

Welcome to CSCE 210

Prof Bill, Jan 2020.

Little help? I need a timekeeper.

The rule: 20 slides, 20 seconds per slide. My theme: Great nerd books. Go!



PechaKucha

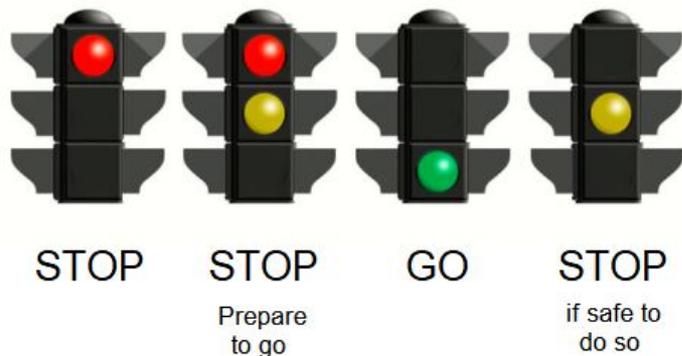
PK is:

PechaKucha (Japanese: ペチャクチャ, IPA: [petʃa kʲɯtʃa], chit-chat) is a presentation style in which 20 slides are shown for 20 seconds each (6 minutes and 40 seconds in total). The format, which keeps presentations concise and fast-paced, powers multiple-speaker events called PechaKucha Nights (PKNs).

- en.wikipedia.org/wiki/PechaKucha

Rules are easy (and fun):

- 20 slides
- 20 seconds per slide
- The math. 400 seconds = ~ 7 minutes



Me

So...

I've been younger ~~~>



Education: BSCS from U of I; MSCS from UIC

Career: coder; Synopsys co-founder (SNPS); Honeybee creator

Teacher: Noctrl part-time prof for 18+ years, my first lecture was...

CSCE 210 - Data Structures

Official Noctrl description:

Elementary data structures and algorithms. Topics include the design, implementation, application, and variations of the following: linked lists, stacks and queues; different types of trees; searching and sorting algorithms; graphs; and introduction to analysis of algorithms. Extensive programming required. Integrated laboratory.

I've taught 210 a few times.

One time, back in the day: Sat 8:00 am - noon (dop)

CSC 210 is 1) data structures, 2) algorithms, 3) Java

Of the CSC 200's (210, 220, 230)...210 is the easiest, most coding, and most fun!

210 = Fave!



GNB* - Classics

Lord of the Rings

Author: JRR Tolkien

First published: 1954

The original, the classic, epic; defined dragons, elves, wizards, orcs, etc; themes: WW2, addiction



* GNB = Great nerd books

Game of Thrones

Author: George RR Martin

First published: 1996

Just this: Better than the TV show



1. Data Structures

A data structure is: “a particular way of organizing data in a computer so that it can be used effectively.” - www.geeksforgeeks.org/data-structures
Or, “how you organize data in a program” - Bill

Go!

- Array
- Linked list
- ArrayList
- Hash table
- Tree
- Graph



2. Algorithms

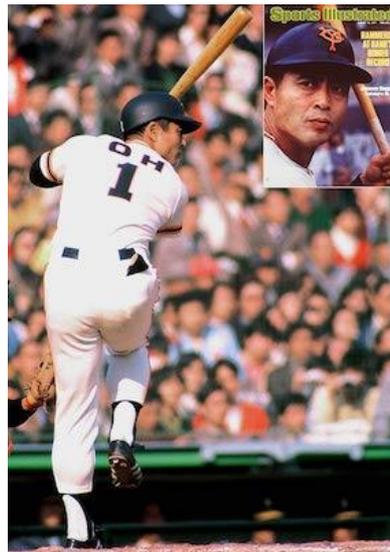
An algorithm is: “a set of instructions designed to perform a specific task” - techterms.com/definition/algorithm

Go!

- ❑ Searching
- ❑ Sorting
- ❑ Recursion
- ❑ Graphs: shortest path, min spanning tree, traversal, etc

Key: **Big-Oh** analysis of algorithm performance

Sadaharu Oh - 868 home runs, in 22 seasons for the Yomiuri Giants in Japan



3. Java

Java is:

- ❖ Object-oriented programming lang (OOPL)
- ❖ 25 years old
- ❖ Still pretty popular (cough)
- ❖ But less mojo than Python, Javascript, etc

[en.wikipedia.org/wiki/Java_\(programming_language\)](https://en.wikipedia.org/wiki/Java_(programming_language))

Download: www.java.com/en

Coding = playing a musical instrument, speaking a foreign language, driving...the more the better!

