

What is Interaction?

communication



Some Terms of Interaction

domain – the area of work under study

e.g. graphic design

goal – what you want to achieve

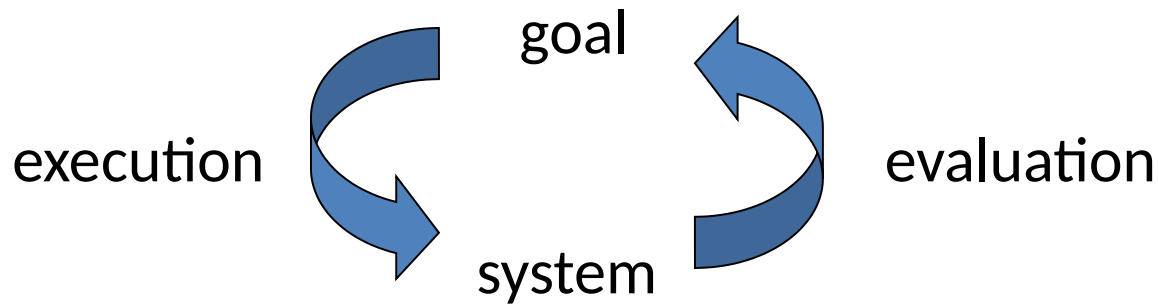
e.g. create a solid red triangle

task – how you go about doing it
– ultimately in terms of operations or actions

e.g. ... select fill tool, click over triangle

Donald Norman's Model

- Norman's model concentrates on user's view of the interface



7 Stages of Action

- Establishing the goal
- Forming the intention
- Specifying the action sequence
- Executing the action
- Perceiving the system state
- Interpreting the system state
- Evaluating the system state with respect to the goals and intentions

Using Norman's Model

Some systems are harder to use than others

Gulf of Execution

user's formulation of actions

≠ actions allowed by the system

Gulf of Evaluation

user's expectation of changed system state

≠ actual presentation of this state

Physical Aspects of Interfaces

- arrangement of controls and displays
 - controls grouped according to function or frequency of use, or sequentially
- surrounding environment
 - seating arrangements adaptable to cope with all sizes of user
- health issues
 - physical position, environmental conditions (temperature, humidity), lighting, noise,
- use of colour
 - use of red for warning, green for okay, awareness of colour-blindness etc.

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, DOS , Telnet

DOS

```
Volume Serial Number is 2B32-1406
Directory of C:\PATH

File not found
                    5,851.42 MB free

C:\PATH>cd othr
Invalid directory

C:\PATH>cd other

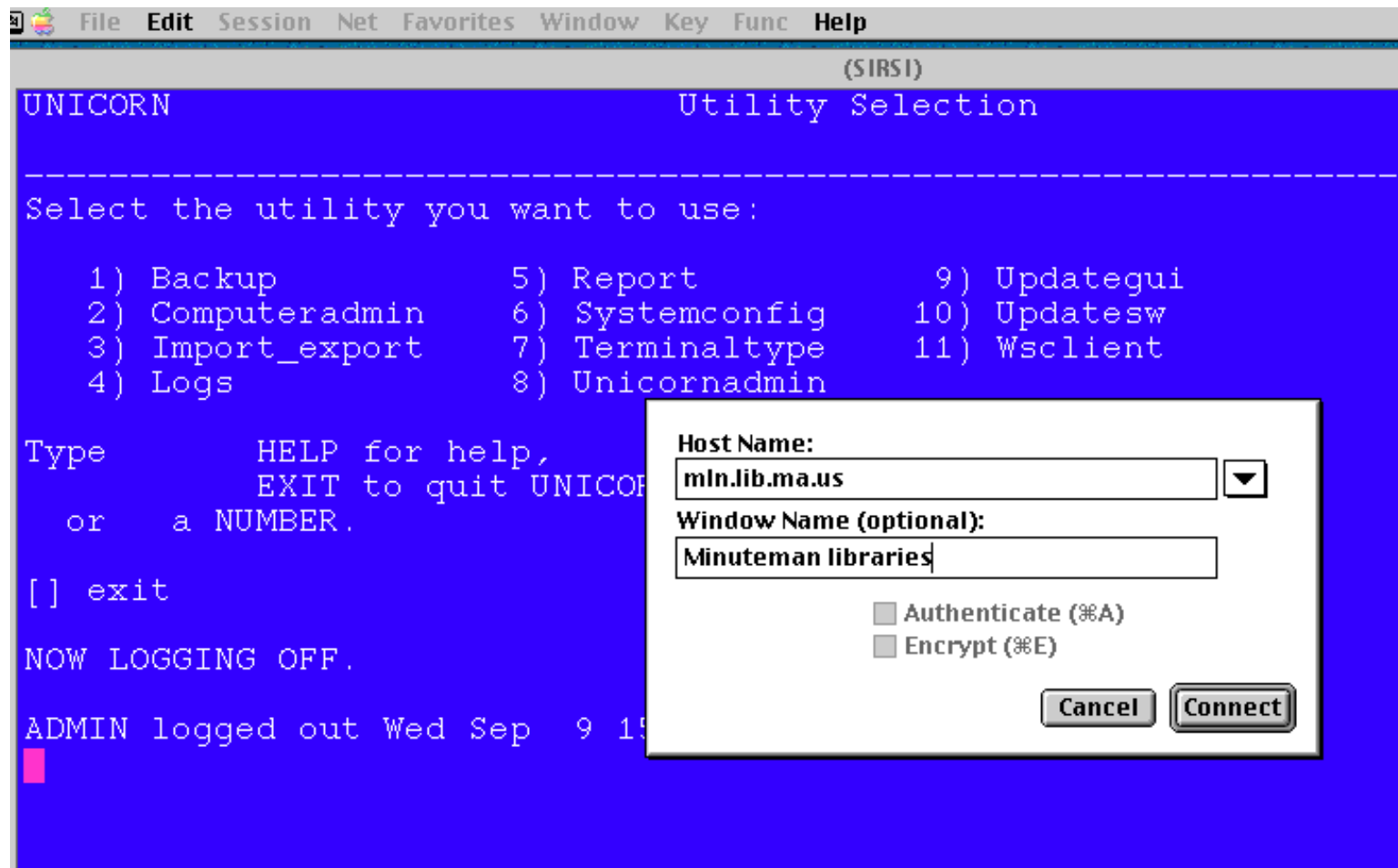
C:\PATH\OTHER>dir p*.* /w

Volume in drive C has no label
Volume Serial Number is 2B32-1406
Directory of C:\PATH\OTHER

PICKEM.EXE      PIE.EXE      PKEXE.EXE      PKLITE.EXE      PKUNLITE.EXE
PKUNZIP.EXE     PKZIP.EXE     PKZIPFIX.EXE   PLAYLZM.EXE     PLAYLZM2.EXE
PLAYMID.BAT     PLAYMID.OLD   PLAYMOD.BAT    PLAYMPG.BAT     PLAYMUS.BAT
PLAYS3M.BAT     PLAYWAV.BAT   PRINTM.EXE     PROMOD.EXE      PNG2BMP.EXE
                20 file(s)      228,736 bytes
                0 dir(s)      5,851.42 MB free

C:\PATH\OTHER>pkzip c:\zips\newzips.zip *.* -r -p -whs
```

