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Graphical User Interface

Chapter Three- Part 3

Phases of Interface Design

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Chapter Description

- **Aims**
 - To Understand the user interface design process.
 - To identify the components of GUI.
 - To identify the roles of use GUI components to build a good GUI.
- **Expected Outcomes**
 - Understand the user interface design process.
 - Able to design a good GUI.



- **References**

The Essential Guide to User Interface Design, Third Edition,
Wilbert O. Galitz, Wiley Publishing Inc.

Step 5: Select the Proper Kinds of Windows

windows box - Google Image Search - Mozilla Firefox

File Edit View History Bookmarks Yahoo! GMaps Tools Help

http://images.google.com/images?gbv=2&svnum=10&hl=en&q=windows+box&btnG=Search+Images

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Images Showing: All image sizes Results 1 - 21 of about 19,900,000 for windows box. (0.30 seconds)

Images 2006 11 Microsoft-Windows- ... 420 x 465 - 38k gthing.net

Windows Vista - With a Security ... 544 x 599 - 26k - jpg www.teentek.com

Microsoft Windows XP Professional ... 800 x 712 - 72k - jpg apnimasti.net

I still have to get to a windows box ... 269 x 250 - 14k - jpg fatpenguinblog.com

Then there's Windows Vista Home ... 319 x 337 - 17k - jpg www.techshout.com

... when I get on a Windows box. 1440 x 900 - 542k - png www.weiqiao.com

My old windows box is still running ... 800 x 600 - 82k - jpg www.einkso.com

In Windows Vista, you can createThe windows box is clad in it's ... 416 x 461 - 60k - jpg www.stevenscottwarren.com

... box to see the About Windows box ... 352 x 288 - 10k - jpg www.petersblog.org

An About Windows box will popup. 420 x 355 - 28k - jpg www1.um.edu

... in the Windows box. 1024 x 768 - 536k - png www.blog.arun-prabha.com

... to upgrade my main windows box, ... 400 x 300 - 63k - jpg www.design-nation.net

... from your Windows box and work ... 1280 x 1024 - 934k - png www.dailycupoftech.com

Done zotero

Components of a window

- Frame
- Title bar
- Window sizing buttons
- What's this? Button
- Menu bar
- Scroll bars
- Toolbar
- And so on

Types of windows

- Primary window
 - (1) Use to represent an independent function or application.
 - (2) Use to present constantly used window components and controls
- Secondary windows
 - (1) For performing subordinate and supplemental actions
 - (2) For presenting used window components

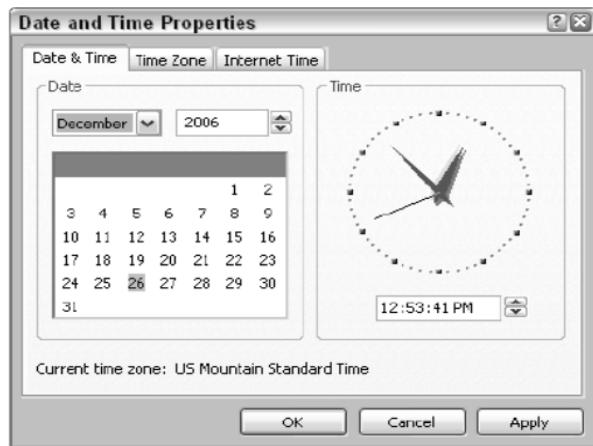
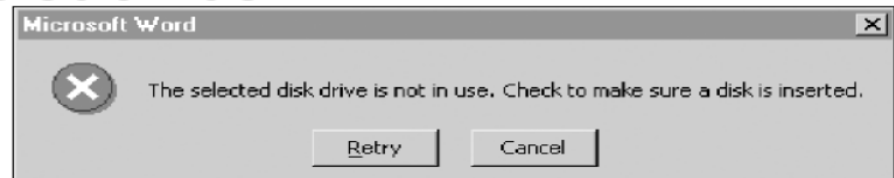
Types of windows

- Microsoft windows possesses several types of secondary windows such as:

(1) dialog boxes

(2) property sheets

(3) message boxes



Step 6: Select the Proper Interaction Devices



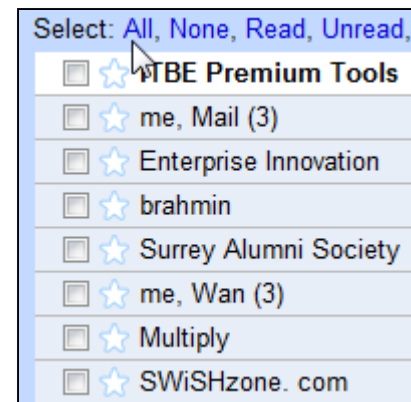
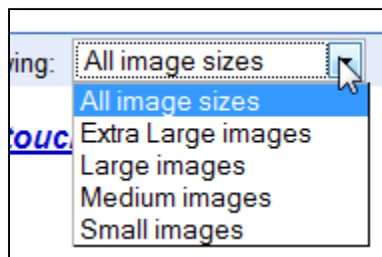
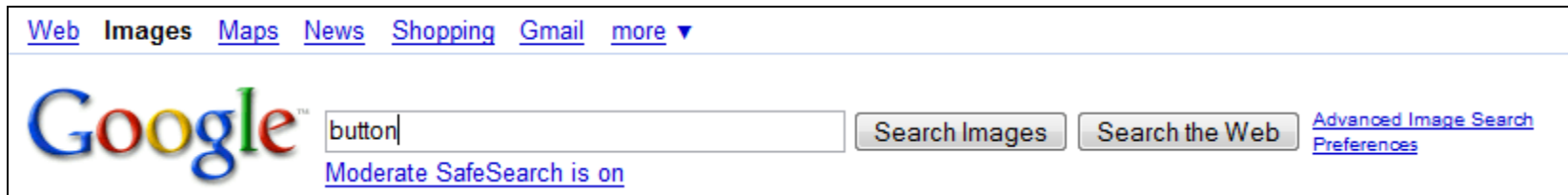
Input devices

- Mouse
- Keyboard
- Voice
- Light pen
- Touch screen
- Trackball
- Joystick
- Graphic tablet or trackpad

Guidelines for selecting the proper input device

- Consider the characteristics of the task.
- Consider user characteristics and preferences
- Consider the characteristics of the environment.
- Provide flexibility.

