Introduction to Programming

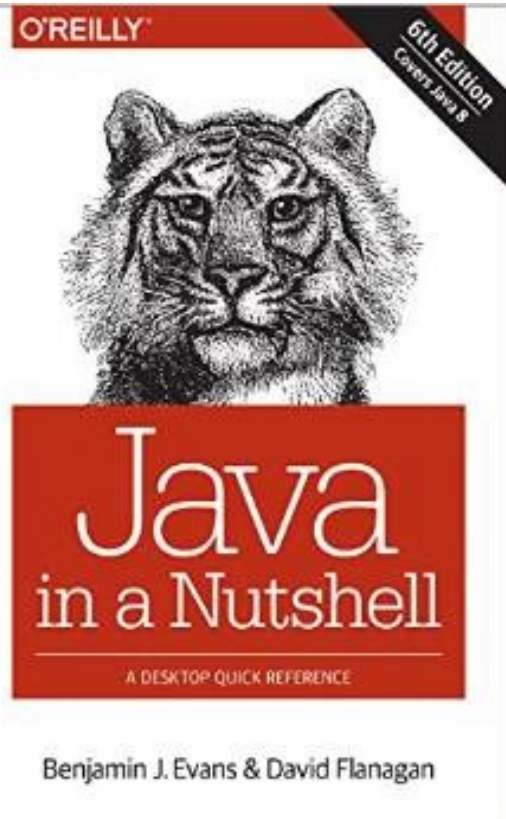# Ben Evans

kathik

About Me

- Co-founder & Tech Fellow, jClarity

- Java Champion & JavaOne Rock Star Speaker

- Java Community Process Executive Committee

- London Java Community

  - Organising Team, Co-founder, AdoptAJSR & AdoptOpenJDK
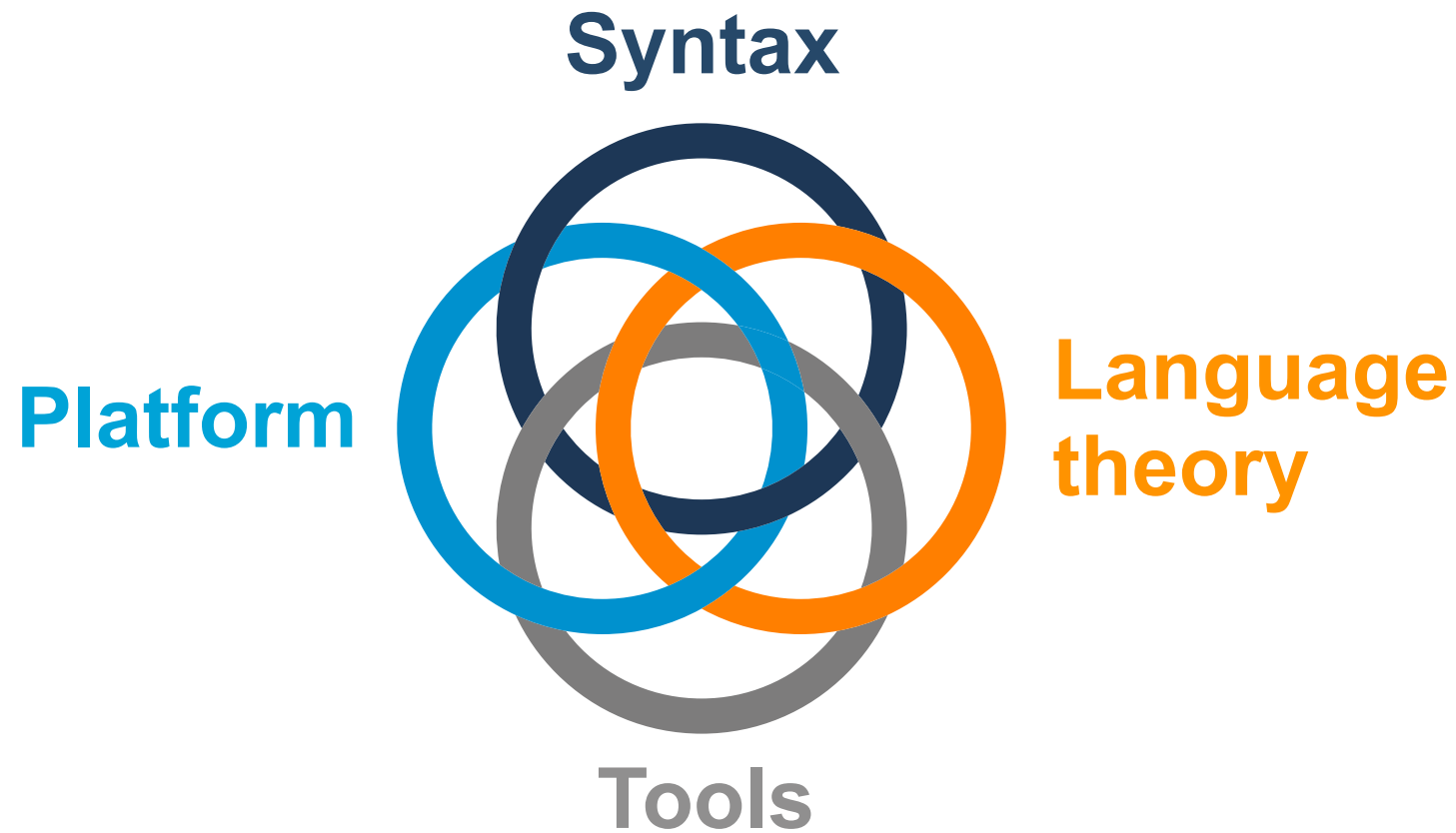
kathik

