Version Control System
&
Java for Android

@wesreisz

- Agenda
  - Version Control / Git / Github
  - Java
  - Android

Review

- What are some of the different java editions? Explain them
- What are Java editions relationship to Android?
- I mentioned three pillars of programming from the pragmatic programmers. What were they?
- What are some of the advantages of native?
- What are some of the advantages of HTML5?
- What is a hybrid app?
- What is phonegap?
- What toolset is based on .NET and cane be used to create Android or iOS apps?
- Compare and Contracts Android and iOS.
- What is an IDE?
- What are the two most popular IDE's for developing Android Applications?
- What does the SDK manager do?
- What does the AVD manager do?

Version Control System:

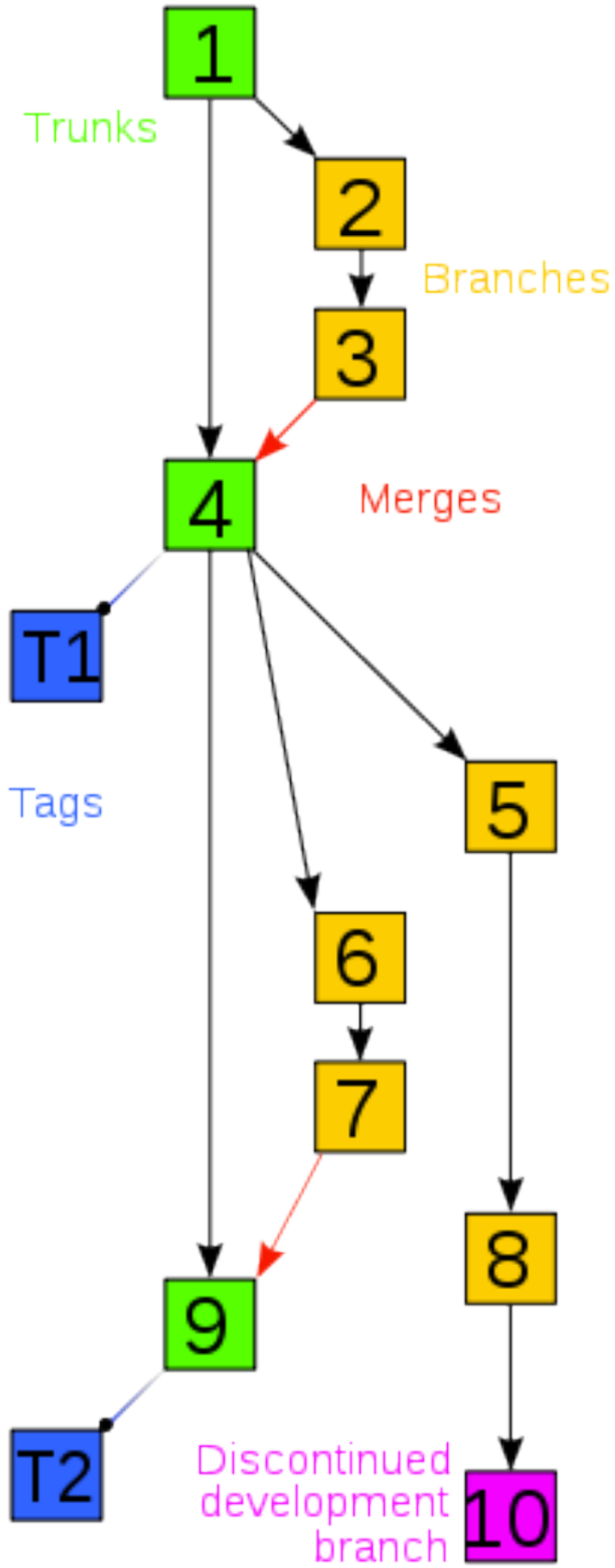
the task of keeping a software system consisting of many versions and configurations well organized.

A Brief History of Version Control

- **First Generation**
  - Single-file
  - No networking
  - e.g. SCCS, RCS
- **Second Generation**
  - Multi-file
  - Centralized
  - e.g. CVS, VSS, SVN, TFS, Perforce
- **Third Generation**
  - Changesets
  - Distributed
  - e.g. Git, Hg, Bazaar, BitKeeper

Create things

- Save things
- Edit things
- Save things



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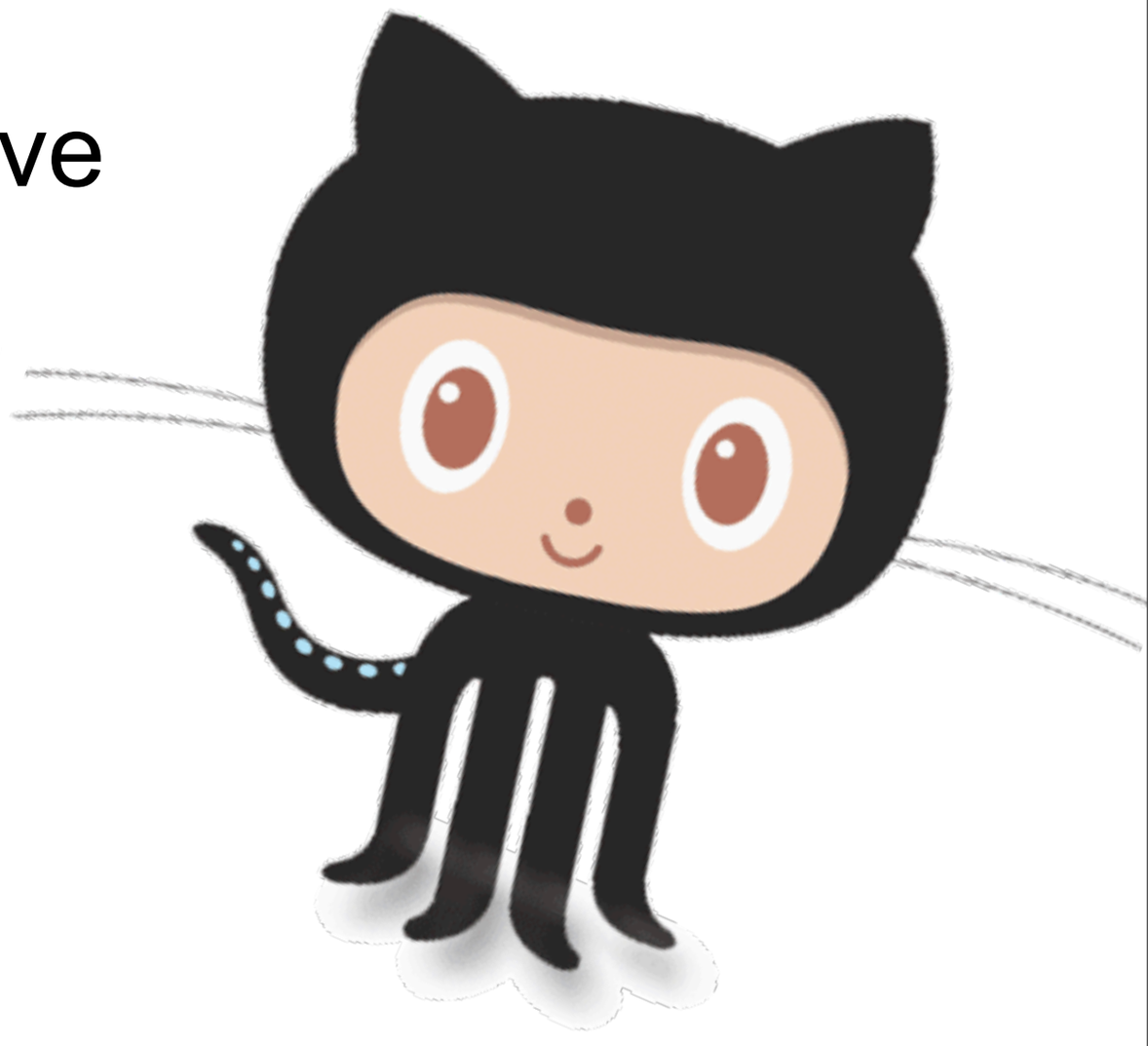
What is Git?