Telnet



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

Natural language

- Familiar to user
- speech recognition or typed natural language
- Problems
 - vague
 - ambiguous
 - hard to do well!

Query Interfaces

- Question/answer interfaces
 - user led through interaction via series of questions



Form-fills

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

Form-fills

Hotmail



Create your e-mail address

Country/Region:

E-mail address: @hotmail.com

The address can contain only letters, numbers, periods (.), hyphens (-), or underscores (_).

Type the name that you want to appear before the @ symbol (for example, **yourname**).

[Get help with this section](#)

Check Availability

Create your password

Password:

The password must contain at least six characters and is case sensitive.

Password strength: Weak Medium Strong

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

VISICALC

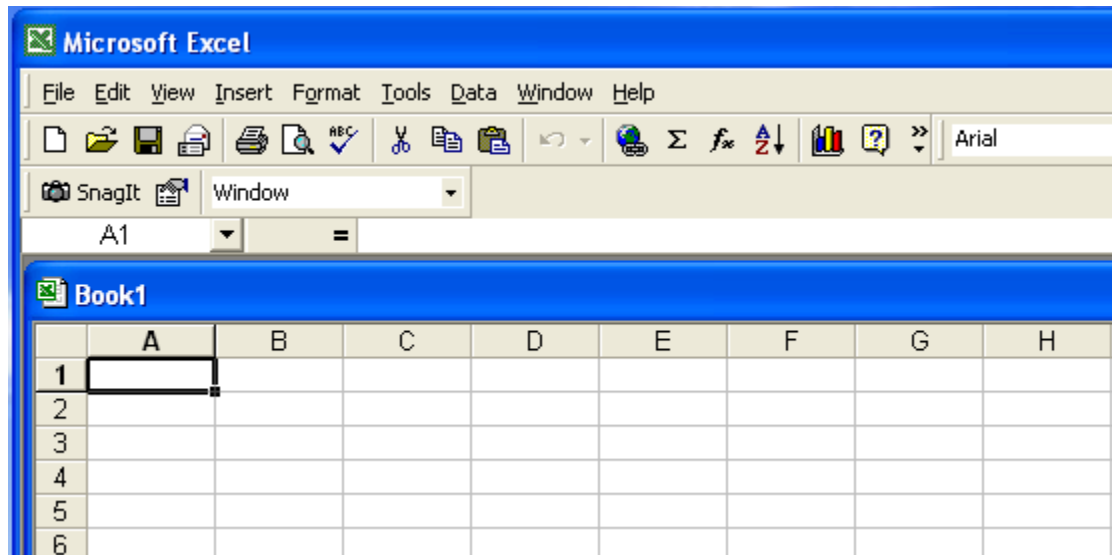
D13 /F\$ (U) +D3-B13+C13 C 58

	A	B	C	D	E	F	G	H
1	Payee	Cheques	Deposits	Balance				
2								
3				545.20				
4								
5	Electric	14.95						
6	Oil	102.15						
7	Phone	36.80						
8	Dentist	40.00						
9	Salary		395.00					
10	Rent	350.00						
11	Gas Card	12.93						
12								
13	TOTALS	556.83	395.00	383.37				
14								
15								
16								
17								
18								
19								
20								
21								