Step 7: Choose the Proper Screen-Based Controls



The step encompass:

- Identifying the characteristics and capabilities of the various screen controls including:
 - (1) buttons;
 - (2) Text entry/read-only controls;
 - (3) Selection controls;
 - (4) Combination entry/selection controls
 - (5) Custom controls , presentation controls
 - (6) Web controls.
- Selecting the proper controls for the user and tasks.

Buttons

- Description: the label may consist of text, graphics, or both.
- Purpose: (1) to start actions; (2) to change properties; (3) to display a pop-up menu.
- Location and layout
 - (1) Maintain consistency in button location between windows.
 - (2) If buttons are for exiting the dialog: position them centered and aligned horizontally at the bottom;

Buttons (conti...)

(3) If buttons are used for invoking a dialog feature or expanding the dialog: position them centered and aligned vertically on the right side.

(4) If there are space constraints, exiting and expanding/invoking feature buttons must be placed together: 1) if at the bottom, place exiting buttons to the right; 2) if along the right side, place exiting buttons at the bottom.

Buttons (conti...)

Configure

Add printer

Ok

Cancel

Text entry/read-only controls: text boxes

- A control, usually rectangular in shape, in which text may be entered or edited; text may be displayed for read-only purposes.
- Usually possesses a caption or label describing the kind of information contained within it.
- Purpose: to permit the display, entering, or editing of textual information; to display read-only information.

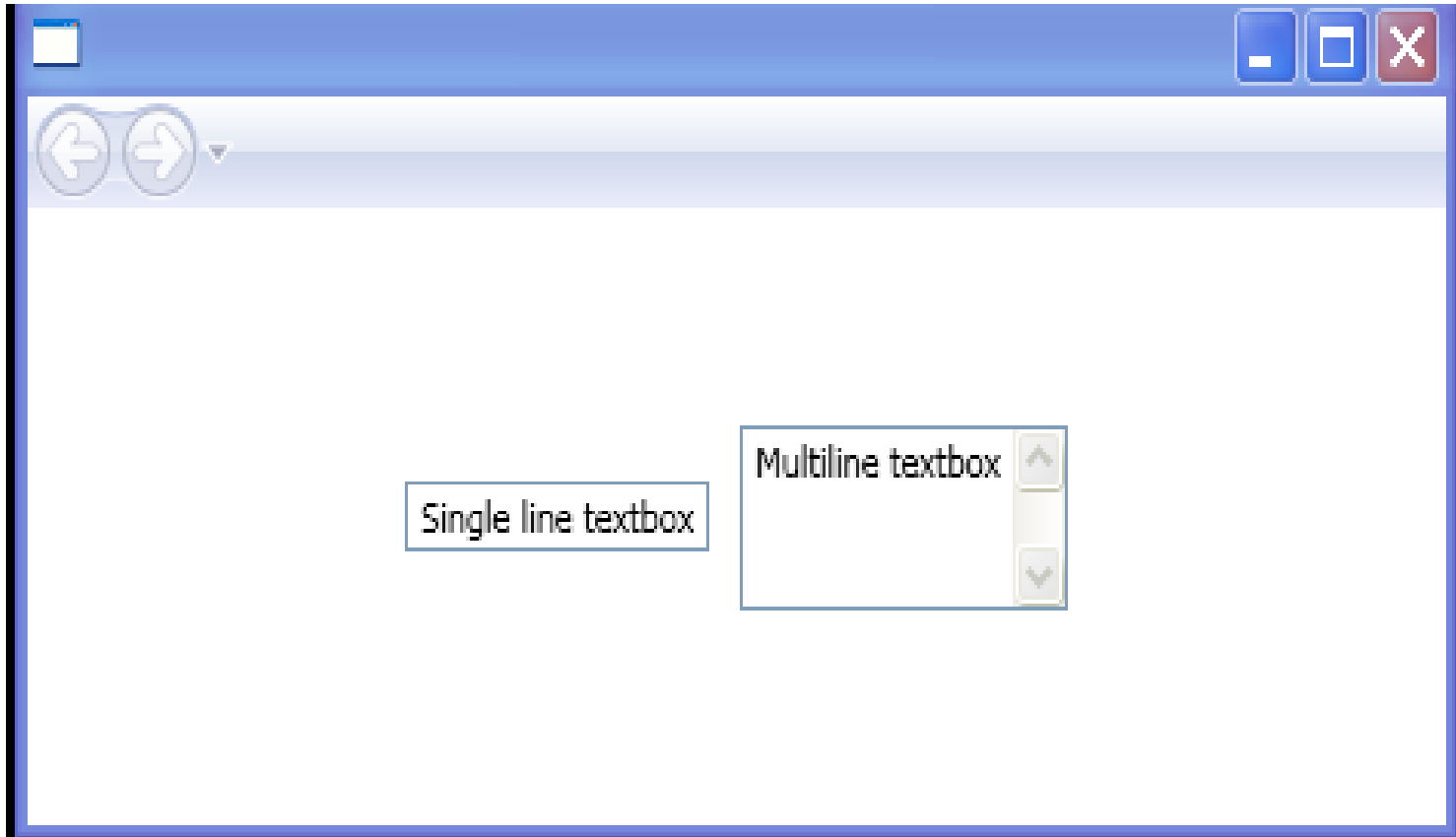
Text boxes

- Proper usage:
 - (1) Most useful for data that is:
 - 1) unlimited in scope;
 - 2) difficult to categorize;
 - 3) a variety of different lengths.
 - (2) When using a selection list is not possible.

Entry/Modification:

Display/Read Only: Information

Types of text boxes



Text boxes

Login information

* Email

This will serve as your login email and your itinerary will be sent here.

* Password

Password must be alphanumeric with minimum 8 characters (e.g: johnsmith01)

* Re-enter password

Selection controls

- A selection control presents on the screen all the possible alternatives, conditions, or choices that may exist for an entity, property, or value.
- Selection controls include :
 - (1) radio buttons;
 - (2) check boxes;
 - (3) list boxes;
 - (4) drop-down/pop-up list boxes
 - (5) palettes.

