

AWS - EXERCISE 1

1. Create a new EC2 instance. Name it "UbuntuDockerAWS".

Launch instance

To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.

Launch instance ▲

Migrate a server ↗

Launch instance

Launch instance from template on

Name and tags Info

Name

UbuntuDockerAWS

Add additional tags

▼ Key pair (login) Info

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - required

vockey ▼

↻ Create new key pair

1 / 12

▼ Network settings Info

Edit

Network Info

vpc-0319a0fe077aa36dc

Subnet Info

No preference (Default subnet in any availability zone)

Auto-assign public IP Info

Enable

Firewall (security groups) Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

☒ Create security group

☐ Select existing security group

We'll create a new security group called 'launch-wizard-2' with the following rules:

☒ Allow SSH traffic from

Helps you connect to your instance


Anywhere
0.0.0.0/0

☒ Allow HTTPS traffic from the internet

To set up an endpoint, for example when creating a web server

☒ Allow HTTP traffic from the internet

To set up an endpoint, for example when creating a web server

 Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

×

▼ Summary

Number of instances Info

1

Software Image (AMI)

Canonical, Ubuntu, 22.04 LTS, ...read more
ami-00874d747dde814fa

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

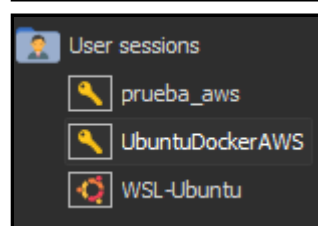
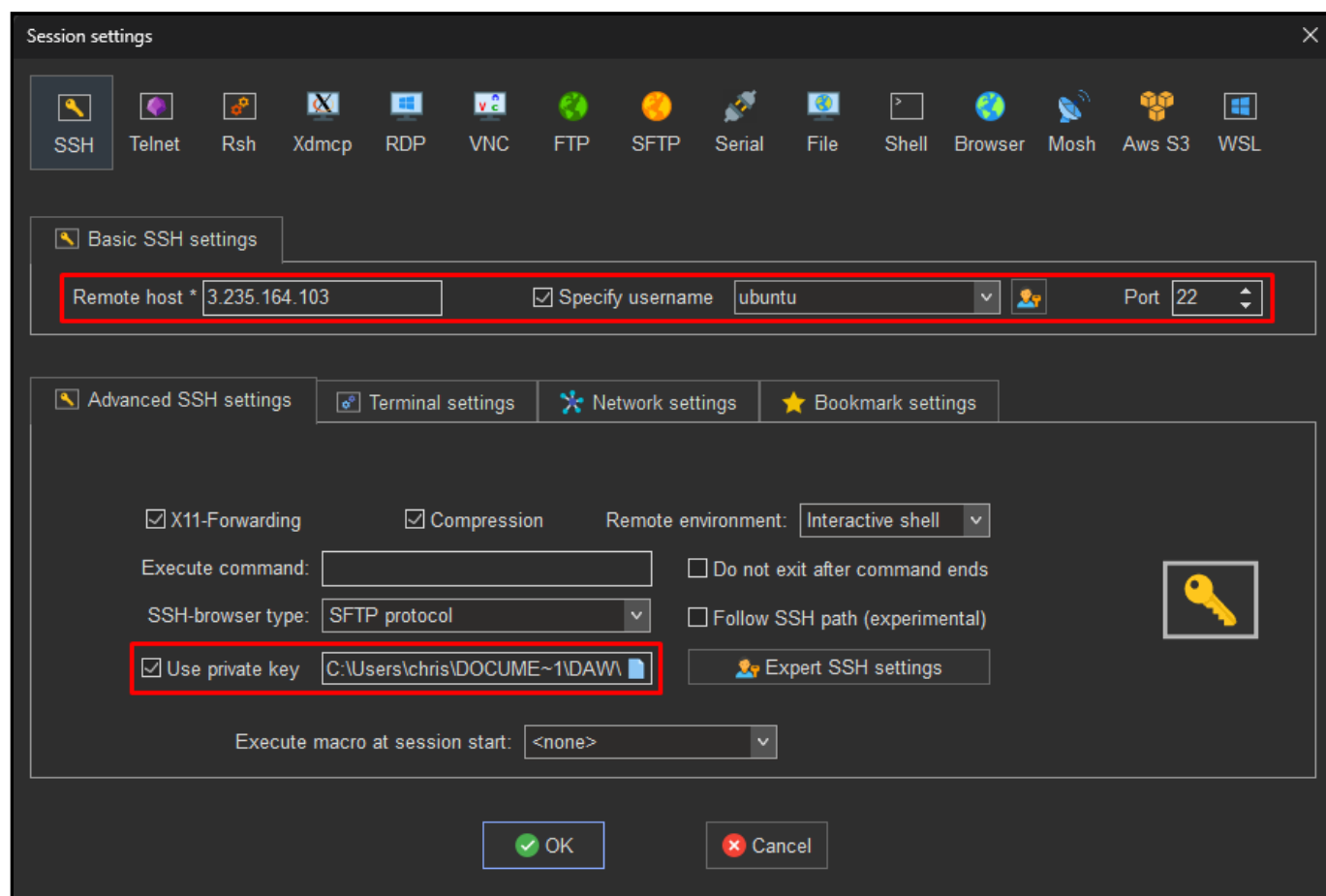
Cancel