Lotus 1-2-3

A1		^FUND RAISING PROJECT						
								
A								
A	A	B	C	D	E	F	G	H
1		FUND RAISING PROJECT						
2								

MS Excel



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

Windows

- Areas of the screen that behave as if they were independent
 - can contain text or graphics
 - can be moved or resized
 - can overlap each other, or can be laid out next to one another (tiled)

Windows

- scrollbars



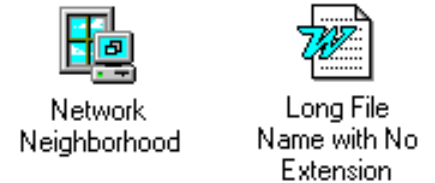
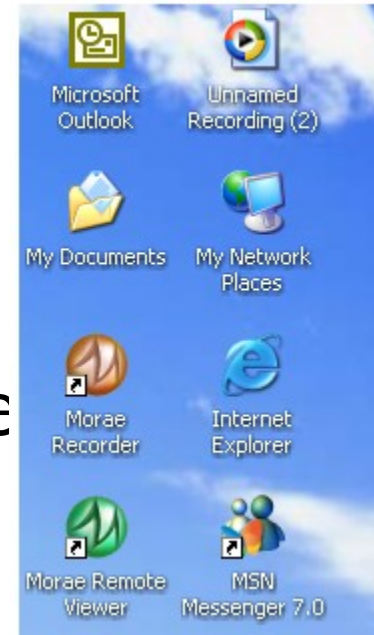
-  The page cannot be displayed - Microsoft Internet Explorer



title bars

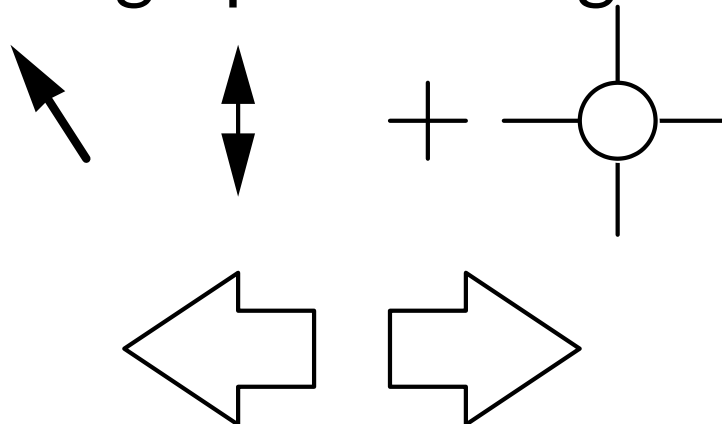
Icons

- small picture or image
- represents some object in the interface
 - often a window or action