Radio buttons

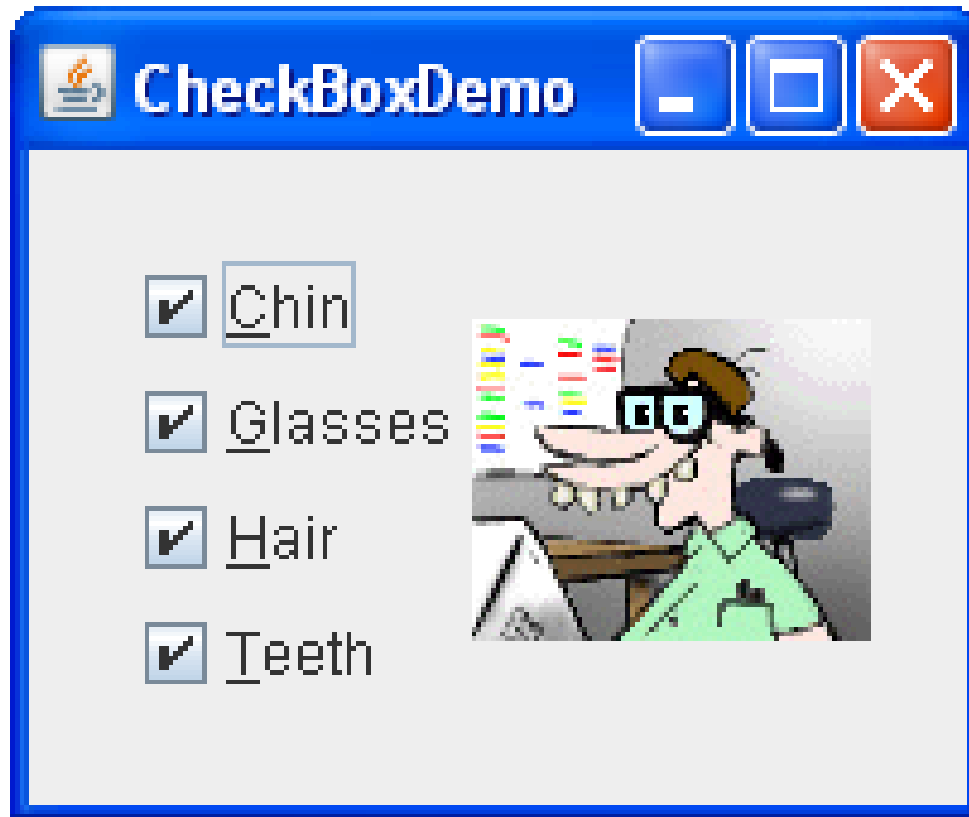


Radio buttons

- Purpose: to set one item from a small set of mutually exclusive options.
- Size: show a minimum of two choices, a maximum of eight.
- Organization.

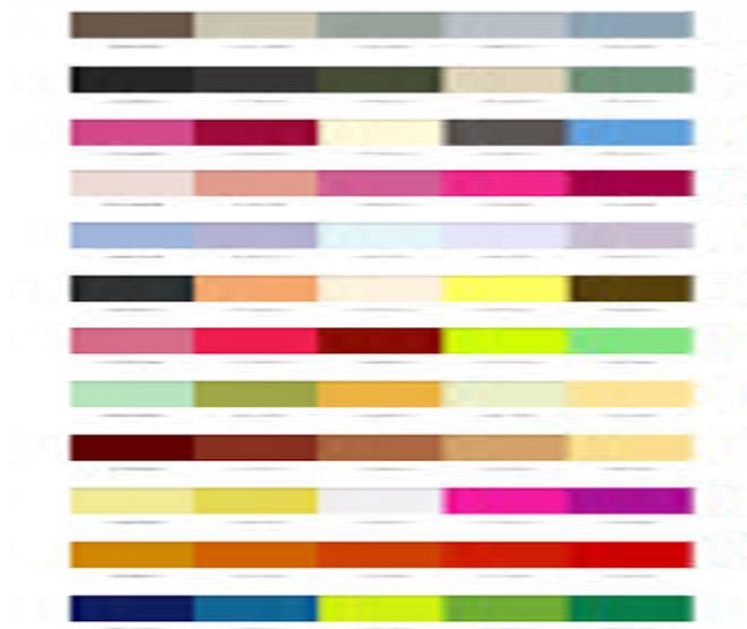
Check boxes

- Purpose: to set one or more options.