- fast and modern
- distributed
- provides history
- facilitates collaborative changes
- useful for anytime of knowledge worker



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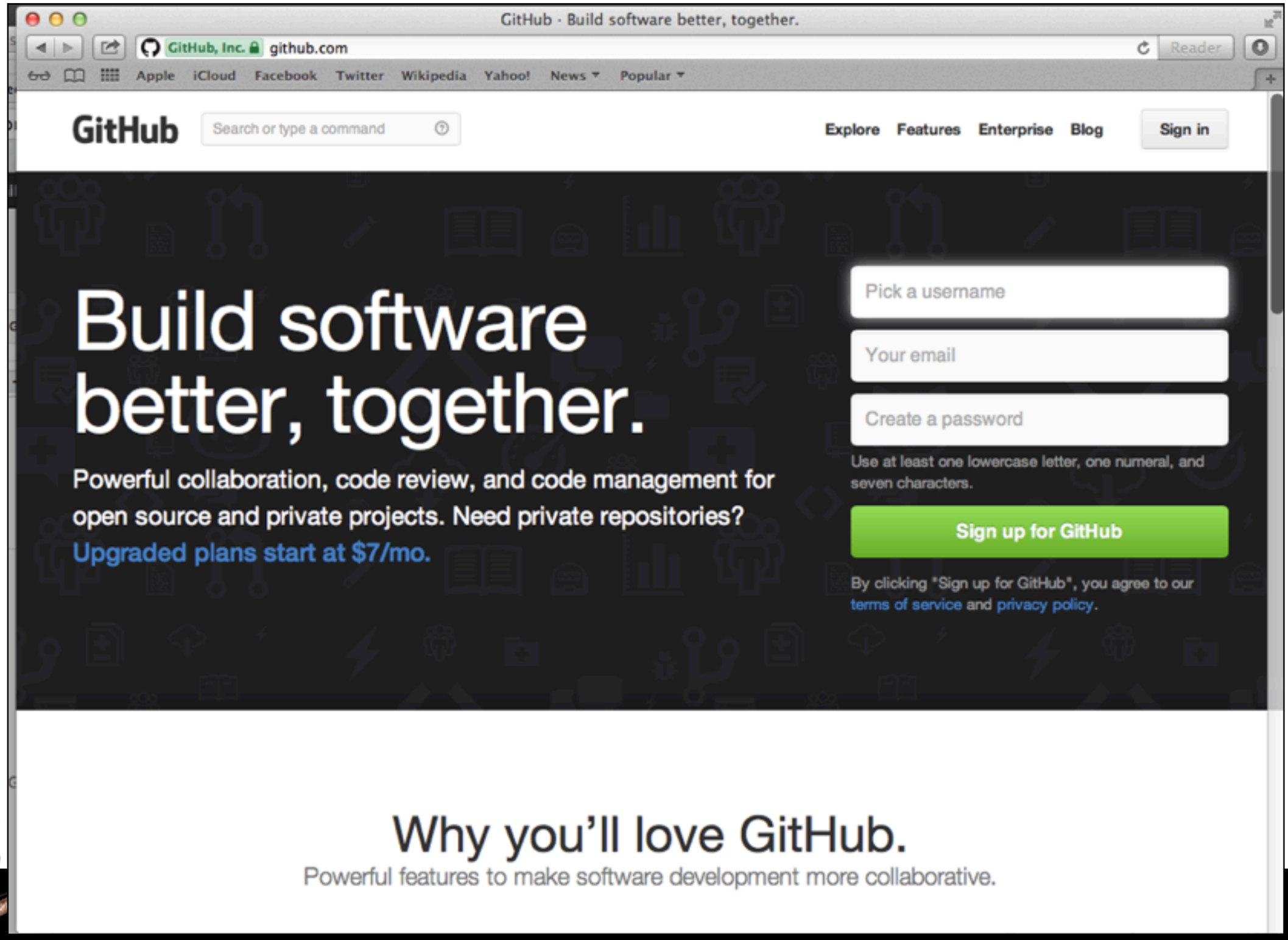
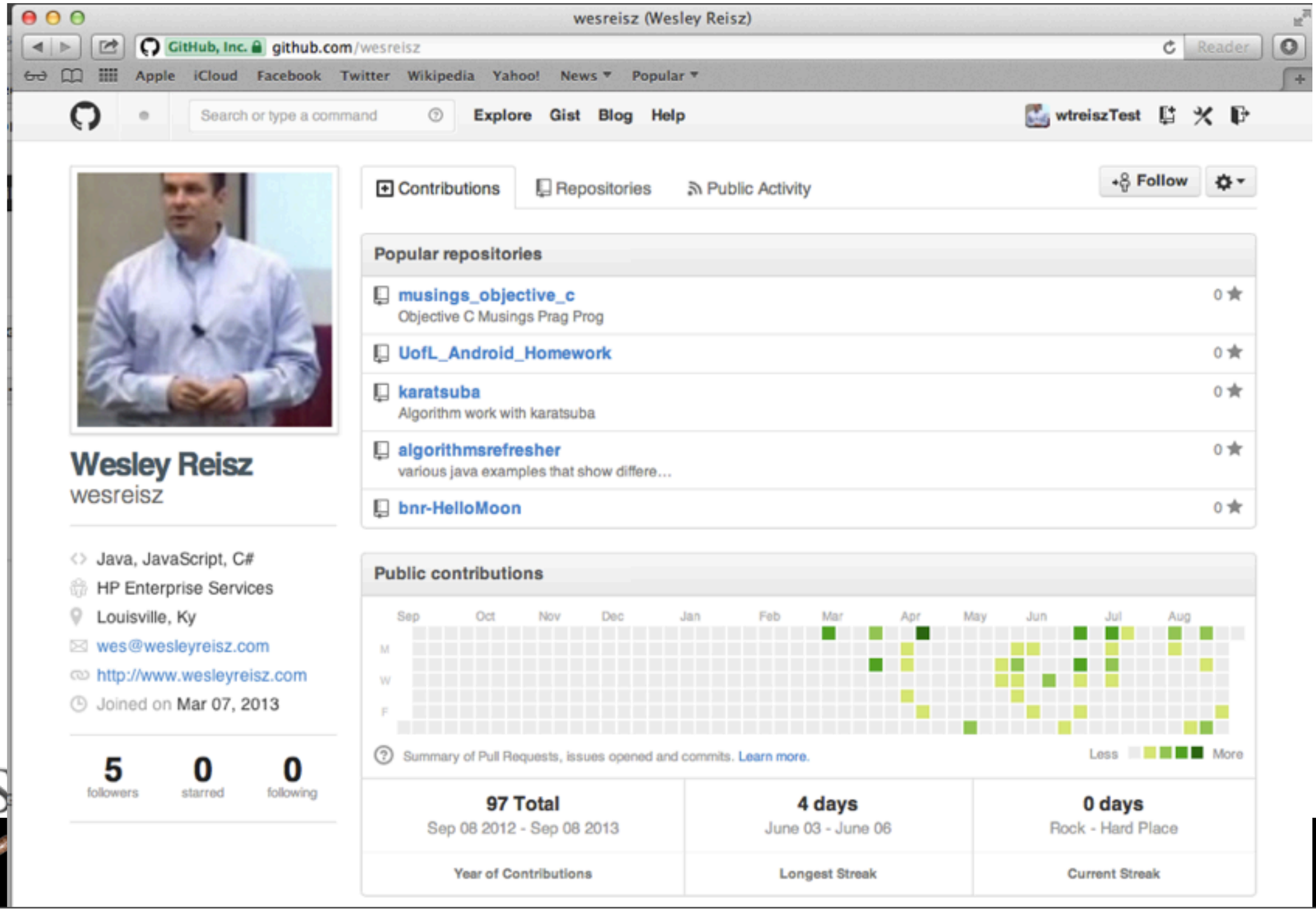
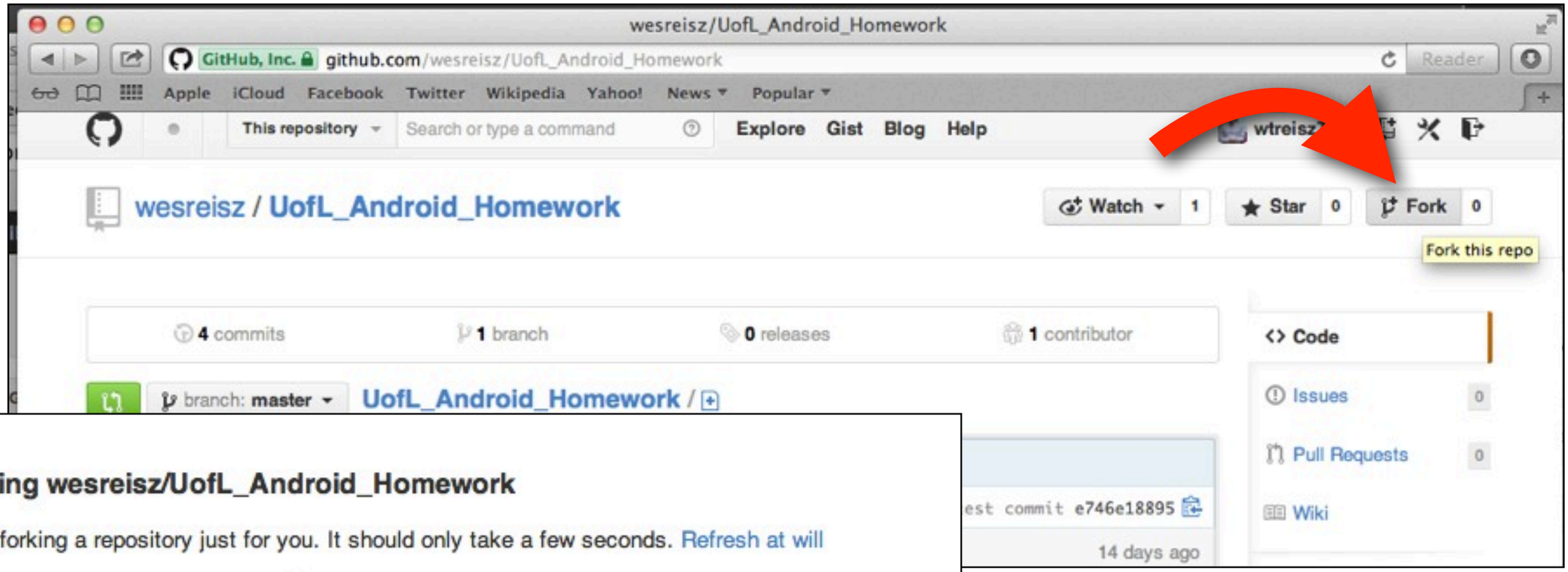
Configuring Git

