Assignment 1

ACCEPTANCE CRITERIA – Include the followings in the PDF:

- Web page that shows your name. The web app in EC2.
- Lambda that returns your friends names.
- S3 bucket URL.

You will submit screenshots of the core steps in one PDF for all assignments.
I recommend you **delete resources once you are done**. Otherwise, it will continue to incur charges.

Task 1 – IaaS (EC2) – Launch a simple web app on EC2

- Spin up an EC2 instance.
    a. Allow HTTP:80 port from the world (0.0.0.0/0) in the Network Setting panel.
- Connect to the instance. Ther are 4 ways to connect to your server, SSH, EC2 connect, IAM. Refer: Connect to your Linux instance
- Configure a web server on EC2.

```
sudo -s => Logging as a root user so you can execute any command
yum install httpd -y => Installing an Apache web server package
service httpd start => Starting the server
cd /var/www/html => Changing the directory to customize the default page.
nano index.html => Create the index.html and write your name here as HTML.
```

If the web app is not responding:

- Make sure you are making http://<your_ip>, not **https** in your browser.
- Check Security Group if it allows port 80.

Task 2 – FaaS (Lambda) – Simple API with Lambda function URL

Create a lambda function that returns an array of strings. Make it an API by enabling the public URL.
Refer: Creating and managing Lambda function URLs

a. Enable URL and enable **CORS**

Task 3 – Deploying a static website in S3

Call the API in Lambda from the React app and deploy the app in S3. Refer: Hosting a static website using Amazon S3

b. Install NodeJS on your laptop
c. npx create-react-app appname
d. npm install axios
e. npm start – to start your front-end app
f. npm run build – after testing, build the app
g. create a bucket and deselect “Block public access”
h. drop all files inside the build folder into the bucket.
i. Write a policy that makes all objects in the bucket public. Refer to the next section.
j. Enable “static website hosting” and define the index.html as the index and error page.

If you google, you will find examples of these 3 tasks all over the internet.

Task 4 – Take a screen shot of tasks and TERMINATE the EC2 instance and clean up.

Snippets

The bucket policy that makes all objects inside it public:

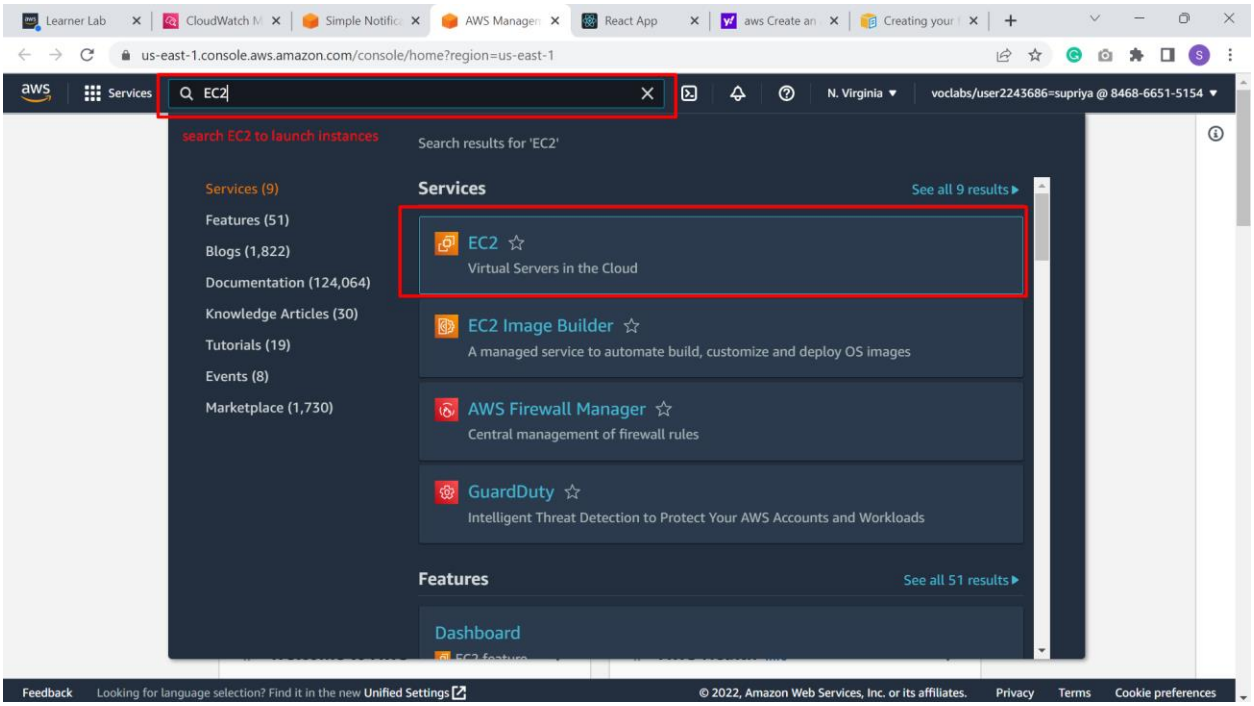
```
{
  "Id": "Policy1650912821527",
  "Version": "2012-10-17",
  "Statement": [
    {
      "Sid": "Stmt1650912820312",
      "Action": [
        "s3:GetObject"
      ],
      "Effect": "Allow",
      "Resource": "arn:aws:s3:::<yourbucket>/*",
      "Principal": "*"
    }
  ]
}
```

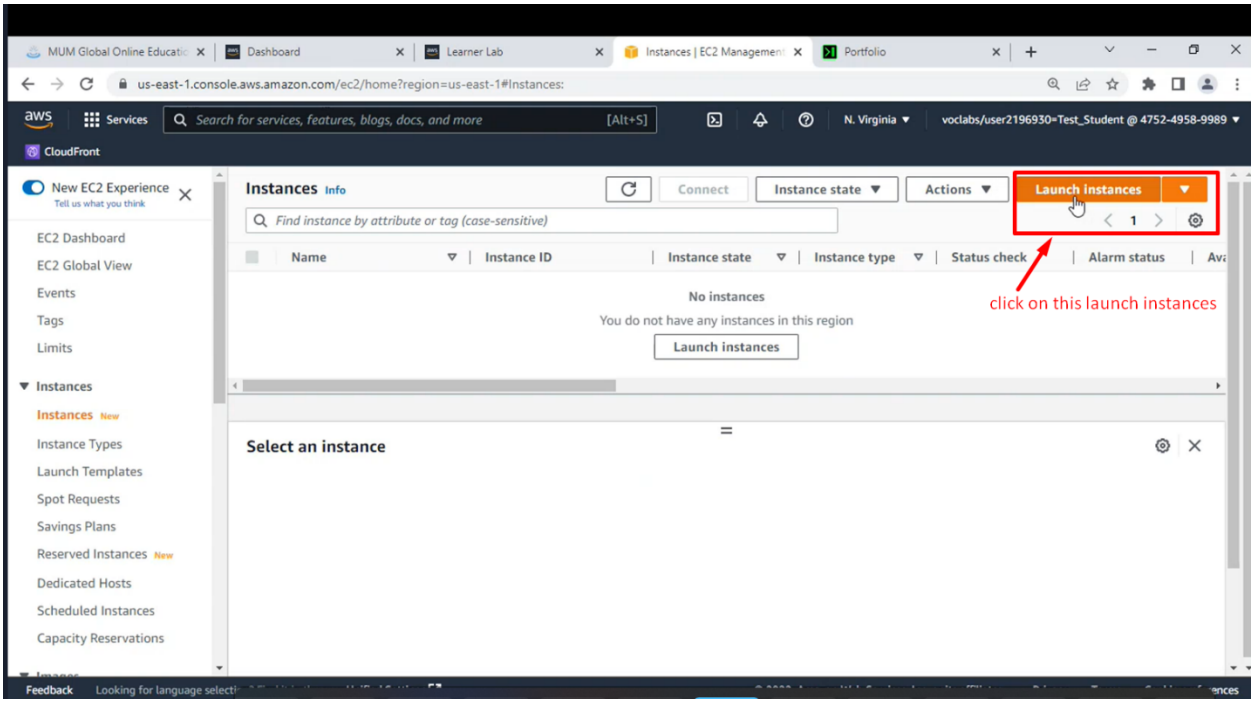
The React web app:

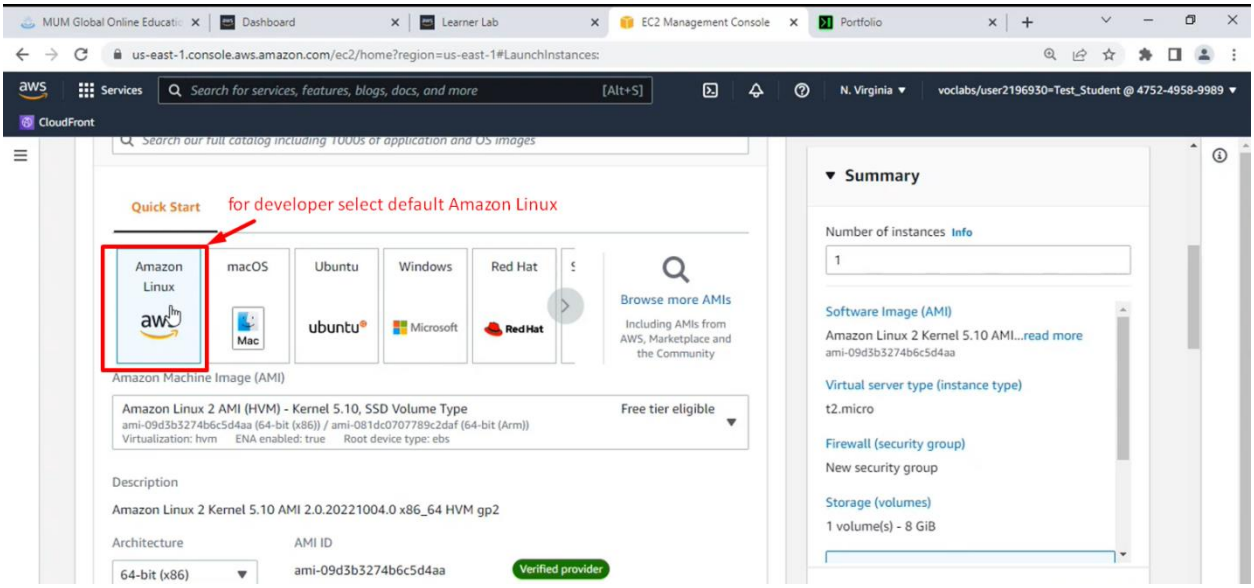
```
import axios from "axios";
import { useEffect, useState } from "react";

export default function App() {
  const [students, setstudents] = useState([]);

  useEffect(() => {
    async function fetchStudents() {
      const studentsFromLambda = (
        await axios.get(
          "<your lambda URL>"
        )
      ).data;
      setstudents(studentsFromLambda);
      console.log(studentsFromLambda);
    }

    fetchStudents();
  }, []);
  return (
    <div>
      Cloud Computing course
      <ol>
        {students.map((student) => (
          <li>{student}</li>
        ))}
      </ol>
    </div>
  );
}
```

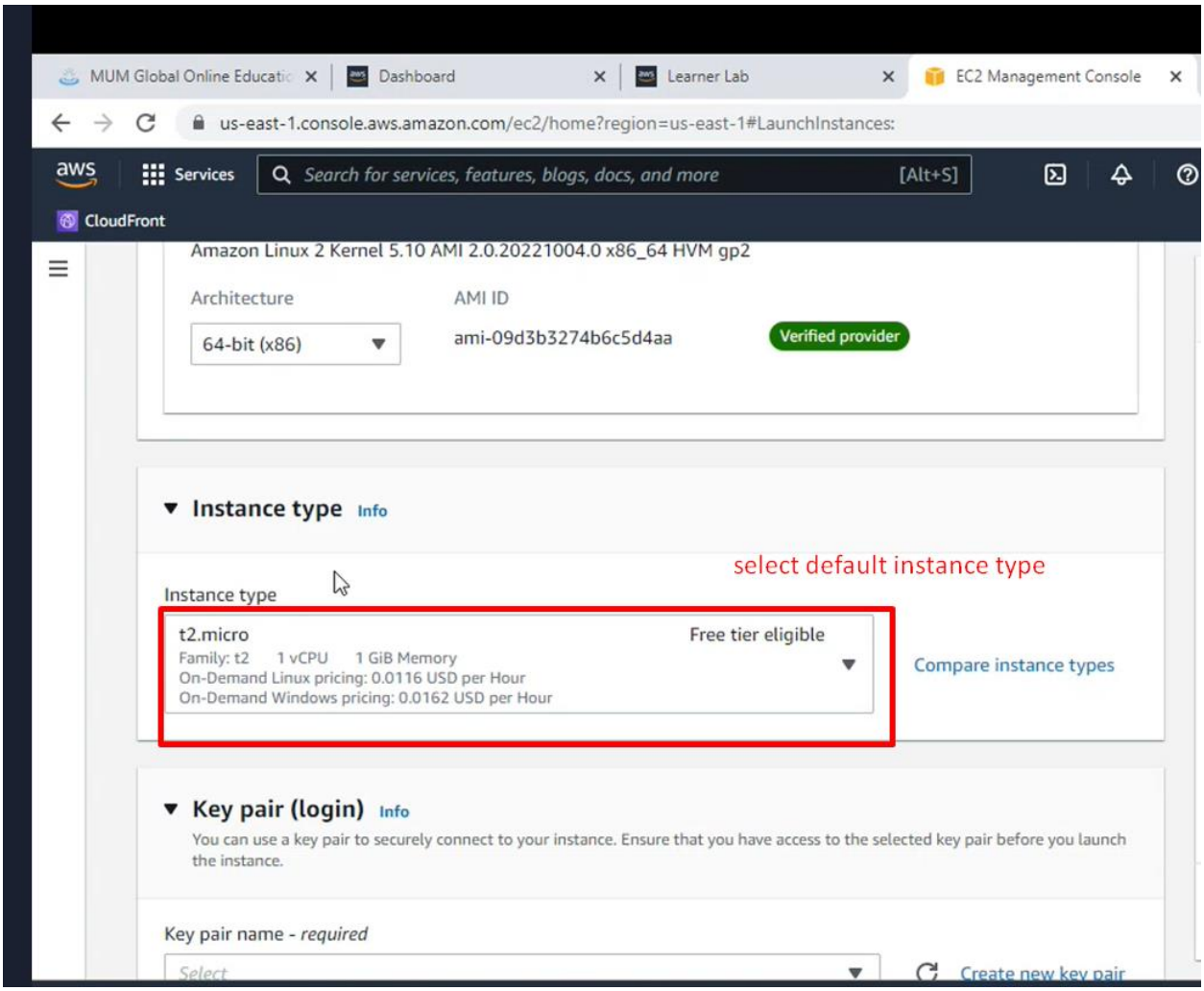
Setting up a web server on EC2

Step-by-step instructions for you to refer. There are many ways to achieve the same result. You don't have to follow it. It will waste a lot of time. Instead, you can do it on your own without following it step by step since you paid careful attention in class and understood the idea.