Launch instance

2. Use this EC2 instance to do the following tasks:

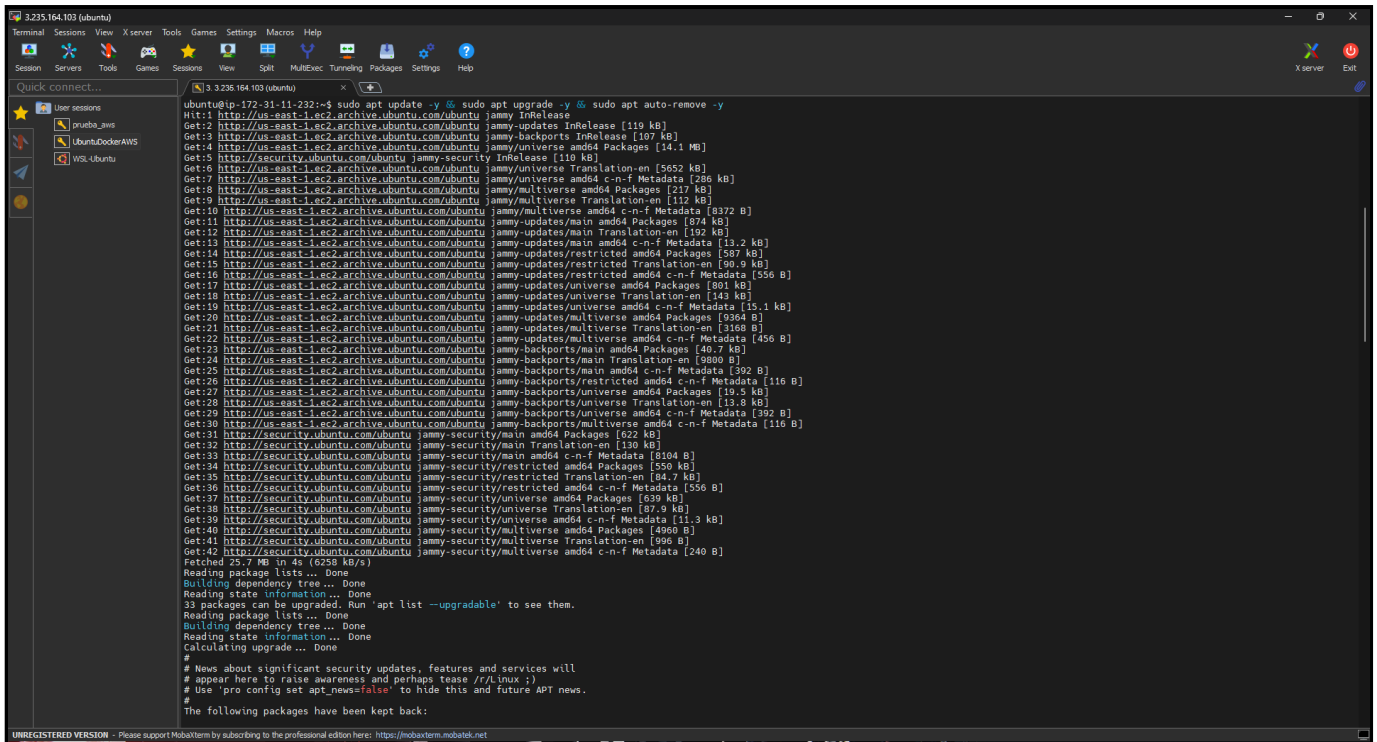
a. Access to this instance using SSH client. Create a new profile.

