

# DevOps Assignment

## 1. Launch an EC2 instance and login via SSH furthermore, install httpd (Apache).

### Launch EC2 and login via SSH

**Launch an instance** [info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

**Name and tags** [info](#)

Name: saajanshrestha\_devops\_assignment [Add additional tags](#)

**Application and OS Images (Amazon Machine Image)** [info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or browse for AMIs if you don't see what you are looking for below.

Search your full catalog including 1000s of application and OS images.

**Recents** **Quick Start**

Amazon Linux Ubuntu Windows Red Hat SUSE Linux

Amazon Machine Image (AMI)

Ubuntu Server 22.04 LTS (HVM), SSD Volume Type [Free tier eligible](#)

ami-052fcd3f9da4825 (64-bit x86\_64) / ami-07095c0c55ce4203 (64-bit ARM) / ami-07095c0c55ce4203 (64-bit ARM) / ami-07095c0c55ce4203 (64-bit ARM) / ami-07095c0c55ce4203 (64-bit ARM)

Virtualization: hvm | ENA enabled: true | Root device type: ebs

Description

Canonical, Ubuntu, 22.04 LTS, amd64 jammy image build on 2022-06-09

**Summary**

Number of instances [info](#)

1

**Software Image (AMI)**

Canonical, Ubuntu, 22.04 LTS, ...[read more](#)

ami-052fcd3f9da4825

**Virtual server type (instance type)**

t2.micro

**Firewall (security group)**

New security group

**Storage (volumes)**

1 volume(s) - 8 GiB

**Free tier:** In your first year includes 750 hours of t2.micro (or t3.micro) in the Region in which t2.micro is unavailable. Instance usage on free tier AMIs per month: 30 GiB of EBS storage, 2 million I/Os, 1 GiB of snapshots, and 100 GB of bandwidth to the internet.

[Cancel](#) [Launch Instance](#)

**Instance type** [info](#)

Instance type

t2.micro [Free tier eligible](#) [Compare instance types](#)

Family: t2 | 1 vCPU | 1 GiB Memory

On-Demand Linux pricing: 0.0116 USD per Hour

On-Demand Windows pricing: 0.0162 USD per Hour

**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

saajan\_devops\_assignment [Create new key pair](#)