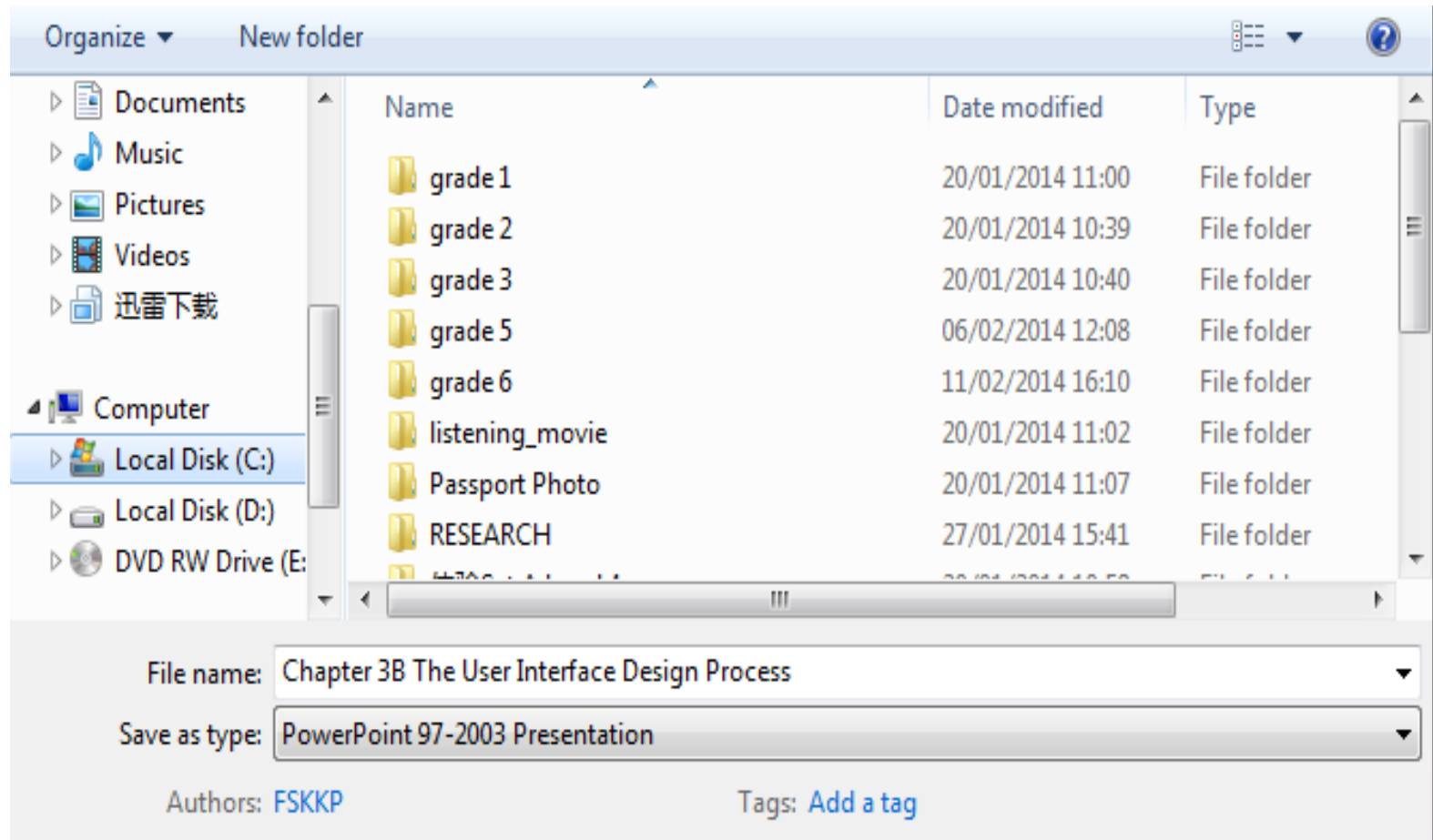


palettes

- A control consisting of a series of graphical alternatives. The choices themselves are descriptive, being composed of colors, patterns, or images



List boxes



Drop-down list boxes

* Title

* Given name
Enter name as per passport/IC in roman alphabets (A-Z) only

* Family name/Surname
Enter name as per passport/IC in roman alphabets (A-Z) only

* Date of birth

* Nationality

Contact details

Address

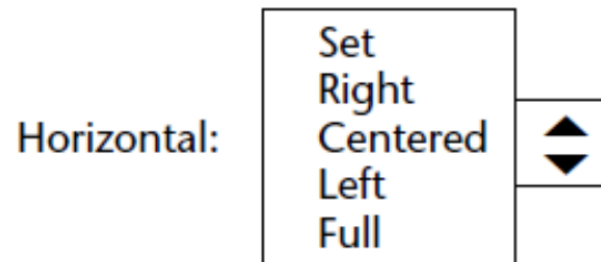
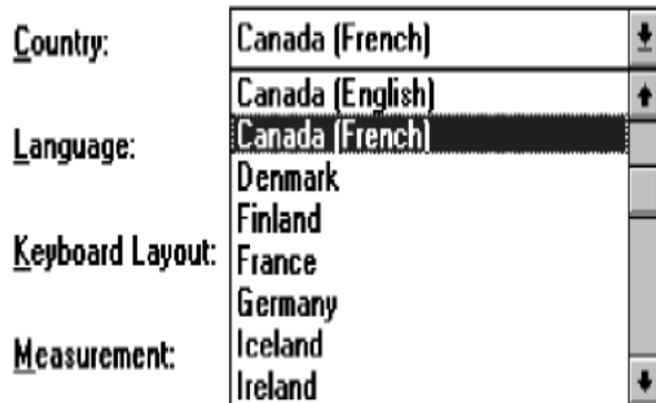
Alphanumeric characters only (e.g: A-Z, 0-9)

* Country

* State/Province

Drop-down/pop-up list boxes

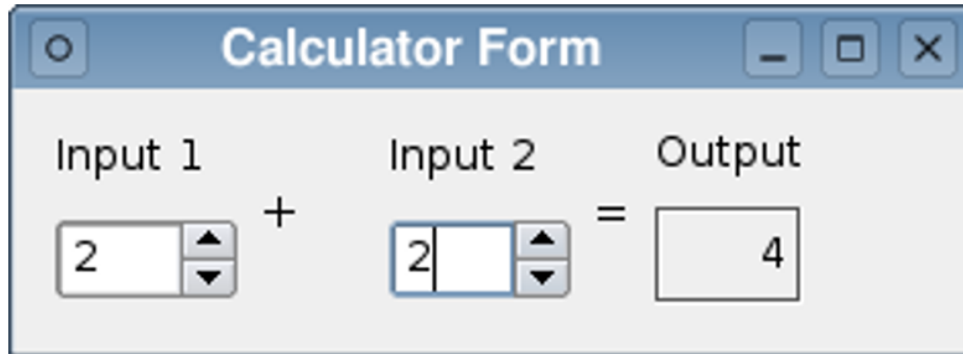
- Purpose: to select one item from a large list of mutually exclusive options when screen space is limited.
Do not use a drop-down list if it is important that all options be seen together.