First, I create a new session and configure it to use my new instance's host and the default user "ubuntu". Also, I downloaded the "PPK" file, since I configured it to use a vockey.



b. Update the Ubuntu packages.

```
sudo apt update -y && sudo apt upgrade -y && sudo apt auto-remove -y
```



c. Install Docker in this server.

```
sudo apt install docker.io
```

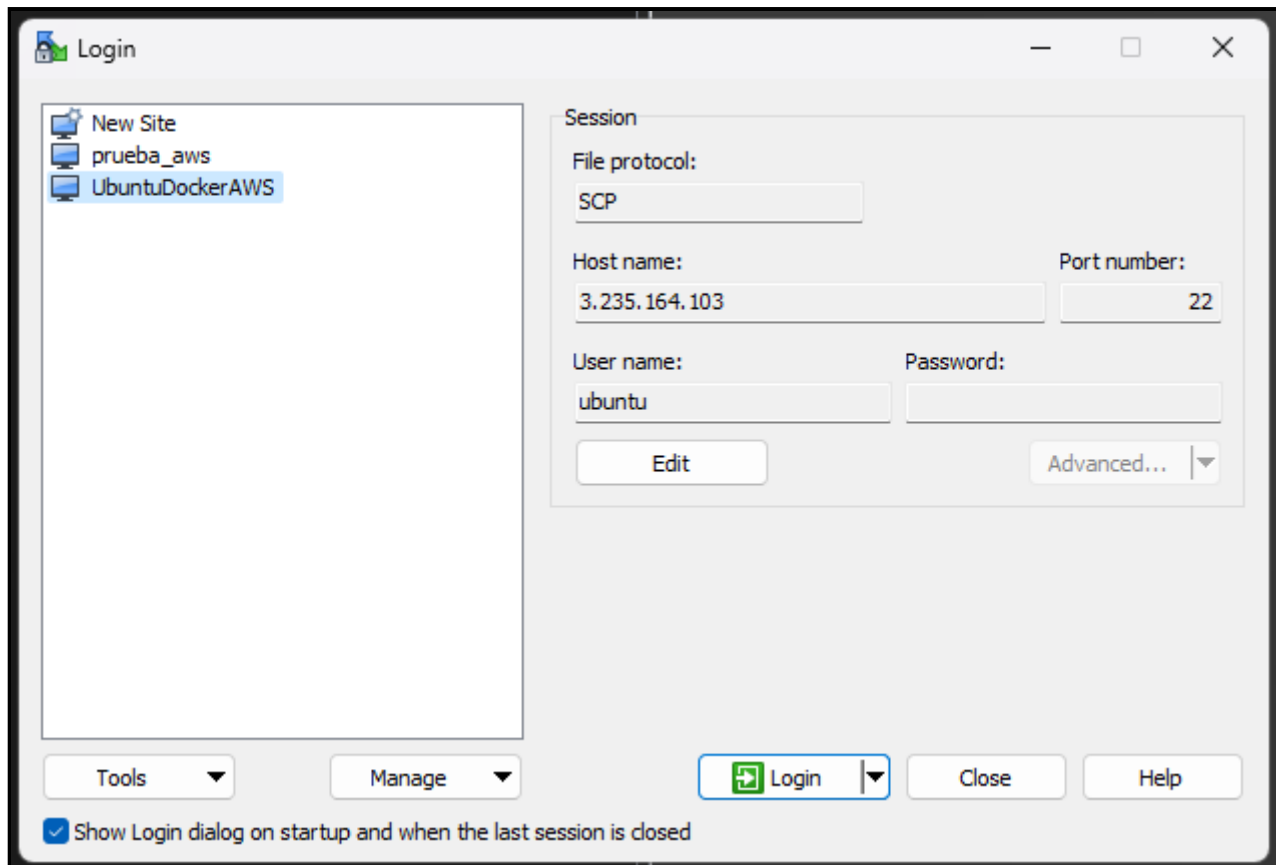
```

ubuntu@ip-172-31-11-232:~$ sudo apt install docker.io
Reading package lists ... Done
Building dependency tree ... Done
Reading state information ... Done
The following additional packages will be installed:
  bridge-utils containerd dns-root-data dnsmasq-base pigz runc ubuntu-fan
Suggested packages:
  ifupdown aufs-tools cgroupfs-mount | cgroup-lite debootstrap docker-doc rinse zfs-fuse | zfsutils
The following NEW packages will be installed:
  bridge-utils containerd dns-root-data dnsmasq-base docker.io pigz runc ubuntu-fan
0 upgraded, 8 newly installed, 0 to remove and 6 not upgraded.
Need to get 66.8 MB of archives.
After this operation, 287 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 pigz amd64 2.6-1 [63.6 kB]
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 bridge-utils amd64 1.7-1ubuntu3 [34.4 kB]
Get:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 runc amd64 1.1.0-0ubuntu1.1 [4242 kB]
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 containerd amd64 1.5.9-0ubuntu3.1 [28.1 MB]
Get:5 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/main amd64 dns-root-data all 2021011101 [5256 B]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 dnsmasq-base amd64 2.86-1.1ubuntu0.1 [354 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 docker.io amd64 20.10.12-0ubuntu4 [34.0 MB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 ubuntu-fan all 0.12.16 [35.2 kB]
Fetched 66.8 MB in 2s (40.3 MB/s)
