User Interface Elements
Menu Types

Task-Related Organization
“The primary goal for menu, form-fillin, and dialog-box designers is to create a sensible, comprehensible, memorable, and convenient organization relevant to the user’s task.”

Single Menus
• Binary Menus
  – Mnemonic letters
  – Radio Buttons
  – Button Choice
• Multiple-item Menus (radio buttons)
• Multiple-selection menus or check boxes
Single Menus (cont.)

- Pull-down, pop-up, and toolbar menus
  - Pull-down menus
    - Always available to the user by making selections on a top menu bar
    - Keyboard shortcuts
      - E.g., Ctrl-C important to support expert user efficiency
  - Pop-up menus
    - Appear on a display in response to a check or tap with a pointing device
    - "Pie" menu structure
  - Toolbars, iconic menus, and pallettes
    - Offers actions on a displayed object

Pie menus

Simple linear pull-down menu

Pop-up Pie menu
Single Menus (cont.)

Pop-up pie example

Single Menus (cont.)

- Menus for long lists
  - Problem: Long lists of items take a lot of time to read/select
    - Scrolling menus, combo boxes, and fisheye menus
      - Scrolling menus display the first portion of the menu and an additional menu item, typically an arrow that leads to the next set of items in the menu sequence.
      - Combo boxes combine a scrolling menu with a text-entry field.
      - Fisheye menus display all of the menu items on the screen at once, but show only items near the cursor at full size.

Fisheye Menu
Fisheye for desktop icons (Gutwin CHI 2004)

Single Menus (cont.)

• Menus for long lists (cont.)
  – Sliders and alphasliders
    • When items consist of ranges or numerical values, a slider is a natural choice to allow the selection of a value.
    • The alphaslider uses multiple levels of granularity in moving the slider thumb and therefore can support tens or hundreds of thousand of items.

Alphaslider to select movie titles
Single Menus (cont.)

- Menus for long lists (cont.)
  - Two-dimensional menus
    - “Fast and vast” two-dimensional menus give users a good overview of the choices, reduce the number of required actions, and allow rapid selection.

Single Menus (cont.)

- Embedded menus and hotlinks
  - Embedded menus are an alternative to explicit menus
  - It is natural to allow users reading about people, events, and places to retrieve detailed information by selecting menus in context.
Single Menus (cont.)

Combination of multiple menus

• Linear menu sequences and simultaneous menus
  – Linear
    • Guide the user through complex decision-making process.
    – E.g. cue cards or “Wizards”
    • Effective for novice users performing simple tasks
  – Simultaneous
    • Present multiple active menus at the same time and allows users to enter choices in any order

Combination of multiple menus (cont.)

• Tree-structured menus
  – Designers can form categories of similar items to create a tree structure
    • E.g., fonts, size style, spacing
  – Fast retrieved if natural and comprehensive
  – Use terminology from the task domain
  – Expanding menus maintain the full context of each choice
    • E.g., Windows Explorer
Combination of multiple menus (cont.)

- **Menu Maps**
  - Menu maps can help users stay oriented in a large menu tree
  - Effective for providing overviews to minimize user disorientation.

- **Acyclic and Cyclic Networks**
  - Useful for social relationships, transportation routing, scientific-journal citations
  - Can cause confusion and disorientation
    - Example: Website with acyclic page structure where users get “lost” in the site

Task-Related Organization

"The primary goal for menu, form-fillin, and dialog-box designers is to create a sensible, comprehensible, memorable, and convenient organization relevant to the user's task."

Content Organization

- Problem: How do we create menu groupings (categories) that enhance usability
Content Organization

- Task-related grouping in tree organization
  - Create groups of logically similar items
    - Example: File menu and Edit menu
  - Form groups that cover all possibilities
  - Make sure that items are non-overlapping
  - Use familiar terminology, but ensure that items are distinct from one another

Content Organization (cont.)

- Item Presentation Sequence within a menu
  - Order of items is important, and should take natural sequence into account when possible:
    - Time
    - Numeric ordering
    - Physical properties
  - When cases have no task-related orderings, the designer must choose from such possibilities as:
    - Alphabetic sequence of terms
    - Grouping of related items
    - Most frequently used items first
    - Most important items first.
Content Organization (cont.)

