# LEGEND

Network or machine

Network interface

Private IP address in the local network
(You can see it on your machine
in your network settings,
and on the server with `ip addr`)

`W.X.Y.Z`

Public IP address on the Internet
(find your current network's public IP address with whatismyip.com,
GitHub's current IP address with `ping github.com`,
and your server's public IP address is defined by the AWS elastic IP)

`1.2.3.4`

Command executed on the server
through a secure SSH tunnel
(over a TCP connection on port 22)

HTTP(S) request
(over a TCP connection)

Local network connection

Reading local files

Files transferred with SFTP
through a secure SSH tunnel
(over a TCP connection on port 22)

Commits & files transferred with Git
through SSH over TCP or through HTTPS

Git repository

`/path/to/repo`

Long-lived process
(you can list them and their relationships
on the server with `ps -ef --forest`)

Process Type
`[command executed]`

Short-lived process
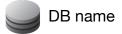(stops when done or with Ctrl-C)

`command`

Application on your local machine
(also a type of process)

Application

Amazon Web Services resource

Resource Type

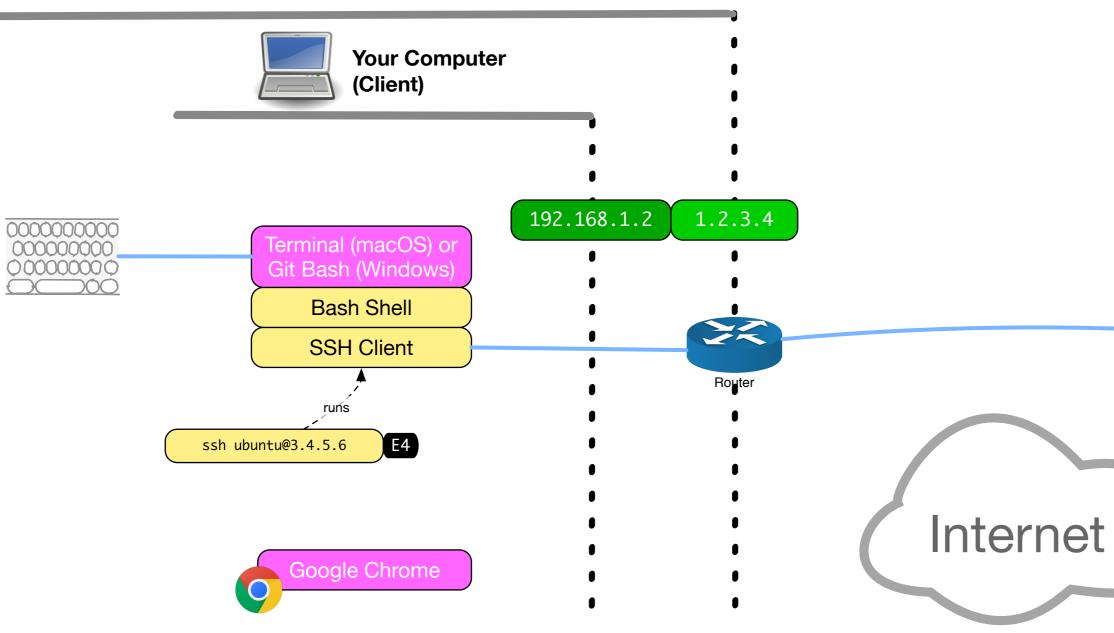Database (MySQL or MongoDB)

DB name

Exercice step

E1 Description

MongoDB request
(over a TCP connection)

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**School Network**

**Amazon Web Services Cloud**

**Your Computer (Client)**

E3 EC2 Elastic IP Address
E2 EC2 Security Group
E1 EC2 Instance
**Your AWS EC2 Instance (Server)**

connects public to private IP address

`192.168.1.2`  `1.2.3.4`

`3.4.5.6`  `172.16.1.2`

Terminal (macOS) or Git Bash (Windows)

Bash Shell

SSH Client

Router

`ssh ubuntu@3.4.5.6` E4

runs

Google Chrome

Internet

Router

SSH Server
`/usr/sbin/sshd -D`

listens

port 22

SSH Session
`sshd: john_doe [priv]`

Pseudo Terminal (PTY)
`sshd: john_doe@pts/0`

Bash Shell
`bash`

port 3000

port 80

port 443

port 3001

`sudo useradd -m john_doe` E5   modifies   /etc/passwd

`sudo passwd john_doe` E5   modifies   /etc/shadow

`sudo usermod -s /bin/bash john_doe` E5   /etc/group

`sudo usermod -a -G sudo john_doe` E5   modifies   /home/john_doe/.ssh/authorized_keys

`(copy Ubuntu's authorized_keys file)` E5   modifies   /etc/hostname

`sudo hostname john-doe.archidep-2018.media` E6

`echo "john-doe.archidep-2018.media" | sudo tee /etc/hostname` E6   modifies

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## EXERCICE: Run your own virtual server on Amazon Web Services (bonus)

E1 Launch an AWS EC2 instance

E2 Configure a security group
(open ports for your instance in the AWS firewall)

E3 Allocate an elastic IP address and assign it to your instance
(this makes your instance reachable on a new public Internet IP address)

E4 Connect to your EC2 instance over SSH

E5 Create your own user

E6 Change your hostname