Questions?

- Homework #3
  - Due today
- Homework #4
  - Out today, due in 2 weeks
- Project #4
  - Out today due in 3 weeks
- Grad Project
  - Due in 3 weeks
    - *Presentation in 2 weeks*

Class survey

- Grading
  - Homeworks and projects now state points assigned to each question
  - "Learning by doing" implies that you have to ask questions
    - *Grading reflect how well you followed the process taught in class*
- Scheduling
  - Point well taken and will improve in the future
  - More homework and reading
- More participation from students (in class)

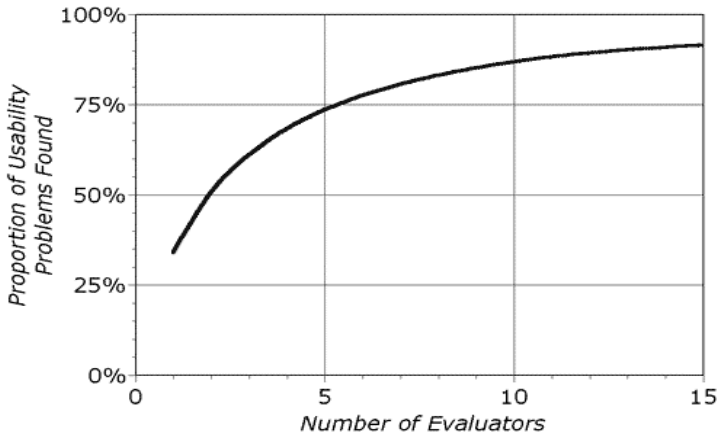
Usability heuristics

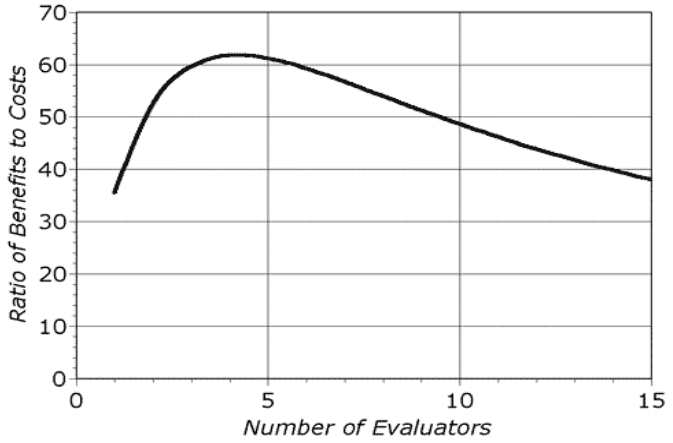
- "Rules of thumb" that describe features of usable systems
  - Can be used as design principles
  - Can be used to evaluate a design

- Pros and cons
  - Easy and inexpensive
    - *Performed by expert*
    - *No users required*
    - *Catch many design flaws*
  - More difficult than it seems
    - *Not a simple checklist*
    - *Cannot assess how well the interface will address user goals*

Usability Engineering

- Introduced by Nielsen (1994)
- Can be performed on working UI or sketches
- Required a small set (3-5) of evaluators to examine the UI
  - Check compliance with usability principles
    - *Each evaluator works independently*
    - *Go through the interface several times*
  - All reviews are aggregated in one final usability report





Nielsen's evaluation phases (1-2)

- Pre-evaluation training
  - Provide the evaluator with domain knowledge if needed

- Evaluation
  - First step: get a feel for flow and scope
  - Second step: focus on specific elements
    - *Multiple passes approach is better*
    - *Create a list of all problems*

Nielsen's evaluation phases (3-4)

- Severity rating
  - Performed after individual evaluations are aggregated
  - Establishes a ranking between problem
  - Reflects frequency, impact and persistence
    - *Cosmetic, minor, major and catastrophic*

- Debriefing
  - Discuss outcome with design team
  - Suggest potential solutions
  - Assess how hard things are to fix

Neilsen's heuristics

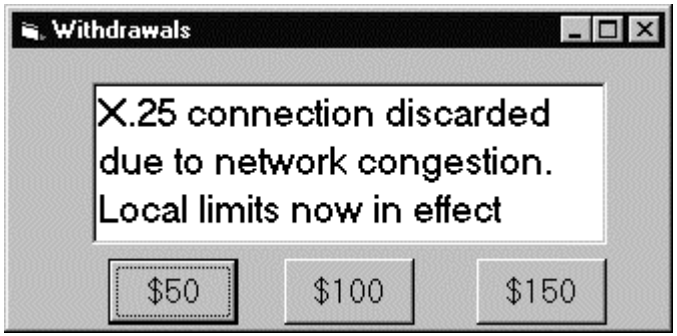
- Simple and natural dialog
- Speak the users' language
- Minimize user memory load
- Consistency
- Feedback
- Clearly marked exits
- Shortcuts
- Prevent errors
- Good error messages
- Provide help and documentation