**Network settings** [Get guidance](#) [Edit](#)

**Network** [info](#)

vpc-00f8984b2df206c70 | Default VPC

**Subnet** [info](#)

subnet-0030671340cb71043 | axis-subnet-1

**Auto-assign public IP** [info](#)

Disable

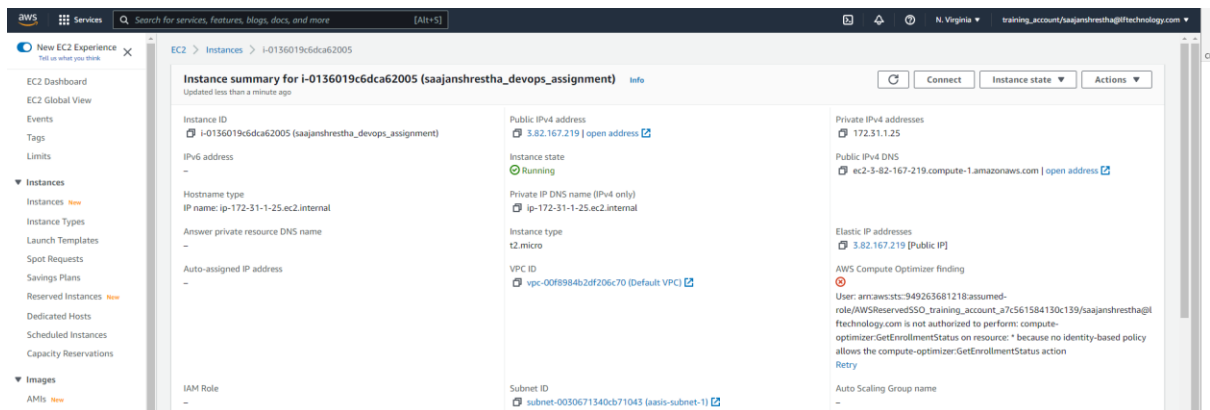
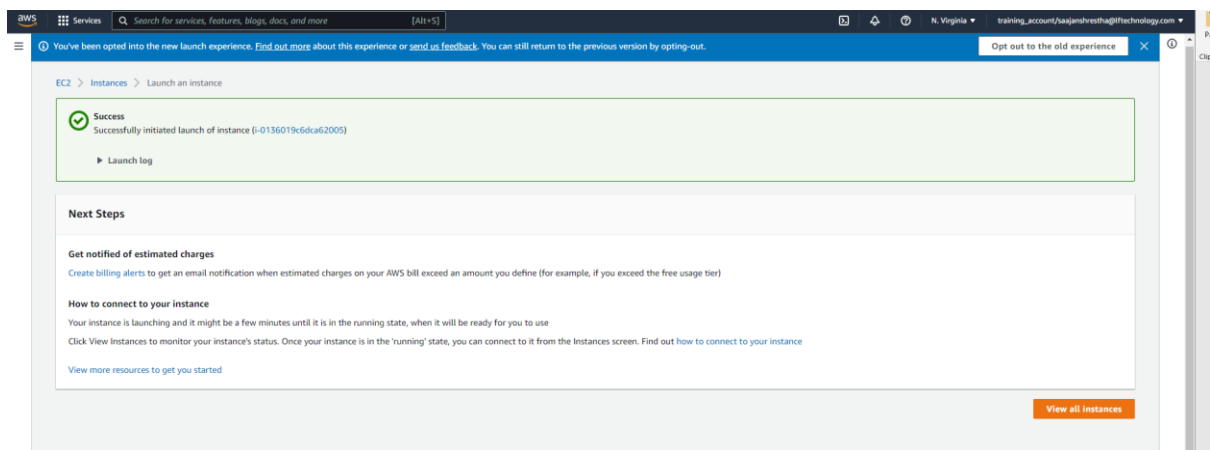
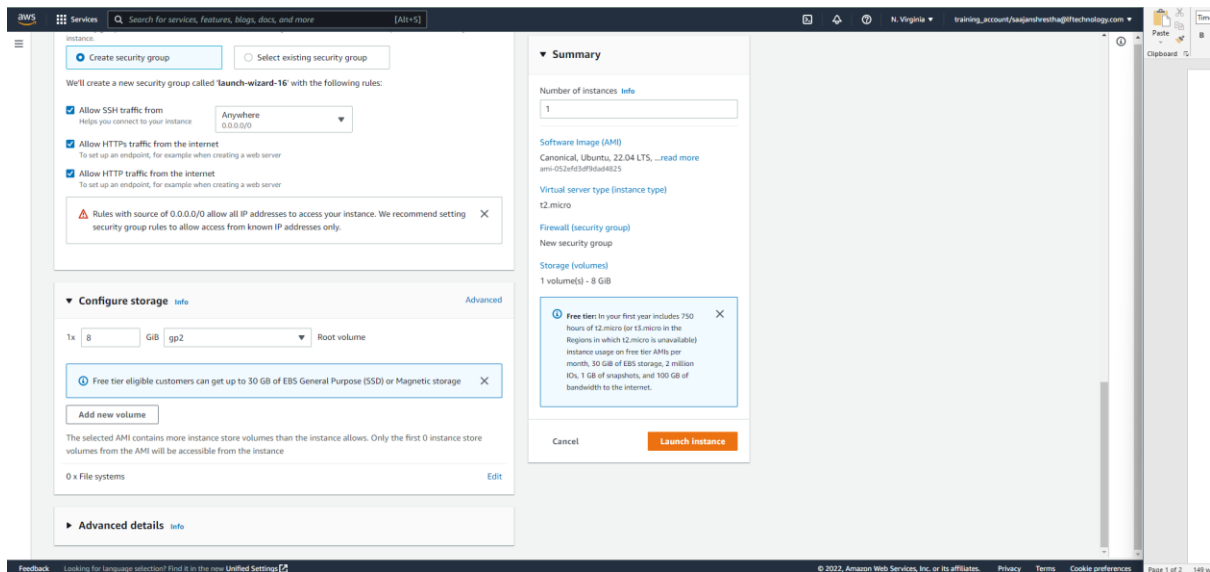
**Firewall (security groups)** [info](#)

