Bash Next Steps

- Ian Miell
- Twitter: @ianmiell
- Ian.miell@gmail.com

Bash and Me

- Used throughout career

- Never learned formally

- Stumbled around, lots of mistakes

- <u>Slowly</u> learned concepts and key points

- Wrote a book (Learn Bash the Hard Way)

This Course

- **Follows on from Introduction to Bash course**

- **Live Walkthroughs**

  - **Encourage you to follow - 'Hard Way' Method**

- **Exercises**

- **Group chat**

- **Materials:**
  - **https://github.com/ianmiell/introduction-to-bash**

Pre-Requisites

- **Familiar with command line**

- **Bash version 4+**
  - $ echo $SHELL
  - $ bash --version
  - <4 is still ok

- **Using zsh (eg on Mac)**
  - **Type 'bash' to get a bash shell**

- **Basic shell utilities (eg grep, cat, ls)**

- **Any editor (I use vim)**

Why This Course?

- **Bash is everywhere**

- **Shells are everywhere**

- **Work with it every day**

- **Taken for granted that it's known**

- **Studying it pays massive dividends**
  - Gateway to deeper OS concepts

Structure of Course

- **Part I – Recap/Level-Set + Advanced Basics**

- **Part II – Advanced Scripting**

- **Part III – Advanced Bash Topics**

Discussion

- What do you want to achieve in bash?

    - Any specific goals?

    - What have you been frustrated by with bash?

Part I – Bash Recap

- **Variables**
- **Globbing**
- **Pipes and redirects**
- **Functions**
- **Tests**
- **Loops**
- **Command substitution**
- **Scripts**

Part II – Bash Scripting

- Subshells

- Process substitiution

- Internal Field Separator

- Here docs

Subshells - Recap

- **Variables**

- **Working directories**

- **Redirection**

Process Substitution - Recap

- **Signals**

- **man signal**

- **'kill' and signals**

- **trap signals**

- **fg and bg**

Here Docs - Recap

- Here docs

- Here strings

- Here docs and variables

Internal Field Separator - Recap

- Problem - files with spaces

- The IFS shell variable

- The null byte as separator

Part III – Advanced Scripting

- **Job Control**

- **Traps and Signals**

- **cheapci / bashtop**

Job Control - Recap

- Single jobs
- Killing jobs
- Waiting for jobs
- Jobs, waiting, and exit codes

Traps and Signals - Recap

* **Signals**

* **man signal**

* **'kill' and signals**

* **trap signals**

* **fg and bg**

Debugging - Recap

- **bash -n, -v, -x**

- **nounset, xtrace, errext**

- **shellcheck**

Wrapup

- https://github.com/ianmiell/bash-next-steps
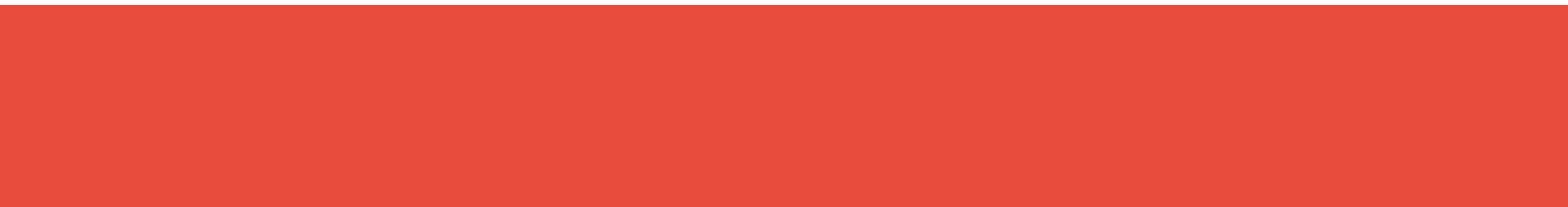
- @ianmiell

