5 Major Flaws
Software can be

- Hard to learn
- Hard to remember
- Slow to use
- Error prone
- Frustrating and unsatisfying to use
An Example (Hard to Learn)

- Mathematica - type in B = 5
- Now what?
  - Shift-return
  - Why not option-return?
- What are the right margin icons for, anyway?
- BUT - you must know math
  - An interface cannot substitute for basic user knowledge
More Examples

- UI Hall of Shame
- GUI Blooper book
- Norman’s book - everyday things
  - Doors, phones, showers
  - Group highlights

- Objective in class
  - To be able to critically evaluate interfaces and diagnosis their flaws
  - Need to be specific, precise in describing the flaws and why
  - Homework - find examples for the five major flaws
Goals of User Interface Design

- Evaluate software on
  - Time to learn
  - Speed of performance
  - Rate of errors
  - Retention over time
  - Subjective satisfaction

- Apply goals in context
  - Life critical systems - no tolerance for error, even under stress
  - Industrial and commercial uses - productivity key
  - Home and entertainment - ease of use, subjective satisfaction
  - Creative systems - hard to be objective, how measure results?
Why do we get these problems?

- Programmers aren’t users
  - Different goals and personalities
    - Programmers are problem solving, techno-geeks
  - Different levels of knowledge
    - Programmers think in system details
  - Programmers know the inside
    - UI reflects their choices, so of course they understand it

- Design process is flawed
  - Programmer, technology centered design
  - HCI is expensive, not budgeted or understood (fluff!)
  - HCI is hard, good intentions no protection
Interaction Design (ID) involves

1. Identifying needs and establishing requirements.
2. Developing alternative designs that meet those requirements.
3. Building interactive versions of the designs so that they can be communicated and assessed.
4. Evaluating what is being built throughout the process.
Characteristics of the ID Process

1. Users should be involved through the development of the project.

2. Specific usability and user experience goals should be identified, clearly documented, and agreed upon at the beginning of the project.

3. Iteration through the four activities is inevitable.

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Usability Goals

- Ensuring that interactive products are
  - Enjoyable from the user's perspective.
  - Effective to use (effectiveness)
  - Efficient to use (efficiency)
  - Safe to use (safety)
  - Have good utility (utility)
  - Easy to learn (learnability)
  - Easy to remember how to use (memorability)
The study of ID

- **Theories of ID**
  - Human psychology - memory, perception
  - Models of ID use (Norman)
  - Controlled experimentation into processes and elements
    - Turning informal experience into established principles

- **Design principles**
  - Psychopathology of everyday things - why interfaces fail
    - Trying to figure the *reason* for usability flaws
  - Principles of design - what worked in the past
  - Visual design and GUIs - using standard widgets
    - Apple User Interface Guidelines (Java, Windows, etc.)
The study of ID: continued

- The design process
  - User-centered design
    - Watch, listen, study, survey, before design
    - Activity-centered design models instead of system-centered
  - Design with users
    - Build multiple prototypes using whatever method
    - Take prototypes to user early and often
  - Usability study
    - Formal approaches for watching and surveying users
    - Survey instruments and their development
This Semester

ID principles - until break
  - Psychology of design
  - Design principles
  - Design process
  - Types of interfaces, elements of standard GUIs

Implementing GUIs in Java - after break
  - Java Swing programming labs
  - Hi fi prototype for group project (not everything functional)
End of class review

- What we covered:
  - Examples of GUI bloopers
  - Goals of ID design
  - ID as design, implementation, evaluation

- For Next Time
  - Assignment 1
  - Read HI 1,2 and N 1,2
  - Visit UI Hall of Shame