- **System-level configuration**
  - git config --system
  - Stored in /etc/gitconfig or c:\Program Files (x86)\Git\etc\gitconfig
- **User-level configuration**
  - git config --global
  - Stored in ~/.gitconfig or c:\Users\<NAME>\.gitconfig
- **Repository-level configuration**
  - git config
  - Stored in .git/config in each repo


GitHub · Build software better, together.
GitHub, Inc. github.com
Reader
Apple iCloud Facebook Twitter Wikipedia Yahoo! News Popular
GitHub
Search or type a command
Explore Features Enterprise Blog
Sign in
Build software better, together.
Powerful collaboration, code review, and code management for open source and private projects. Need private repositories?
Upgraded plans start at $7/mo.
Pick a username
Your email
Create a password
Use at least one lowercase letter, one numeral, and seven characters.
Sign up for GitHub
By clicking "Sign up for GitHub", you agree to our terms of service and privacy policy.
Why you'll love GitHub.
Powerful features to make software development more collaborative.



Fork me


Fork me on GitHub
wesreisz/UofL_Android_Homework
GitHub, Inc. github.com/wesreisz/UofL_Android_Homework
Reader
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This repository
Search or type a command
Explore Gist Blog Help
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wesreisz / UofL_Android_Homework
Watch 1
Star 0
Fork 0
Fork this repo
4 commits
1 branch
0 releases
1 contributor
Code
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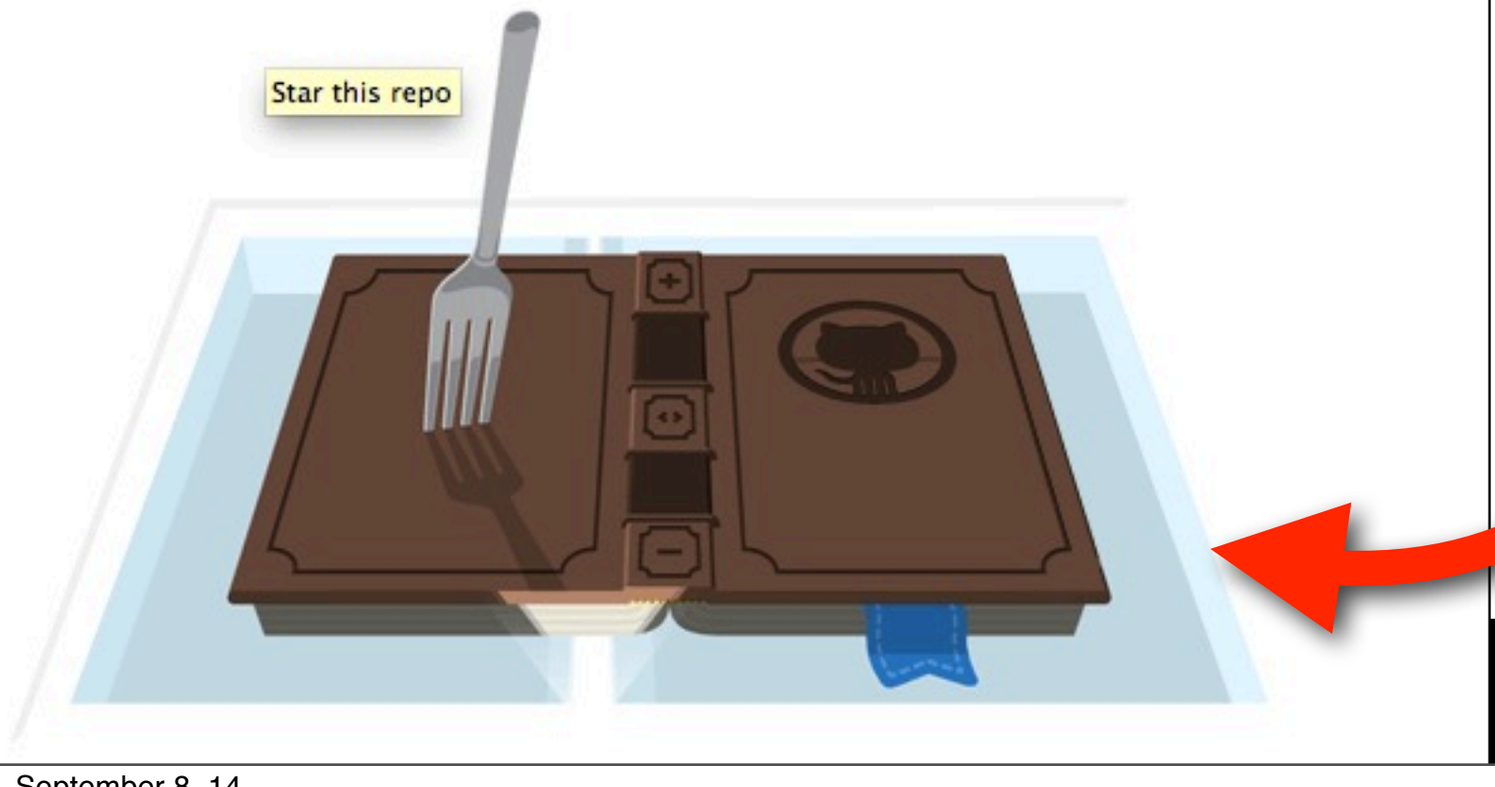
14 days ago


Forking wesreisz/UofL_Android_Homework
We're forking a repository just for you. It should only take a few seconds. Refresh at will
Star this repo

wtreiszTest/UofL_Android_Homework

GitHub, Inc. github.com/wtreiszTest/UofL_Android_Homework

Reader

Apple iCloud Facebook Twitter Wikipedia Yahoo! News Popular

This repository Search or type a command Explore Gist Blog Help wtreiszTest

wtreiszTest / UofL_Android_Homework

forked from wesreisz/UofL_Android_Homework

Unwatch 1 Star 0 Fork 1

Description Short description of this repository

Website Website for this repository (optional)

Save or cancel

<> Code

Pull Requests 0

Wiki

Pulse

Graphs

Network

Settings

4 commits **1** branch **0** releases **1** contributor

branch: **master** UofL_Android_Homework /

This branch is 0 commits ahead and 0 commits behind master — Pull Request Compare

removed sample files

wesreisz authored 14 days ago — latest commit e746e18895

homework1	removed sample files	14 days ago
homework10	basic homework structure	14 days ago
homework2	basic homework structure	14 days ago
homework3	basic homework structure	14 days ago
homework4	basic homework structure	14 days ago
homework5	basic homework structure	14 days ago
homework6	basic homework structure	14 days ago