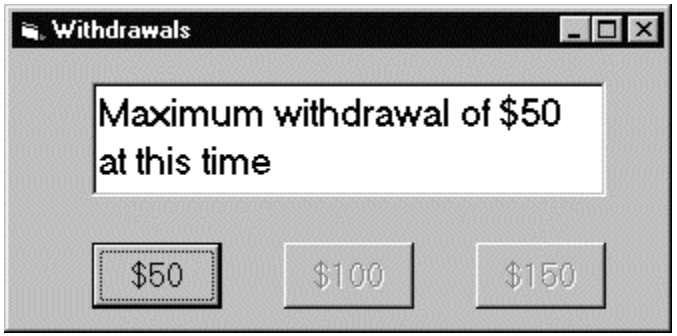
Simple and natural dialog

- Present information in natural order
  - See class on graphic design
- Use windows frugally
  - Avoid complex window management
- Remove or hide irrelevant or rarely needed information
  - They compete with important information on screen
    - *Pro: Palm Pilot*
    - *Against: Dynamic menus*
- Use Occam's razor
  - less to learn, to get wrong, to distract...

Speak the users' language

- Use a language compatible with users' conceptual model
  - Example: withdrawing money at an ATM



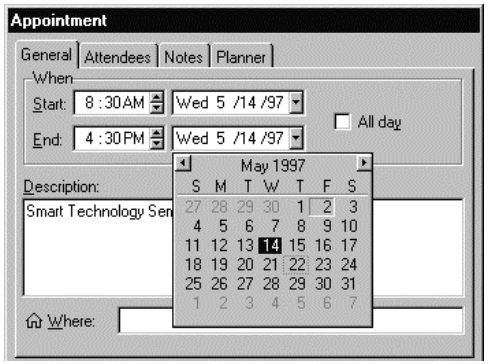


- Use meaningful mnemonics, icons and abbreviations

Minimize user memory load

- Promote recognition over recall
  - Recognition is easier than recall

- Describe expected input clearly
  - Don't allow for incorrect input



- Create orthogonal command systems
  - Using generic commands that can be applied to all interface objects

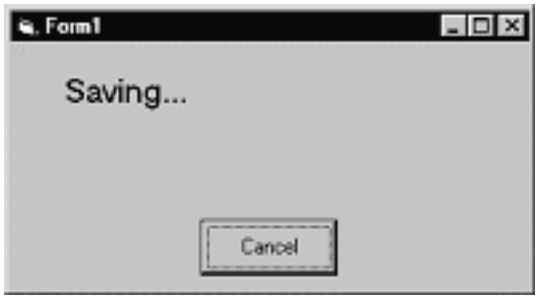
Consistency

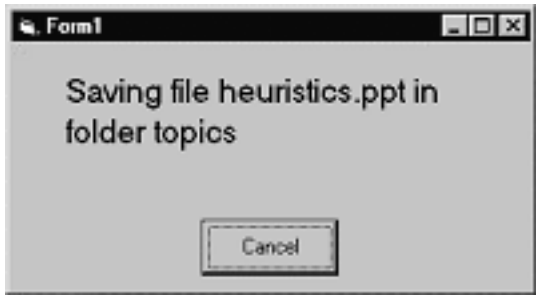
- Consistency promotes skills acquisition and/or transfer

- Be consistent in
  - Command design
    - *Same action, same effect in equivalent situations*
  - Graphic design
    - *Input format*
    - *Output format*
  - Flow design
    - *Similar tasks are handled in similar ways*

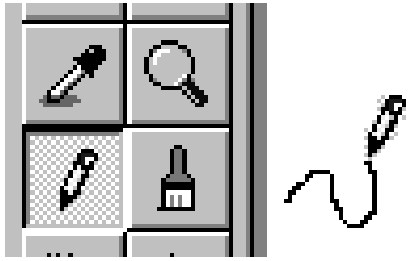
Feedback (I)

- Users should always be aware of what is going on
  - So that they can make informed decision
  - Be specific:





  - Provide redundant information



Feedback: Toolbar, cursor, ink

Feedback (II)

- Different feedback time scales
  - Shall I wait for that task to finished or go for coffee?

.1s	Causality
1s	Delay but user's flow of thought is uninterrupted
10s	Difficult to stay focused
> 10s	User will switch to another task while waiting

- Different techniques
  - Short transaction: hour glass cursor
  - Longer transaction: estimate of time left
    - *An overestimate is always better!*