Combination entry/selection controls

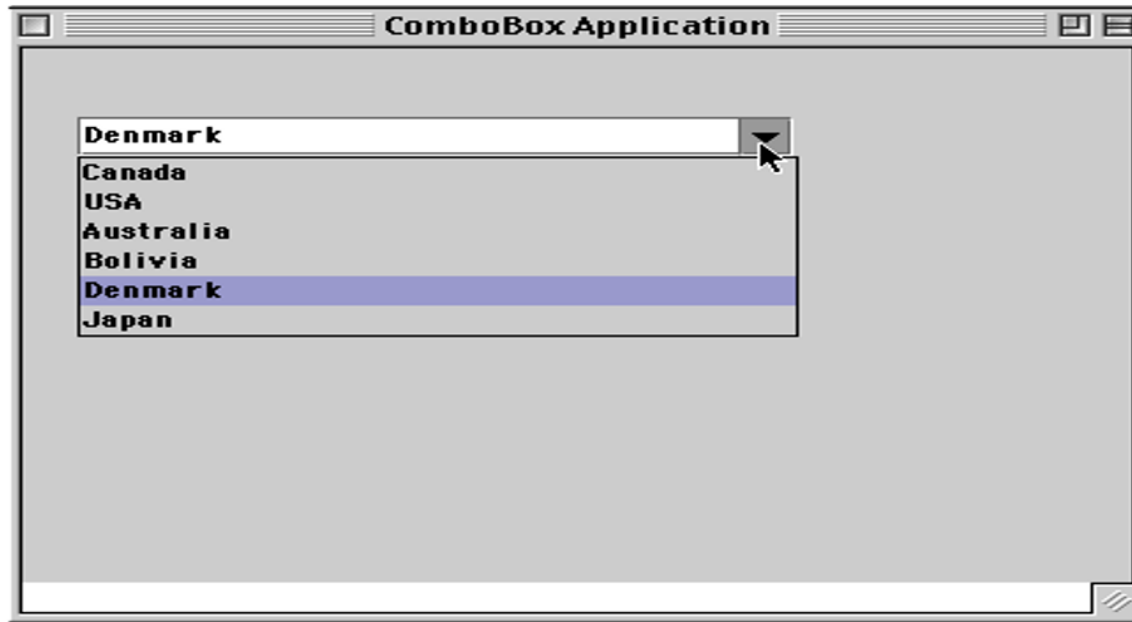
- Information may either be keyed into the field or selected and placed within it.
- These controls include:
 - (1) spin boxes
 - (2) attached combination boxes
 - (3) drop-down/pop-up combination boxes.

Spin boxes



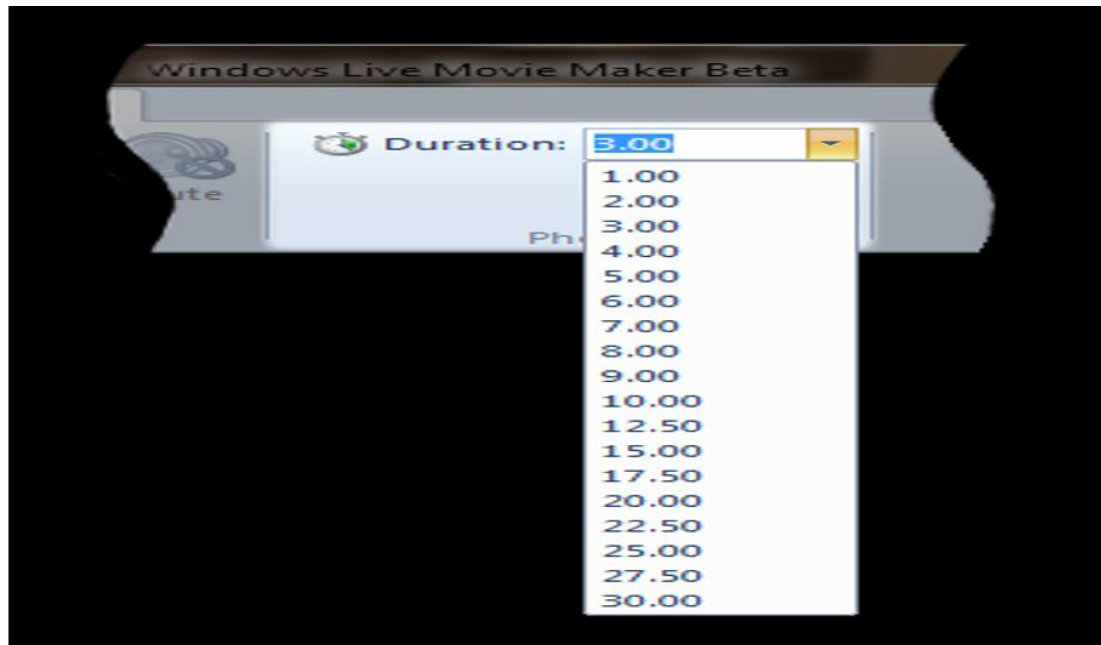
Purpose: to make a selection by either scrolling through a small set of meaningful predefined choices or typing text.

Combo boxes



- Purpose: to allow either typed entry in a text box or selection from a list of options in a permanently displayed list box attached to the text box.

Drop-down/pop-up combo boxes



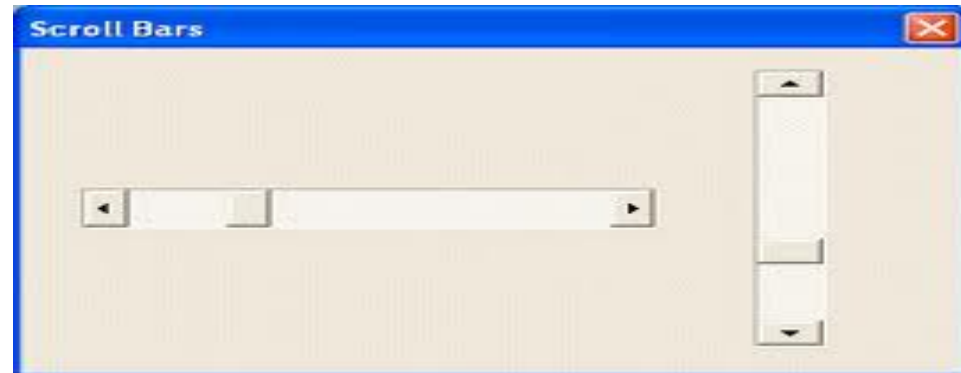
- Purpose: to allow either typed entry or selection from a list of options in a list box that may be closed and retrieved as needed.

Other operable controls

- Date-picker



- Scroll bars



Step 8: Write Clear Text and Messages



Capaian Terus Ke Seksyen >>

Akhbar Sisipan

Joran

Bintang Popular

Web Sekolah

Emas Perak Gangsa - EpG

Klik Khas

Anugerah Bintang Popular **baru**

AsiaRooms is part of TUI Travel PLC.

Das Auto.