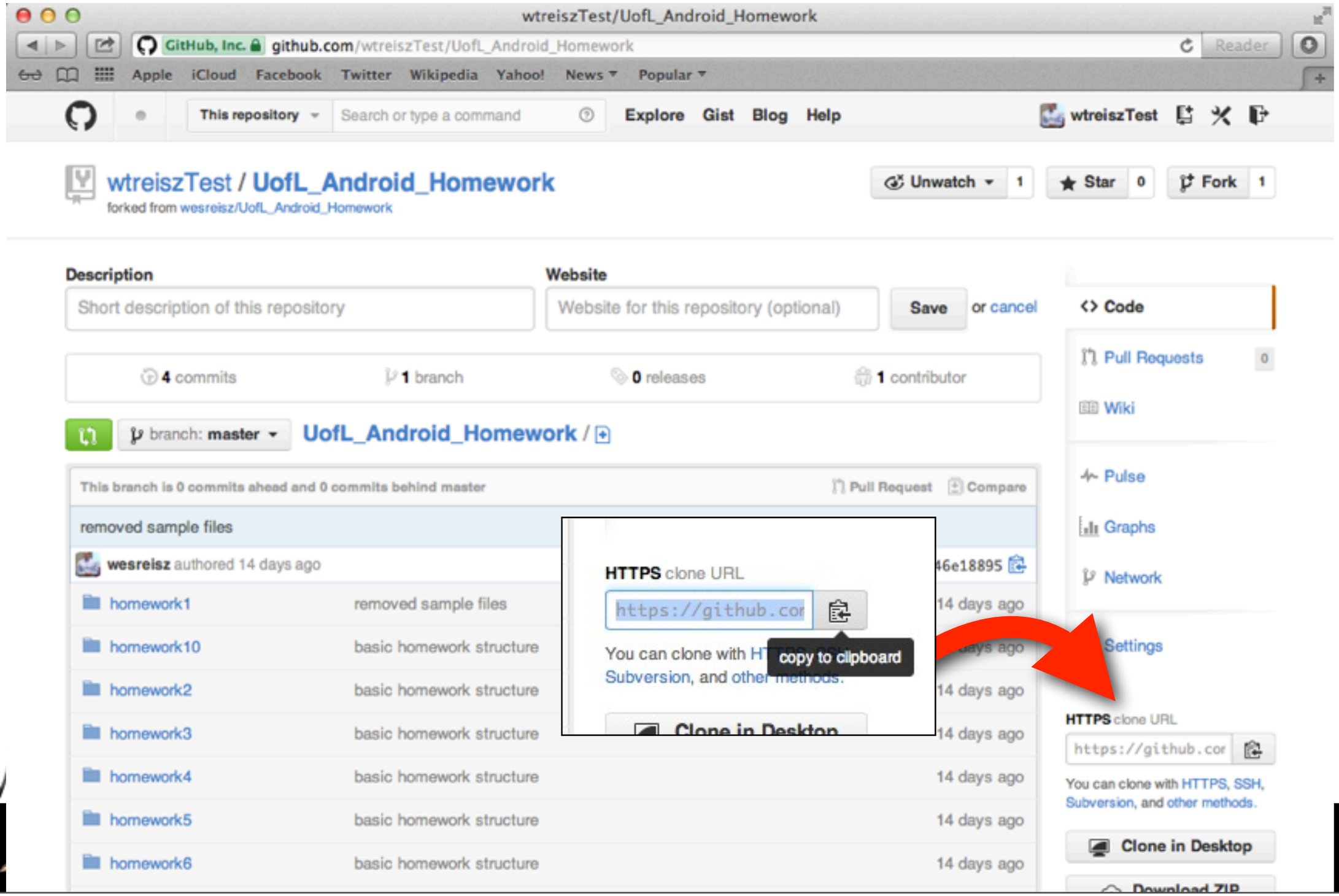
HTTPS clone URL

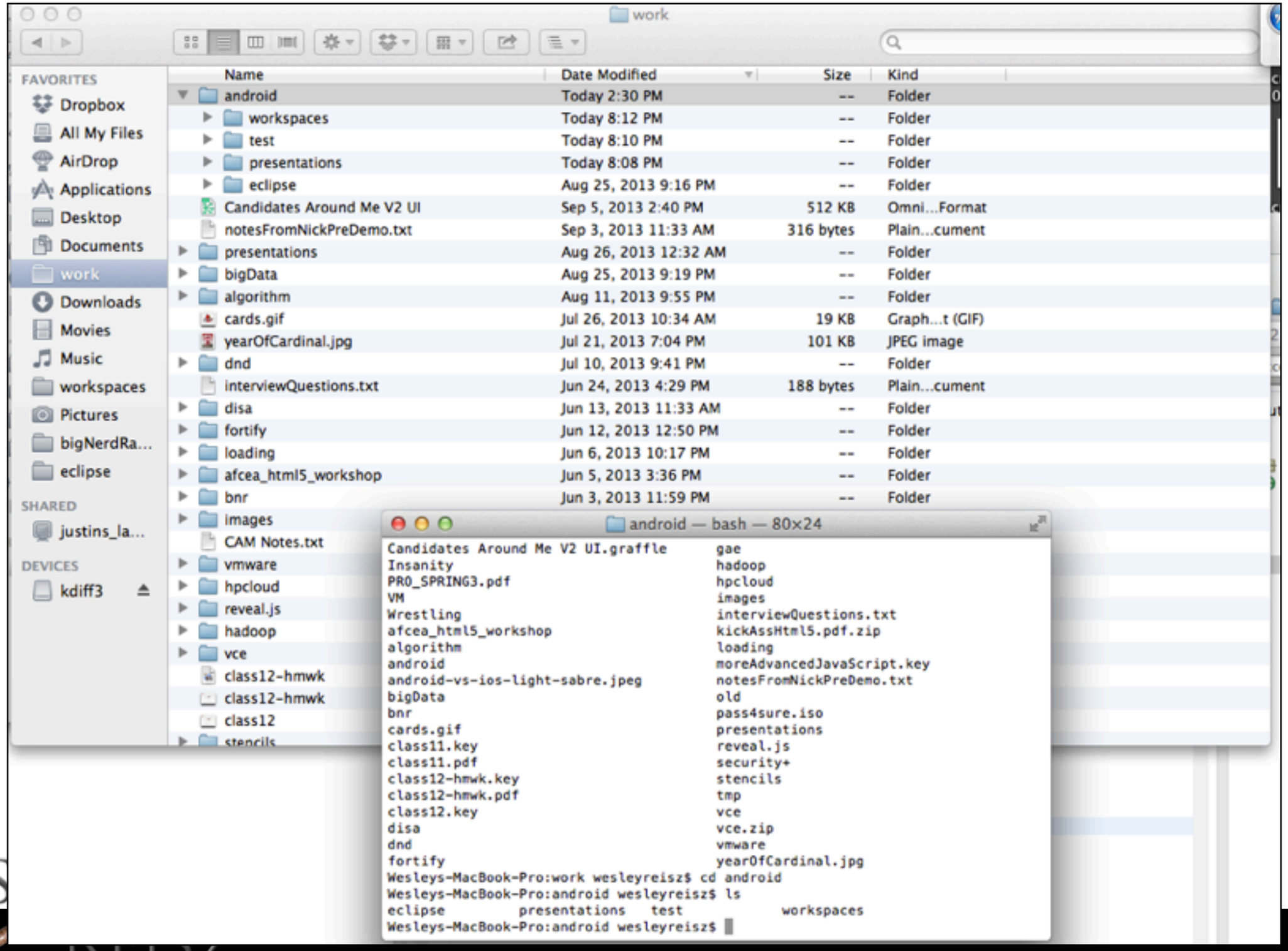
https://github.cor

You can clone with HTTPS, SSH, Subversion, and other methods.