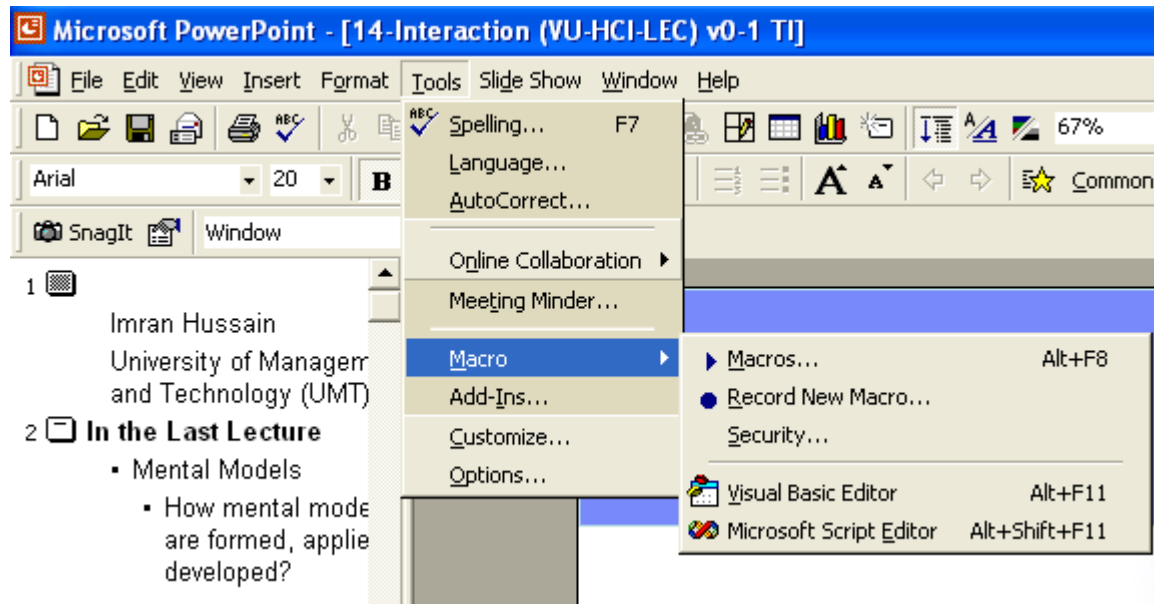


Pointers

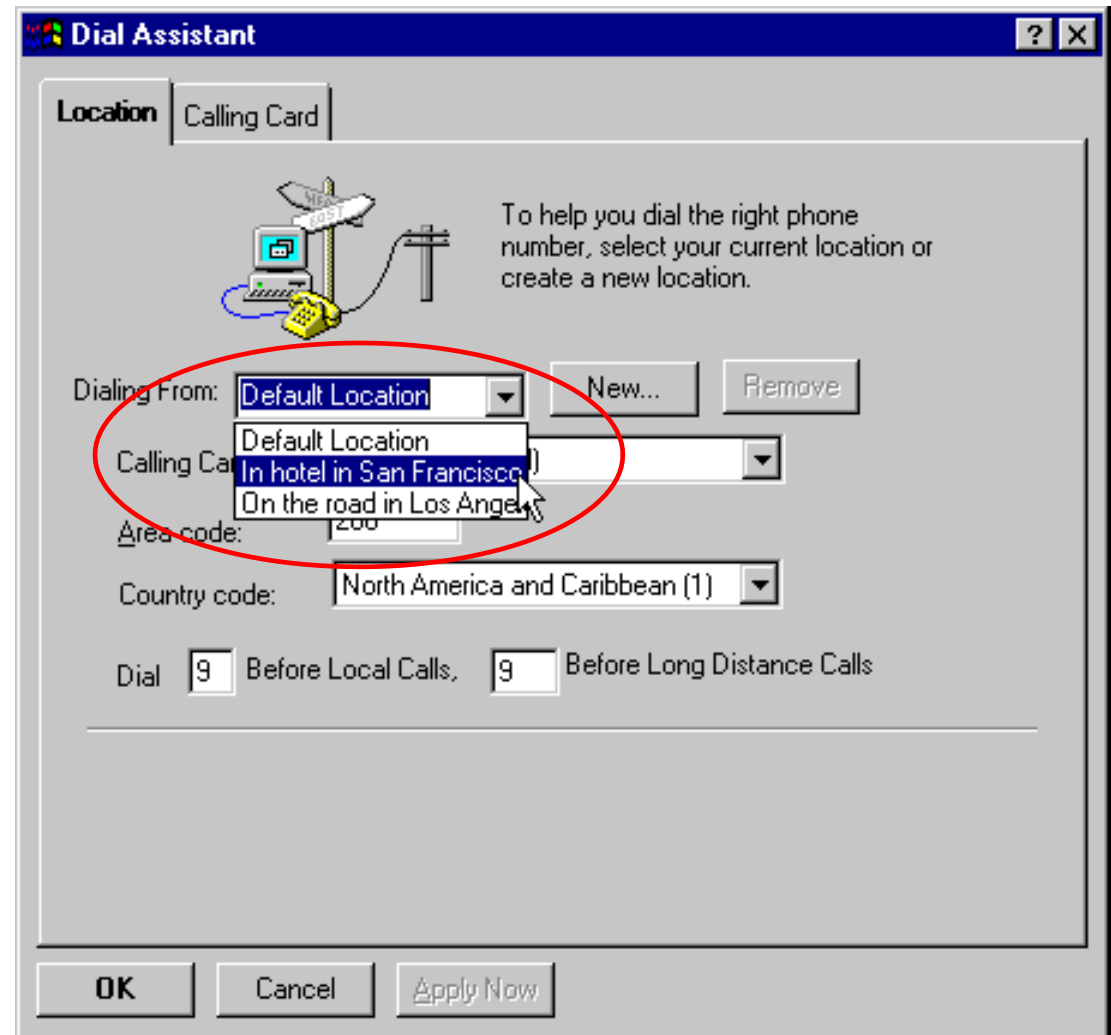
- important component
 - WIMP style relies on pointing and selecting things
- uses mouse, trackpad, joystick, trackball, cursor keys or keyboard shortcuts
- wide variety of graphical images