Preconfiguring packages ...
Selecting previously unselected package pigz.
(Reading database ... 63571 files and directories currently installed.)
Preparing to unpack .../0-pigz_2.6-1_amd64.deb ...
Unpacking pigz (2.6-1) ...
Selecting previously unselected package bridge-utils.
Preparing to unpack .../1-bridge-utils_1.7-1ubuntu3_amd64.deb ...
Unpacking bridge-utils (1.7-1ubuntu3) ...
Selecting previously unselected package runc.
Preparing to unpack .../2-runc_1.1.0-0ubuntu1.1_amd64.deb ...
Unpacking runc (1.1.0-0ubuntu1.1) ...
Selecting previously unselected package containerd.
Preparing to unpack .../3-containerd_1.5.9-0ubuntu3.1_amd64.deb ...
Unpacking containerd (1.5.9-0ubuntu3.1) ...
Selecting previously unselected package dns-root-data.
Preparing to unpack .../4-dns-root-data_2021011101_all.deb ...
Unpacking dns-root-data (2021011101) ...
Selecting previously unselected package dnsmasq-base.
Preparing to unpack .../5-dnsmasq-base_2.86-1.1ubuntu0.1_amd64.deb ...
Unpacking dnsmasq-base (2.86-1.1ubuntu0.1) ...
Selecting previously unselected package docker.io.
Preparing to unpack .../6-docker.io_20.10.12-0ubuntu4_amd64.deb ...
Unpacking docker.io (20.10.12-0ubuntu4) ...
Selecting previously unselected package ubuntu-fan.
Preparing to unpack .../7-ubuntu-fan_0.12.16_all.deb ...
Unpacking ubuntu-fan (0.12.16) ...
Setting up dnsmasq-base (2.86-1.1ubuntu0.1) ...
Setting up runc (1.1.0-0ubuntu1.1) ...
Setting up dns-root-data (2021011101) ...
Setting up bridge-utils (1.7-1ubuntu3) ...
Setting up pigz (2.6-1) ...
Setting up containerd (1.5.9-0ubuntu3.1) ...
Created symlink /etc/systemd/system/multi-user.target.wants/containerd.service → /lib/systemd/system/containerd.service.

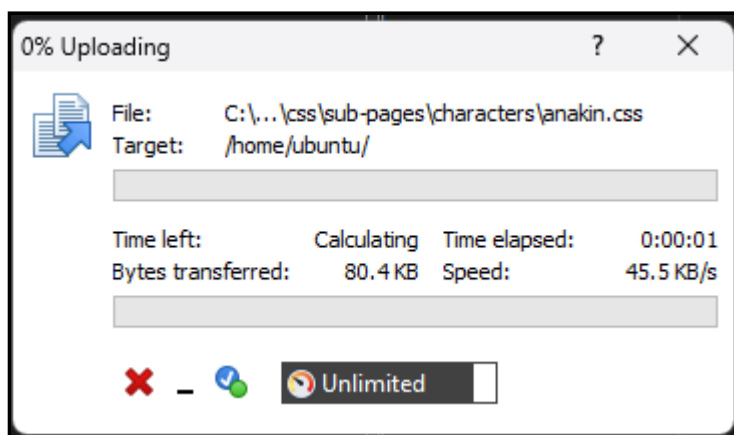
```

d. Use WinSCP to transfer the content of a static web page to home directory.

