WELCOME

My name is Ryan.

Here’s my personal email if you have any questions, no spam plz:

ryan.fleck@protonmail.com

RCF LAB

Disclaimer:

-I’m not good with presentations.

-Potentially a touch of coarse language.

-All the images are fully uncredited and have essentially been pirated.

RCF LAB

PYTHON3 -> JAVA

RCF LAB

So, you just learned Python and now you need to learn this scary new “enterprise” language called Java.

...wyd?

RCF LAB

LISTEN.

RCF LAB

Java is **E-Z**.

I’ll teach you ITI1121 today.

The whole thing.

RCF LAB

Yes, I read your syllabus.

RCF LAB

What your prof said:

1) Identify the main objects in a software system
2) Contrast primitive and reference types
3) Create new data types
4) Structure an ensemble of classes as a hierarchy using inheritence
5) Conceive the graphical user interface of simple applications
6) Describe the mechanisms allowing for the construction of generic data structures without compromising the static analysis of the programs
7) Describe, apply and implement a stack
8) Throw and catch exceptions
9) Describe, apply and implement a queue
10) Create an industrial grade implementation of a list
11) Explain the concept of an iterator
12) Write recursive methods for list structures
13) Write and modify computer programs using binary search trees

RCF LAB

What that all means:
- Learn basic Java.
- Learn some data structures.
- Slap some objects together to make the data structures and call it a day.

RCF LAB

And I’m going to go fast.

Pay close attention.

- TOPICS COVERED -

- *Why???* Why do I need to learn Java?
- The basics of handling .java files.
- How to be a good computer programmer.
- “Hello, World!” and Java boilerplate.
- A bunch of easy stuff from ITI1120.
- CSI2110 in a nutshell.
- ITI1121, also conveniently in a nutshell.

RCF LAB

So, today:

CSI2110
ITI1121

Ready? Ok.

RCF LAB

Why Java?

- It uses the JVM.
  - Large, stable, threading support, error handling.
  - Manages memory automatically. (You'll appreciate this later.)
- It's an 'enterprise' language.
  - Respected and widely used.
  - Mature and with decent builtin libraries.
- "Common" - Everyone speaks the same Java. Not true with other langs.

RCF LAB

Why Java is BAD.

- It uses *the JVM*.
  - Large, stable, very very very slow.
  - Uses tons of memory, manages it bureaucratically. (You'll learn to really hate this later.)
- It's an 'enterprise' language.
  - Boring.
- Takes longer to use than Python3 for simple scripts and small tasks.

RCF LAB

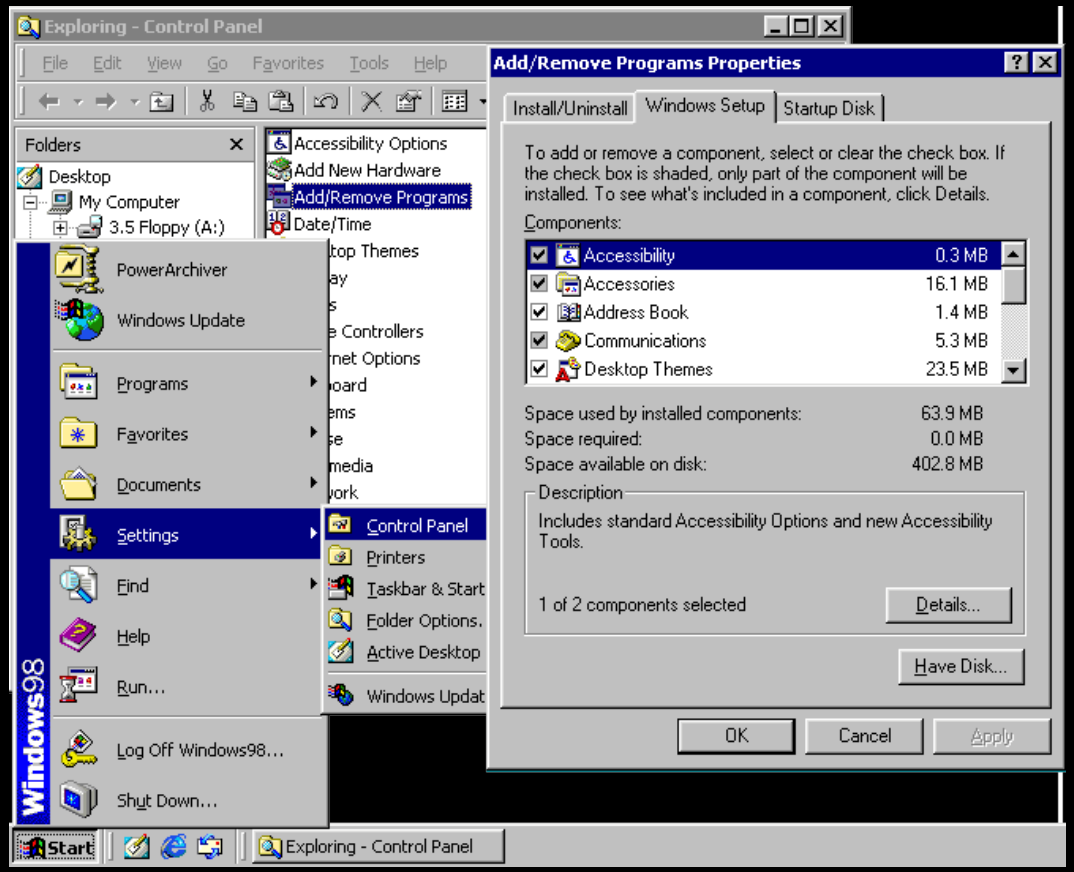
The basics of .java.