Clone in Desktop

Download ZIP

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FAVORITES
Dropbox
All My Files
AirDrop
Applications
Desktop
Documents
work
Downloads
Movies
Music
workspaces
Pictures
bigNerdRa...
eclipse
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workspaces Today 8:12 PM -- Folder
test Today 8:10 PM -- Folder
presentations Today 8:08 PM -- Folder
eclipse Aug 25, 2013 9:16 PM -- Folder
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notesFromNickPreDemo.txt Sep 3, 2013 11:33 AM 316 bytes Plain...cument
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algorithm Aug 11, 2013 9:55 PM -- Folder
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yearOfCardinal.jpg Jul 21, 2013 7:04 PM 101 KB JPEG image
dnd Jul 10, 2013 9:41 PM -- Folder
interviewQuestions.txt Jun 24, 2013 4:29 PM 188 bytes Plain...cument
disa Jun 13, 2013 11:33 AM -- Folder
fortify Jun 12, 2013 12:50 PM -- Folder
loading Jun 6, 2013 10:17 PM -- Folder
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android — bash — 80×24
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Insanity hadoop
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Wesleys-MacBook-Pro:work wesleyreisz$ cd android
Wesleys-MacBook-Pro:android wesleyreisz$ ls
eclipse presentations test workspaces
Wesleys-MacBook-Pro:android wesleyreisz$


android — bash — 80×24
android
android-vs-ios-light-sabre.jpeg
bigData
bnr
cards.gif
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notesFromNickPreDemo.txt
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vmware
yearOfCardinal.jpg
Wesleys-MacBook-Pro:work wesleyreisz$ cd android
Wesleys-MacBook-Pro:android wesleyreisz$ ls
eclipse presentations test workspaces
Wesleys-MacBook-Pro:android wesleyreisz$ git clone https://github.com/wtreiszTes
t/UofL_Android_Homework.git
Cloning into 'UofL_Android_Homework'...
remote: Counting objects: 28, done.
remote: Compressing objects: 100% (13/13), done.
remote: Total 28 (delta 3), reused 28 (delta 3)
Unpacking objects: 100% (28/28), done.
Wesleys-MacBook-Pro:android wesleyreisz$


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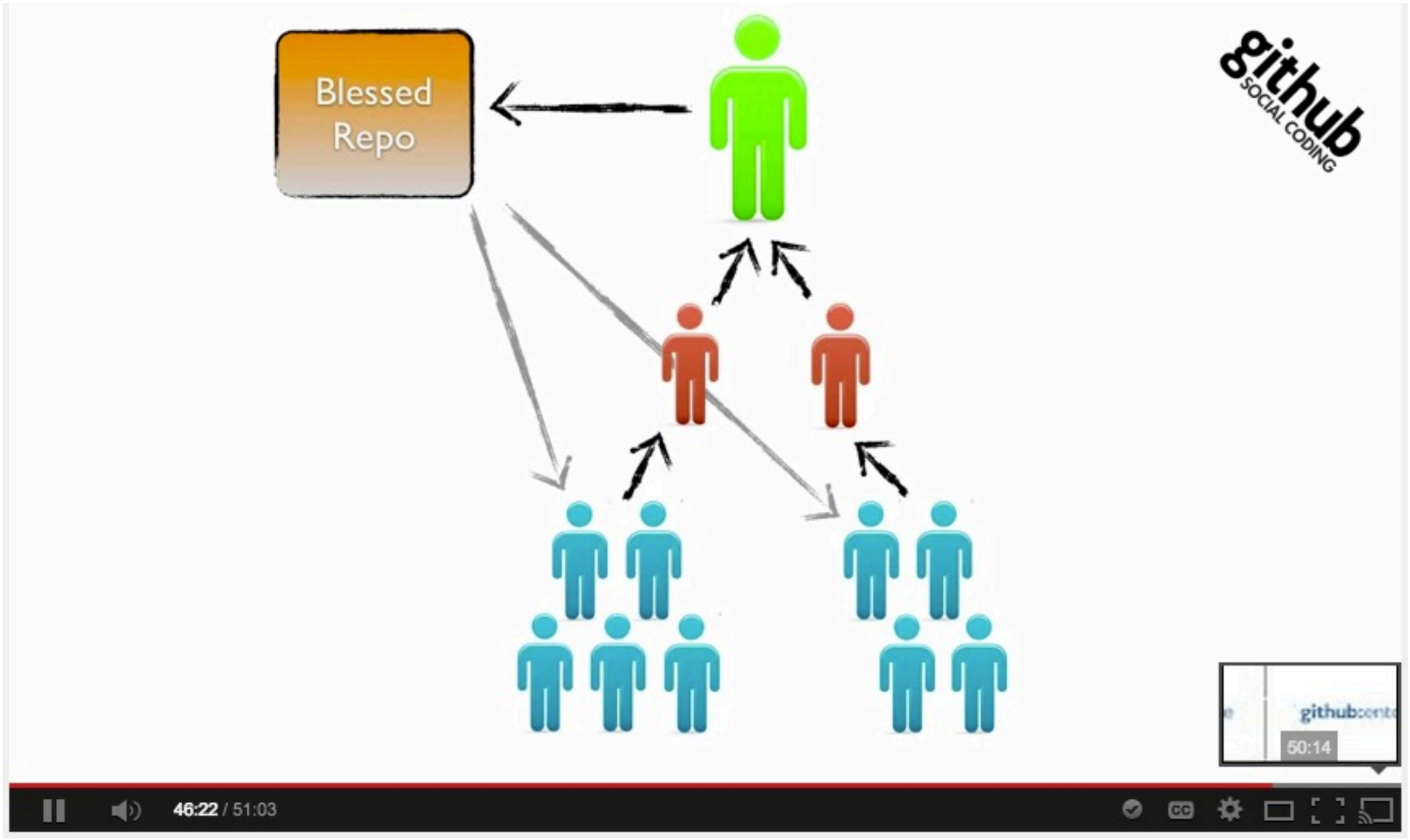
more
Google
the droids we're looking for
Google Search
I'm Feeling
Advertising Programs
Business Solutions
2009

Demo

- git status
- git log
- git add -u / git rm <file>
- git commit -m “my message”
- Same in GitHub GUI
- git clone
- git push (git push -u)
- git checkout
- pull request



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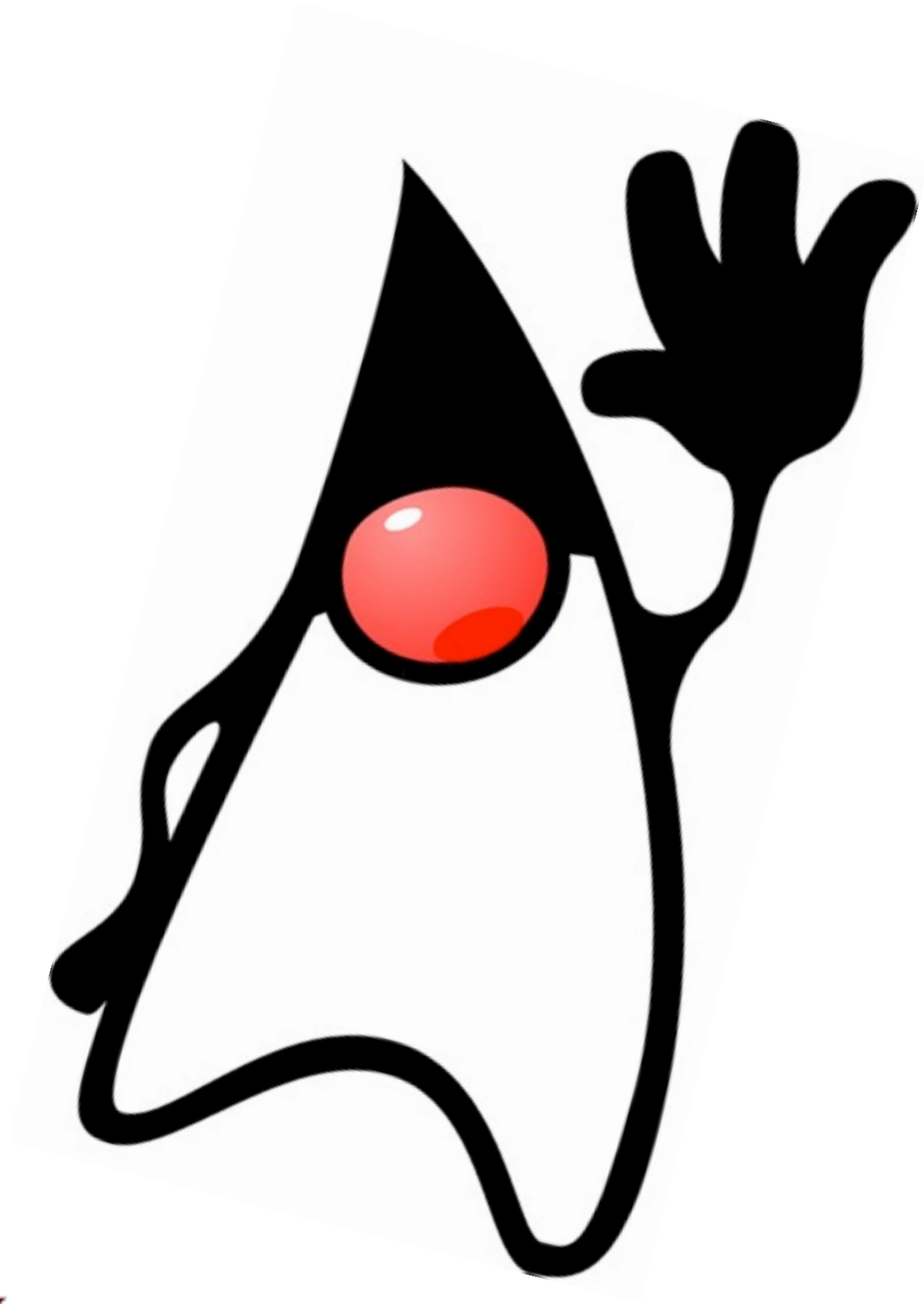
- Java