I create a new SCP connection with the host in WinSCP.



And now I can transfer my static project to the server home directory.

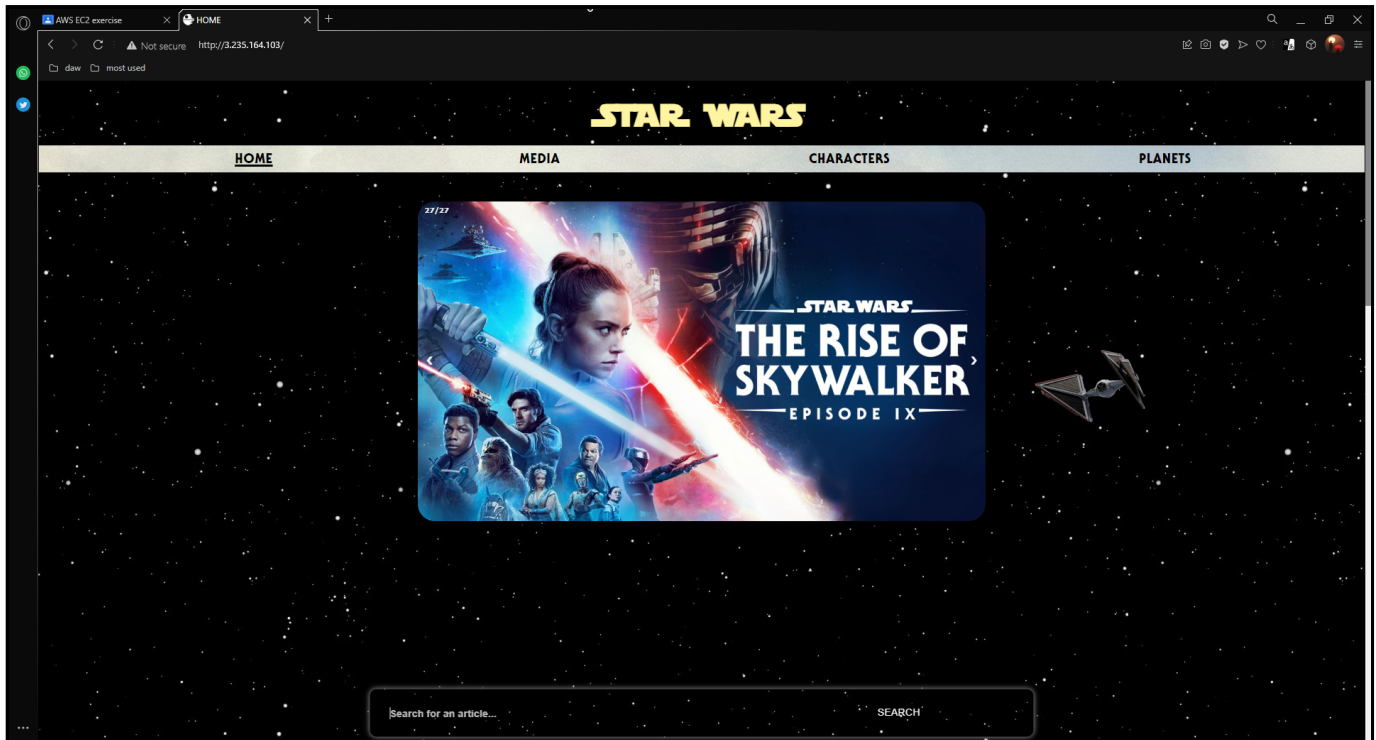


e. Run a "nginx:1.22.1" docker to publish this static web page (port 80).

```
sudo docker run -d -p 80:80 -v ~/fin_1er_trimestre:/usr/share/nginx/html
nginx:1.22.1
```

```
ubuntu@ip-172-31-11-232:~$ sudo docker run -d -p 80:80 -v ~/fin_1er_trimestre:/usr/share/nginx/html nginx:1.22.1
Unable to find image 'nginx:1.22.1' locally
1.22.1: Pulling from library/nginx
bb263680fed1: Pull complete
c13df232596d: Pull complete
2b1f6cfd11a1: Pull complete
cef27009be5d: Pull complete
9317a4486630: Pull complete
023932eaae7e: Pull complete
Digest: sha256:6b9d1c6e9826964d65710927416b526ec5939545e66ad42326ccb338880f2c5d
Status: Downloaded newer image for nginx:1.22.1
00e308bf23a5d4e5731d1f58345314df83074606ce599cdfc3c8ea476e37256
```

It is now possible to visit "3.235.164.103:80" and visit the page, located on the docker nginx server.



3. Now consider you are not using Windows but an Ubuntu console:

a. Access to previous "UbuntuDockerAWS" EC2 instance.

To be able to do this, I first need to download the "PEM" vockey file for the instance.

```
chmod 400 labsuser.pem
```

```
christian@christianms13:/mnt/c/Users/chris/Documents/DAW/.extra/aws_ej1$ chmod 400 labsuser.pem