To install on Linux:

```
pkg install openjdk-8-jdk eclipse vim
```

RCF LAB

The basics of .java.

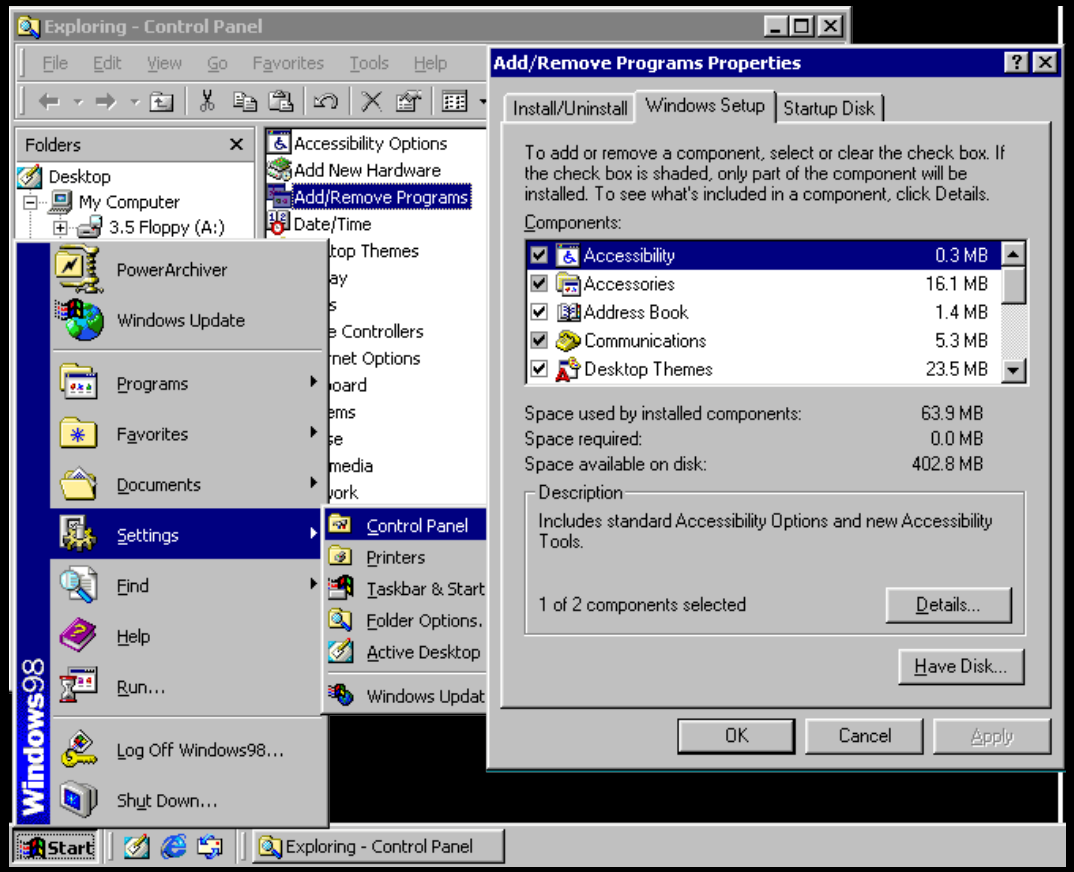


To install on Windows:

1. Download JDK.
2. Install JDK.
3. Pray to Bill Gates.
4. Add .java executables to the path at System > Advanced > ?
5. Test, and find that they aren't working.
6. Restart your PC.
7. Download Eclipse 'cause the CLI in Windows is a mess.
8. Install Eclipse.
9. Pray that Eclipse can compile Java.
10. Cry and install Dr. Java.

