

# 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

The screenshot shows a web browser window with the title 'Go-faster Travel Agency Booking'. The page content includes the heading 'Go-faster Travel Agency Booking' and the instruction 'Please enter details of journey:'. Below this, there are several form fields: 'Start from:' with the value 'Lancaster', 'Destination:' with the value 'Atlanta', and 'Via:' with the value 'Leeds'. There are also three radio buttons for 'First class / Second class / Bargain', with 'First class' selected. Below these are two more radio buttons for 'Single / Return', with 'Return' selected. At the bottom, there is a 'Seat number:' label followed by an empty text box. On the left side of the form, there is a vertical sidebar with three buttons: 'Favorites', 'History', and 'Search'.

# 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!

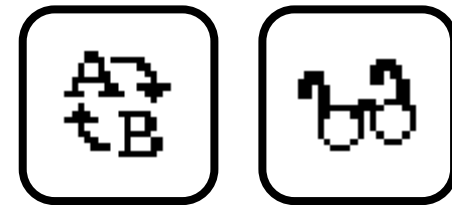
- default style for majority of interactive computer systems, especially PCs and desktop machines

# Point and click interfaces

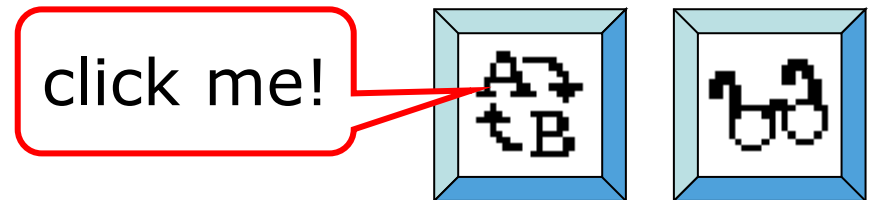
- used in ..
  - multimedia
  - web browsers
  - hypertext
- just click something!
  - icons, text links or location on map
- minimal typing

# 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

# elements of the wimp interface

windows, icons, menus, pointers

+++

buttons, toolbars,  
palettes, dialog boxes

also see supplementary material  
on choosing wimp elements

# Windows

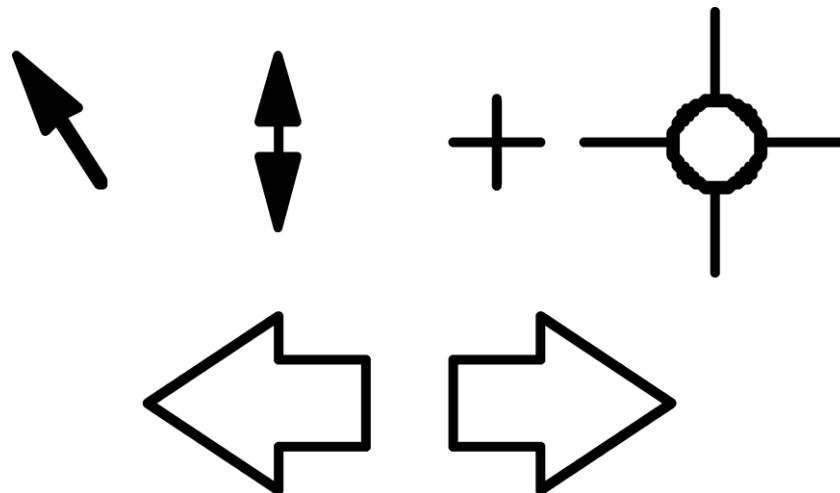
- Areas of the screen that behave as if they were independent
  - can contain text or graphics
  - can be moved or resized
  - can overlap and obscure each other, or can be laid out next to one another (tiled)
- scrollbars
  - allow the user to move the contents of the window up and down or from side 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 of many accessible windows
- icons can be many and various
  - highly stylized
  - realistic representations.

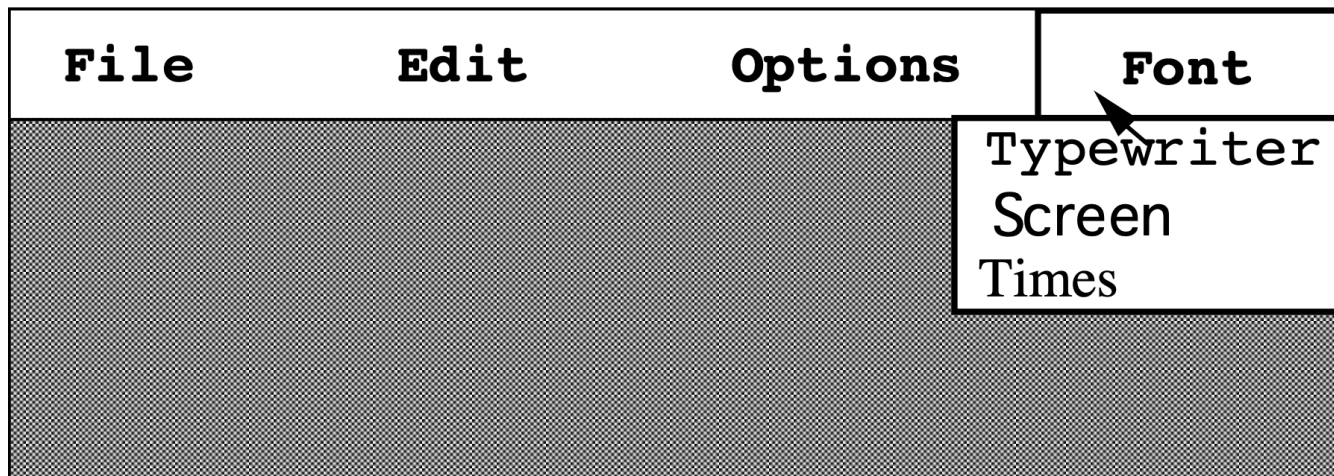
# Pointers

- 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

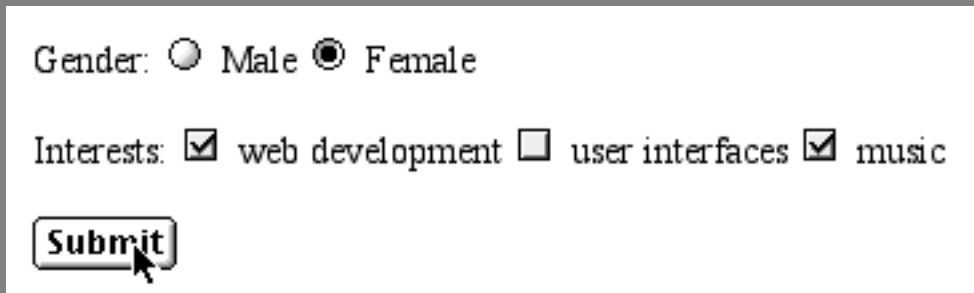
- Cascading menus
    - hierarchical menu structure
    - menu selection opens new menu
    - and so in ad infinitum
  - Keyboard accelerators
    - key combinations - same effect as menu item
    - two kinds
      - active when menu open – usually first letter
      - active when menu closed – usually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

- 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.