BERITA UTAMA

Suharto meninggal

JAKARTA: Bekas Presiden Indonesia, Suharto, meninggal dunia semalam akibat kegagalan pelbagai organ dalaman selepas keadaan kesihatannya tidak menentu sejak dimasukkan ke hospital pada 4 Januari lalu. [+]

Kehilangan besar kepada Indonesia, Malaysia: PM

SUBANG: Datuk Seri Abdullah Ahmad Badawi menyampaikan ucapan takziah kepada keluarga Suharto dan rakyat Indonesia berikutan kematian bekas presiden republik itu. [+]

Proton terima 23 000 tempahan Saga

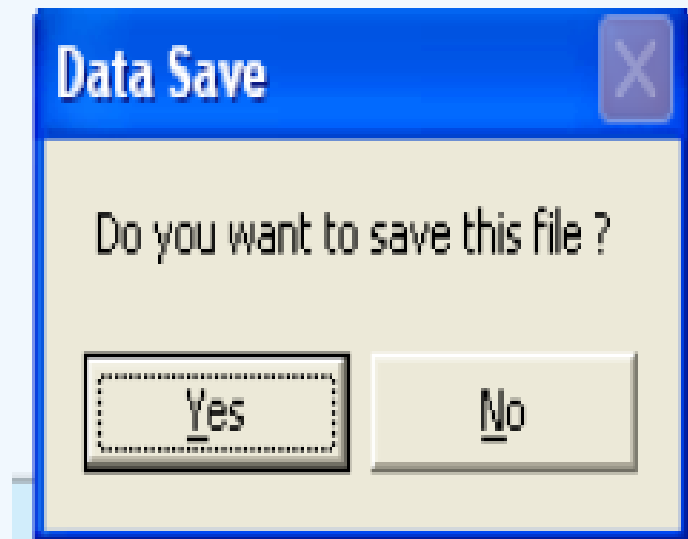
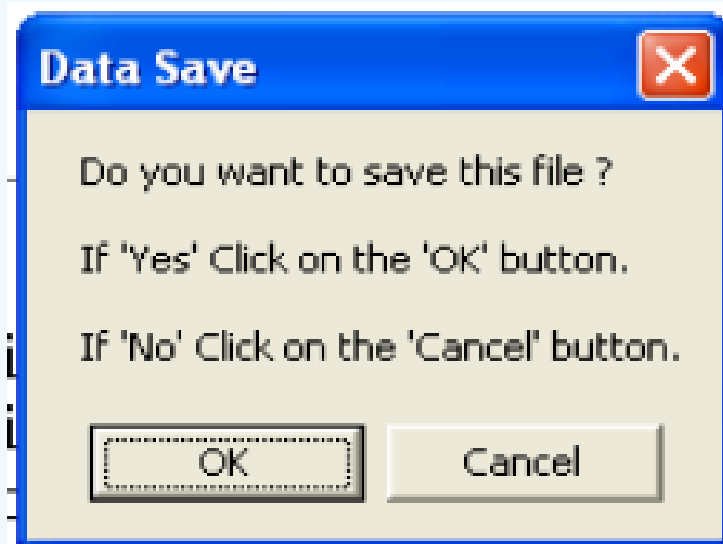
Choosing the proper words

- Do not use
 - (1) words or terms which are unique to the computer profession and with different meanings outside of the computer profession.
 - (2) abbreviations unless the abbreviations are as familiar as a full word or phrase.
- Use
 - (1) short, familiar words;
 - (2) Positive terms;
 - (3) Consistent and standard words.

Choosing the proper words

Bad	good
By means of	by
For the purposes of	for
In many cases	often
In the event that	if
Is able to	can
The way in which	The way, how
In order to	to
Prior to	before
Is required to	must

Good vs. bad



Good vs.Bad

- *This is a demo to show the visual elements like color, font-style and font size affects the user interface. Make the things pleasant to the user rather than causing eye strain and headache while reading the text.*

- This is a demo to show the visual elements like color, font-style and font size affect the user interface. Make the things pleasant to the user rather than causing eye strain and headache while reading the text.

Bad design



Step 9: Provide Effective Feedback and Guidance and Assistance

Erreur

 Can't find a usable main.tcl in the following directories:
C:/CYGWIN/TOOLS/share/gdbtcl C:/CYGWIN/TOOLS/gdbtcl C:/CYGWIN/TOOLS/gdb/gdbtk/library
C:/CYGWIN/TOOLS/gdb1.0/gdbtk/library

```
C:/CYGWIN/TOOLS/share/gdbtcl/main.tcl: can't read "errMsg": no such variable
can't read "errMsg": no such variable
while executing
"tk_messageBox -title Error -message "Could not find the lwidgets libraries.
Got nameofexec: [info nameofexecutable]
Error(s) were: \n$errMsg" -icon e..."
invoked from within
"if {[find_lwidgets_library]} {
tk_messageBox -title Error -message "Could not find the lwidgets libraries.
Got nameofexec: [info nameofexecutable]
..."
(file "C:/CYGWIN/TOOLS/share/gdbtcl/main.tcl" line 53)
invoked from within
"source C:/CYGWIN/TOOLS/share/gdbtcl/main.tcl"
["uplevel" body line 1]
invoked from within
"uplevel \#0 [list source $file]"

This probably means that gdb wasn't installed properly.

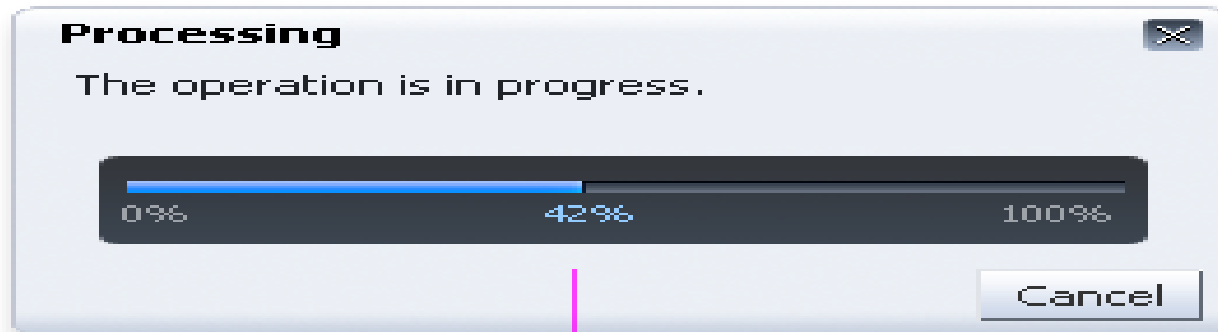
while executing
"error $msg"
(procedure "tcl_findLibrary" line 84)
invoked from within
"tcl_findLibrary gdb 1.0 {} main.tcl GDBTK_LIBRARY GDBTK_LIBRARY gdbtk/library gdbtcl {} $debug_startup"
(procedure "gdbtk_find_main" line 11)
invoked from within
"gdbtk_find_main"
```

OK

Web Page downloading

- Maximum downloading time should be about 10 seconds.
- Images should be small, lean (low bit depth, resolution, use of fewer colors).
- Use simple background images.