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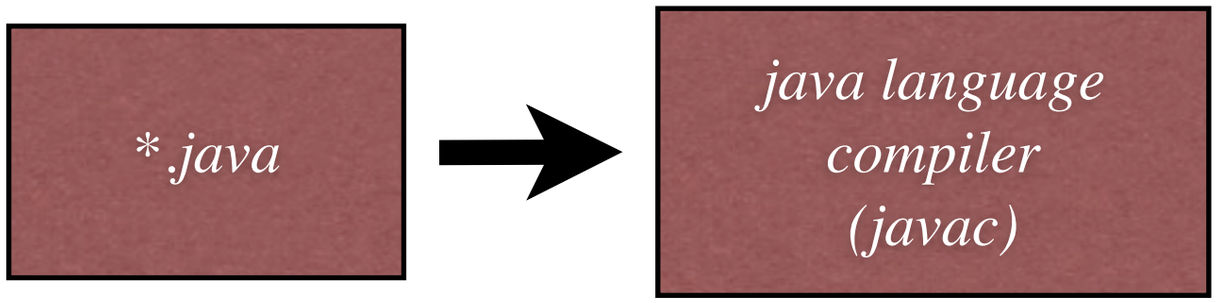
- Statically Typed
- Object Oriented (Abstraction, Inheritance, Encapsulation, Polymorphism, Composition)
- Java is NOT JavaScript
- Basic DataTypes (int, float, boolean, char, String)
- Conventions
  - Types
  - declaring/initializing variables
  - declaring/calling methods
  - file structure
  - member / instance variables
  - Concrete class
  - Abstract class
  - Interface
  - Android's use of interfaces
  - calling classes
  - factory