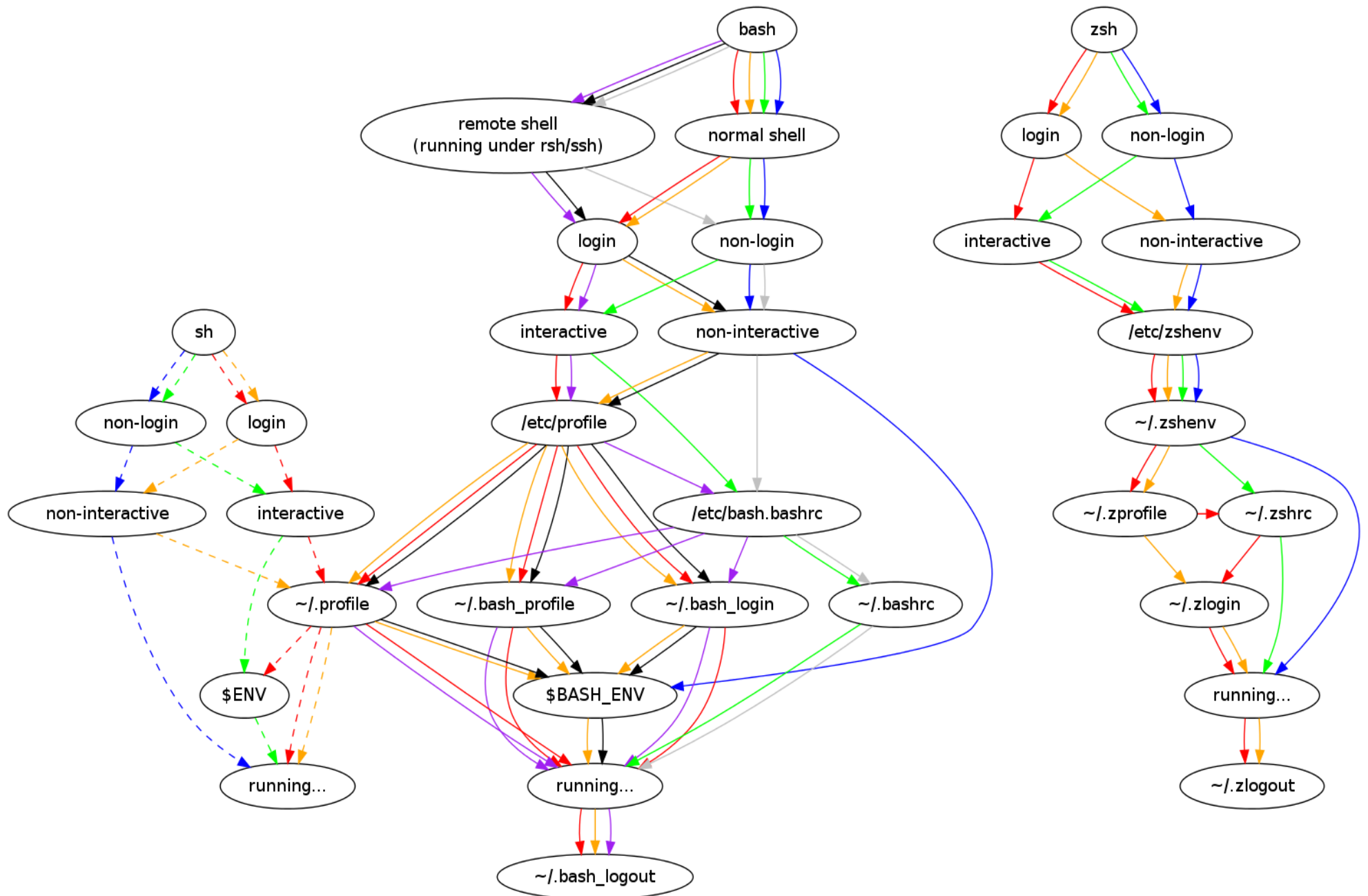- ian.miell@gmail.com

Bash Next Steps

Ian Miell

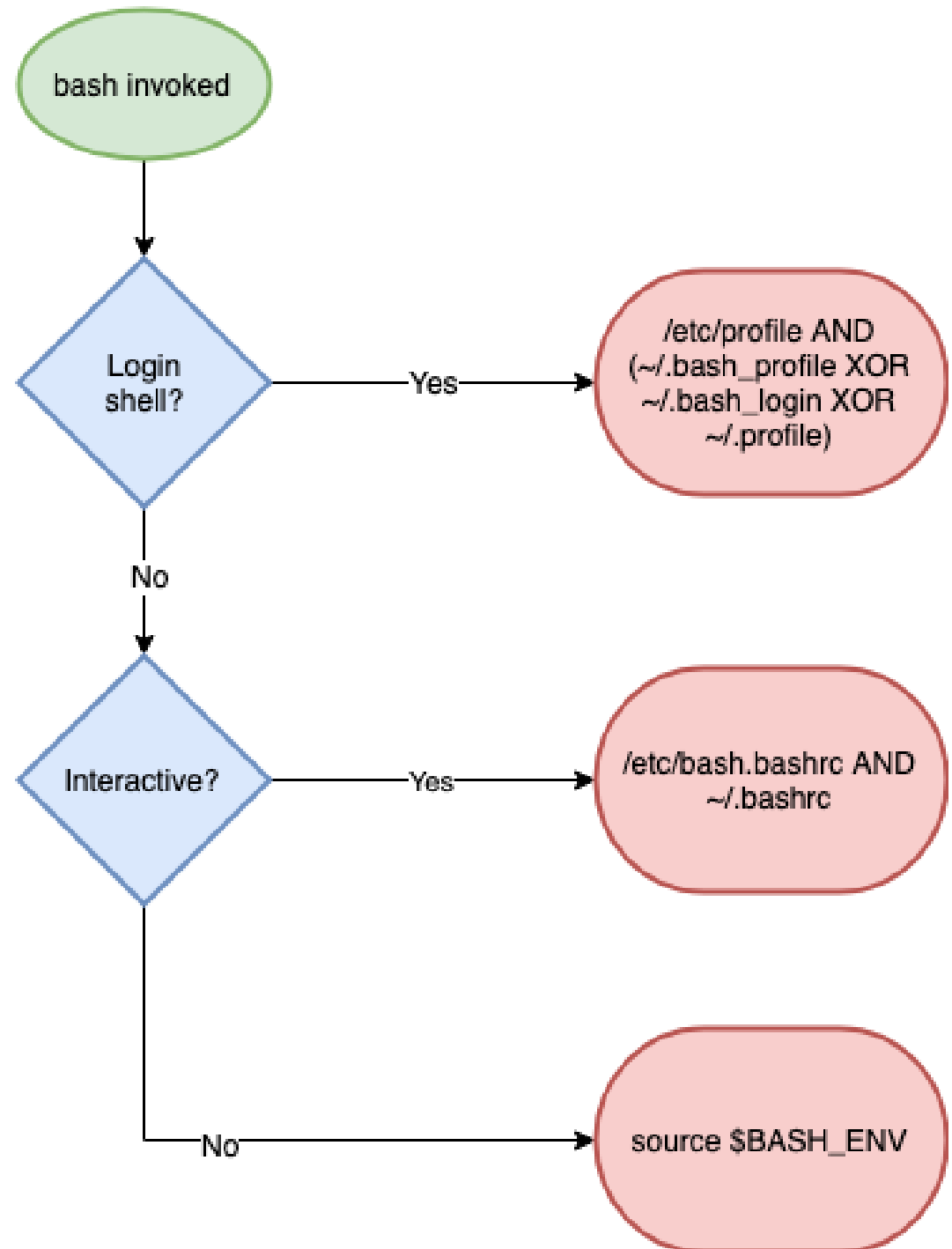@ianmiell

Scripts and Startup

- What shell scripts are

- What happens on bash startup

- This has cost me many hours!

- Executable files

- 'source' vs './'

Walkthrough – Startup Explained

Walkthrough– Startup Explained (simpler)

bash invoked

Login shell? — Yes → /etc/profile AND (~/.bash_profile XOR ~/.bash_login XOR ~/.profile)

No

Interactive? — Yes → /etc/bash.bashrc AND ~/.bashrc

No → source $BASH_ENV

Recap - Scripts and Startup

- What shell scripts are

- How complex bash startup can be

- Keep diagram handy!

3.2 The 'set' builtin

- Setting options in bash

- What POSIX is

- Most useful options:
  - nounset
  - xtrace
  - errexit

- 'set' vs 'shopt'

Recap - 'set'

- Options: + off, - on

- POSIX

- Most common options

- shopt and set

- xtrace, nounset, errexit