select or sort XML elements.

Extensible Style Language Transformations (XSLT)

XSLT allows you to:

- Select XML elements.
- Sort.
- Select data to be output.