

interaction styles

dialogue ... computer and user
distinct styles of interaction

Common interaction styles

- command line interface
- menus
- natural language
- question/answer and query dialogue
- form-fills and spreadsheets
- WIMP
- point and click
- three-dimensional interfaces

Command line interface

- Way of expressing instructions to the computer directly
 - function keys, single characters, short abbreviations, whole words, or a combination
- suitable for repetitive tasks
- better for expert users than novices
- offers direct access to system functionality
- command names/abbreviations should be meaningful!

Typical example: the Unix system

Menus

- Set of options displayed on the screen
- Options visible
 - less recall - easier to use
 - rely on recognition so names should be meaningful
- Selection by:
 - numbers, letters, arrow keys, mouse
 - combination (e.g. mouse plus accelerators)
- Often options hierarchically grouped
 - sensible grouping is needed
- Restricted form of full WIMP system

Natural language

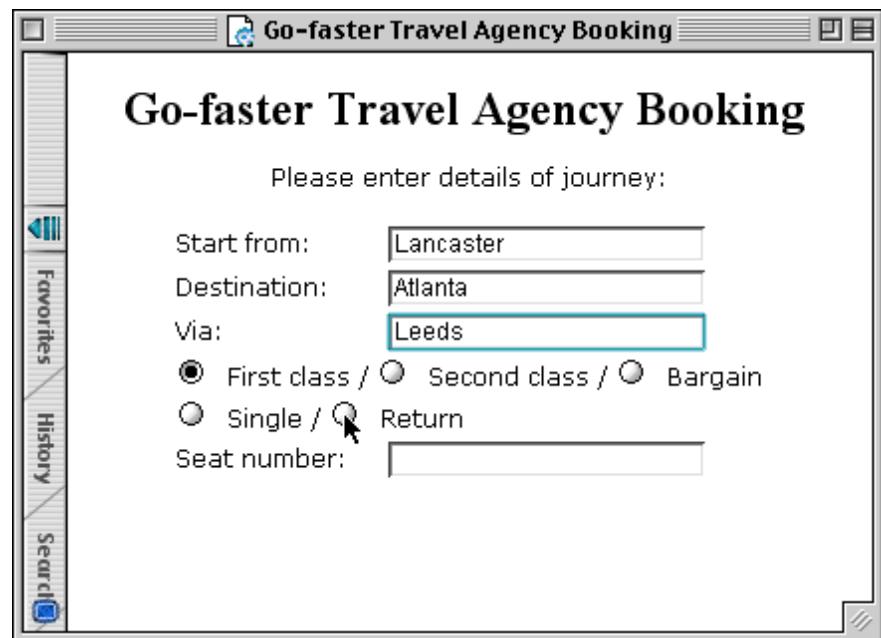
- Familiar to user
- speech recognition or typed natural language
- Problems
 - vague
 - ambiguous
 - hard to do well!
- Solutions
 - try to understand a subset
 - pick on key words

Query interfaces

- Question/answer interfaces
 - user led through interaction via series of questions
 - suitable for novice users but restricted functionality
 - often used in information systems
- Query languages (e.g. SQL)
 - used to retrieve information from database
 - requires understanding of database structure and language syntax, hence requires some expertise

Form-fills

- Primarily for data entry or data retrieval
- Screen like paper form.
- Data put in relevant place
- Requires
 - good design
 - obvious correction facilities



Spreadsheets

- first spreadsheet VISICALC, followed by Lotus 1-2-3
MS Excel most common today
- sophisticated variation of form-filling.
 - grid of cells contain a value or a formula
 - formula can involve values of other cells
 - e.g. sum of all cells in this column
 - user can enter and alter data spreadsheet maintains consistency

WIMP Interface

Windows
Icons
Menus
Pointers

... or windows, icons, mice, and pull-down menus!

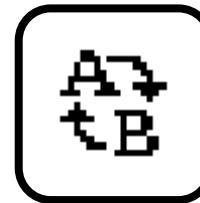
- default style for majority of interactive computer systems, especially PCs and desktop machines

Point and click interfaces

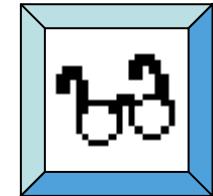
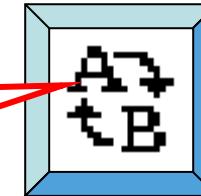
- used in ..
 - multimedia
 - web browsers
 - hypertext
- just click something!
 - icons, text links or location on map
- minimal typing

Three dimensional interfaces

- virtual reality
- 'ordinary' window systems
 - highlighting
 - visual affordance
 - indiscriminate use just confusing!
- 3D workspaces
 - use for extra virtual space
 - light and occlusion give depth
 - distance effects



flat buttons ...