- Menu layout guidelines
  - Use task semantics to organize menus (single, linear sequence, tree structure, acyclic and cyclic networks)
  - Prefer broad-shallow to narrow-deep
  - Show position by graphics, numbers, or titles
  - Use items as titles for subtitles
  - Group items meaningfully
  - Sequence items meaningfully
  - Use brief items, begin with the keyword
  - Use consistent grammar, layout, terminology
  - Allow type-ahead, jump ahead, or other shortcuts
  - Enable jumps to previous and main menu
  - Consider online help, novel selection mechanisms, and optimal response time, display rate, screen size

Content Organization (cont.)

- Menu layout (cont.)
  - Titles
    - For single menus, use a simple descriptive "familiar" title.
    - For tree-structured menus, use the exact same words in the higher-level menu items as in the titles for the next lower-level menu.
      - E.g. if a menu item is called Business and Financial Services, the next screen should have that phrase as its title.

Content Organization (cont.)

- Menu layout (cont.)
  - Phrasing of menu items
    - Use familiar and consistent terminology
    - Ensure that items are distinct from one another
    - Use consistent and concise phrasing
    - Bring the keyword to the left
Content Organization (cont.)

- Menu layout (cont.)
  - Graphic layout and design
    - Constraints
      - screen width and length
      - display rate
      - character set
      - highlighting techniques
      - UI widget look & feel

Content Organization (cont.)

- Menu layout (cont.)
  - Establish guidelines for consistency of at least these menu components:
    - Titles
    - Item placement
    - Instructions
    - Error messages
    - Status reports
  - Be consistent with the UI (Windows, Mac, X Window)

Content Organization (cont.)

- Menu layout (cont.)
  - Techniques to help users know where they are in a menu
    - Indentation
    - Upper/lower case characters
    - Symbols such as * or - to create separators or outlines
    - Position markers
    - Cascading or walking menus
    - Magic lens (transparent menus)
Data Entry with Form Fillin

- **Form Fillin**
  - Appropriate when many fields of data must be entered:
    - Full complement of information is visible to user.
    - Display resembles familiar paper forms.
    - Few instructions are required for many types of entries.
  - Users must be familiar with:
    - Keyboards
    - Use of TAB key or mouse to move the cursor
    - Error correction methods
    - Field-label meanings
    - Permissible field contents
    - Use of the ENTER and/or RETURN key.

Data Entry with Form Fillin

- **Form-Fillin Design Guidelines**
  - Meaningful title
  - Comprehensible instructions
  - Logical grouping and sequencing of fields
  - Visually appealing layout of the form
  - Familiar field labels
  - Consistent terminology and abbreviations
  - Visible space and boundaries for data-entry fields
  - Convenient cursor movement
  - Error correction for individual characters and entire fields
  - Error prevention
  - Error messages for unacceptable values
  - Optional fields clearly marked
  - Explanatory messages for fields
  - Completion signal
Data Entry with Form Fillin

- Format-specific field
  - Coded fields
  - Show users the format
    - Telephone numbers
    - Social-security numbers
    - Times
    - Dates
    - Dollar amounts (or other currency)

Data Entry with Form Fillin

Data Entry with Dialog Boxes

- Dialog Boxes
- Combination of menu and form-fillin techniques.
- Internal layout guidelines:
  - Meaningful title, consistent style
  - Top-left to bottom-right sequencing
  - Clustering and emphasis
  - Consistent layouts (margins, grid, white space, lines, boxes)
  - Consistent terminology, fonts, capitalization, justification
  - Standard buttons (OK, Cancel)
  - Error prevention by direct manipulation
Dialog Box Example

Data Entry with Dialog Boxes

- **Dialog Boxes (cont.)**
  - External Relationship guidelines
    - Smooth appearance and disappearance
    - Distinguishable but small boundary
    - Size small enough to reduce overlap problems
    - Display close to appropriate items
    - No overlap of required items
    - Easy to make disappear
    - Clear how to complete/cancel

Audio Menus and Menus for Small Displays

- **Audio menus**
  - Verbal prompts and option descriptions
  - Input is normally verbal or keypad
  - Not persistent, like a visual display, so memorization is required
  - Help users avoid listening to all options
    - Accept or reject each option as read
    - Allow users to select an item while list is being read
Audio Menus and Menus for Small Displays (cont.)

- Menu for small displays
  - E.g., entertainment, communication services
  - Learnability is a key issue
  - Hardware buttons
    - Navigation, select
  - Expect interactions
  - Tap interface
  - GPS and radio frequency identification provides same automatic input

<< GROWING AREA!!! >>