RCF LAB

The basics of .java.



UGH.

RCF LAB

We really do need a list, though:

1)Download a recent Java 8 JDK

2)Download Notepad++ (Text editor)

3)Download Eclipse (Integrated Dev Env)

4)Install all the programs, JDK first

5)Add the Java path to the PATH file in the Windows Environment Vars

RCF LAB

To be perfectly honest, installing Java on Windows is the hardest part of this course. So, with that done:

RCF LAB

(You've used the console before, right?)

RCF LAB

Linux: touch filename.java

Windows: Right click and stuff.

To compile: javac filename.java

To run: java filename

Super easy.

RCF LAB

How does this work?

Compiling the .java file converts it into a .class file, runnable bytecode compiled for use within the JVM.

Unlike Python, JVM is a sandbox that requires the code to be pre-compiled.

RCF LAB

.java -> .class -> run

RCF LAB

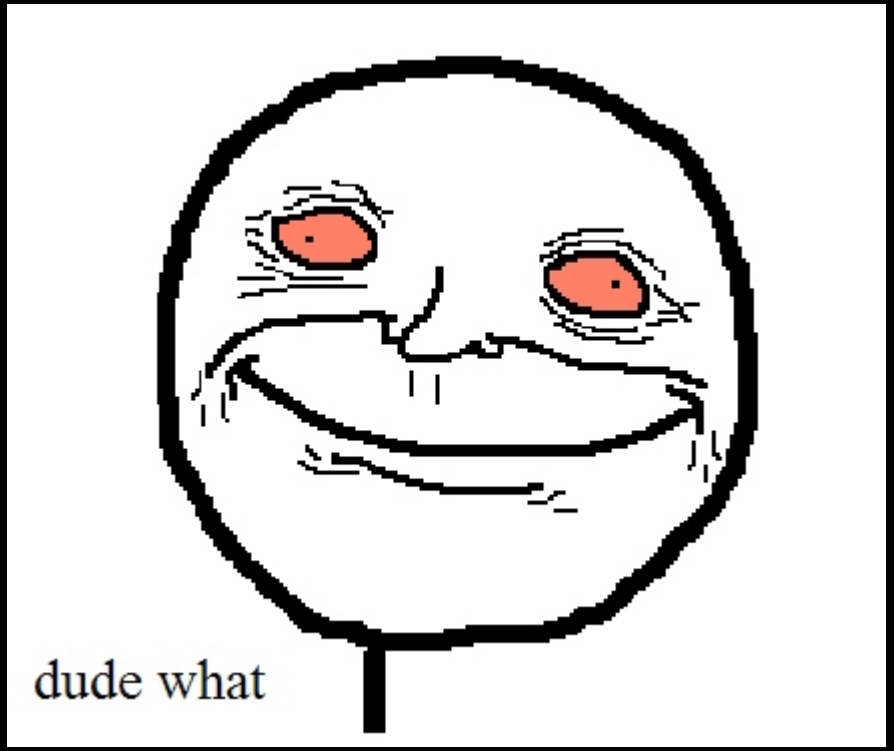
That’s all you need to know about creating and running java programs.

RCF LAB

Now, before we learn to write them,
we need to take a moment to think:

Programming... What is it?

RCF
LAB



RCF LAB

Java and Python are both

“Object-Oriented”

RCF LAB

The primary strength of an OOP is to create and manipulate ‘objects’ that have properties.

...to do all sorts of cool stuff.

RCF LAB

Important bit:

This also means that you can think about programming problems in a unified way as long as the language observes the OOP paradigm

Tl;Dr

Java think = Python think

RCF LAB

You should be able to think about how your system logically functions before you begin programming.

Everyone does this differently, but I like to write blocks and arrows.

On paper. Like a neanderthal.

RCF LAB

Planning is your friend.

RCF LAB

No, really.

RCF
LAB

As your teachers recommended:

Learn how to use java properly without an IDE,
as autocomplete will ruin you.