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-16' with the following rules:

## [DevOps Assignment – Saajan Shrestha]



```
PS C:\Users\Asus\Downloads> ssh -i "saajan_devops_assignment.pem" ubuntu@ec2-3-82-167-219.compute-1.amazonaws.com
The authenticity of host 'ec2-3-82-167-219.compute-1.amazonaws.com (3.82.167.219)' can't be established.
ECDSA key fingerprint is SHA256:B4m6t/8TW+7oLVXTh90UFD7iUjhSJ28VuqxIuMlpfo.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-82-167-219.compute-1.amazonaws.com,3.82.167.219' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 22.04 LTS (GNU/Linux 5.15.0-1011-aws x86_64)

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

System information as of Tue Aug 9 16:05:43 UTC 2022

System load:  0.0068359375      Processes:            99
Usage of /:   19.0% of 7.58GB   Users logged in:     0
Memory usage: 20%              IPv4 address for eth0: 172.31.1.25
Swap usage:   0%

0 updates can be applied immediately.

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-1-25:~$ ls
```

## Install apache2:

```
ubuntu@ip-172-31-1-25:~$ sudo apt install apache2
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Enabling module auth_basic.
Enabling module access_compat.
Enabling module authn_file.
Enabling module authz_user.
Enabling module alias.
Enabling module dir.
Enabling module autoindex.
Enabling module env.
Enabling module mime.
Enabling module negotiation.
Enabling module setenvif.
Enabling module filter.
Enabling module deflate.
Enabling module status.
Enabling module reqtimeout.
Enabling conf charset.
Enabling conf localized-error-pages.
Enabling conf other-vhosts-access-log.
Enabling conf security.
Enabling conf serve-cgi-bin.
Enabling site 000-default.
Created symlink /etc/systemd/system/multi-user.target.wants/apache2.service → /lib/systemd/system/apache2.service.
Created symlink /etc/systemd/system/multi-user.target.wants/apache-htcacheclean.service → /lib/systemd/system/apache-htcacheclean.service.
Processing triggers for ufw (0.36.1-4build1) ...
Processing triggers for man-db (2.10.2-1) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-1-25:~$
```