About Me

- Java in a Nutshell (6th Edition)

- Introduction to Java 8

- The Well-Grounded Java Developer

- Previously:

  - Deutsche Bank - Chief Architect (Listed Derivatives)

  - Morgan Stanley - MATRIX, Google IPO, Dodd-Frank

  - SportingBet - Chief Architect
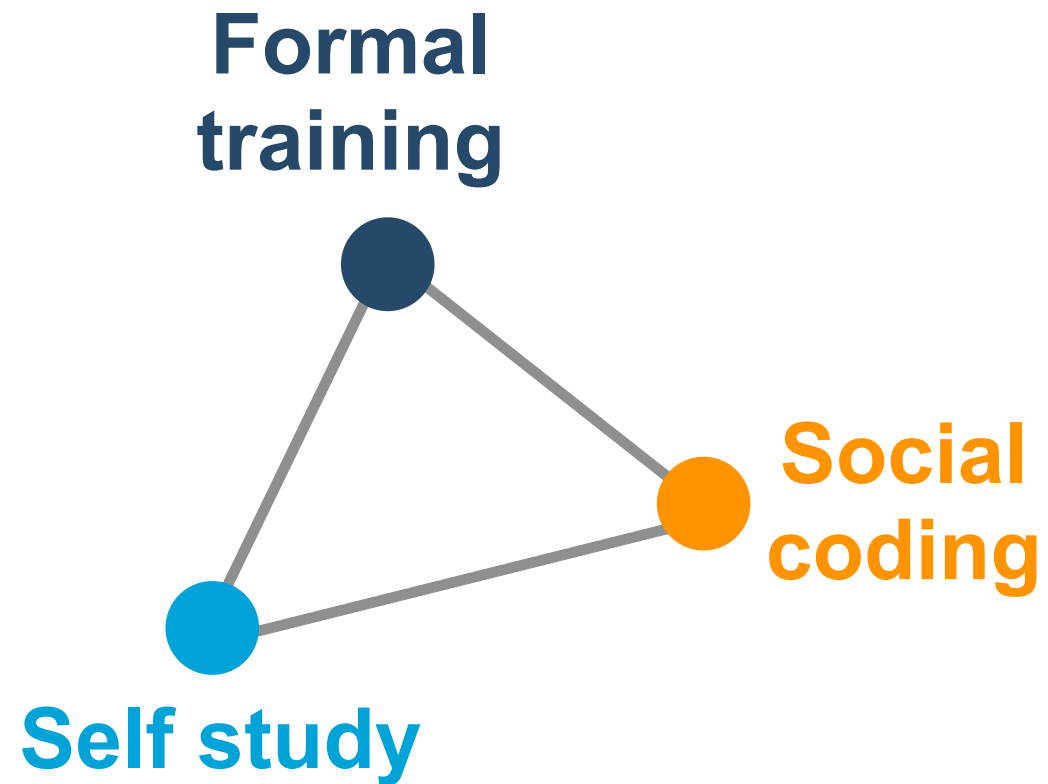
  - Researcher - Quark-Gluon Plasma Physics

kathik

How Do We Learn?

Creating

Evaluating

Analyzing

Applying

Understanding

Remembering

kathik

How Do We Learn?

