

Linux Shell

DS 5110/CS 5501: Big Data Systems

Spring 2024

Lecture 2a

Yue Cheng



Some material taken/derived from:

- Wisconsin CS 544 by Tyler Caraza-Harter.

@ 2024 released for use under a [CC BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) license.

Learning objectives

- Setting up an EC2 VM instance via AWS Academy
- Navigate a Linux file system
- Operating within a Linux shell
- Automate repeated tasks

What is a Shell?

A shell program

Loop:

```
print(SOME PROMPT)
cmd = get_input()
run(cmd)
```




If you can type it, you can automate it

A shell program

Loop:

```
print(SOME PROMPT)
cmd = get_input()
run(cmd)
```



Script.sh

Shell commands

...
...

You can run a shell inside of a shell

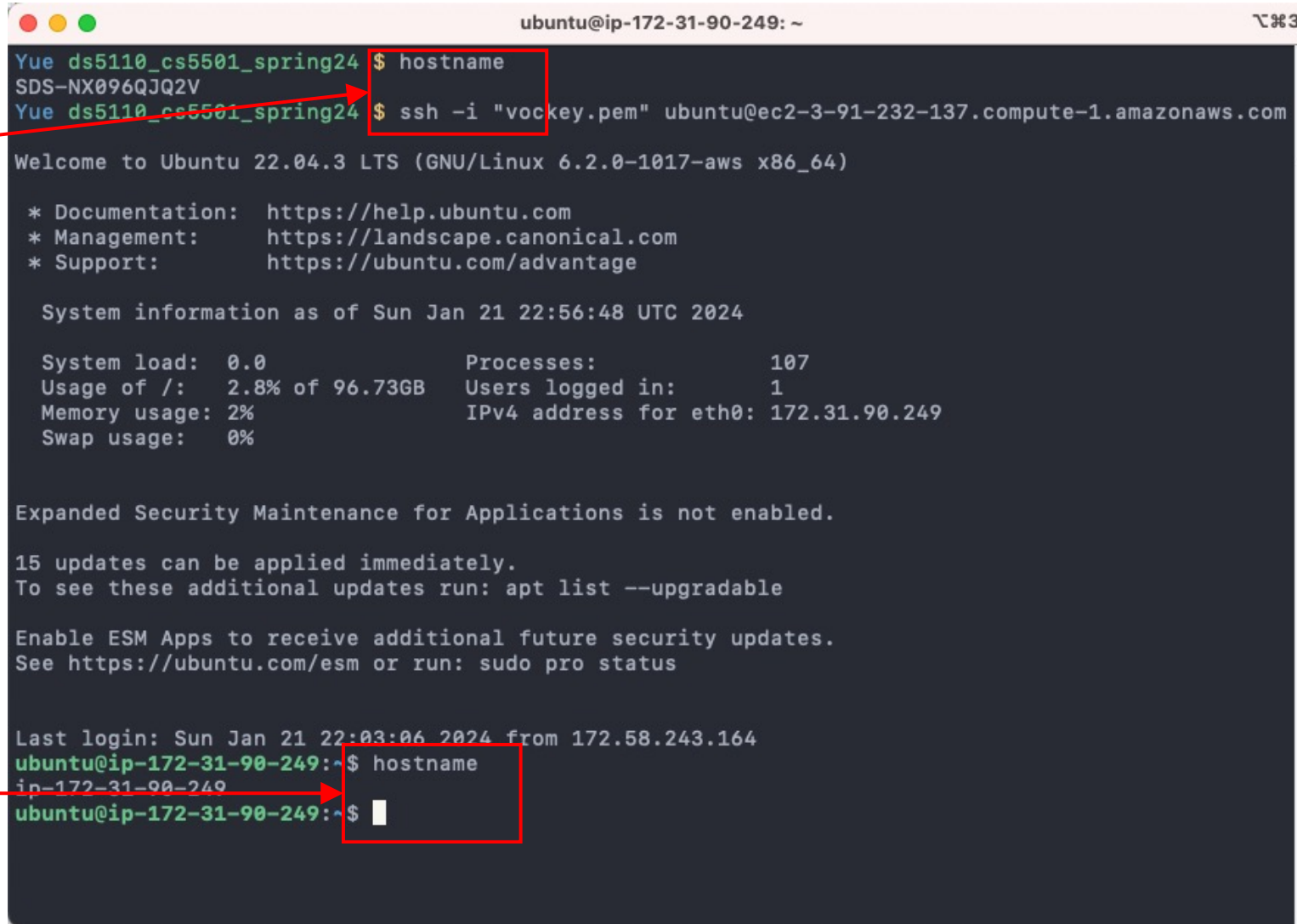
A terminal window titled "bash" with a window icon in the top-left corner and a zoom icon in the top-right corner. The terminal shows a sequence of commands and prompts. Red arrows point from the text "zsh prompt" to the first three lines of the terminal. A blue arrow points from the text "Start running bash" to the command "bash". A red arrow points from the text "bash prompt" to the final line of the terminal. The terminal content is as follows:

```
Yue ~ $ echo hello world
hello world
Yue ~ $ pwd
/Users/yue
Yue ~ $ bash

The default interactive shell is now zsh.
To update your account to use zsh, please run `chsh
-s /bin/zsh`.
For more details, please visit https://support.apple.com/kb/HT208050.
bash-3.2$
```

SSH: Secure shell

Running on
my laptop



The terminal window shows a user named 'Yue' on a laptop with IP 'ds5110_cs5501_spring24' and SDS-ID 'NX096QJQ2V'. They execute the command `ssh -i "vockey.pem" ubuntu@ec2-3-91-232-137.compute-1.amazonaws.com`. The terminal output shows the Ubuntu 22.04.3 LTS login banner, system information, and a successful login as 'ubuntu' on the EC2 instance with IP 'ip-172-31-90-249'.

```
ubuntu@ip-172-31-90-249: ~  
Yue ds5110_cs5501_spring24 $ hostname  
SDS-NX096QJQ2V  
Yue ds5110_cs5501_spring24 $ ssh -i "vockey.pem" ubuntu@ec2-3-91-232-137.compute-1.amazonaws.com  
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 6.2.0-1017-aws x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:       https://ubuntu.com/advantage  
  
System information as of Sun Jan 21 22:56:48 UTC 2024  
  
System load:  0.0                Processes:            107  
Usage of /:   2.8% of 96.73GB    Users logged in:     1  
Memory usage: 2%                IPv4 address for eth0: 172.31.90.249  
Swap usage:   0%  
  
Expanded Security Maintenance for Applications is not enabled.  
  
15 updates can be applied immediately.  
To see these additional updates run: apt list --upgradable  
  
Enable ESM Apps to receive additional future security updates.  
See https://ubuntu.com/esm or run: sudo pro status  
  
Last login: Sun Jan 21 22:03:06 2024 from 172.58.243.164  
ubuntu@ip-172-31-90-249:~$ hostname  
ip-172-31-90-249  
ubuntu@ip-172-31-90-249:~$
```

Running on
my EC2
VM

Demos ...