christian@christianms13:/mnt/c/Users/chris/Documents/DAW/.extra/aws_ej1$ ls -la
total 8
drwxrwxrwx 1 christian christian 512 Feb  9 17:57 
drwxrwxrwx 1 christian christian 512 Feb  9 17:24 
-r-xr-xr-x 1 christian christian 1678 Feb  9 17:57 labsuser.pem
-rwxrwxrwx 1 christian christian 1438 Feb  9 17:24 labsuser.ppk
```

Once I have this file, I need to change it's permissions:

```
ssh -i "labsuser.pem" ubuntu@ec2-3-235-164-103.compute-1.amazonaws.com
```

```
christian@christianms13:~$ ssh -i "vockey.pem" ubuntu@ec2-3-235-164-103.compute-1.amazonaws.com
Welcome to Ubuntu 22.04.1 LTS (GNU/Linux 5.15.0-1028-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Thu Feb  9 17:55:48 UTC 2023

System load:  0.0               Processes:    106
Usage of /:   29.1% of 7.57GB   Users logged in: 0
Memory usage: 27%              IPv4 address for docker0: 172.17.0.1
Swap usage:   0%               IPv4 address for eth0: 172.31.11.232

0 updates can be applied immediately.

Last login: Thu Feb  9 17:45:24 2023 from 46.37.76.3
ubuntu@ip-172-31-11-232:~$
```

b. Copy using "scp" command a directory with another static web page to the "UbuntuDockerAWS" EC2 instance.

First of all, since I am going to use the same web page, I need to create an additional directory in the user home of "UbuntuDockerAWS" to locate the page in there.

```
mkdir auxiliar
```