Formal training

Social coding

Self study

kathik

Operating Systems & Linux

- Introduction

- Some History

- Basic Commands

- UNIX Philosophy

- The Pipeline

kathik

Introduction

- Why do we need operating systems?

  - Control access to scarce resources

    - CPU time

    - I/O Resources

    - Memory

OS Components

- Operating system kernel

- Scheduler

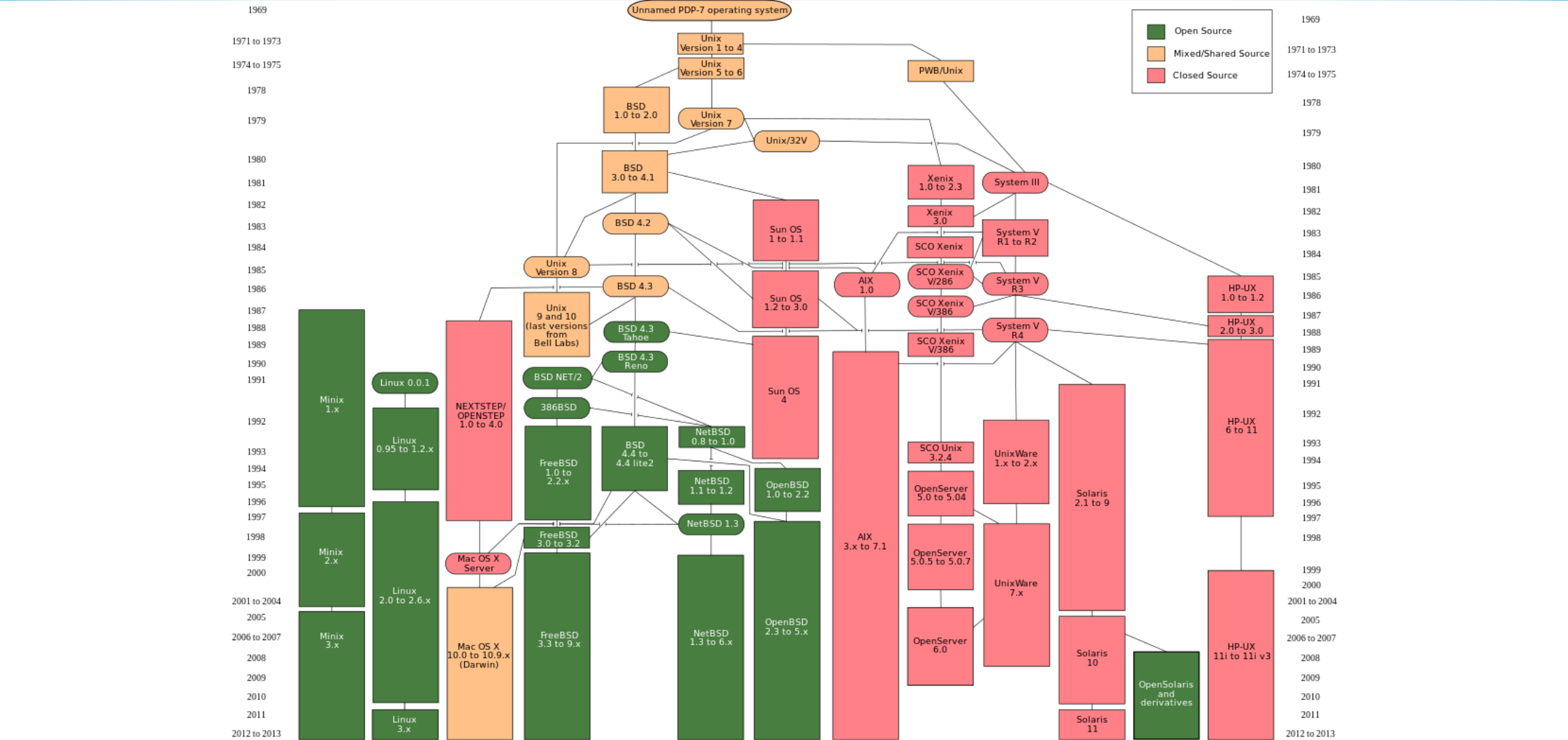- Virtual Memory Subsystem

- Standard library & kernel interface

Some History

- Why Unix?