**2. Create a Dockerfile for NodeJS and react and push the created docker images to the docker hub repository.**

**React App:** <https://hub.docker.com/r/saajanshrestha/react-devops-assignment/tags>

```
ubuntu@ip-172-31-1-25:~/react-app$ npx create-react-app new_react_app

Creating a new React app in /home/ubuntu/react-app/new_react_app.

Installing packages. This might take a couple of minutes.
Installing react, react-dom, and react-scripts with cra-template...

added 1395 packages in 60s

205 packages are looking for funding
  run `npm fund` for details

Initialized a git repository.

Installing template dependencies using npm...

added 48 packages in 6s

205 packages are looking for funding
  run `npm fund` for details
Removing template package using npm...

removed 1 package, and audited 1443 packages in 4s

205 packages are looking for funding
  run `npm fund` for details

6 high severity vulnerabilities

To address all issues (including breaking changes), run:
  npm audit fix --force

Run `npm audit` for details.

Created git commit.

Success! Created new_react_app at /home/ubuntu/react-app/new_react_app
Inside that directory, you can run several commands:

  npm start
    Starts the development server.

  npm run build
    Bundles the app into static files for production.

  npm test
    Starts the test runner.

  npm run eject
    Removes this tool and copies build dependencies, configuration files
    and scripts into the app directory. If you do this, you can't go back!

We suggest that you begin by typing:

  cd new_react_app
  npm start

Happy hacking!
```

```
ubuntu@ip-172-31-1-25:~$ ls
react-app
ubuntu@ip-172-31-1-25:~$ cd react-app/new_react_app/
ubuntu@ip-172-31-1-25:~/react-app/new_react_app$ ls
Dockerfile  README.md  node_modules  package-lock.json  package.json  public  src
ubuntu@ip-172-31-1-25:~/react-app/new_react_app$ nano Dockerfile
ubuntu@ip-172-31-1-25:~/react-app/new_react_app$ cat Dockerfile
FROM node:alpine
WORKDIR /app
COPY package*.json ./
RUN npm install
COPY . ./
CMD ["npm", "run", "start"]
```

```
ubuntu@ip-172-31-1-25:~/react-app/new_react_app$ sudo docker build -t react-docker:dev .
Sending build context to Docker daemon   302MB
Step 1/6 : FROM node:alpine
alpine: Pulling from library/node
213ec9aee27d: Pull complete
eb184890be96: Pull complete
95a3a46a0ed7: Pull complete
f264c3d43a2b: Pull complete
Digest: sha256:5f9dc9d8b5e53b9b568c1f222be416b1258b6277063df7bbaa2c80be07e6a96b
Status: Downloaded newer image for node:alpine
--> eecd5234277e
Step 2/6 : WORKDIR /app
--> Running in 91922dcd6420
Removing intermediate container 91922dcd6420