Java Compilation Process

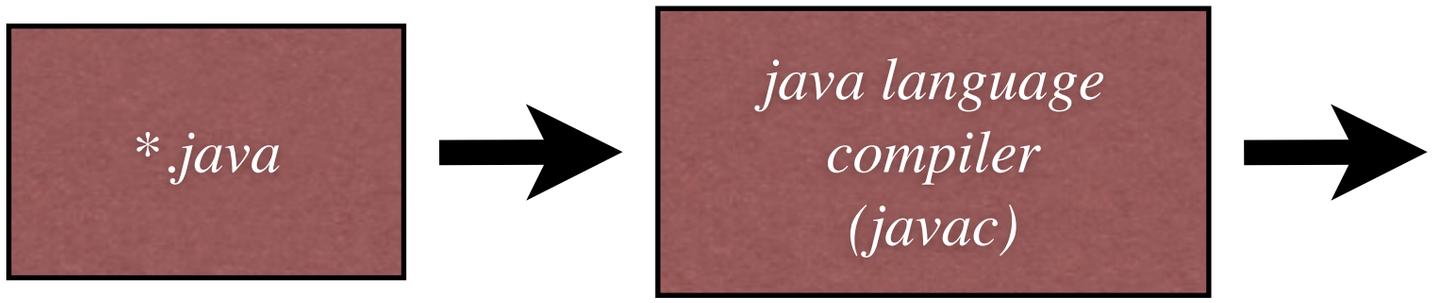
Java Compilation Process

Java Compilation Process

Java Compilation Process



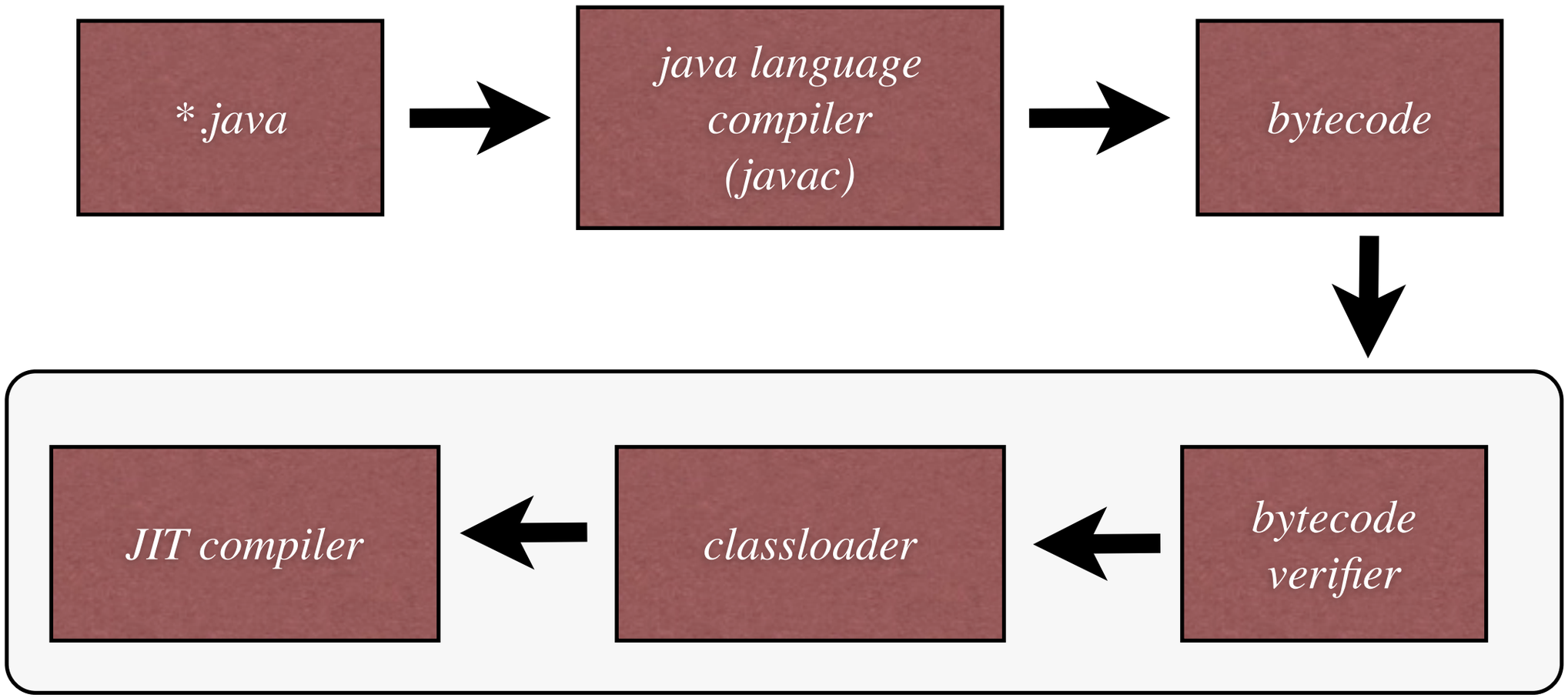
Java Compilation Process



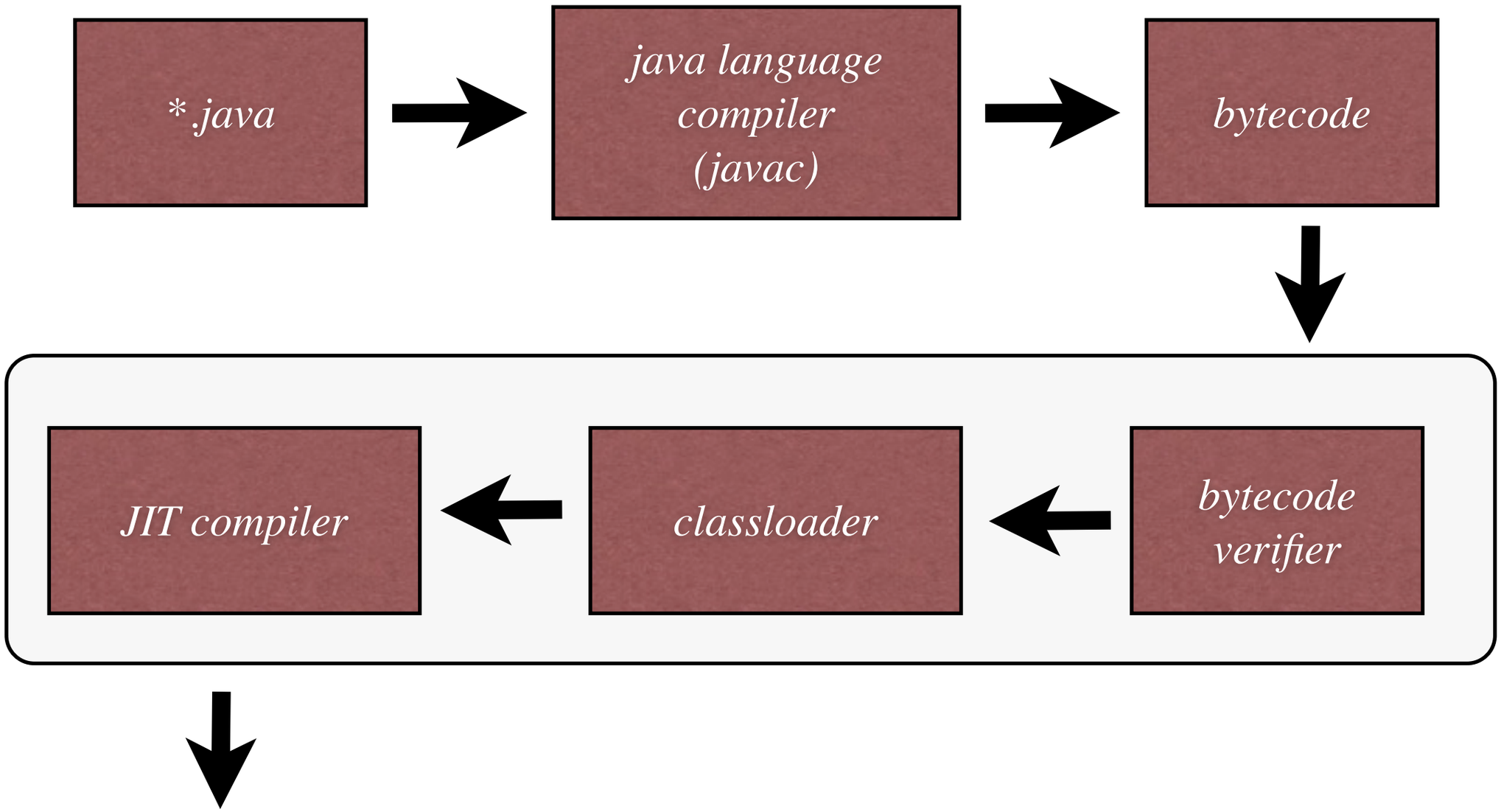
Java Compilation Process

Java Compilation Process

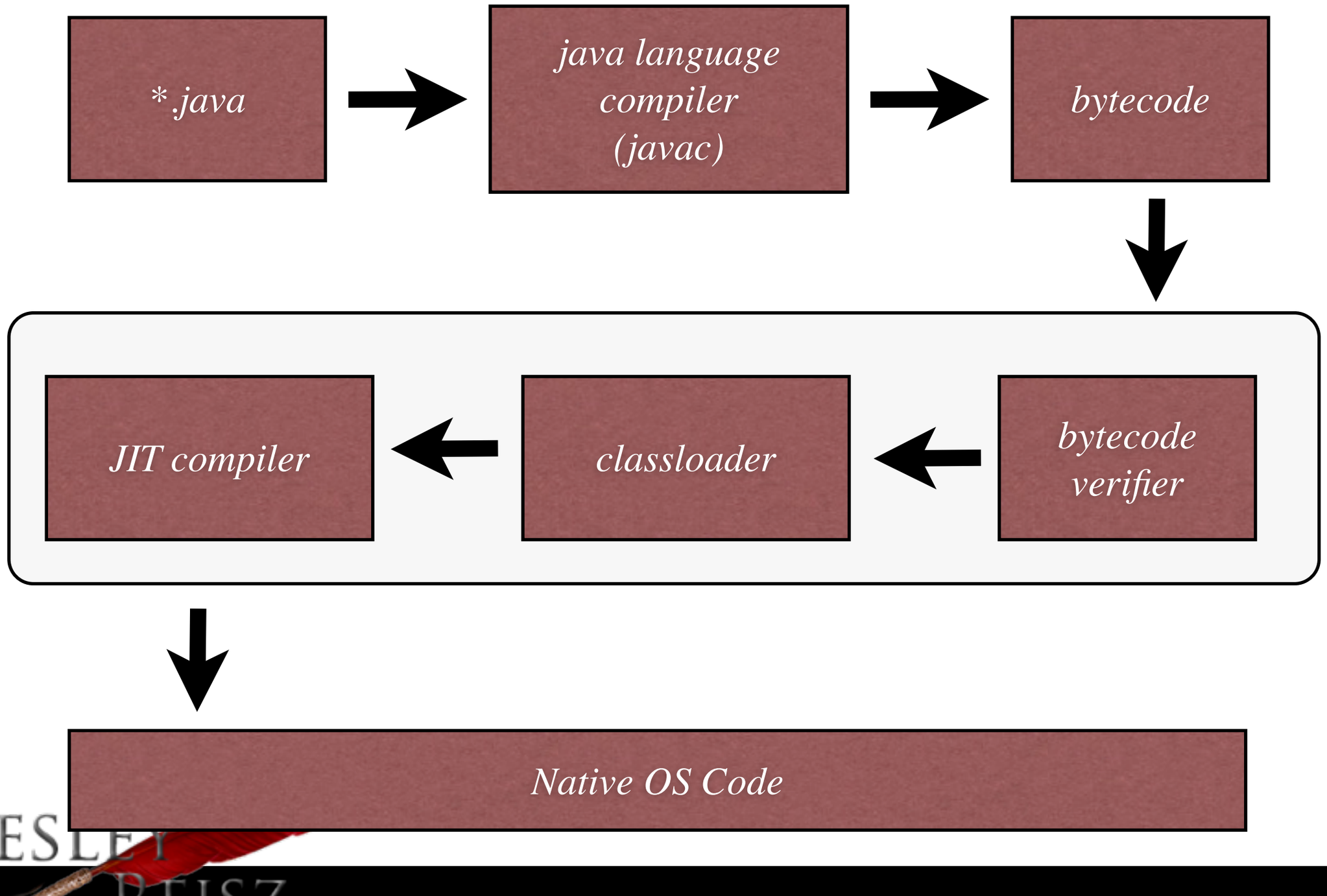
Java Compilation Process



Java Compilation Process



Java Compilation Process



Demo

1. bash

```
Wesleys-MacBook-Pro-2:helloGit wesleyreisz$ cat Hello.java
public class Hello{
        public static void main(String[] args){
        System.out.println("Hello World");
        }
}Wesleys-MacBook-Pro-2:helloGit wesleyreisz$ javap -c Hello.class
Compiled from "Hello.java"
public class Hello {
  public Hello();
    Code:
       0: aload_0
       1: invokespecial #1                  // Method java/lang/Object."<init>":()V
       4: return

  public static void main(java.lang.String[]);
    Code:
       0: getstatic     #2                  // Field java/lang/System.out:Ljava/io/PrintStream;
       3: ldc           #3                  // String Hello World
       5: invokevirtual #4                  // Method java/io/PrintStream.println:(Ljava/lang/String;)V
       8: return
}
Wesleys-MacBook-Pro-2:helloGit wesleyreisz$
```

- Write: HelloWorld.java
- Compile
  - javac HelloWorld.java
- Run
  - java HelloWorld
- View Byte Code
  - javap -c

