Topic 1
CS314 Course Introduction

Chapman: I didn't expect a kind of Spanish Inquisition.

Cardinal Ximinez: NOBODY expects the Spanish Inquisition! Our chief weapon is surprise...surprise and fear...fear and surprise.... Our two weapons are fear and surprise...and ruthless efficiency.... Our **three** weapons are fear, surprise, and ruthless efficiency...and an almost fanatical devotion to the Pope.... Our **four**...no... **Amongst** our weapons.... Amongst our weaponry...are such diverse elements as fear, surprise....

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Who Am I?

- Lecturer in CS department since 2000
- Undergrad Stanford, MSCS RPI
- US Navy for 8 years, submarines
- 2 years Round Rock High School
- Wife (Kelly) is a nurse.
  - 2 daughters, Olivia and Isabelle

Rensselaer

What We Will Do Today

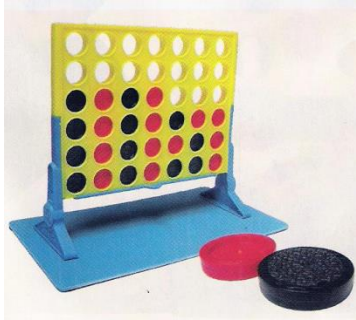
- Discuss
  - course content
  - procedures
  - tools
- For your TO DO list:
  - complete items on the startup page

www.cs.utexas.edu/~scottm/cs314/handouts/startup.htm

Prerequisites

- Formal: CS312 with a grade of C- or higher
- Informal: Ability to design and implement programs in Java using the following:

- •variables and data types
- •expressions, order of operations
- •decision making (if statements)
  - •including boolean logic and boolean expressions
- •loops (fixed and variable repetition)
- •procedures or functions
- •parameters (reference and value parameters, local variables, scope, problem generalization)
- •structures or records or objects
- •arrays (vectors, lists)
- •top down design (breaking big rocks into little rocks)
  - •algorithm and data design
  - •create and implement program of at least 200 - 300 loc
  - •could you write a program to let 2 people play connect 4?



CS314 Topics

1. Introduction
2. Complexity
3. Encapsulation
4. Inheritance
5. Polymorphism
6. Generics
7. Interfaces
8. Iterators
9. Abstract Classes
10. Maps, Sets
11. Linked Lists
12. Recursion
13. Recursive Backtracking
14. Searching, Simple Sorts
15. Stacks
16. Queues
17. Fast Sorting
18. Trees
19. Binary Search Trees
20. Graphs
21. Hash tables
22. Red-Black Trees
23. Heaps
24. Dynamic Programming

Data Structures

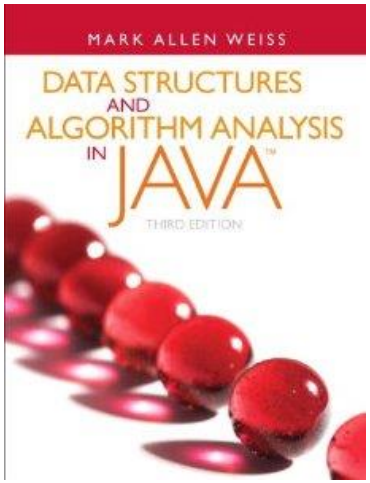
- simple definition:
  - Variables that store other variables
- We will learn a toolbox full of data structures

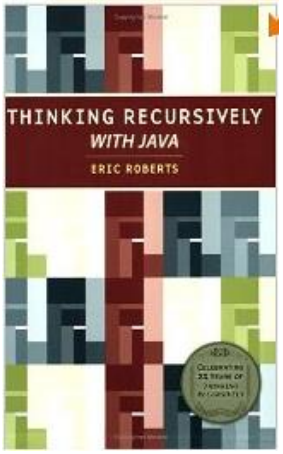
Resources

- Class web site – most course material
- Schedule – readings
- Class discussion group – Piazza
- Labs, software (Java, Eclipse, Canvas)
- Teaching staff, lab hours
- Grades on Canvas

Books and equipment

- clicker is required
- books are recommended, not required
- free alternatives on the web, see schedule
  - Weiss book - data structures
  - Thinking Recursively in Java - recursion





Clicker Question 1

Which of these best describes you?

A. First year at UT and first year college student

B. First year at UT, transferring from another college or university.

C. In second year at UT.

D. In third year at UT

E. Other

Graded Course Components

- clicker participation
  - 41 lectures with clicker, 1 point each: 41 points total
- Discussion section quizzes
  - 9 quizzes, 10 points each: 90 points total
- Programming projects
  - 11 projects, 20 points each: 220 points total
- Exams 2/24 (180 points) and 4/14 (200 points)
  7 - 9 pm in UTC 2.112A
- Final during finals week, TBD: 300 points
- 41 + 100 + 220 + 170 + 200 + 300 = 1031
- clicker, Quizzes, Programming Assignments capped at 320 points.
- 31 points of “slack” among those 3 components
- No points added! Grades based on 1000 points, not 1031
- **Grades posted to Grade Center on Canvas**

Grades and Performance

- Final grade determined by final point total and a 900 – 800 – 700 – 600 scale
  - plusses and minuses if within 25 points of cutoff: 875 – 899: B+, 900 – 924: A-

- CS314 Historical Grades - my sections only
- **71% C- or higher:**
  - **24% A's, 26% B's, 21% C's**
- **14% D or F**
- **15% Q or W (drop)**
- **ON CIS WORK LOAD EVALUATED AS HIGH**

Assignments

- Non trivial programming projects
- Individual – do your own work
  - okay to share tests you write
- Programs checked automatically with plagiarism detection software
- Turn in the right thing - correct name, correct format or you will lose points / slip days
- Slip days
  - 6 for term, max 2 per assignment
  - don’t use frivolously

Succeeding in the Course

- Randy Pausch,
  CS Professor at CMU said:

- *"When I got tenure a year early at Virginia, other Assistant Professors would come up to me and say, 'You got tenure early!?!?! What's your secret?!?!?' and I would tell them, 'Call me in my office at 10pm on Friday night and I'll tell you.' "*

- Meaning:
  Some things don't have an easy solution.
  Some things simply require a lot of hard work.

Succeeding in the Course

- Former student:
  - "I really like the boot camp nature of your course."
- do the readings
- start on assignments early
- get help from the teaching staff when you get stuck on an assignment
- attend lecture and discussion sections
- participate on the class discussion group
- do extra problems - http://tinyurl.com/pnzp28f
- study for tests using the old tests
- study for tests in groups
- ask questions and get help when needed

Course Materials and Procedures

- Software
  - can work in CS department microlab, 1st or 3rd floor of GDC, Dell hall (north wing)
  - login via CS account name and password
  - can work at home if you wish
  - Java.
    - Web page has details under Software. - JDK 8.0
    - Only using up to and including Java 7.0 features
  - Optional IDE.
    - Recommended IDE is Eclipse, also free

Clicker Question 2

Which computer programming language are you most comfortable with?

A. Java

B. C or C++

C. Python

D. PHP

E. Other

See: http://www.tiobe.com/index.php/content/paperinfo/tpci/index.html
and http://lang-index.sourceforge.net/