MUM Global Online Educatic
Dashboard
Learner Lab
EC2 Management Console
Portfolio
us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:
aws
Services
Search for services, features, blogs, docs, and more
[Alt+S]
N. Virginia
voclabs/user2196930=Test_Student @ 4752-4958-9989
CloudFront
Quick Start
for developer select default Amazon Linux
Amazon Linux
macOS
Ubuntu
Windows
Red Hat
Browse more AMIs
Including AMIs from AWS, Marketplace and the Community
Amazon Machine Image (AMI)
Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type
ami-09d3b3274b6c5d4aa (64-bit (x86)) / ami-081dc0707789c2daf (64-bit (Arm))
Virtualization: hvm ENA enabled: true Root device type: ebs
Free tier eligible
Description
Amazon Linux 2 Kernel 5.10 AMI 2.0.20221004.0 x86_64 HVM gp2
Architecture
AMI ID
64-bit (x86)
ami-09d3b3274b6c5d4aa
Verified provider
Summary
Number of instances Info
1
Software Image (AMI)
Amazon Linux 2 Kernel 5.10 AMI...read more
ami-09d3b3274b6c5d4aa
Virtual server type (instance type)
t2.micro
Firewall (security group)
New security group
Storage (volumes)
1 volume(s) - 8 GiB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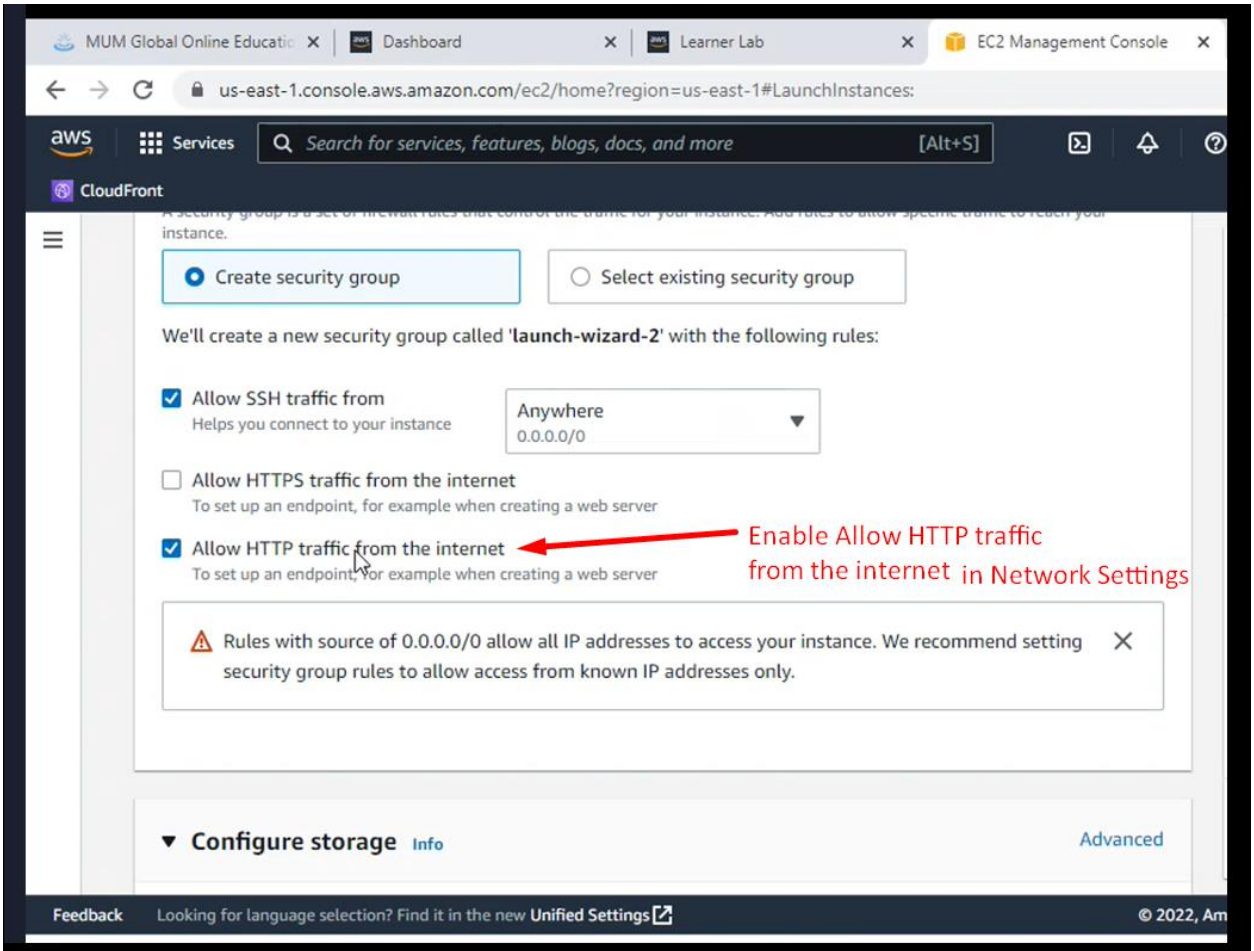
Dashboard
Learner Lab
EC2 Management Console
us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:
aws
Services
Search for services, features, blogs, docs, and more
[Alt+S]
CloudFront
Amazon Linux 2 Kernel 5.10 AMI 2.0.20221004.0 x86_64 HVM gp2
Architecture
AMI ID
64-bit (x86)
ami-09d3b3274b6c5d4aa
Verified provider
Instance type Info
select default instance type
Instance type
t2.micro
Free tier eligible
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
Compare instance types
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
Select
Create new key pair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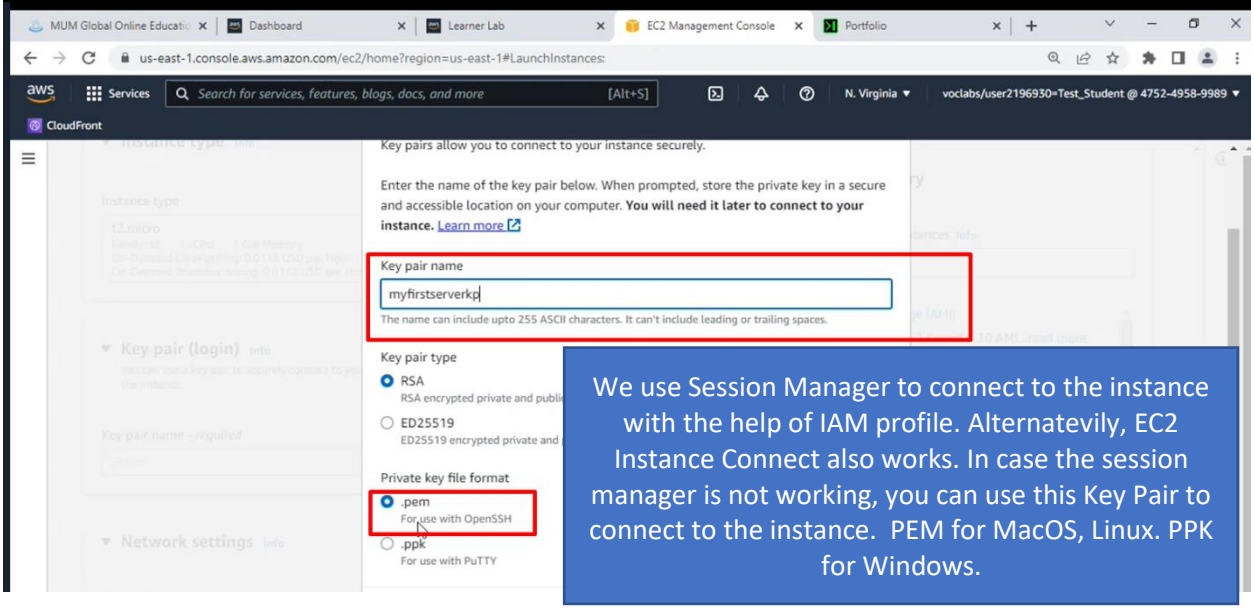
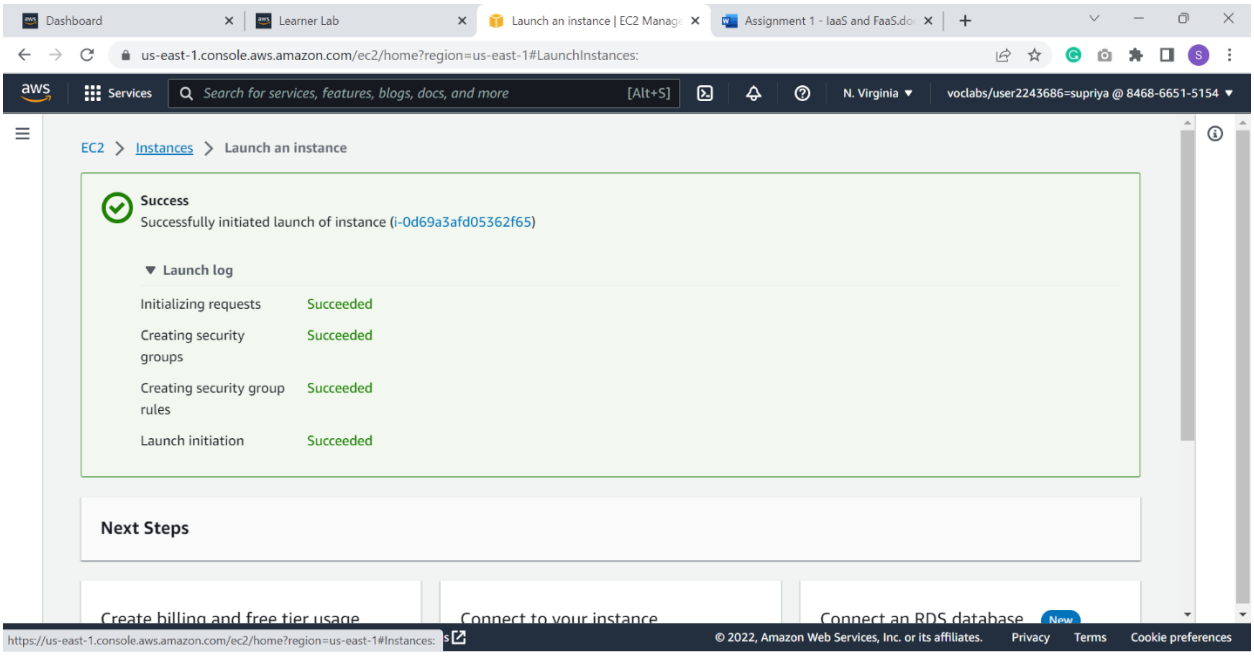
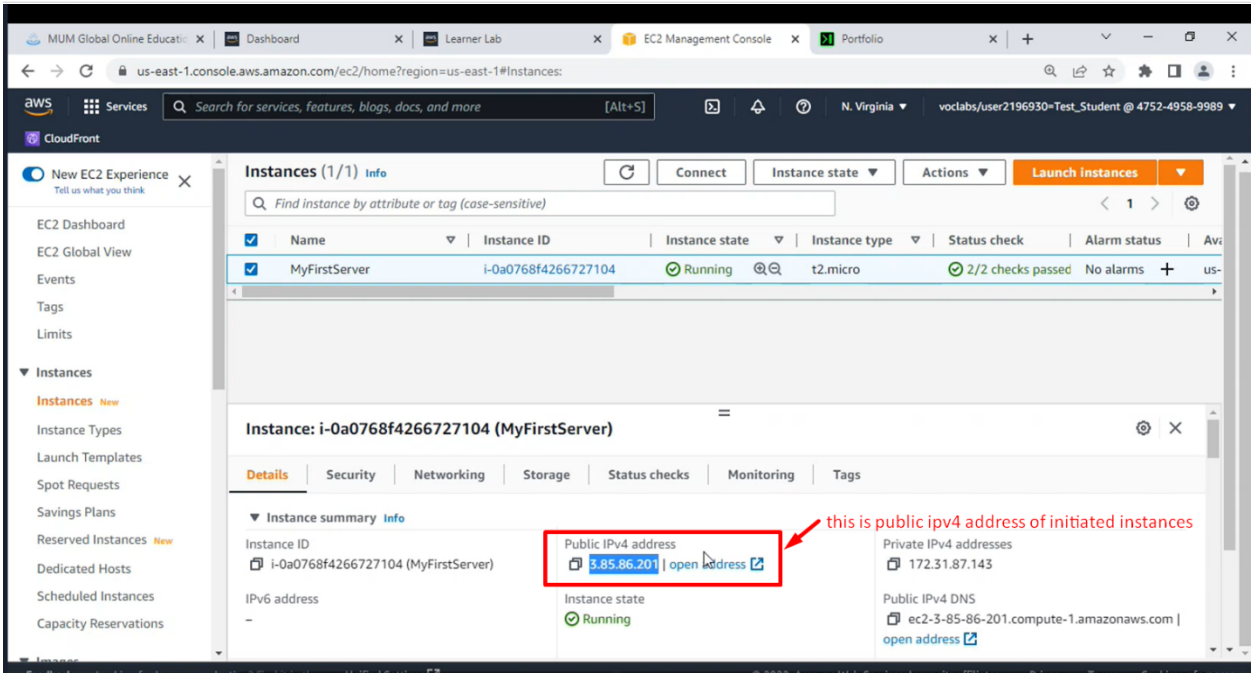
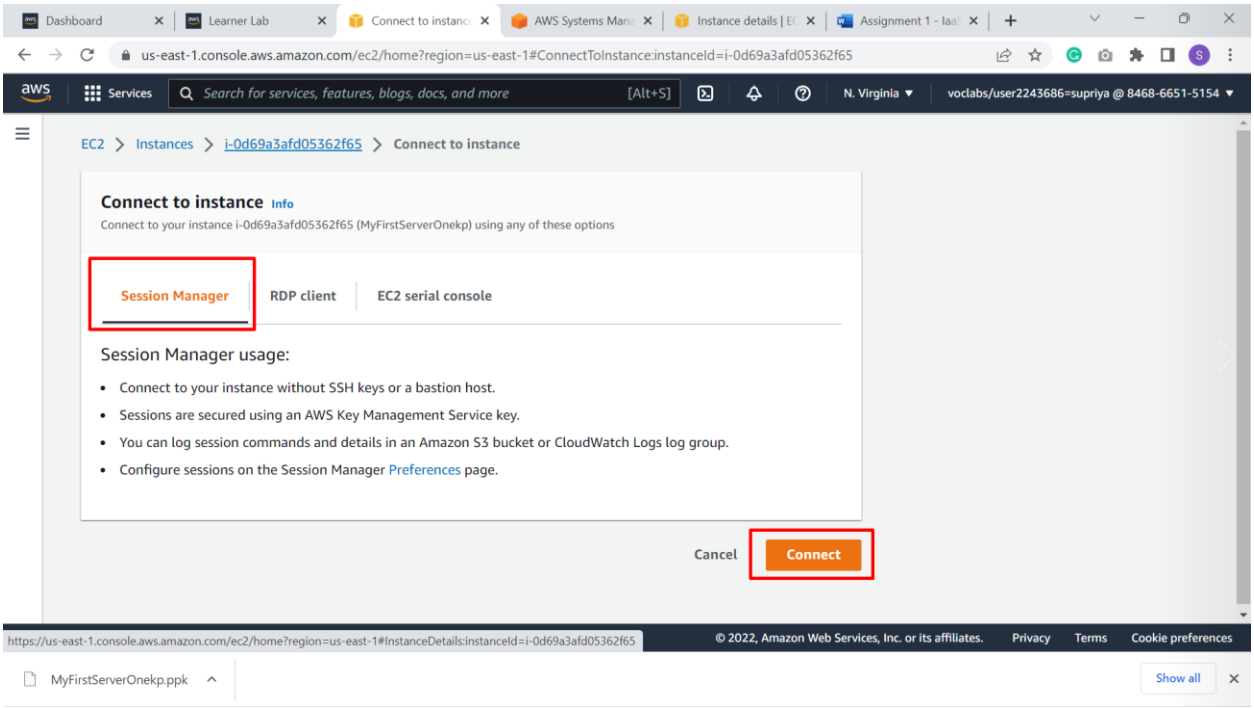
Dashboard
Learner Lab
EC2 Management Console
us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:
Services
Search for services, features, blogs, docs, and more
[Alt+S]
CloudFront
instance.
Create security group
Select existing security group
We'll create a new security group called '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
Enable Allow HTTP traffic from the internet in Network Settings
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.
Configure storage Info
Advanced
Feedback
Looking for language selection? Find it in the new Unified Settings
© 2022, Am


