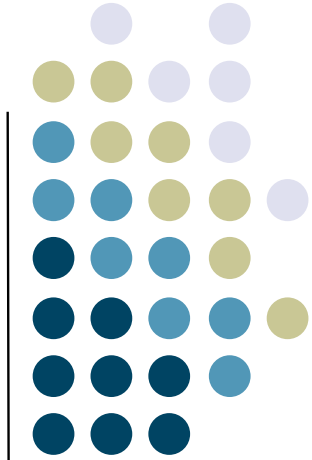
CS4470: Intro to UI Software
CS6456: Principles of UI Software



Keith Edwards

Today's Agenda

- Introductions
  - Me
  - TAs
  - You
- Class Overview
  - Syllabus
  - Resources
  - Class Policies

Introductions

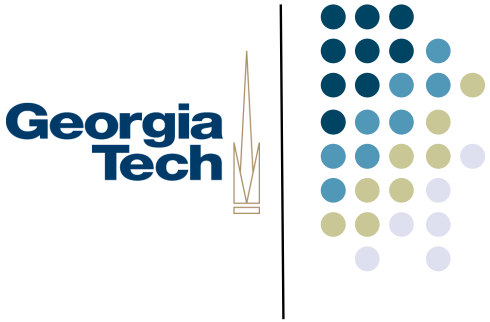
- Instructor
  - Keith Edwards
  - TSRB 345
  - good: keith@cc.gatech.edu
  - bad: 404-385-6783
- HCI
  - Technical side of HCI
  - UI infrastructures
  - Ubicomp
  - Making security, networking more usable

Introductions

- TA

Now, It's Your Turn

- Name (pronunciation if non-obvious)
- Major, Year
- Interests
- Why UI SW?



What is this class about?

- Organizing principles of UI software
- Practice in UI implementation (lots)

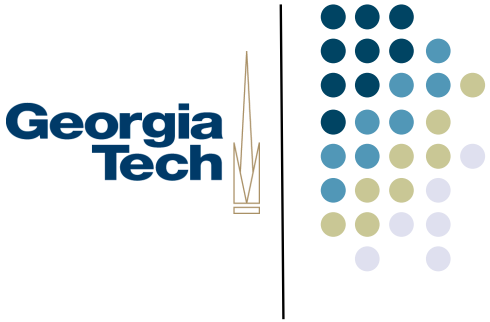
- Part I: Basics of traditional 2-dimensional GUIs
- Part II: Advanced topics (animation, audio, etc.)

What this class is NOT about

- User-centered design
  - That's what 4750/6750 are for!

Basic Course Info

- "Prerequisite": CS4750/6750
  - Remedial background texts:
    - "Human-Computer Interaction," Dix, Finlay, Abowd, Beale
    - "The Design of Everyday Things," Norman
- Web materials
  - Up now:
    - http://www.cc.gatech.edu/classes/AY2008/cs4470_fall
  - General info (books/readings, exams, homework)
  - Syllabus
    - Will be updated throughout the semester
    - Will contain links to lecture slides

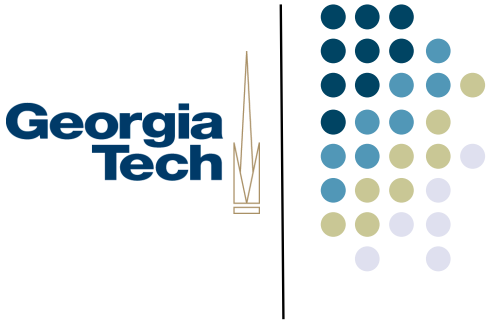


Resources

- Recommended:
  - *Java Swing, Second Edition*
    - Loy, Eckstein, Wood, Elliott, Cole
    - O'Reilly Associates
    - Helpful for the Swing-based programming assignments
- Recommended and Free!
  - Java AWT Reference
    - Zukowski
    - O'Reilly Associates
    - Somewhat out-of-date, but downloadable!
    - http://www.oreilly.com/catalog/javawt/book/index.html
    - AWT is the layer "underneath" Swing

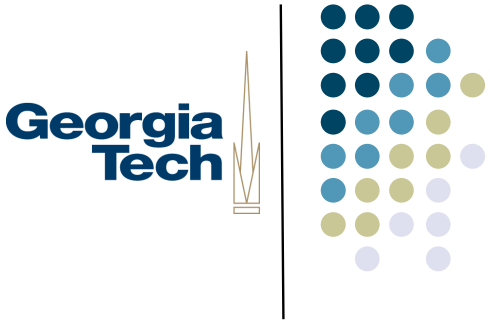
Grading Criteria

- Different criteria for undergrad versus grad
- First half of semester:
  - Everyone:
    - 3 individual homework assignments (3 x 10%)
    - Exam 1 (20%)
- Second half of semester:
  - Undergrads:
    - 3 individual homework assignments (3 x 10%)
    - Final exam (20%)
  - Grads:
    - Research project (50%) -- two person teams
    - Writing, implementation, presentation



Programming

- **Homework** assignments are in Java
  - Java use is required
  - Turnin and late policy:
    - Due 11:59PM on the announced due date
    - Late turnins will be marked down 25% for each date they are late
- Grad **Project** work is more flexible
  - You will choose programming environment
  - Exact details TBD, but likely:
    - Written paper, implementation task, presentation and demo
- What you turn in must compile and run!
- Please pay attention to platform issues (hard-coded filenames, e.g.)



