CS 121
“Ordering Chaos”

User Interface Design

“Mike”
Michael A. Erlinger
Usability

Usability is a measure of how easy it is to use a piece of software to perform a task.

To design for usability you need to understand and prioritize the user tasks.

Develop design that is simple, intuitive, consistent, ...
Properties of good UI design

Familiar and consistent – easy to learn
- familiar contexts, objects, actions
- consistent icons, positions, styles, metaphors
- look at CS Dept Web page

Intuitive and understandable
- current context is clear (middle school)
- available actions obvious
- all important information is obvious
- enjoyable
Properties of good UI design

Simple and convenient
- user doesn’t have to remember too much
- doesn’t overwhelm user with info
- anticipates needs but does not force down path

Helpful and robust
- error response meaningful
- help when user is lost

Adaptable and configurable
- supports different users/goals
UI Principles/Metrics

Four Aspects from the readings

- **Learnability**
  - Sometimes all you care about is learnability: for example, if you expect to have only occasional users. An information kiosk at a tourist attraction is a good example; almost everybody who uses your interface will use it exactly once, so learnability is much more important than usability. But if you're creating a word processor for professional writers, well, now usability is more important.
  - Use of the UI should be based on recognition rather than recall.
  - Immediate and repeatable feedback between input and output are critical for learnability.

- **Simplicity**
  - The design should make simple, common tasks easy, communicating clearly and simply in the user's own language, and providing good shortcuts that are meaningfully related to longer procedures.
  - Best Uis are those that determine ways to keep the game mechanic efficient and engaging, but still only use simple controls.
UI Principles

Four aspects from the readings

- Efficiency
  - What you really really need to do to make an interface efficient is to figure out what exactly the user is trying to achieve, and then let them do exactly that without any fuss.
  - Implement an interface that lets people easily accomplish what they want instead of simply implementing access to a list of features.
  - Efficiency mainly concerns expert users who want to accomplish tasks quickly...think about player demographics

- Ascetic
  - 1. What can constitutes ascetics in computers' User Interfaces?
  - 2. How much ascetics can be incorporated in a software application - i.e. a tool that has solely a functional purpose?
  - Pleasing aesthetic that makes it enjoyable to use.

Rarely Possible to follow all principles....
Process of UI Design

Identify needs and establish requirements
   Done this

Develop alternative designs that meet requirements
   Maybe done this

Build prototypes of the UIs
   Doing this….can be paper

Test and Evaluation of UIs
   Will do this in class on Friday
Phase 2

UI Design & Test

Implement as much as you need for Alpha, for example, the start menu, one or two levels.

As Will Wright describes in his Game Design Video http://www.youtube.com/watch?v=CdgQyd3hEPo at any time while playing your game, the player will have a collection of goals that run from the very short term (seconds) to the long term (winning the game). The UI provides the access to completing the goals
Usability test

Assess

- Learnability
- Efficiency
- Accuracy
- Emotional response

By asking users to complete tasks with your UI prototype
The End
Tic Tac Toe Sequence

1. Select Play from main menu
2. Take turn
3. If three in a row player wins (win Use Case)
4. AI responds with 0
5. If three in a row player loses (lose Use Case)
6. Repeat from 2.

Elaborated use cases includes cognitive aspects as well as UI components
Task: Play game

1. Select Play from main menu

2. Choose empty square with goal of
   (a) creating 3 X’s in a row, or (b) stopping opponent from making 3 O’s in a row.

3. Click empty square to enter X

4. If three in a row player wins (win use case)

5. AI responds with 0

6. If three in a row player loses (lose use case)

7. Repeat from 2.

Elaborated use cases that includes cognitive aspects as well as UI components
Play game, take turn

Click square
Lose game

You lose!
Assess

tasks

EXPERT EVALUATIONS
USER TESTS

 Loads of Fun
 Fast Paced Adventure

 Play Load Quit
User Test

User: Play a game of Tic Tac Toe
Do they know what to do?

Click square? what my fingers? square? like the green one?
User Test

User: Play a game of Tic Tac Toe
Do they know what to do?
Do they know how to do it?

Hmmm I’m using the arrow keys but I don’t see a cursor. How am I supposed to make an X.
User Test

User: Play a game of Tic Tac Toe
Do they know what to do?
Do they know how to do it?

UNDERSTAND CONCEPTUAL MODEL OF YOUR APPLICATION: it is not likely to be the same as yours!
Different UI Designs

Tasks

Loads of Fun
Fast Paced Adventure

Play  Load  Quit

USER TEST

redesign
Users’ conceptual model

Especially important for novice users
Especially important for educational games
You will user test yourself
You will user test another team
Your user test may be videotaped
UI Design & Usability