RCF
LAB

What your teachers don’t know:

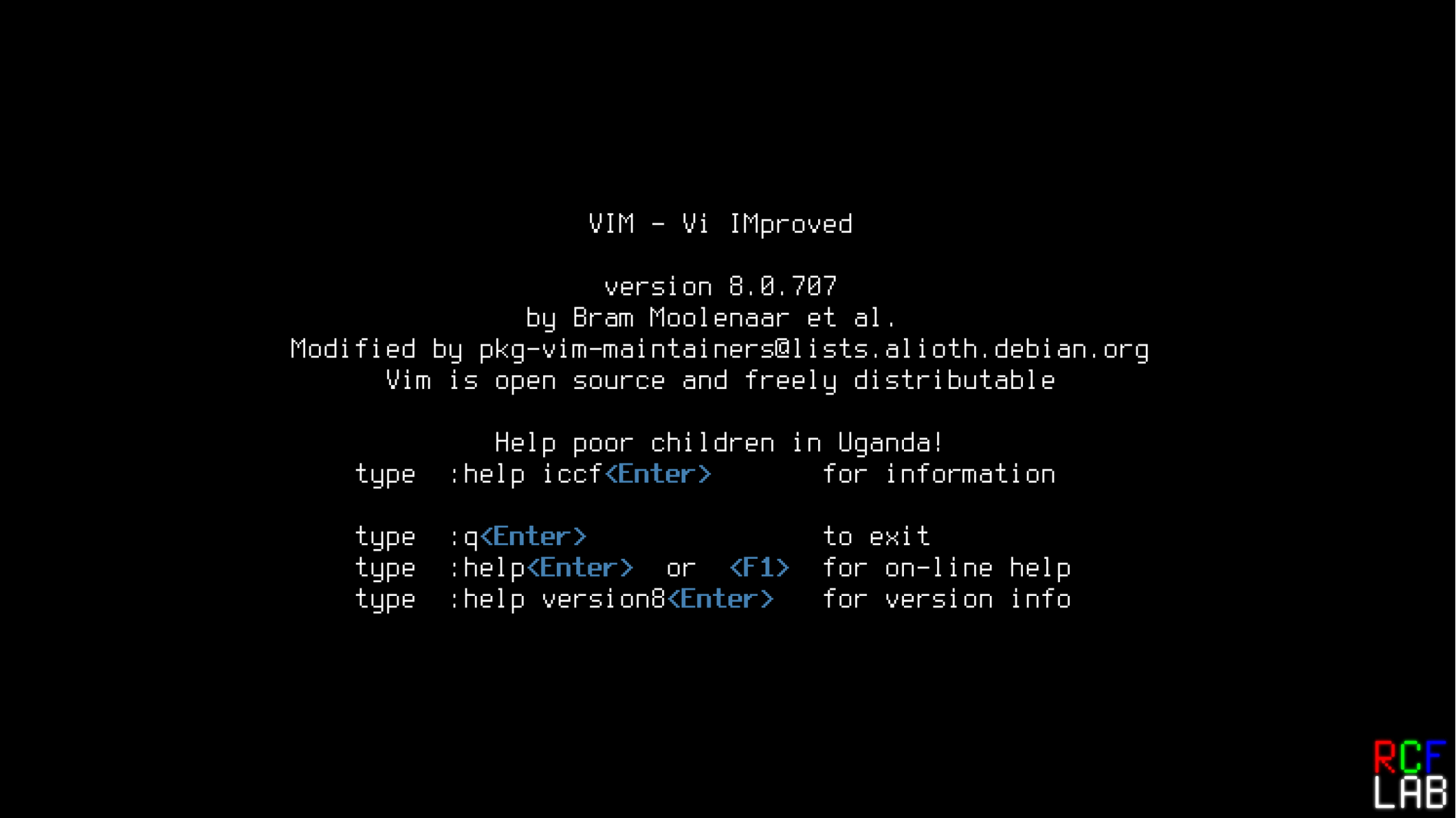
Learning Java is hard.
Use Eclipse if necessary.

RCF LAB

My Recommendation:

Use VIM/Notepad++ (Unix/Windows) until stuck.
Use Eclipse to get over roadblocks.

RCF LAB


VIM - Vi IMproved
version 8.0.707
by Bram Moolenaar et al.
Modified by pkg-vim-maintainers@lists.alioth.debian.org
Vim is open source and freely distributable
Help poor children in Uganda!
type :help iccf<Enter> for information
type :q<Enter> to exit
type :help<Enter> or <F1> for on-line help
type :help version8<Enter> for version info

That was VIM.

Shameless plug:

VIM tutorial -> ryanfleck.github.io

RCF LAB

Alright, enough fooling around,
let’s learn some data structures,
then we can get to programming in Java.