Extra: Use modern tools like debugger, git, Github, VS Code editor



GNB - Singularity

The Singularity is Near

Author: Ray Kurzweil

First published: 2005

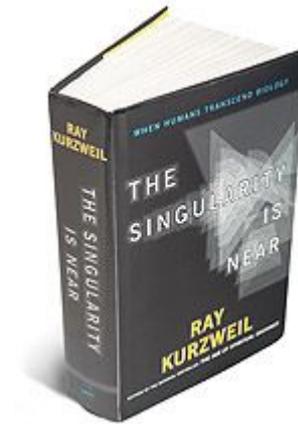
Subtitle: “When Humans Transcend Biology”

Non-fiction; tech acceleration (Moore’s Law);

Three revolutions: 1) Bio-tech and genetics, 2)

Nano-tech, 3) Strong AI

Website: www.kurzweilai.net

A handwritten signature of Ray Kurzweil in black ink, written in a cursive style.

Website + Syllabus

My Noctrl website:

wtkrieger.faculty.noctrl.edu

Includes:

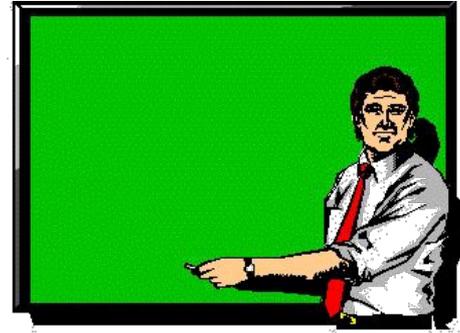
- Schedule - updated for each lecture
- Office hours - we'll work on this
- Programming assignments
- Etc - links
- Email - wtkrieger@noctrl.edu

Archive will last as long as I do (smile)

/ insert random Blackboard insult here */*

Syllabus

- On our class website
- Description; Instructor; Textbook; Grading; The Plan
- Handout 



Textbooks++

Main text:

Open Data Structures by Pat Morin

It's free, online: opendatastructures.org

Java text:

Introduction to Programming in Java (2nd Edition) by Sedgewick & Wayne

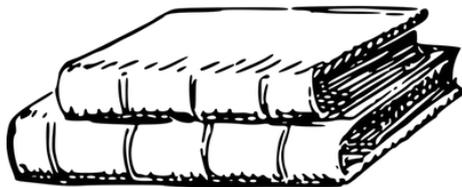
Free, online: introcs.cs.princeton.edu/java/home

I'll provide links to lots of additional resources: tutorials, videos, lectures, etc.

Even better, you google.

Important! “Real” books are available at Amazon for < \$30. I got both. Buy if this helps you just a bit!

You can peek at my copies.



Extra

Let's do extra.

Public speaking - you'll do a PK presentation like this one; yes, this is a critical skill; have some fun with it, like these guys: www.pechakucha.org

Tech - today, you must be an independent learner; google, stackoverflow, tutorials, videos, open source, git, Github, VS Code, etc.

Solutions - everyone will share at least one homework solution to the cause

Just OK. Not.



GNB - Some Vonnegut

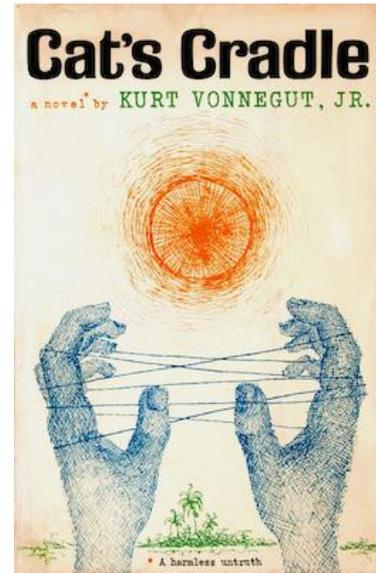
Cat's Cradle

Author: Kurt Vonnegut

First published: 1963

Satire of tech/life, pessimist, but very funny/smart;
defines own vocab: Ice nine, Bokononism, karass,
duprass...