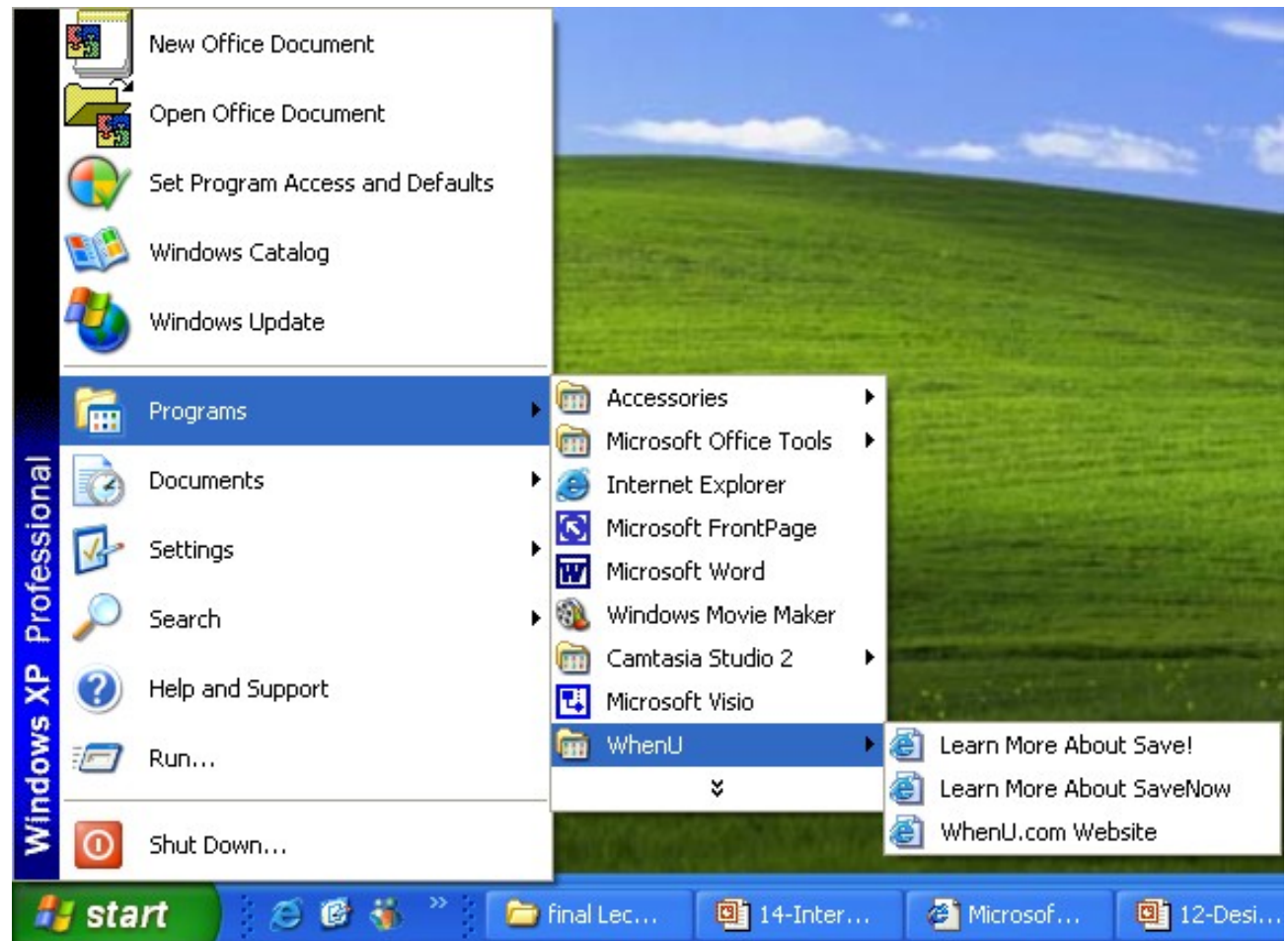
Pull-down Menu



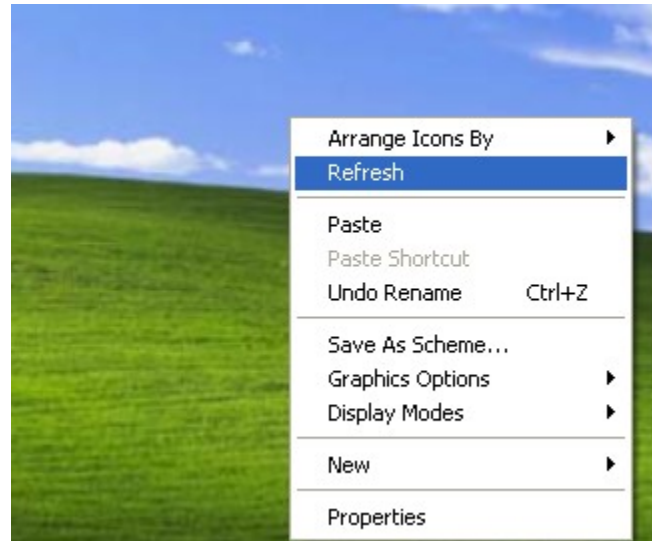
Drop-down Menu



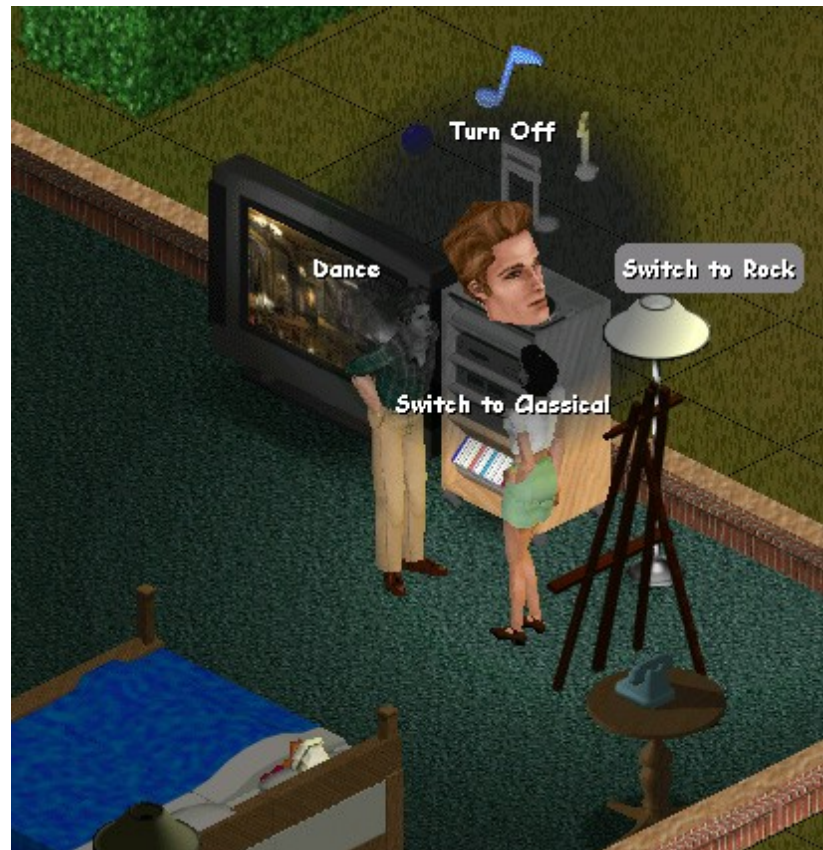
Fall-down Menus



Pop-up Menus