... or sculptured

click me!

elements of the wimp interface

windows, icons, menus, pointers

+++

buttons, toolbars,
palettes, dialog boxes

also see supplementary material
on choosing wimp elements

Windows

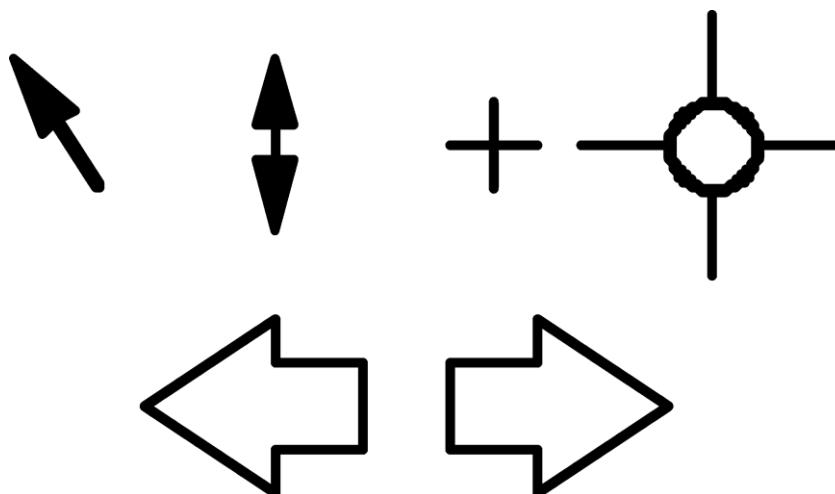
- Areas of the screen that behave as if they were independent
 - can contain text or graphics
 - can be moved or resized
 - can overlap and obscure each other, or can be laid out next to one another (tiled)
- scrollbars
 - allow the user to move the contents of the window up and down or from side to side
- title bars
 - describe the name of the window

Icons

- small picture or image
- represents some object in the interface
 - often a window or action
- windows can be closed down (iconised)
 - small representation for many accessible windows
- icons can be many and various
 - highly stylized
 - realistic representations.

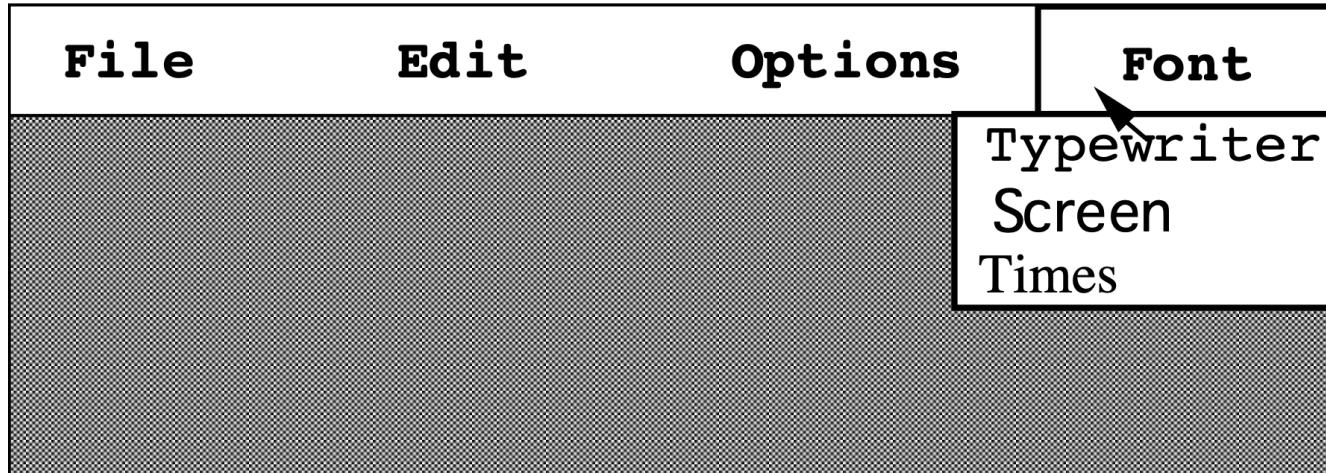
Pointers

- important component
 - WIMP style relies on pointing and selecting things
- uses mouse, trackpad, joystick, trackball, cursor keys or keyboard shortcuts
- wide variety of graphical images



Menus

- Choice of operations or services offered on the screen
- Required option selected with pointer



problem – take a lot of screen space

solution – pop-up: menu appears when needed

Kinds of Menus

- Menu Bar at top of screen (normally), menu drags down
 - pull-down menu - mouse hold and drag down menu
 - drop-down menu - mouse click reveals menu
 - fall-down menus - mouse just moves over bar!
- Contextual menu appears where you are
 - pop-up menus - actions for selected object
 - pie menus - arranged in a circle
 - easier to select item (larger target area)
 - quicker (same distance to any option)
 - ... but not widely used!

Menus extras

- Cascading menus
 - hierarchical menu structure
 - menu selection opens new menu
 - and so in ad infinitum
- Keyboard accelerators
 - key combinations - same effect as menu item
 - two kinds
 - active when menu open – usually first letter
 - active when menu closed – usually Ctrl + letter
 - usually different !!!

Menus design issues

- which kind to use
- what to include in menus at all
- words to use (action or description)
- how to group items
- choice of keyboard accelerators

Buttons

- individual and isolated regions within a display that can be selected to invoke an action

Gender: Male Female

Interests: web development user interfaces music

Submit

- Special kinds
 - radio buttons
 - set of mutually exclusive choices
 - check boxes
 - set of non-exclusive choices

Toolbars

- long lines of icons ...
... but what do they do?
- fast access to common actions
- often customizable:
 - choose *which* toolbars to see
 - choose *what* options are on it

Palettes and tear-off menus

- Problem
 - menu not there when you want it
- Solution
 - palettes – little windows of actions
 - shown/hidden via menu option
 - e.g. available shapes in drawing package
 - tear-off and pin-up menus
 - menu ‘tears off’ to become palette

Dialogue boxes

- information windows that pop up to inform of an important event or request information.
 - e.g: when saving a file, a dialogue box is displayed to allow the user to specify the filename and location. Once the file is saved, the box disappears.