QOTD: "No damn cat, and no damn cradle."



Philosophy #1 - Prepare

Come to lecture prepared for action

I am ready. You **must** read the stuff! Bring your notes and your questions to class

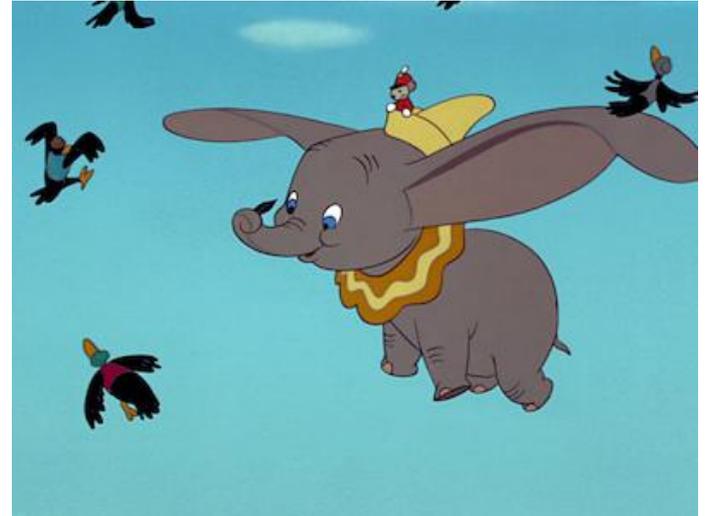
In class: less lecture (yawn), review materials, Q&A, problem-solving, examples, coding; no Powerpoint (well, except...)

“He called on me. Oh no!”



Dumbo says “Less lecture”

More you + Less me = Win-win



Philosophy #2 - I am available

We are inextricably linked. (for 16 weeks?)
When you fail; I fail. When you succeed; I succeed.
And vice versa. So, if you need help...



I. AM. AVAILABLE!

Office hours. Other hours. Email. In person.
We will both put in extra...to win.

Philosophy #3 - Own it!

Own your classes, especially in your major (CS)

It's like we're at a regular, old workplace here: work hard, work smart, no late work, no extra credit, positivity, be independent, **creative**, and engaged.

(cough) things a future employer looks for (cough)

Bottom line - College is your startup. Be an owner!

“You only have to be right once.”

- M Cuban on being an entrepreneur



twitter.com/elonmusk/status/1067173497909141504

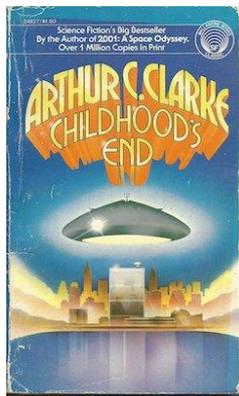
GNB - Better than 2001

Childhood's End

Author: Arthur C Clarke

First published: 1953

Fantastic story in two parts; very fun and way out there!



Another reading rec: www.goodreads.com

Bought by Amazon a few years back; still great!



CS 2020

Teaching in 2020 is different!

Old: Prof controlled access to information; travel agent analogy

New: Tech decentralizes, gives you more power, control; independent learning

This change is good! **You** can/must be able to use tech to teach and improve yourself.

- Google
- Stackoverflow (or mathoverflow.net)
- Github
- Open source
- Online textbooks, tutorials, courses
- Wikipedia, social media, etc

Boss: This project will need <fill-in-the-blank-tech>.
You: I'm on it!

Savage Chickens

by Doug Savage



www.savagechickens.com/2008/05/leadership.html

The PJ Hyett slide

Who is PJ Hyett?

- Co-founder of Github, one of the most important tech sites in the world
- Net worth includes many large sacks of \$\$\$
- And... he's a Noctrl CSC alum; yeah, he sat right there (point to random desk)



So, is PJ Hyett a genius? A superhero? Batman?

Or...is he just like you and me. (correct)

PJ and a couple guys had an idea and ran with it.
Low risk/high reward. Ownership!



Slide 20

Simple philosophy.

1. Prepare
2. I am available
3. Own it!

One learns by doing a thing; for though you think you know it, you have no certainty until you try.

- Sophocles,

www.goodreads.com/quotes/96381-one-learns-by-doing-a-thing-for-though-you-think

Philosophy #4: Fire, Uranium, No survivors