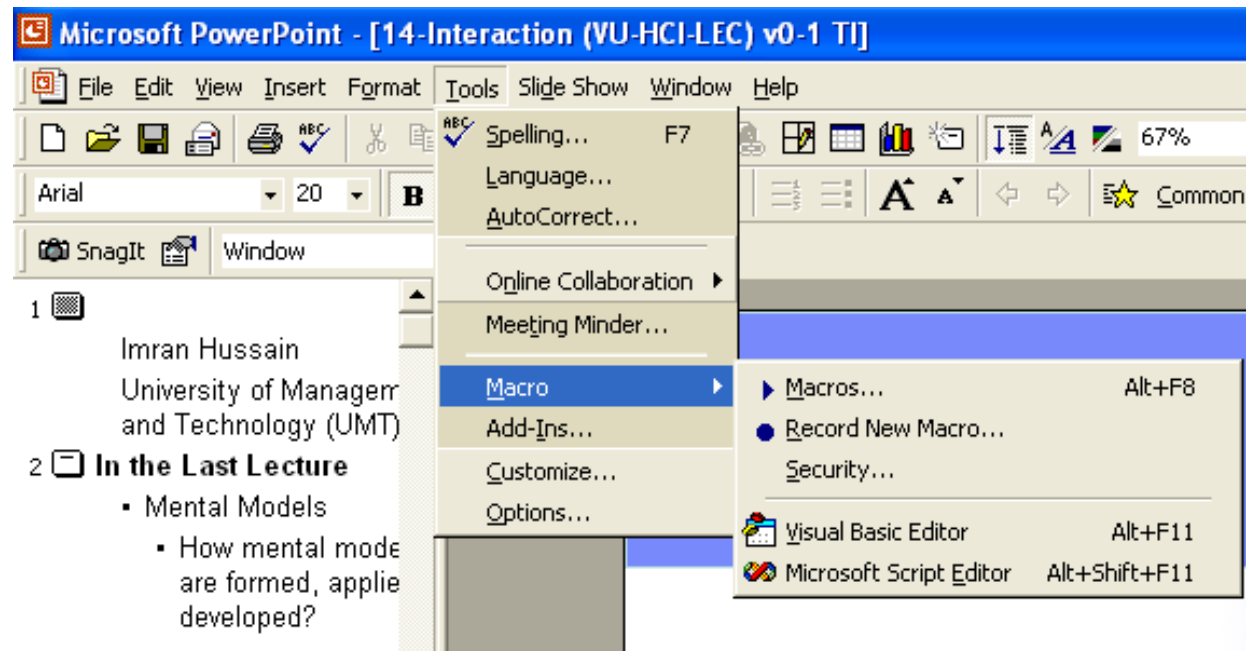


Pie Menu



Keyboard Accelerators

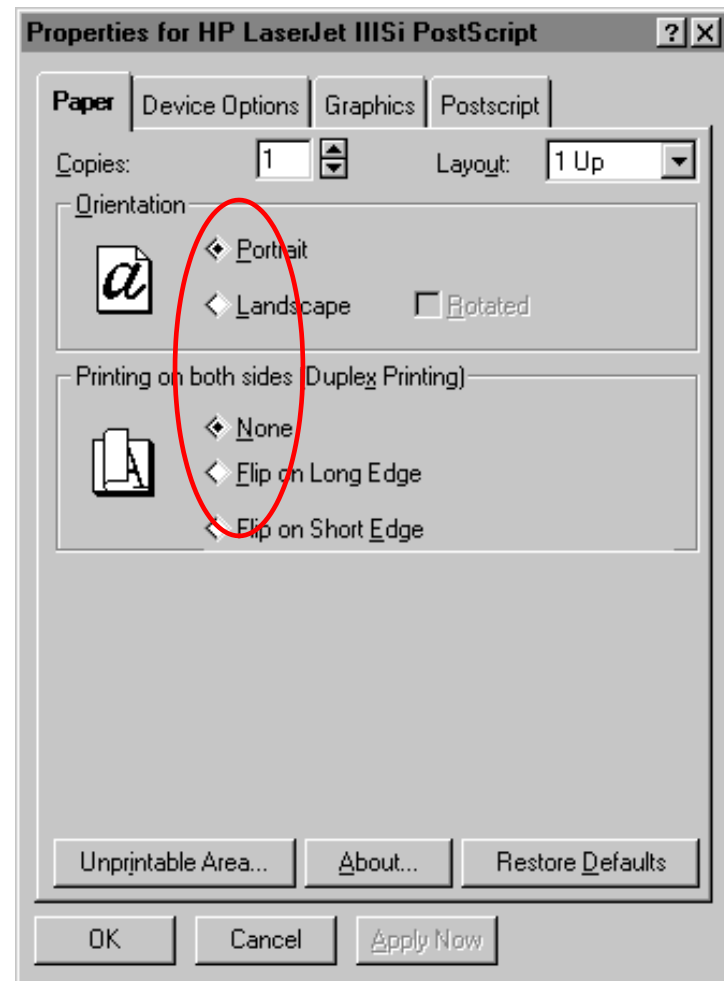
Alt + T →



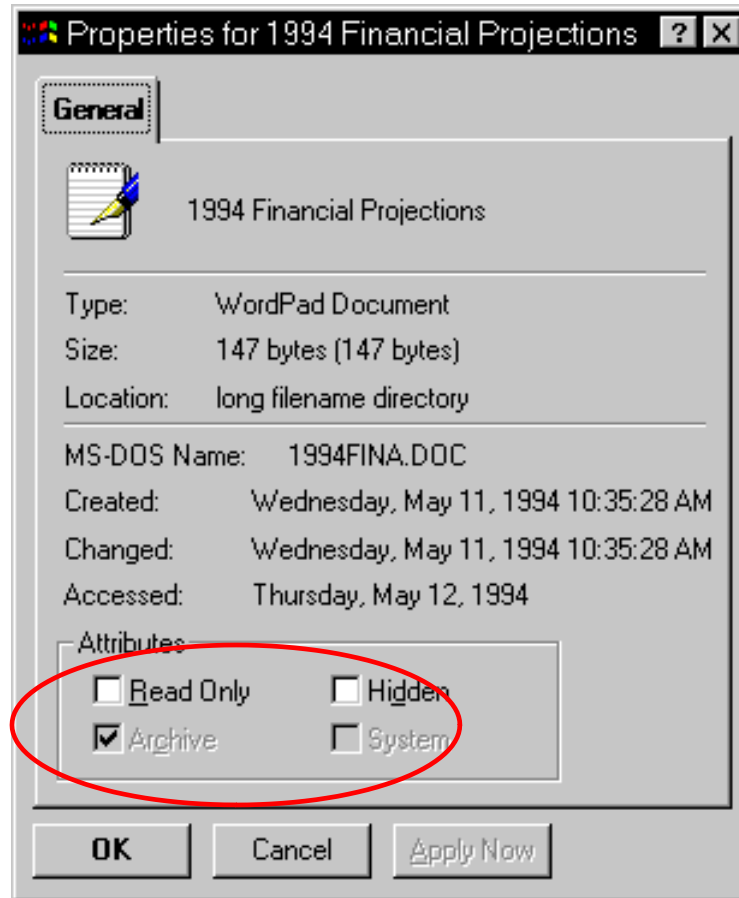
Buttons

- individual and isolated regions within a display that can be selected to invoke an action
- Special kinds
 - radio buttons
 - set of mutually exclusive choices
 - check boxes
 - set of non-exclusive choices