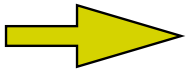
Important Note

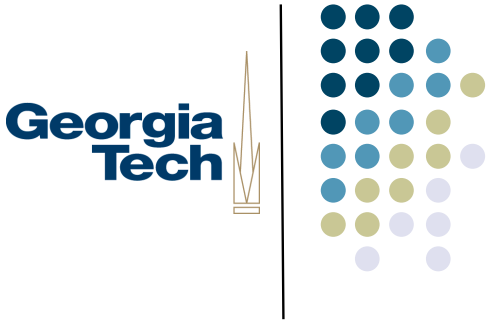
- There will be minimal Java training in class
- If you are not comfortable with Java programming:
  1. Learn
  2. Drop course
- While examples and programming assignments are in Swing, focus of the lectures is on broader UI software concepts
  - You'll have to understand how these concepts are applied in Swing
  - I can help with a lot of this, but Swing is huge and you may encounter Swing features/bugs that I am unaware of
  - Be prepared to do independent problem solving if necessary

Motivation

- Moore's Law has done its job...

- No longer: "Can you build it?"
- Now: "Can they use it?"

- Follow-on: "Will they use it?"  "Can I sell it?"
- Shift toward "usability" (broadly defined) as a key product differentiator
  - Good user experience design
  - Good visual design
  - Good physical/industrial design
  - Think: iPod, iPhone



Why a class on UI software?

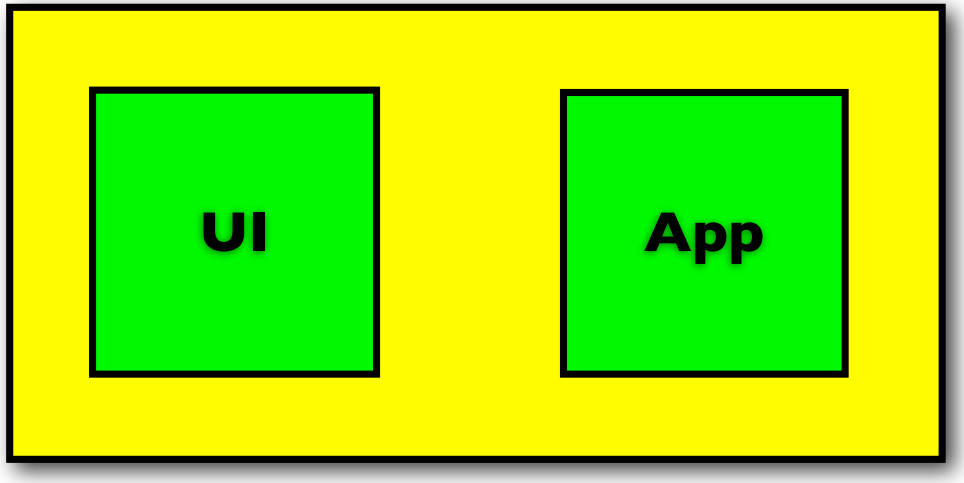
- Most systems are built for a user
- Good user interfaces are critical for software survival and economics
- Designing for users is *important* and *difficult*
  - Lots of code devoted to UI
  - Hard to get right the first time (iteration necessary)

What's the User Interface?

- Since mid-40's
  - Display (paper terminal, CRT, LCD, ...)
  - Keyboard
- Since late '60's
  - Pointing device
  - WIMP/GUI style of interaction
- Since early '90's
  - An extension of our physical environment
  - Sensing, inferencing

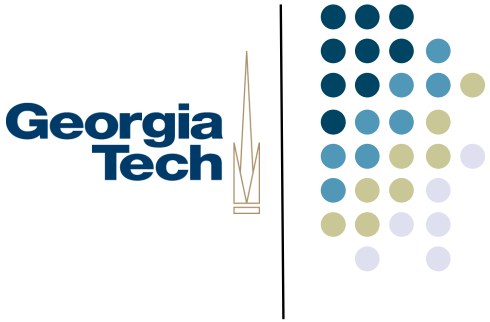
Programmer's Perspective

- The "UI" is typically viewed as one component of the overall system
  - The part that "deals with the user"
  - Separate from the "functional core" (AKA the "application")