--> 648cd3454504
Step 3/6 : COPY package*.json ./
--> f99e19d20db7
Step 4/6 : RUN npm install
--> Running in b97a61c0a788
npm WARN deprecated stable@0.1.8: Modern JS already guarantees Array#sort() is a stable sort, so this library is deprecated.
aScript/Reference/Global_Objects/Array/sort#browser_compatibility
npm WARN deprecated svgo@1.3.2: This SVGO version is no longer supported. Upgrade to v2.x.x.

added 1442 packages, and audited 1443 packages in 42s

205 packages are looking for funding
  run `npm fund` for details

6 high severity vulnerabilities

To address all issues (including breaking changes), run:
  npm audit fix --force

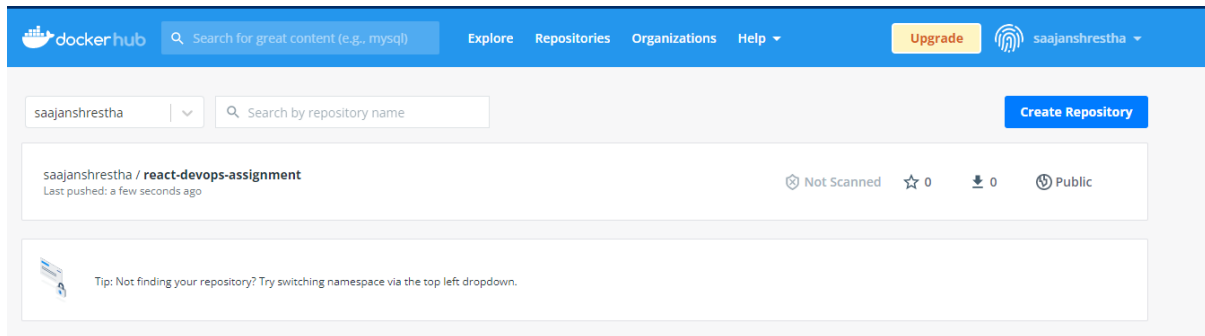
Run `npm audit` for details.
npm notice
npm notice New minor version of npm available! 8.15.0 -> 8.16.0
npm notice Changelog: <https://github.com/npm/cli/releases/tag/v8.16.0>
npm notice Run `npm install -g npm@8.16.0` to update!
npm notice
Removing intermediate container b97a61c0a788
--> 795a499976f6
Step 5/6 : COPY . ./
--> 1cb14098c3b3
Step 6/6 : CMD ["npm", "run", "start"]
--> Running in 304b47329819
Removing intermediate container 304b47329819
--> 6acd7ca82d43
Successfully built 6acd7ca82d43
Successfully tagged react-docker:dev
```

```
ubuntu@ip-172-31-1-25:~/react-app/new_react_app$ docker images
REPOSITORY          TAG          IMAGE ID          CREATED          SIZE
react-docker         dev          6acd7ca82d43     About a minute ago  703MB
node                 alpine      eecd5234277e     7 hours ago      166MB
```

```
ubuntu@ip-172-31-1-25:~/react-app/new_react_app$ docker login
Login with your Docker ID to push and pull images from Docker Hub. If you don't have a Docker ID, head over to https://hub.docker.com to create one.
Username: saajanshrestha
Password:
WARNING! Your password will be stored unencrypted in /home/ubuntu/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store

Login Succeeded
ubuntu@ip-172-31-1-25:~/react-app/new_react_app$ docker tag 6acd7ca82d43 saajanshrestha/react-devops-assignment:react-docker
```

```
ubuntu@ip-172-31-1-25:~/react-app/new_react_app$ docker push saajanshrestha/react-devops-assignment:react-docker
The push refers to repository [docker.io/saajanshrestha/react-devops-assignment]
57eca21dd607: Pushed
e6740e932103: Pushed
6e81947b6c4b: Pushed
bad2f3c52320: Pushed
e38ca4d584ee: Mounted from library/node
4950eccaaf53: Mounted from library/node
2ad245d84297: Mounted from library/node
994393dc58e7: Mounted from library/node
react-docker: digest: sha256:07481cfcb88286c208c3645173b24341c0eab0dc0d7fc1f7a48918a7c2e095fe size: 1998
```