Processing progress indicator



Progress Bar

Guidance and assistance

- Paper documents
- Portable document format (PDF) files
- Online help
- Web site
- Wizards
- Hints or tips

Step 10: Provide Effective Internationalization and Accessibility



Step 11: Create Meaningful Graphics, Icons, and Images

(examples of icons which can be created with this pack - many other effects and symbols are available)



- HIGH QUALITY
- CUSTOMIZABLE
- ROYALTY FREE

Axialis Object Pack #1 For Icons - Glossy Buttons

A collection of 150 hi-res objects to be used with Axialis IconWorkshop
Easily create icons containing various sizes up to 256x256 for Windows®, Vista® & MacOS®

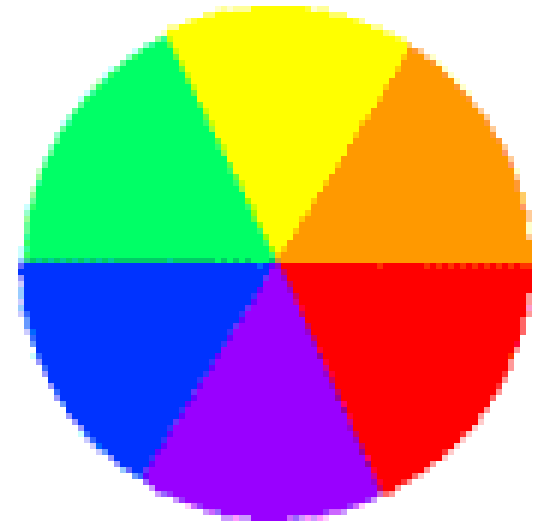
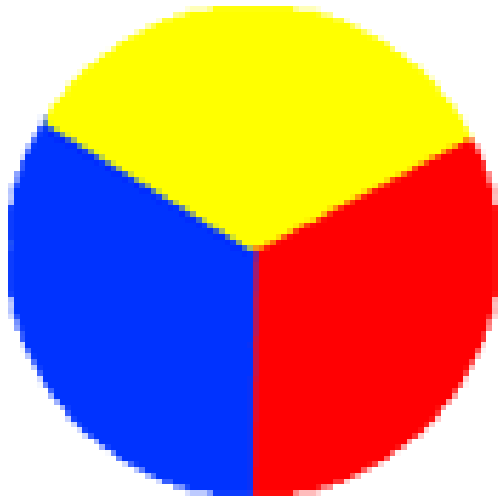
Choosing icon images

- Use existing icons when available
- Use traditional images.
- Consider user cultural and social norms.

Creating icon images

- Create familiar and concrete shapes.
- Create visually and conceptually distinct shapes.(do not display within a border).
- Simply reflect objects represented, avoiding excessive detail.
- Provide consistency in icon type.

Step 12: Choose the Proper Colors



Color uses

- Use color to assist in formatting a screen
 - (1) relating or tying elements into groupings.
 - (2) breaking apart separate groupings of information.
 - (3) highlighting or calling attention to important information by setting it off from the other information.
- Use color to increase screen appeal

Common meanings

- To indicate that actions are necessary, use warm colors : red, orange, yellow.
- To provide status or background information, use cool colors: green, blue, purple.
- Order colors by their spectral position:
red, orange, yellow, green, blue, indigo,
violet.

Foregrounds and backgrounds

- Foregrounds
 - (1) use colors that highly contrast with the background color.
 - (2) for text or data, use black; spectrum center colors such as white, yellow, or green.
- Backgrounds
 - (1) use light-colored backgrounds of low intensity: off-white or light gray.