Software Engineering and the UI

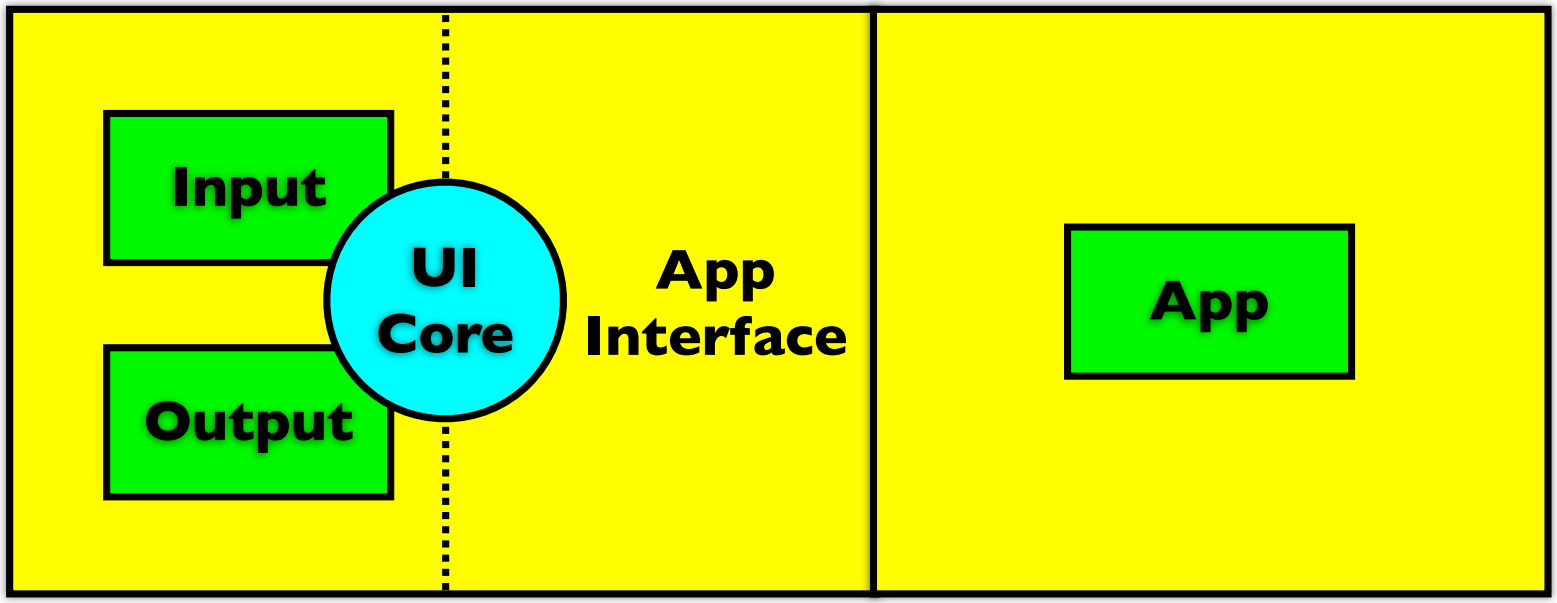
- Advantages of "separation of concerns"
  - Keep UI code separate from app code
  - Isolate changes
  - More modular implementation
  - Different expertise needed
  - Don't want to iterate the whole thing



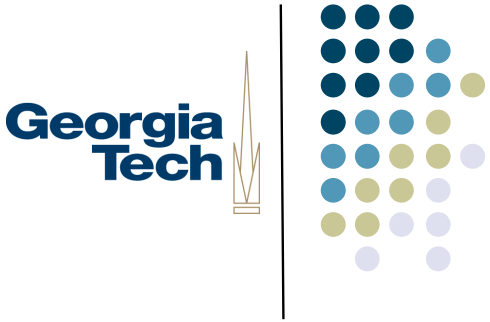
In practice, very hard to do...

- More and more interactive programs are tightly coupled to the UI
  - Programs structured around UI concepts/flow
  - UI structure "sneaks into" application
- Not always bad...
  - Tight coupling can offer better feedback/performance

Conceptual Overview of the UI

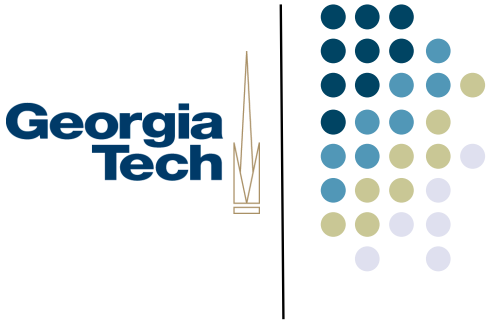


Part I: Understanding Traditional GUIs



- UI software architecture and organization
- Input and output
  - Devices, software abstractions
- Interaction techniques and how to implement them
- Toolkits and programming environments

Part II: Advanced Topics



- Multiscale input and output
  - Large surfaces, handheld or wearable devices
- Multitouch (two-handed) input
- Zoomable interfaces
- Animation
- Natural interaction types
  - Ink, audio, video
- Sensing-based interfaces
  - Recognition, context awareness
- Paper-based interfaces

- Requests?

Next class

- Movie day!
  - Videos of past and present systems