**Node App:** <https://hub.docker.com/r/saajanshrestha/node-devops-assignment/tags>

```
ubuntu@ip-172-31-1-25:~$ git clone https://github.com/crazieeKinG/VAS-backend.git
Cloning into 'VAS-backend'...
remote: Enumerating objects: 110, done.
remote: Counting objects: 100% (110/110), done.
remote: Compressing objects: 100% (78/78), done.
remote: Total 110 (delta 25), reused 106 (delta 25), pack-reused 0
Receiving objects: 100% (110/110), 65.38 KiB | 5.94 MiB/s, done.
Resolving deltas: 100% (25/25), done.
ubuntu@ip-172-31-1-25:~$ ls
VAS-backend  react-app
ubuntu@ip-172-31-1-25:~$ cd VAS-backend/
```

```
ubuntu@ip-172-31-1-25:~/VAS-backend$ nano Dockerfile
ubuntu@ip-172-31-1-25:~/VAS-backend$ cat Dockerfile
FROM node:alpine
WORKDIR /node-app
COPY package*.json ./
RUN npm install
COPY . ./
CMD ["npm", "start"]
```

```
ubuntu@ip-172-31-1-25:~/VAS-backend$ docker build -t node-docker:dev .
Sending build context to Docker daemon 306.2kB
Step 1/6 : FROM node:alpine
--> eecd5234277e
Step 2/6 : WORKDIR /node-app
--> Running in 8c522262da28
Removing intermediate container 8c522262da28
--> 3f0e23f0ee23
Step 3/6 : COPY package*.json ./
--> cfb49106cc4b
```

```
Step 4/6 : RUN npm install
--> Running in 212a6b56c07c
npm WARN deprecated @types/http-status-codes@1.2.0: This is a stub types definition for http-status-codes
ons, so you don't need @types/http-status-codes installed!

added 361 packages, and audited 362 packages in 21s

45 packages are looking for funding
  run 'npm fund' for details


3 vulnerabilities (2 moderate, 1 critical)


Some issues need review, and may require choosing
a different dependency.

Run 'npm audit' for details.
npm notice
npm notice New minor version of npm available! 8.15.0 -> 8.16.0
npm notice Changelog: <https://github.com/npm/cli/releases/tag/v8.16.0>
npm notice Run 'npm install -g npm@8.16.0' to update!
npm notice
Removing intermediate container 212a6b56c07c
--> 65471ee843cd
Step 5/6 : COPY . ./
--> afc84f64719a
Step 6/6 : CMD ["npm","start"]
--> Running in 63cf2f056f28
Removing intermediate container 63cf2f056f28
--> b038d5587de5
Successfully built b038d5587de5
Successfully tagged node-docker:dev
```

```
ubuntu@ip-172-31-1-25:~/VAS-backend$ docker images
REPOSITORY          TAG          IMAGE ID          CREATED          SIZE
node-docker          dev          b038d5587de5     46 seconds ago  320MB
```

```
ubuntu@ip-172-31-1-25:~/VAS-backend$ docker tag b038d5587de5 saajanshrestha/node-devops-assignment:node-docker
ubuntu@ip-172-31-1-25:~/VAS-backend$ docker push saajanshrestha/node-devops-assignment:node-docker
The push refers to repository [docker.io/saajanshrestha/node-devops-assignment]
bcf23f7d65b8: Pushed
29f201f04a7f: Pushed
9cb1c95e76c3: Pushed
8534d6675e60: Pushed
e38ca4d584ee: Mounted from saajanshrestha/react-devops-assignment
4950eccaaf53: Mounted from saajanshrestha/react-devops-assignment
2ad245d84297: Mounted from saajanshrestha/react-devops-assignment
994393dc58e7: Mounted from saajanshrestha/react-devops-assignment
node-docker: digest: sha256:07ded4d6c8233f19d37961e741c7a1e521ff2f9c1e9c355ae168146d5359e5c8 size: 1993
```