Radio Buttons



Check Boxes



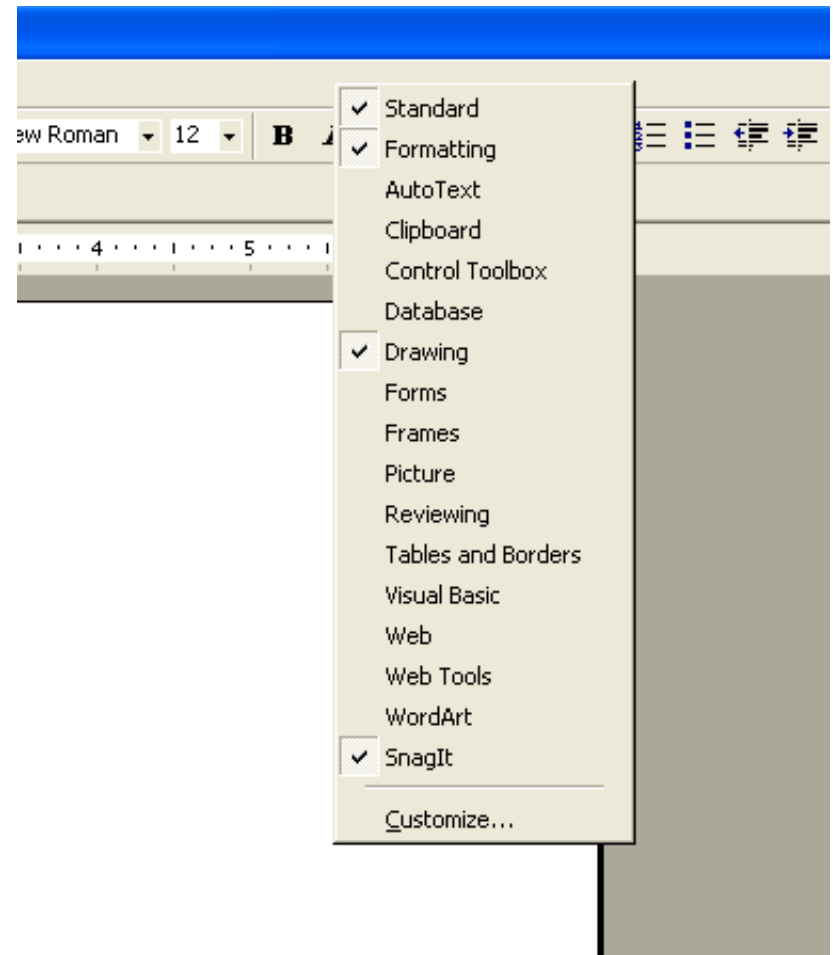
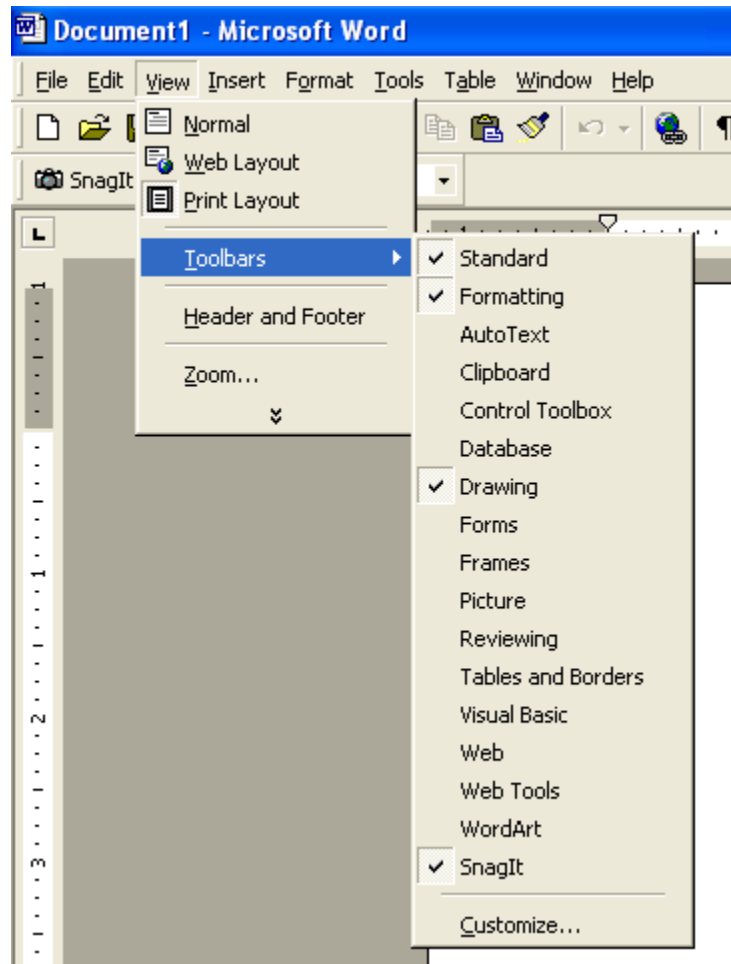
Toolbars

- 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

Customization



Dialogue Boxes

- information windows that pop up to inform of an important event or request information.