- Android

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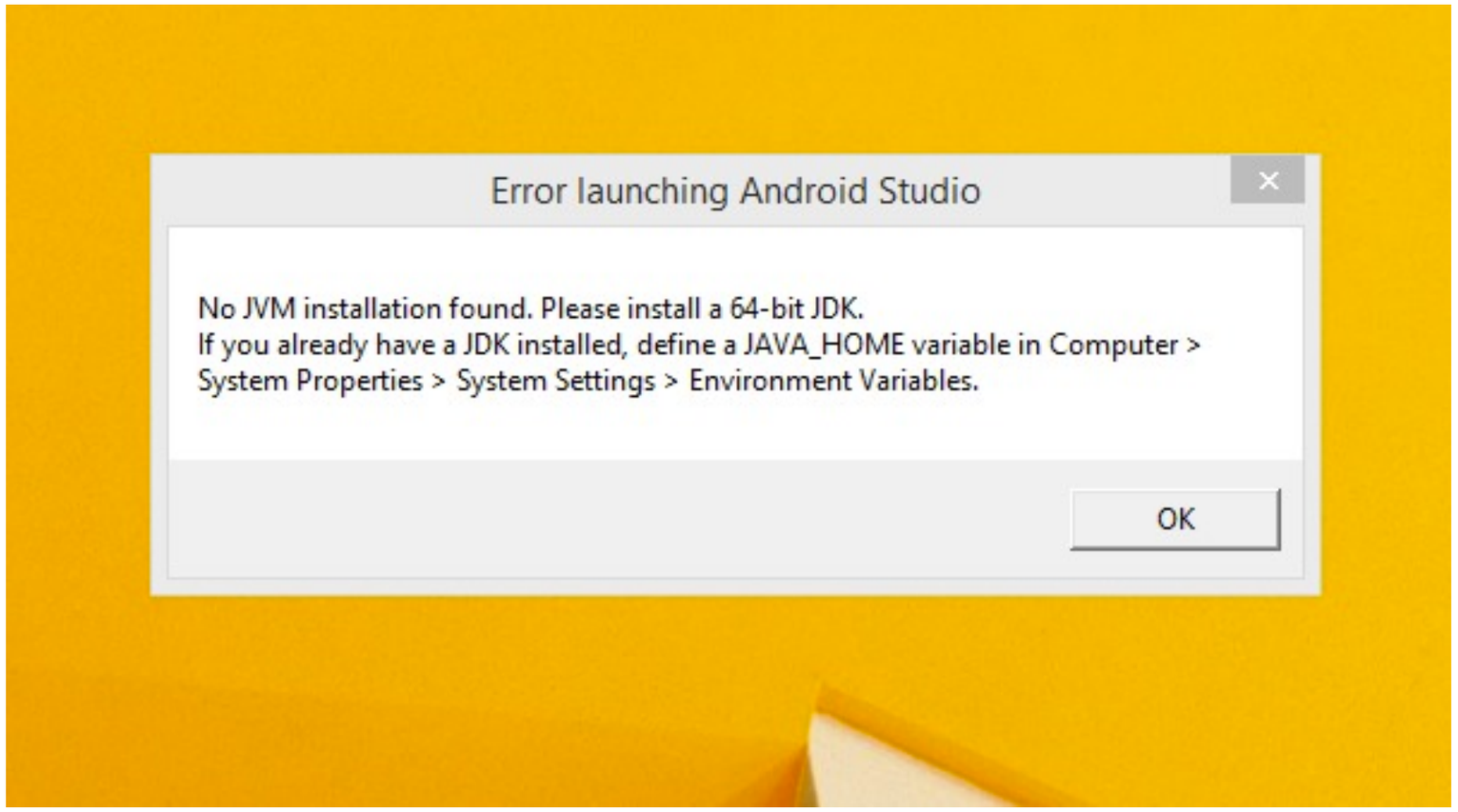
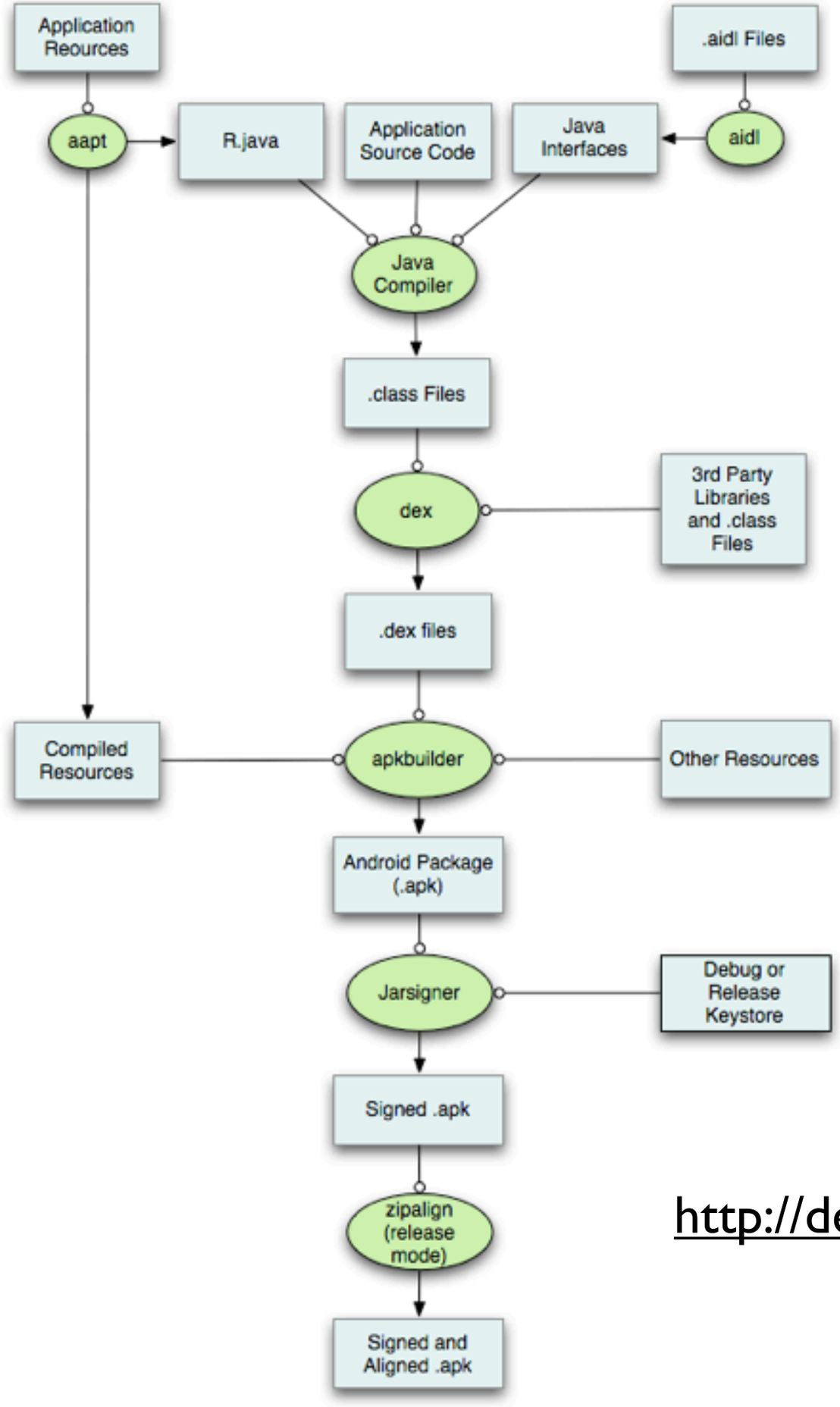

Error launching Android Studio
No JVM installation found. Please install a 64-bit JDK.
If you already have a JDK installed, define a JAVA_HOME variable in Computer > System Properties > System Settings > Environment Variables.
OK



Definitions:

AIDL (Android Interface Definition Language): is similar to other IDLs you might have worked with. It allows you to define the programming interface that both the client and service agree upon in order to communicate with each other using interprocess communication (IPC). On Android, one process cannot normally access the memory of another process. So to talk, they need to decompose their objects into primitives that the operating system can understand, and marshall the objects across that boundary for you. The code to do that marshalling is tedious to write, so Android handles it for you with AIDL

AAPT: The Android Asset Packaging Tool (aapt) takes your application resource files, such as the `AndroidManifest.xml` file and the XML files for your Activities, and compiles them. An `R.java` is also produced so you can reference your resources from your Java code.

dex tool: converts the .class files to Dalvik byte code. Any 3rd party libraries and .class files that you have included in your project are also converted into `.dex` files so that they can be packaged into the final `.apk` file.

http://developer.android.com/tools/building/index.html

ART vs Dalvik / AOT vs JIT

Dalvik is based on JIT (just in time) compilation. It means that each time you run an app, the part of the code required for its execution is going to be translated (compiled) to machine code at that moment. As you progress through the app, additional code is going to be compiled and cached, so that the system can reuse the code while the app is running. Since JIT compiles only a part of the code, it has a smaller memory footprint and uses less physical space on the device.

ART, on the other hand, compiles the intermediate language, Dalvik bytecode, into a system-dependent binary. The whole code of the app ***will be pre-compiled during install (once)***, thus removing the lag that we see when we open an app on our device. With no need for JIT compilation, the code should execute much faster.

Except for the potential speed increase, the use of ART can provide an important secondary benefit. As ART runs app machine code directly (native execution), it ***doesn't hit the CPU as hard as just-in-time code compiling on Dalvik***. Less CPU usage results in less battery drain, which is a big plus for portable devices in general.

https://www.infinum.co/the-capsized-eight/articles/art-vs-dalvik-introducing-the-new-android-runtime-in-kit-kat

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