- The 80s & 90s

- The Rise of Linux & Decline of Solaris

- Modern Times

kathik

The beginning

- Unix was originally developed in 1970s

    - Along with the C programming language

    - Dennis Ritchie & Ken Thompson

- Quickly became very popular

    - Many variants and different versions

- A "family" of related operating systems

    - Mostly standardised (but some differences)

A family tree of Unix

The 80s & 90s

- BSD Unix

- Sun Microsystems (SunOS & Solaris)

- IBM AIX

- Silicon Graphics

- Digital Unix

- Could Windows Challenge?

The Rise of Linux & Decline of other Unixes

- Linus Torvalds released first version in October 1991

- Quickly became dominant open OS for servers

  - BSDs held up by court battles

- Sun's Solaris still led in the data centre

- First Dotcom crash

  - Wave of cost-cutting (Linux seen as cheaper)

kathik

Modern Times

- Linux is everywhere

  - Android

- Macs provide a different Unix variant

  - BSD-based

- Solaris has a special niche (Oracle acquisition)

  - But OpenSolaris forks (e.g. CoreOS) continue

kathik

- The Terminal

- Getting help

- Files & the Filesystem

- Processes

- The shell

The Terminal

- Linux Users - Assuming you can get there!

- Mac Users - In Finder:

  - Applications -> Utilities -> Terminal

- Windows Users - Start up VirtualBox

Exercise 0

- Get the Terminal started up

  - Mac Users may want to add the Terminal app to the Dock

  - Windows users need to get VirtualBox started

  - Linux users - Coffee Time!

kathik

Getting Help

- man – "Manual Page"

- Looking for help online

  - Stack Overflow

  - Learning the terminology (help guide search results)

Unix Command Format

- Linux commands have "switches" (aka options)

  - Extra optional functionality

- General format of a command:

  - <COMMAND> <SWITCHES> <ARGUMENTS>

Working With Files

- ls – "List files"

- file – "Examine type of file"

- wc – "Word Count"

- cp – "Copy File"

- mv – "Move File"

- rm – "Delete File"

kathik

Working With Files

- cat – "Display contents of file"

- head – "First few lines of file"

- tail – "Last few lines of file"

- less – "Display file a page at a time"

Lab 1 - Basic File Manipulation

1. List the files in the directory

2. What types are they all?

3. Display the contents of one of them

4. Use the "man" command to explore the switches to the file listing command

5. How can you get a "long listing" of all the details of a particular file?

6. There are three "hidden" files in the directory - what are they?

7. How many words are in the file called south.txt?

8. Can you rename south.txt to north.txt?

Useful Switches

- ls – "List files"

  - -l : Long Listing

  - -a : All files (show hidden)

  - -h : Human Readable file size

  - -t : Sort by when file was modified

  - -r : Reverse order (useful with -t)

  - Can combine: ls -lh or ls -la

Useful Switches

- wc – "Word Count"

  - -l : "Line count"

  - -w : Per file count (if multiple files given)

- rm – "Delete File"

  - -f : "Force" (sometimes useful)

  - -r : Recursive - delete subdirectories & contents (CAREFUL)

  - -v : Verbose (show the name of each file as it's deleted)

kathik

Useful Switches

- head – "First few lines of file"

  - -n : Display the first n lines of a file

- tail – "Last few lines of file"

  - -n : Display the last n lines of a file

- less – "Display file a page at a time"

  - +n : Skip past first n lines of file before starting display

kathik

Working With Directories

- pwd – "Print Working Directory"

- cd – "Change Directory"

- mkdir – "Make directory"

- rmdir – "Remove directory"

- df – "Disk Free?"

- du – "Disk Used?"

kathik

Files & Filesystems

Desktop ▶
Applications ▶
Documents ▶

Bank ▶
College ▶
Insurance ▶
Personal ▶
Travel ▶
Writing ▶

Desktop ▶
Dissertation ▶
Guidance.pdf
Proposals ▶
QMUL stats
Year review

_Updated list
Archived ▶
D3837notes.pdf
D3837 v1.key
Feedback notes
M9273.pdf
M9273.pdf
PYTH-628.pdf

PDF

Name:
M9273.pdf

Type: PDF

Size: 2.3Mb

Created:
21-05-2015

Open with:
Acrobat Reader

kathik

7

Find

- find – find files

- Recursive directory traversal

  - -iname : find by name

  - Many, many other switches..

  - Consult the man page

kathik

Working With Processes

- ps – "List processes"

  - ps -ef (ps auxw on Mac) – show details

- kill – "End a process"

  - Takes a process ID

kathik