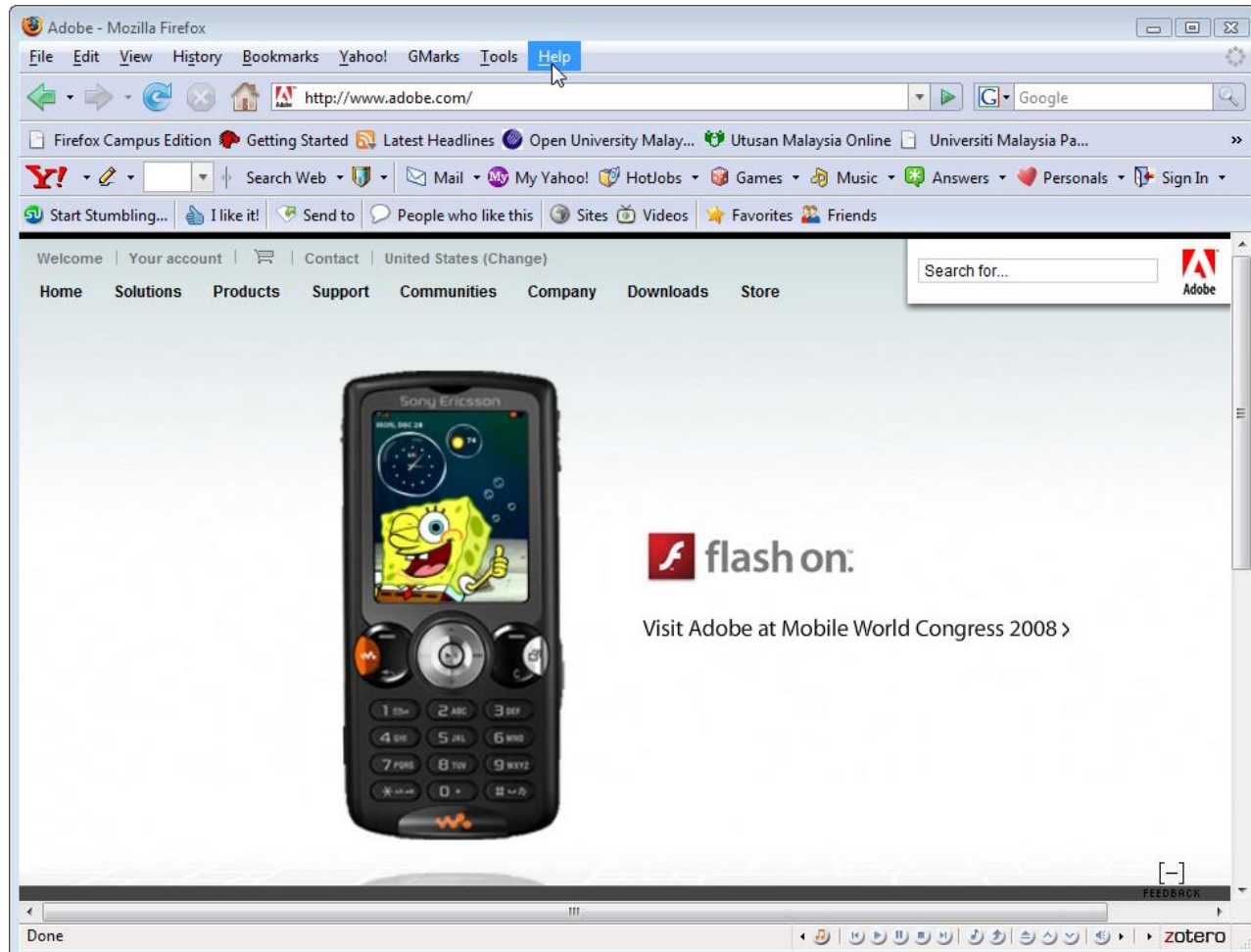
Choosing colors for web page

- For foregrounds: use black or strong colors for text and headings.
- For backgrounds: use weaker contrasting colors such as off-white or light gray.
- Use a uniform color in large areas.
- The smaller the element, the more contrast is required between it and its background.

Choosing colors for web page

- Link:
 - (1) use default colors for links. (make unselected/unvisited links blue; make selected/visited links purple).
 - (2) do not display non-link text in link colors.

Step 13: Organize & Layout Windows and Pages



General guidelines

- Amount of information:
present the proper of information on each screen. (too little is inefficient; too much is confusing).
- Organization and flow:
divide information into units that are logical, meaningful, and sensible.

General guidelines

- Provide an ordering that is logical and sequential, minimizes pointer and eye movement distances.
- Control placement:
 - (1) position the most important and frequently used controls at the top left.
 - (2) maintain a top-to-bottom, left-to-right flow.

Window guidelines

- Use:
 - (1) primary window
 - (2) secondary window
 - (3) dialog box
- Number: minimize the number of windows
- Size:
 - (1) provide large enough windows to prevent hiding important information, prevent crowding or visual confusion, minimize the need for scrolling.

Web page guidelines

- Strike a proper balance between textural information, graphics, links.
- Layout grid: create and use a layout grid.
- Size: minimize page length.
 - (1) use shorter pages for homepages, navigation pages.
 - (2) use longer pages for content pages in which an entire concept must be understood without interruption.

Web page guidelines

- Avoid horizontal scrolling.
- Place important information at the very top so it is viewable when the page is opened. (locate it within the top 4 inches of page).
- Provide sufficient but moderate amount of white space. (a minimum of 30 percent).
- Keep text and related graphics close to each other.
- Provide adequate horizontal spacing.

Possible web page components

component	purpose	Page frequency	location
Page title	To describe page	Every page	top
Navigation bar	To allow global site navigation	Every page	top
Site identifier(trademark,logo)	To identify page's owner.	Every page	top
Table of contents	To list page contents	If longer than 2 to 3 screen.	top
Search facility	To provide a means for locating content of interest	Every page	top
Page's author or contact person	To identify page's author	Every page	footer
Contact e-mail address	To solicit queries or comments	Every page	footer

Possible web page components

component	purpose	Page frequency	location
Comment facility	To solicit queries or comments	As necessary	footer
Copyright information	To identify page's legal ownership	Every page	footer
Date of creation or update	To indicate currency information.	Every page	Top, footer
Links to:			
Skip to main content	An accessibility	Every page	top
homepage	To return to homepage	Every page	Top-left, footer also for long pages.
Next/ previous page	To go to next/previous page	Every page	bottom

Step 14: Test, Test and Retest



Importance of usability testing

- Developers and users possess different models.
- Developer's intuitions are not always correct.
- There is no average user.
- It's impossible to predict usability from appearance.
- Design standards and guidelines are not sufficient.
- Problems found late are more difficult and expensive to fix.
- Test early, test often.

prototypes

- A prototype is a simulation of an actual system that can be quickly created.
- Various kinds of prototypes, in general order of increased fidelity, are as follows.
 - (1) hand sketches
 - (2) interactive paper prototypes
 - (3) programmed facades
 - (4) prototype-oriented languages

Kinds of test

- Observe
- Compare
- Listen
- measure

Test techniques

- Guideline and standard review
- Heuristic evaluation.
- Think-aloud evaluations.
- Usability test.
- Focus groups.

Some things to remember to test in web site design

Test:	Ensure that:
Different dial-up speeds	Download times are satisfactory for all users.
Navigation design	Users know how to find information; users know where they are in the web site's structure; users know how to return to visited points when they are browsing; all links are working properly; unnecessary links are found and removed.
Content legibility and readability	All grammar and spelling is correct.
Backgrounds and color	Backgrounds are compatible with foregrounds; backgrounds are not distracting.
Graphics and icons	Graphics are meaningful.
accessibility	Keep accessibility guidelines.

Analyze, modify, and retest

- Compile the data from all test participants.
- List the problems the participants had.
- Sort the problems by priority and frequency.
- Develop solutions for the problems.
- Modify the prototype as necessary.
- Test the system again, and again.

Evaluate the working system

- Collect information on actual system usage through
 - (1) interviews and focus group discussions.
 - (2) surveys.
 - (3) support line.
 - (4) online suggestion box or trouble reporting.
 - (5) user performance data logging.
- Respond to users who provide feedback.

Further readings:

- The Essential Guide to User Interface Design, Third Edition, Wilbert O. Galitz, Wiley Publishing Inc.