Introduction to the Bash shell on Linux and Mac OS

Introducing Bash

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Overview

- **Why bash?**
- **What to expect from this course**
- **UNIX, Linux and Mac OS**
- **The UNIX philosophy**

Why bash?

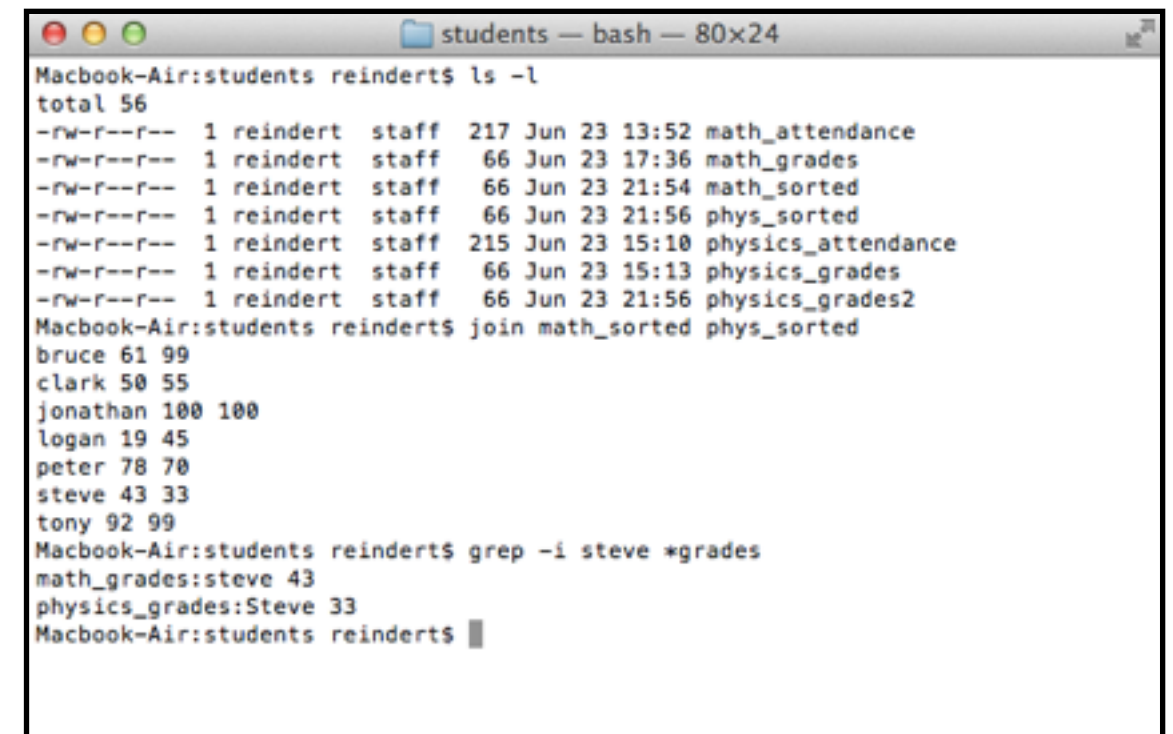- **Bash is a command line shell**
  - □ Gives you access to many UNIX utilities
  - □ Efficiently run complex tasks
  - □ And make them repeatable

- **Some use cases**
  - □ File management
  - □ Processing data
  - □ System administration
  - □ Remote access
  - □ Scripting

- **Dominant shell on UNIX**
  - □ Default on Mac OS and Linux
  - □ Available on other UNIXes, Windows, Android, etc.

```
● ● ●              students — bash — 80×24
Macbook-Air:students reindert$ ls -l
total 56
-rw-r--r--  1 reindert  staff  217 Jun 23 13:52 math_attendance
-rw-r--r--  1 reindert  staff   66 Jun 23 17:36 math_grades
-rw-r--r--  1 reindert  staff   66 Jun 23 21:54 math_sorted
-rw-r--r--  1 reindert  staff   66 Jun 23 21:56 phys_sorted
-rw-r--r--  1 reindert  staff  215 Jun 23 15:10 physics_attendance
-rw-r--r--  1 reindert  staff   66 Jun 23 15:13 physics_grades
-rw-r--r--  1 reindert  staff   66 Jun 23 21:56 physics_grades2
Macbook-Air:students reindert$ join math_sorted phys_sorted
bruce 61 99
clark 50 55
jonathan 100 100
logan 19 45
peter 78 70
steve 43 33
tony 92 99
Macbook-Air:students reindert$ grep -i steve *grades
math_grades:steve 43
physics_grades:Steve 33
Macbook-Air:students reindert$ █
```

What to expect

- **Core features and commands**

- **Modules:**
  - First Steps
  - Basic File Management
  - Using Bash More Effectively
  - Filtering and Processing Text
  - Jobs and Processes
  - Customization

- **Not in this course:**
  - System administration
  - Scripting

UNIX, Linux, Mac OS

- **UNIX**
  - Open Group: Single UNIX Specification
  - IBM AIX, Solaris, HP/UX, Mac OS
- **GNU/Linux**
  - Linux kernel, GNU tools
  - Considered "UNIX-like"
- **BSD:**
  - OpenBSD, FreeBSD, NetBSD, Mac OS
  - BSD kernel, BSD Tools
- **Bash is the default shell on Mac OS and Linux**
  - But tools and utilities differ
  - Example: GNU cp vs BSD cp
  - I will focus on common features

- **When I mention UNIX:**
  - I mean all of these systems in general

The UNIX philosophy

- **Write programs that do one thing and do it well**

- **Write programs to work together.**

- **Write programs to handle text streams**
    - because that is a universal interface.