Now that I have a place to copy the page in, I can use the SCP command:

```
scp -i "vockey.pem"
/mnt/c/Users/chris/Documents/DAW/lenguajes_de_marcas/fin_1er_trimestre/*
ubuntu@ec2-3-235-164-103.compute-1.amazonaws.com:/home/ubuntu/auxiliar
```



```
christian@christianms13:~$ scp -i "vockey.pem" -r /mnt/c/Users/chris/Documents/DAW/lenguajes_de_marcas/fin_1er_trimestre/* ubuntu@ec2-3-235-164-103.compute-1.amazonaws.com:/home/ubuntu/auxiliar
characters_style.css 100% 14KB 76.8KB/s 00:00
main_style.css 100% 38KB 203.5KB/s 00:00
media_style.css 100% 16KB 172.1KB/s 00:00
planets_style.css 100% 12KB 132.5KB/s 00:00
anakin.css 100% 12KB 127.2KB/s 00:00
finn.css 100% 12KB 127.1KB/s 00:00
han.css 100% 12KB 122.3KB/s 00:00
leia.css 100% 12KB 126.4KB/s 00:00
luke.css 100% 12KB 127.6KB/s 00:00
obi.css 100% 12KB 124.4KB/s 00:00
padme.css 100% 12KB 126.6KB/s 00:00
poe.css 100% 12KB 127.0KB/s 00:00
rey.css 100% 12KB 127.7KB/s 00:00
episode1.css 100% 12KB 127.4KB/s 00:00
episode2.css 100% 12KB 127.3KB/s 00:00
episode3.css 100% 12KB 127.6KB/s 00:00
episode4.css 100% 12KB 127.6KB/s 00:00
episode5.css 100% 12KB 125.8KB/s 00:00
episode6.css 100% 12KB 125.7KB/s 00:00
episode7.css 100% 12KB 127.4KB/s 00:00
episode8.css 100% 12KB 126.5KB/s 00:00
episode9.css 100% 12KB 125.6KB/s 00:00
rogue_one.css 100% 12KB 127.5KB/s 00:00
solo.css 100% 12KB 126.2KB/s 00:00
tcw.css 100% 12KB 127.5KB/s 00:00
coruscant.css 100% 12KB 123.6KB/s 00:00
dagobah.css 100% 12KB 126.7KB/s 00:00
geonosis.css 100% 12KB 126.4KB/s 00:00
jakku.css 100% 12KB 126.5KB/s 00:00
kamino.css 100% 12KB 128.4KB/s 00:00
tatooine.css 100% 12KB 128.3KB/s 00:00
riccione-serial-medium-regular.ttf 100% 52KB 547.5KB/s 00:00
Aurebesh Bold Italic.otf 100% 78KB 416.8KB/s 00:00
Aurebesh Bold.otf 100% 77KB 419.1KB/s 00:00
Aurebesh Condensed Bold Italic.otf 100% 78KB 828.3KB/s 00:00
Aurebesh Condensed Bold.otf 100% 77KB 823.1KB/s 00:00
Aurebesh Condensed Italic.otf 100% 78KB 841.0KB/s 00:00
Aurebesh Condensed.otf 100% 77KB 827.1KB/s 00:00
Aurebesh Italic.otf 100% 81KB 869.1KB/s 00:00
Aurebesh.otf 100% 88KB 851.3KB/s 00:00
SF Distant Galaxy Alternate Italic.ttf 100% 59KB 609.7KB/s 00:00
SF Distant Galaxy Alternate.ttf 100% 59KB 616.9KB/s 00:00
SF Distant Galaxy AltOutline Italic.ttf 100% 89KB 938.8KB/s 00:00
SF Distant Galaxy AltOutline.ttf 100% 84KB 848.0KB/s 00:00
SF Distant Galaxy Italic.ttf 100% 58KB 618.5KB/s 00:00
SF Distant Galaxy Outline Italic.ttf 100% 89KB 941.4KB/s 00:00
SF Distant Galaxy Outline.ttf 100% 83KB 877.9KB/s 00:00
SF Distant Galaxy Symbols Italic.ttf 100% 42KB 453.5KB/s 00:00
SF Distant Galaxy Symbols.ttf 100% 48KB 483.7KB/s 00:00
```

c. Run a "nginx:perl" docker to publish this static web page in port 8080.

Now from the "UbuntuDockerAWS" instance:

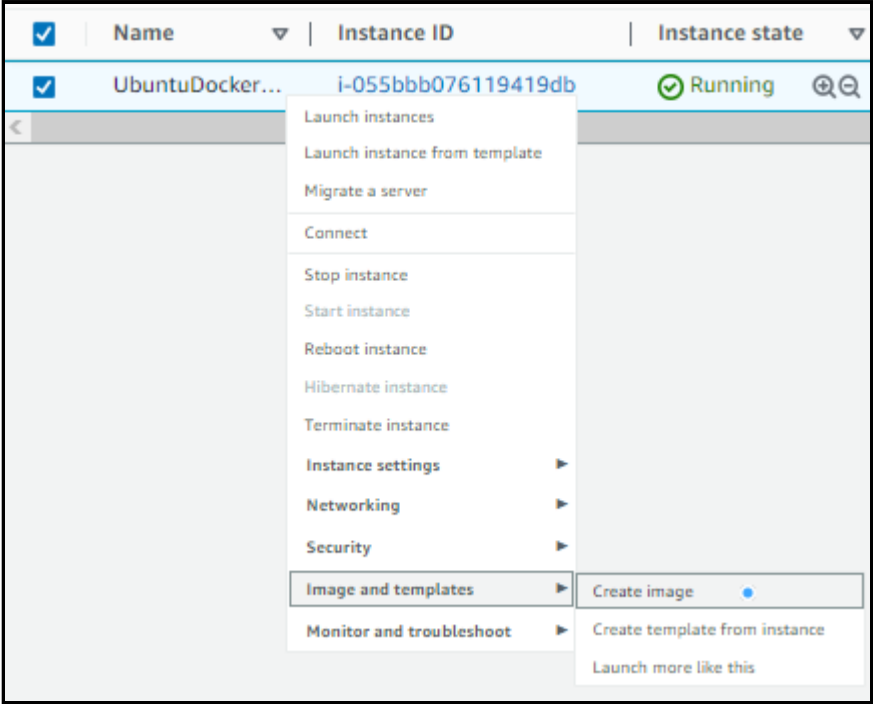
```
sudo docker run -d -p 8080:8080 -v
~/auxiliar/fin_1er_trimestre:/usr/share/nginx/html nginx:perl
```

```
ubuntu@ip-172-31-11-232:~$ sudo docker run -d -p 8080:8080 -v ~/auxiliar/fin_1er_trimestre:/usr/share/nginx/html nginx:perl
Unable to find image 'nginx:perl' locally
perl: Pulling from library/nginx
bb263680fed1: Already exists
258f176fd226: Pull complete
a0bc35e70773: Pull complete
077b9569ff86: Pull complete
3082a16f3b61: Pull complete
7e9b29976cce: Pull complete
00559ba6ebd1: Pull complete
Digest: sha256:58be63045ce255b5f1fa93d169e3dc1632e18b6e7bc7f82ad3c77ccf6eae3b80
Status: Downloaded newer image for nginx:perl
66b1ee602f1d033f4c28a5d8807e09c1e8720233e8bbcc74ddf854c7d741ef51
```

And yet again, I'm able to visit the "3.235.164.103:8080" URL.

4. Use "UbuntuDockerAWS" to create a new AMI (Amazon Machine Image). Thus, we can create easily new EC2 instances based in "UbuntuDockerAWS" with all work already done to be reused.

From the instances panel at AWS, I right-click on the "UbuntuDockerAWS" instance and select "Create image".



I give it a name and crate it:

Create image [Info](#)

An image (also referred to as an AMI) defines the programs and settings that are applied when you launch an EC2 instance. You can create an image from the configuration of an existing instance.

Instance ID

i-055bbb076119419db (UbuntuDockerAWS)

Image name

UbuntuDockerAWSImage

Maximum 127 characters. Can't be modified after creation.

Image description - optional

Image description

Maximum 255 characters

No reboot

☐ Enable

Instance volumes

Storage type	Device	Snapshot	Size	Volume type	IOPS	Throughput	Delete on termination	Encrypted
EBS	/dev/...	Create new snapshot fr...	8	EBS General Purpose S...	100		<input checked="" type="checkbox"/> Enable	<input type="checkbox"/> Enable

Add volume

During the image creation process, Amazon EC2 creates a snapshot of each of the above volumes.

Tags - optional

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

☒ Tag image and snapshots together
Tag the image and the snapshots with the same tag.

☐ Tag image and snapshots separately
Tag the image and the snapshots with different tags.

No tags associated with the resource.

Add new tag

You can add up to 50 more tags.

Cancel

Create image

To see the new AMI, I clicked on the left panel option "AMIs".

aws

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Security Groups

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Key Pairs

Network Interfaces

Load Balancing

Load Balancers

Target Groups

Amazon Machine Images (AMIs) (1) Info

Owned by me Find AMI by attribute or tag

Recycle Bin EC2 Image Builder Actions Launch Instance from AMI

	Name	AMI ID	AMI name	Source	Owner	Visibility	Status	Creation date	Platform	Root device
<input type="checkbox"/>	-	ami-02868f989bc014104	UbuntuDockerAWSImage	808925875888/UbuntuDockerAWSImage	808925875888	Private	Pending	2023/02/09 19:12 GMT+1	Linux/UNIX	ebs

Now this image is 100% ready to be used to create new instances based on the "UbuntuDockerAWS" instance.

