Bash Next Steps

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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**

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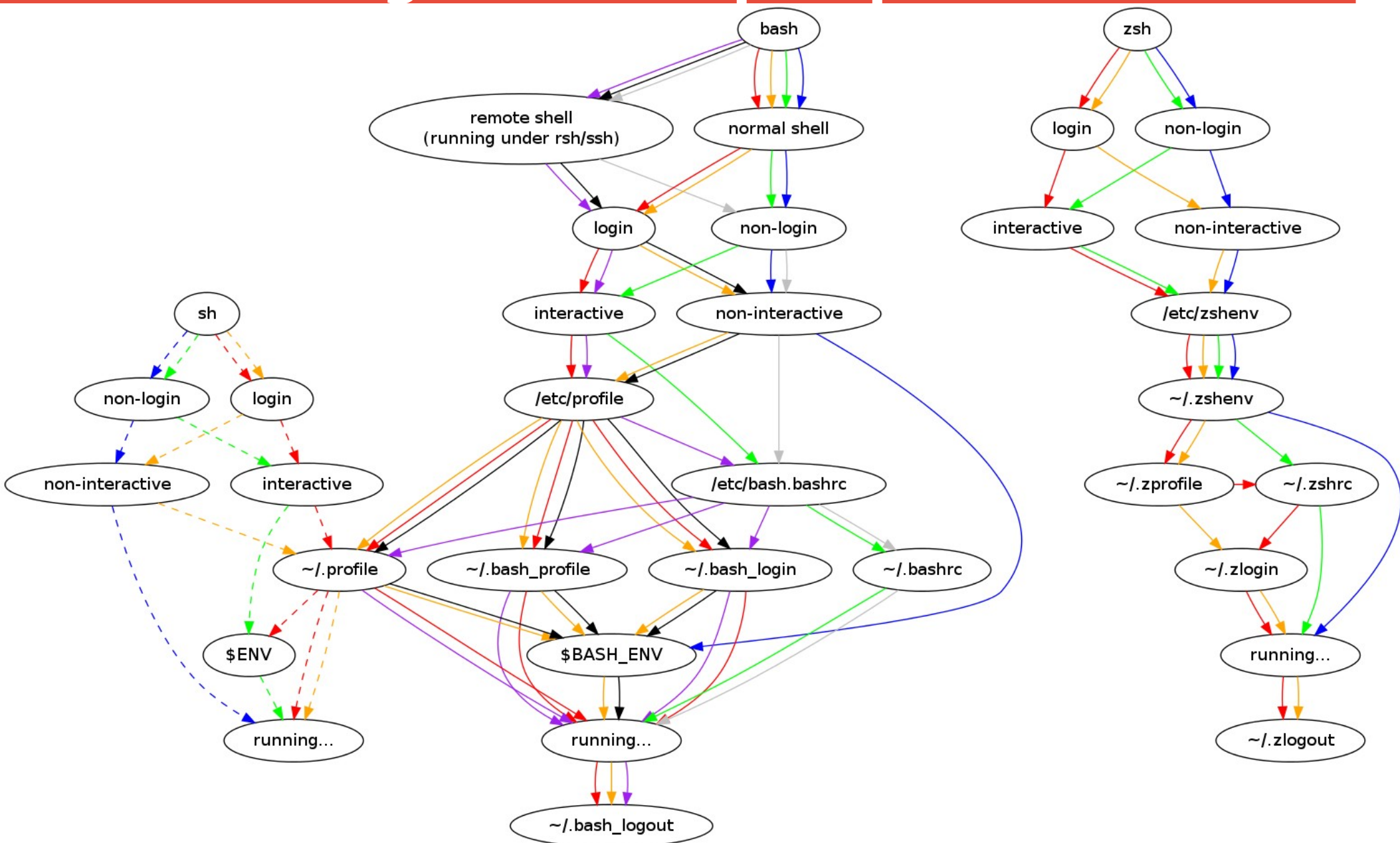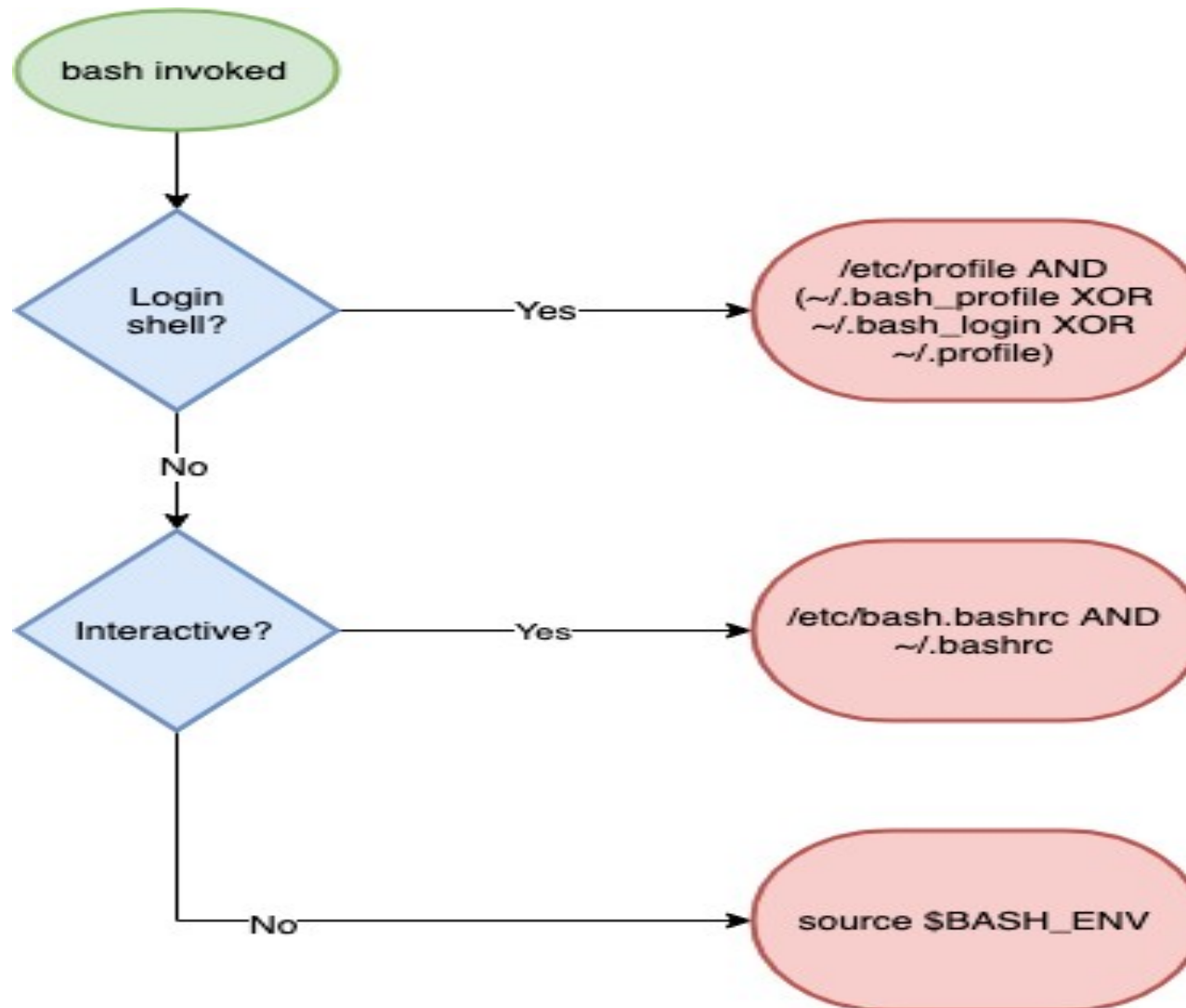
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3.1 Scripts and Startup

- **What shell scripts are**

- **What happens on bash startup**

- **This has cost me many hours!**

- **Executable files**

- **'source' vs './'**

Walkthrough – Startup Explained (simpler)

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**