 **docker hub**

[Explore](#) [Repositories](#) [Organizations](#) [Help](#) [Upgrade](#)  saajanshrestha

saajanshrestha

Create Repository

saajanshrestha / node-devops-assignment

Last pushed: a few seconds ago

Not Scanned

0

0

Public

saajanshrestha / react-devops-assignment


Last pushed: 15 minutes ago

Not Scanned

0

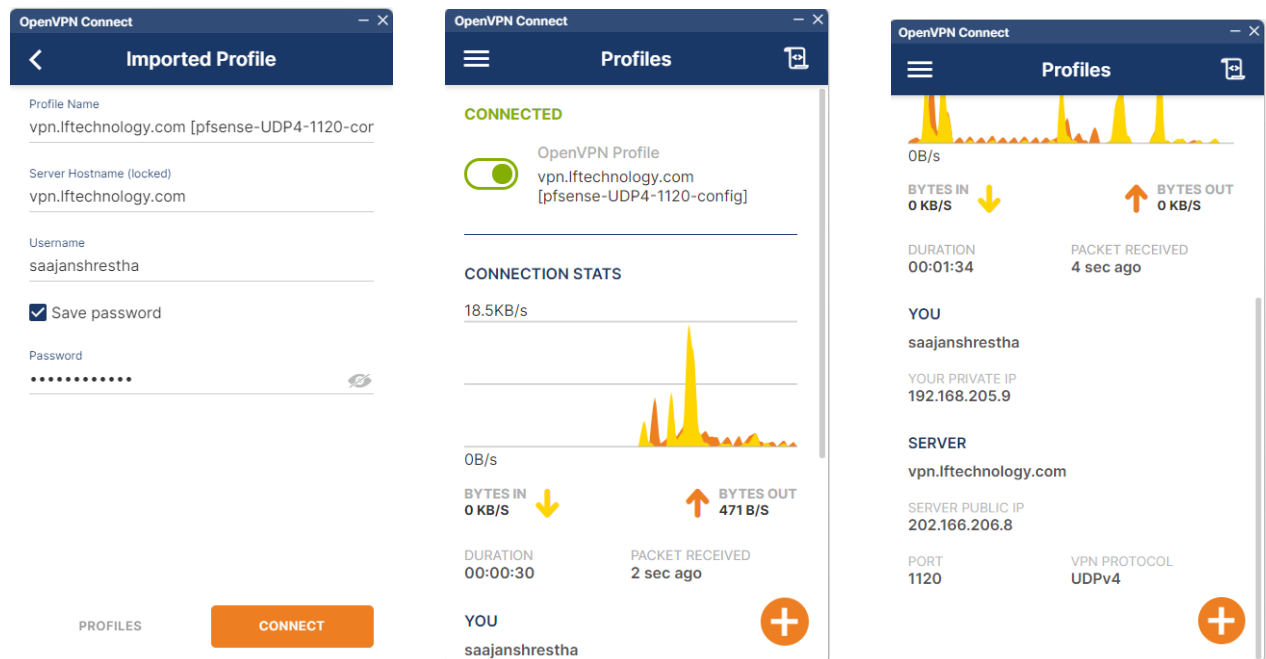
0

Public

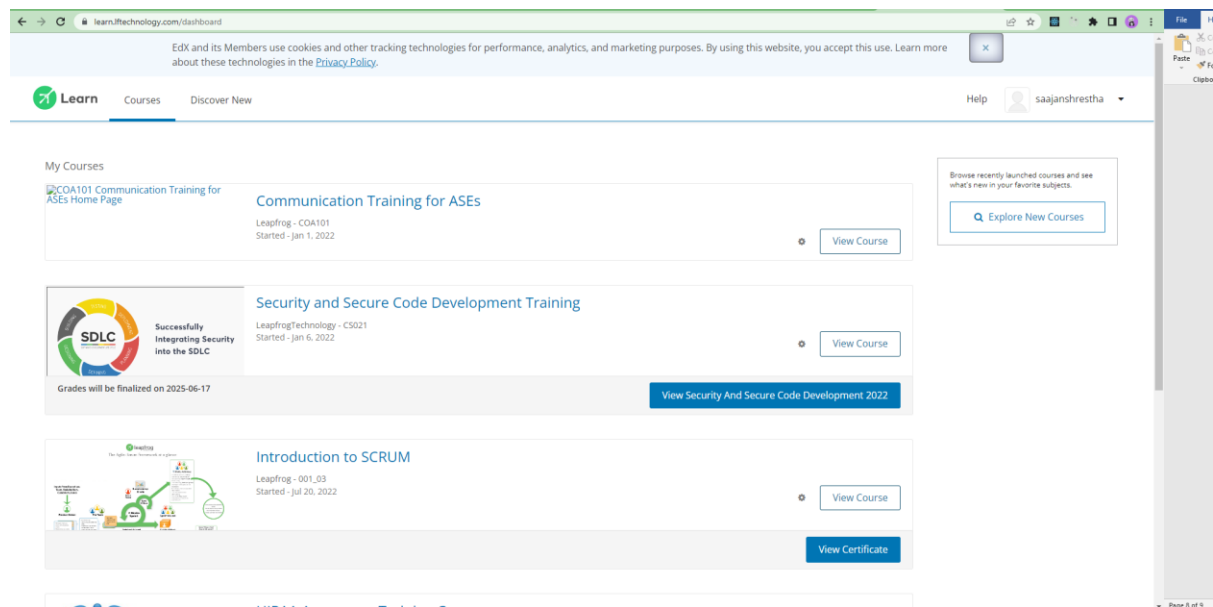
 Tip: Not finding your repository? Try switching namespace via the top left dropdown.

### 3.Setup office VPN and access self-learning platforms.

Setup VPN:



Login to learn platform:





**4.List down common HTTP status code (only 10) with means.**

The common HTTP status code are:

1. 200: OK
2. 201: Created
3. 301: Moved Permanently
4. 400: Bad Request
5. 401: Unauthorized
6. 403: Forbidden
7. 404: Not Found
8. 500: Internal Server Error
9. 501: Not Implemented
10. 503: Service Unavailable

**5.Find network id and Broadcast for 150.10.20.30.**

As, the IP address range of class B address is 128.0.x.x to 191.255.x.x. The given IP 150.10.20.30 falls under class B address. And the default subnet mask of class B address is 255.255.0.0.

So, for the given IP address 150.10.20.30:

Network ID is 150.10.0.0

And Broadcast ID is 150.10.255.255