RCF LAB

ITI1121 is essentially this:

- Learn Java and Objects.

- Learn how to stick the objects to each other.

- Stick them together into a bunch of neat shapes.

RCF LAB

Shapes like:

Tree

Heap

Stack

Queue

Deque

Tables

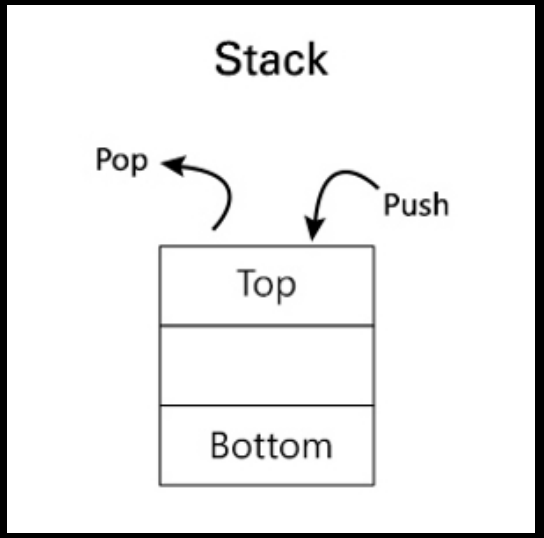
Hash Tables

More Trees like AVL

Graphs, ETC.

RCF LAB

DATA STRUCT: STACK



- Just like the name.
- First in, last out.
- HEAD points to top object.
- PUSH adds one to top of stack.
- POP pulls from top of stack.

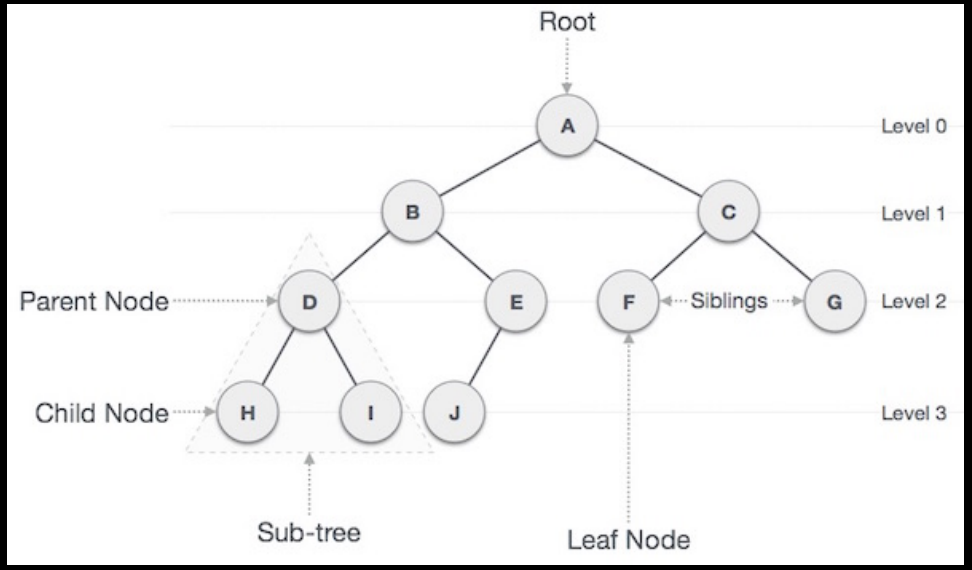
RCF LAB

DATA STRUCT: QUEUE

- Just like the name.
- First in, first out.
- HEAD points to ‘bottom’ object.
- PUSH adds one to the top of the queue
- POP pulls from the bottom of the queue.

RCF LAB

DATA STRUCT: TREE



- Each node connects to two children.
- Left child can be accessed by calling node.left();
- Same with right.
- Parent called with node.parent();
- Lots of fun.

RCF LAB

JAVA

-Review of TOPICS COVERED -

- *Why???* Why do I need to learn Java?
- The basics of handling .java files.
- How to be a good computer programmer.
- “Hello, World!” and Java boilerplate.
- A bunch of easy stuff from ITI1120.
- CSI2110 in a nutshell.
- ITI1121, here we go...

RCF LAB

Finish me lol.

RCF LAB

- TOPICS COVERED -

- *Why???* Why do I need to learn Java?
- The basics of handling .java files.
- How to be a good computer programmer.
- “Hello, World!” and Java boilerplate.
- A bunch of easy stuff from ITI1120.
- CSI2110 in a nutshell.
- ITI1121, also conveniently in a nutshell.

RCF LAB