MUM Global Online Educatic
Dashboard
Learner Lab
EC2 Management Console
Portfolio
us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:
Services
Search for services, features, blogs, docs, and more
[Alt+S]
N. Virginia
voclabs/user2196930=Test_Student @ 4752-4958-9989
CloudFront
Key pairs allow you to connect to your instance securely.
Enter the name of the key pair below. When prompted, store the private key in a secure and accessible location on your computer. You will need it later to connect to your instance. Learn more
Key pair name
myfirstserverkp
The name can include upto 255 ASCII characters. It can't include leading or trailing spaces.
Key pair type
RSA
RSA encrypted private and public
ED25519
ED25519 encrypted private and
Private key file format
.pem
For use with OpenSSH
.ppk
For use with PuTTY
Key pair (login)
Network settings
We use Session Manager to connect to the instance with the help of IAM profile. Alternatevily, EC2 Instance Connect also works. In case the session manager is not working, you can use this Key Pair to connect to the instance. PEM for MacOS, Linux. PPK for Windows.

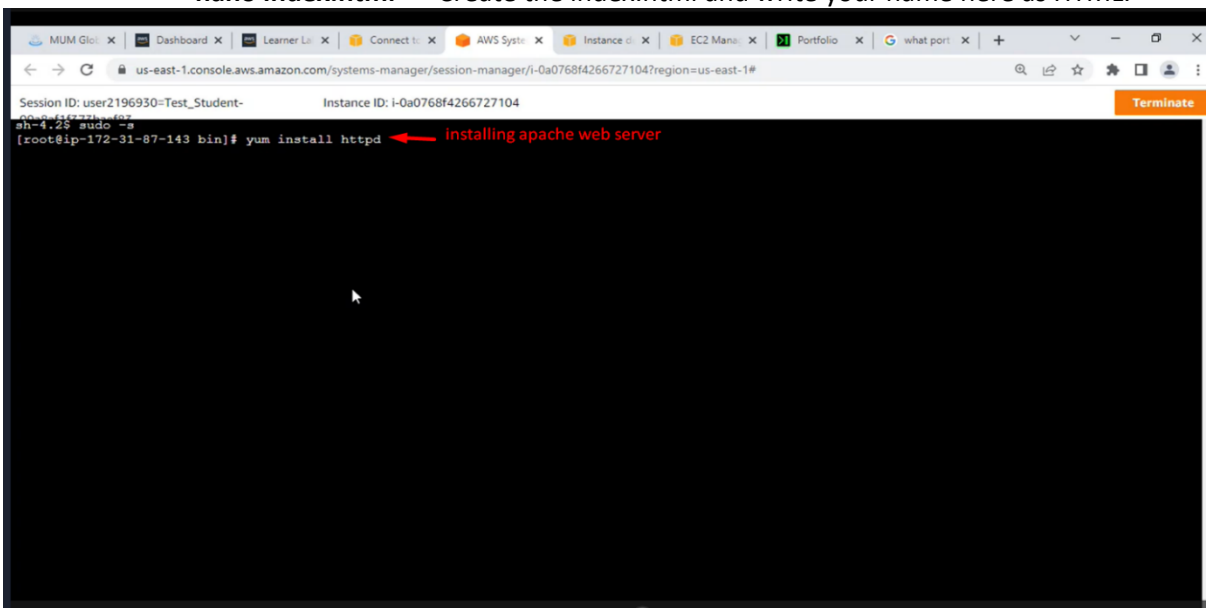




1. Configure a web server on EC2.
    a. Select the instance
    b. Hit Connect
    c. Select the “Session Manager” tab and hit Connect.



d. To install and customize a web server:
sudo -s => Logging as a root user so you can start the HTTPD service
yum install httpd -y => Installing a web server
service httpd start => Starting the server
cd /var/www/html => Changing the directory to customize the default Apache page.
nano index.html => Create the index.html and write your name here as HTML.



root@ip-172-31-5-164:/home/ec2-user

```
  Verifying  : httpd-filesystem-2.4.52-1.amzn2.noarch                4/9
  Verifying  : httpd-2.4.52-1.amzn2.x86_64                           5/9
  Verifying  : mailcap-2.1.41-2.amzn2.noarch                         6/9
  Verifying  : generic-logos-httpd-18.0.0-4.amzn2.noarch             7/9
  Verifying  : mod_http2-1.15.19-1.amzn2.0.1.x86_64                  8/9
  Verifying  : apr-1.7.0-9.amzn2.x86_64                              9/9

Installed:
  httpd.x86_64 0:2.4.52-1.amzn2

Dependency Installed:
  apr.x86_64 0:1.7.0-9.amzn2
  apr-util.x86_64 0:1.6.1-5.amzn2.0.2
  apr-util-bdb.x86_64 0:1.6.1-5.amzn2.0.2
  generic-logos-httpd.noarch 0:18.0.0-4.amzn2
  httpd-filesystem.noarch 0:2.4.52-1.amzn2
  httpd-tools.x86_64 0:2.4.52-1.amzn2
  mailcap.noarch 0:2.1.41-2.amzn2
  mod_http2.x86_64 0:1.15.19-1.amzn2.0.1

Complete!
[root@ip-172-31-5-164 ec2-user]# service httpd start
Redirecting to /bin/systemctl start httpd.service
[root@ip-172-31-5-164 ec2-user]#
```

Not secure | 3.85.86.201

Test Page

This page is used to test the proper operation of the Apache HTTP server after it has been installed. If you can read this page, it means that the Apache HTTP server installed at this site is working properly.

If you are a member of the general public:

The fact that you are seeing this page indicates that the website you just visited is either experiencing problems, or is undergoing routine maintenance.

If you would like to let the administrators of this website know that you've seen this page instead of the page you expected, you should send them e-mail. In general, mail sent to the name "webmaster" and directed to the website's domain should reach the appropriate person.

For example, if you experienced problems while visiting www.example.com, you should send e-mail to "webmaster@example.com".

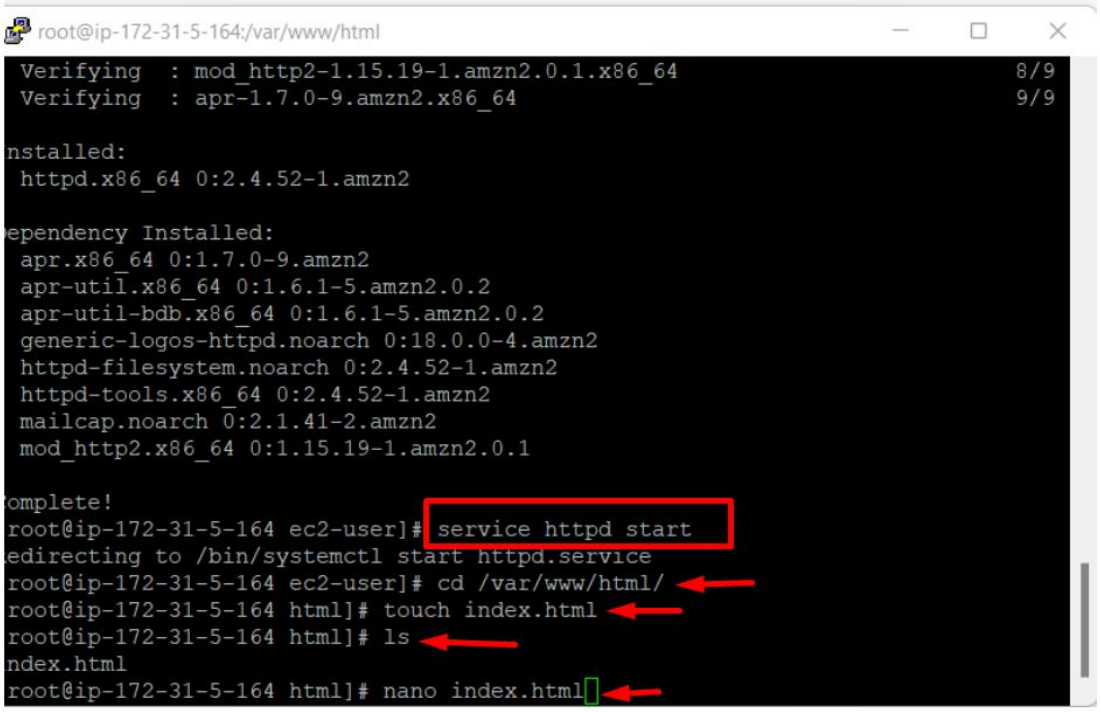
If you are the website administrator:

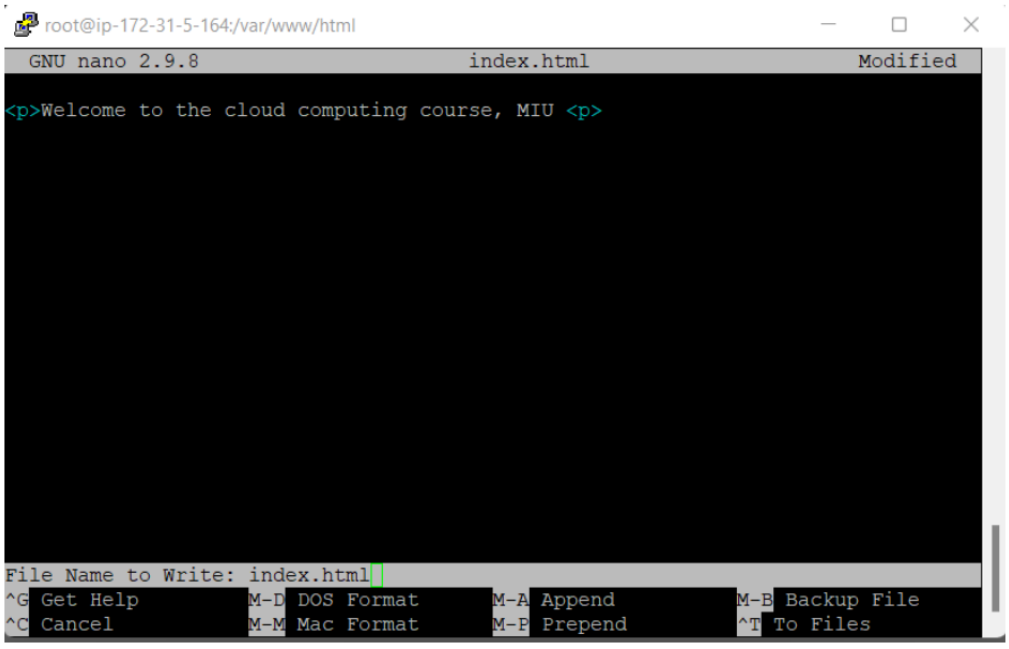
cd /var/www/html in cli

You may now add content to the directory `/var/www/html/`. Note that until you do so, people visiting your website will see this page, and not your content. To prevent this page from ever being used, follow the instructions in the file `/etc/httpd/conf.d/welcome.conf`.

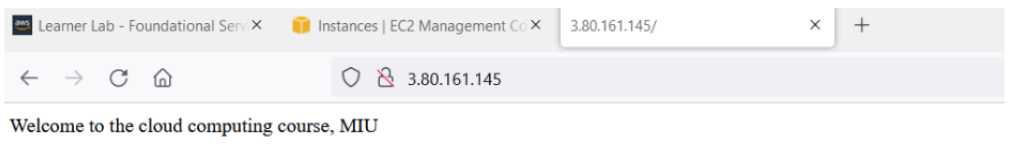
You are free to use the image below on web sites powered by the Apache HTTP Server:

Powered by APACHE 2.4

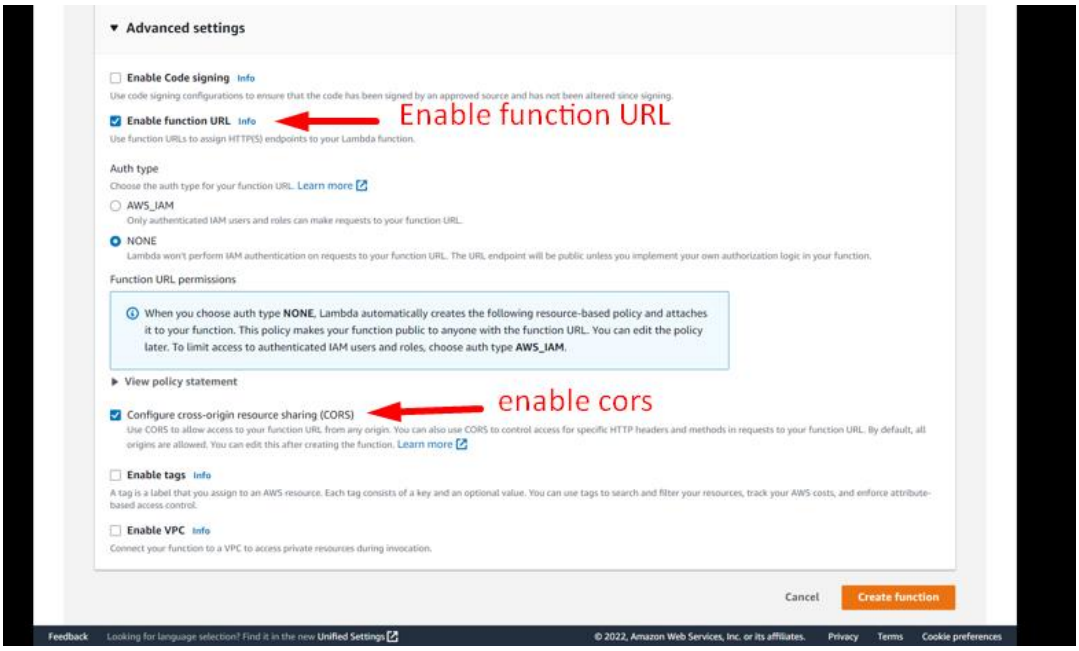


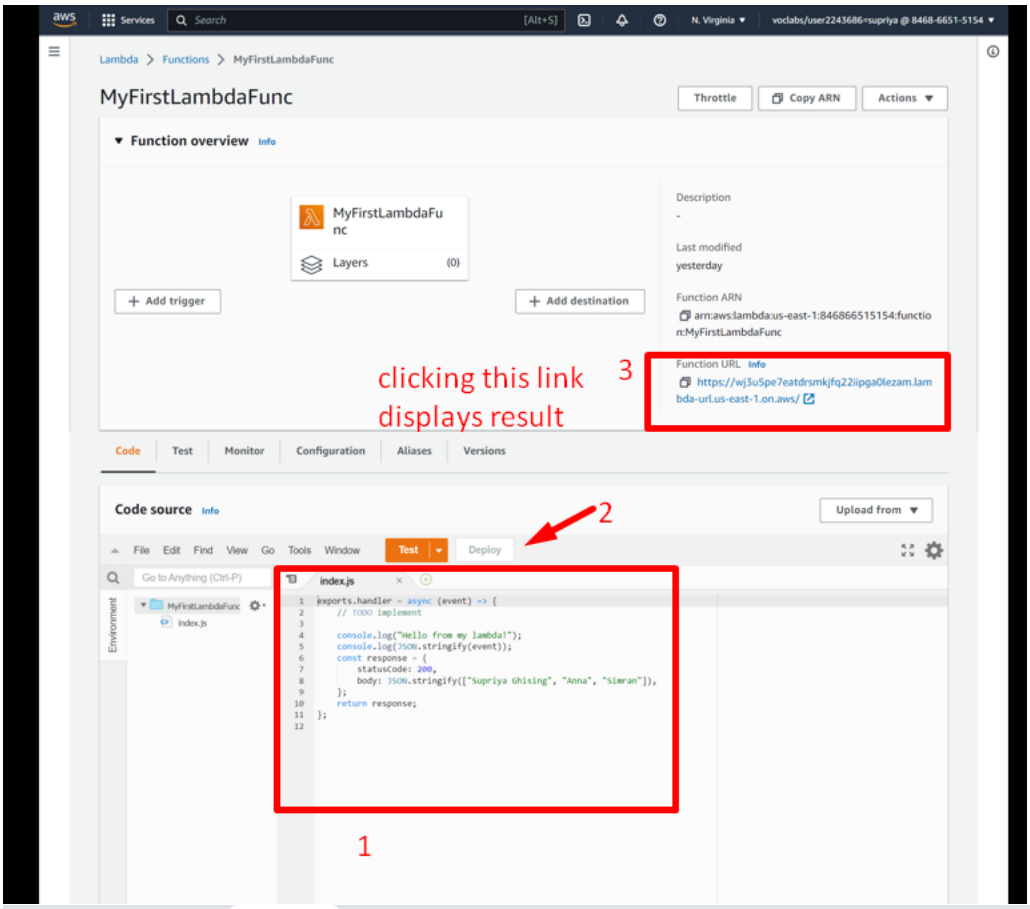


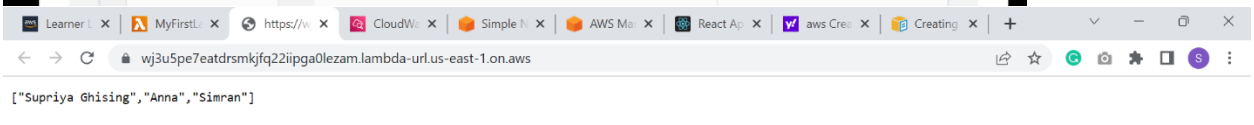
Go to the website and reload



Creating a public Lambda endpoint

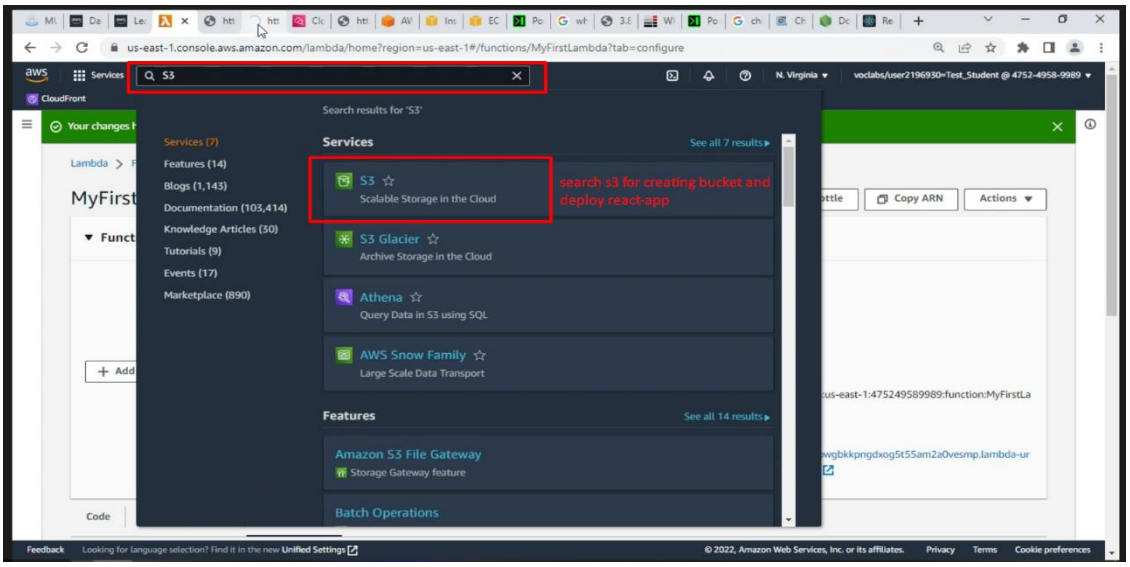


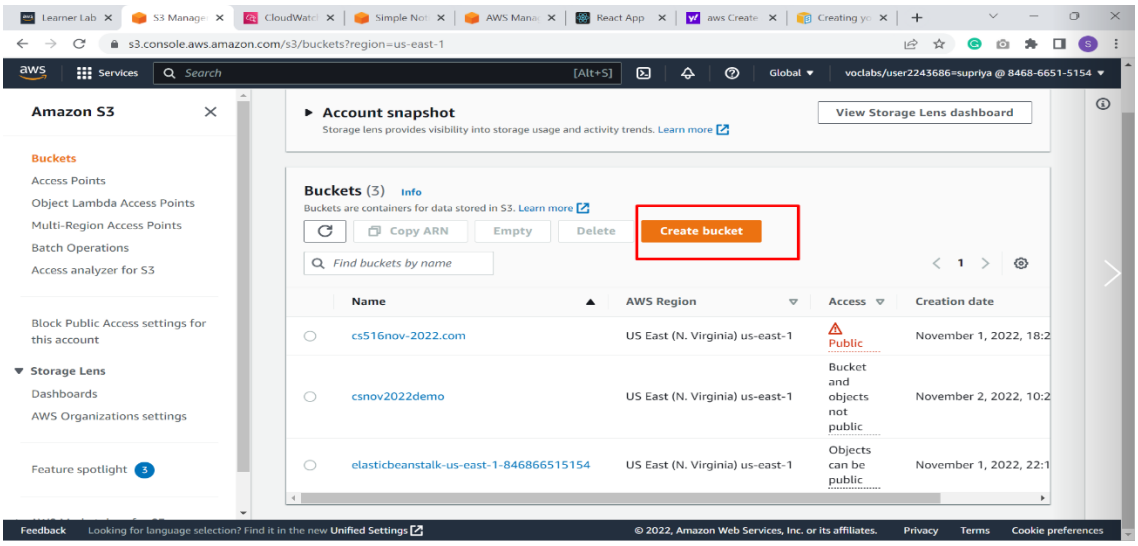


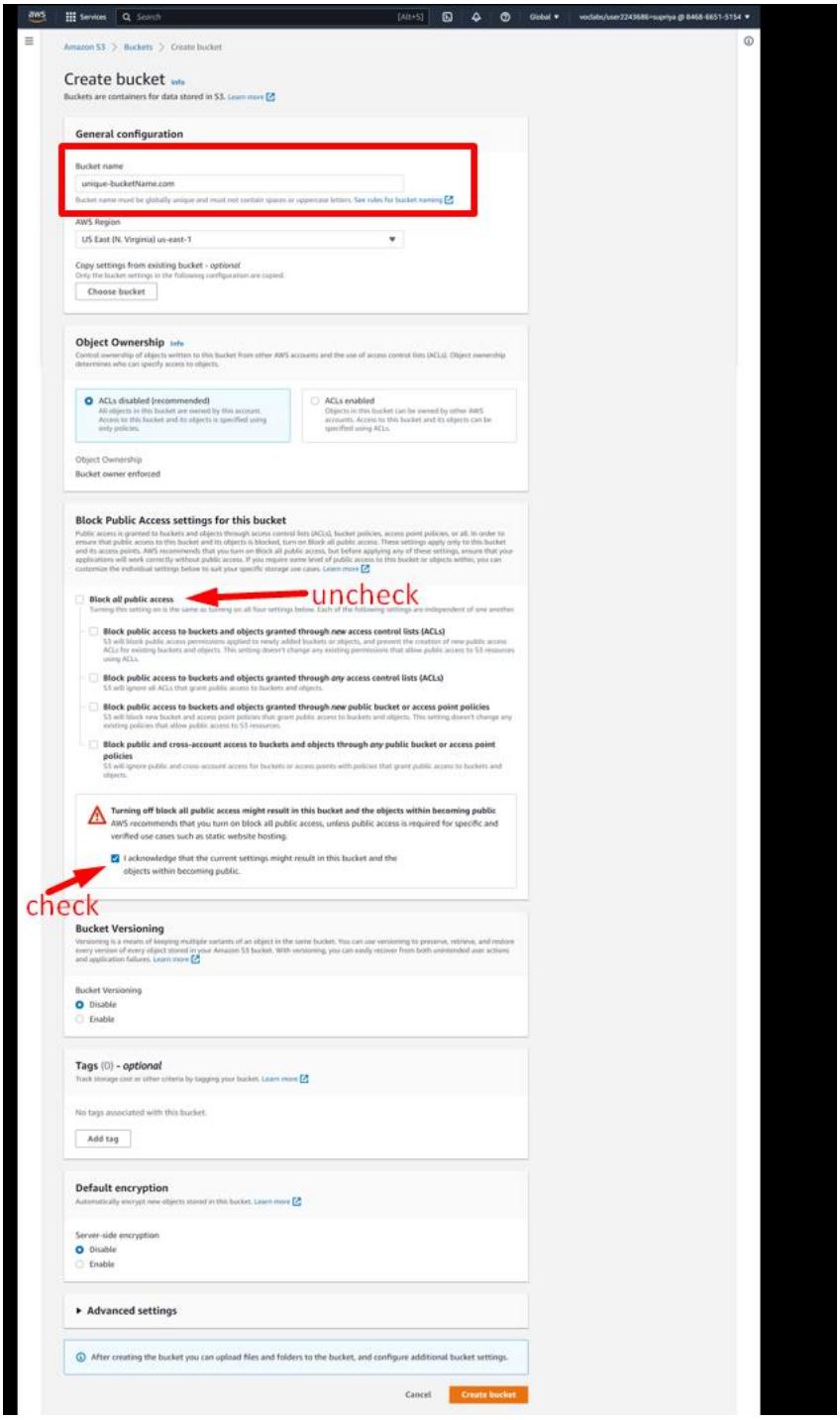


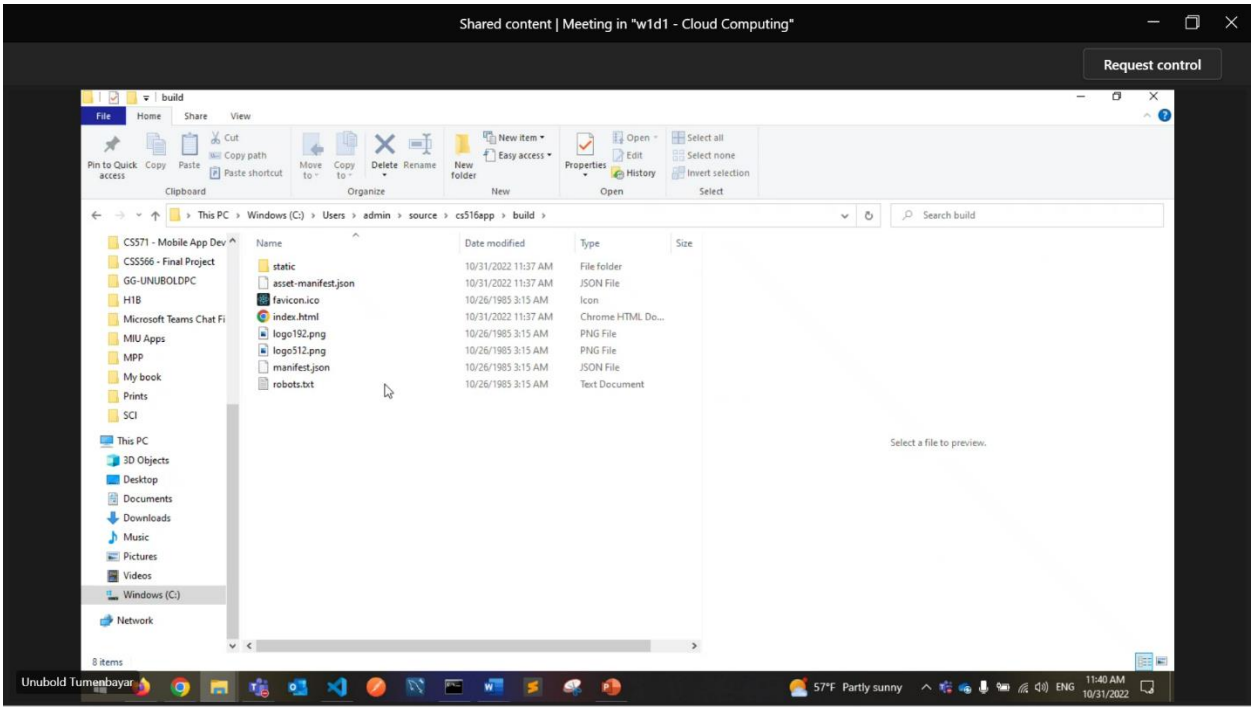

```
["Supriya Ghising","Anna","Simran"]
```

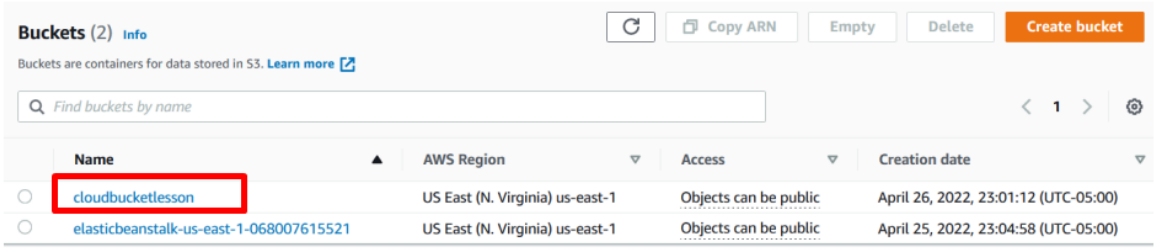
Deploying a React app to S3





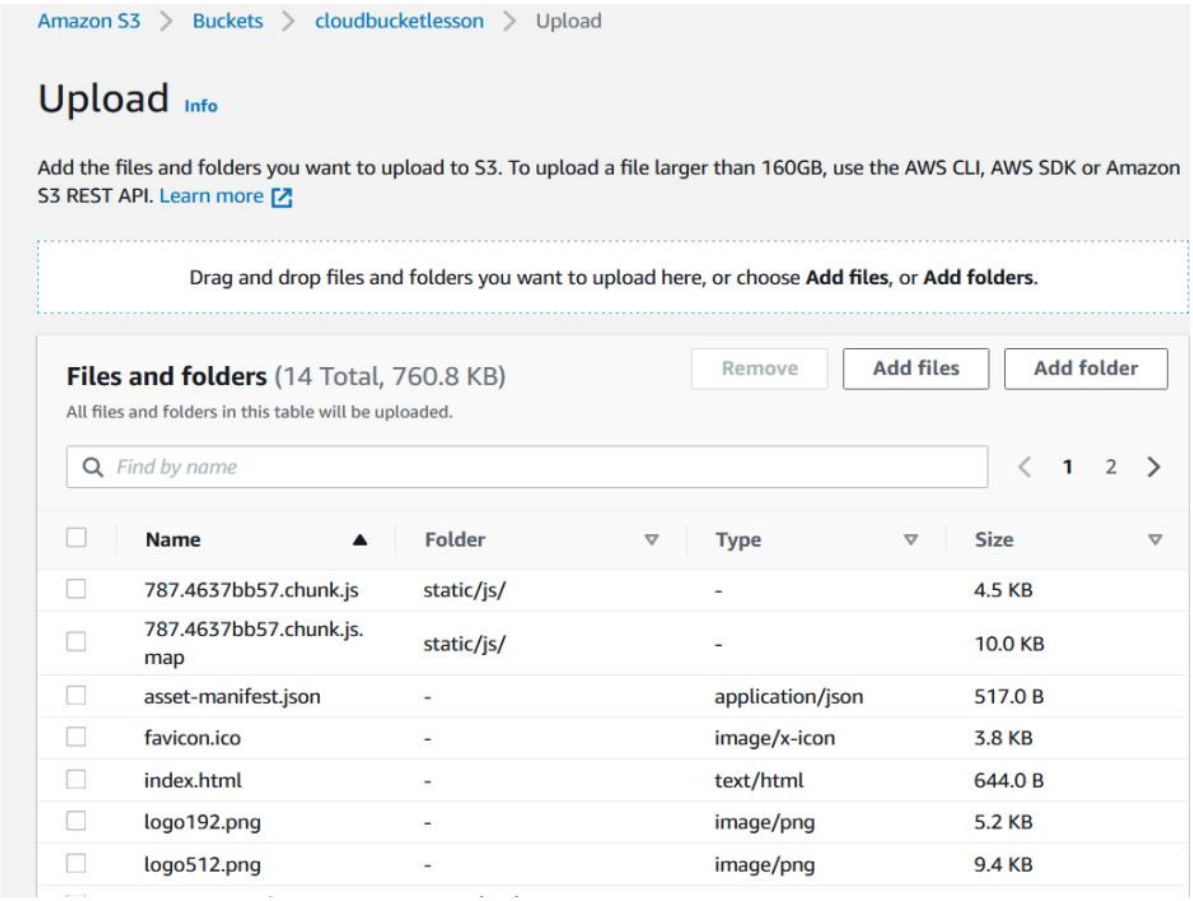

Amazon S3 > Buckets > Create bucket
Create bucket
Buckets are containers for data stored in S3.
General configuration
Bucket name
unique-bucketName.com
AWS Region
US East (N. Virginia) us-east-1
Copy settings from existing bucket - optional
Choose bucket
Object Ownership
ACLs disabled (recommended)
ACLs enabled
Object Ownership
Bucket owner enforced
Block Public Access settings for this bucket
Block all public access
uncheck
Block public access to buckets and objects granted through new access control lists (ACLs)
Block public access to buckets and objects granted through any access control lists (ACLs)
Block public access to buckets and objects granted through new public bucket or access point policies
Block public and cross-account access to buckets and objects through any public bucket or access point policies
Turning off block all public access might result in this bucket and the objects within becoming public
AWS recommends that you turn on block all public access, unless public access is required for specific and verified use cases such as static website hosting.
I acknowledge that the current settings might result in this bucket and the objects within becoming public.
check
Bucket Versioning
Bucket Versioning
Disable
Enable
Tags (0) - optional
No tags associated with this bucket.
Add tag
Default encryption
Server-side encryption
Disable
Enable
Advanced settings
After creating the bucket you can upload files and folders to the bucket, and configure additional bucket settings.
Cancel
Create bucket



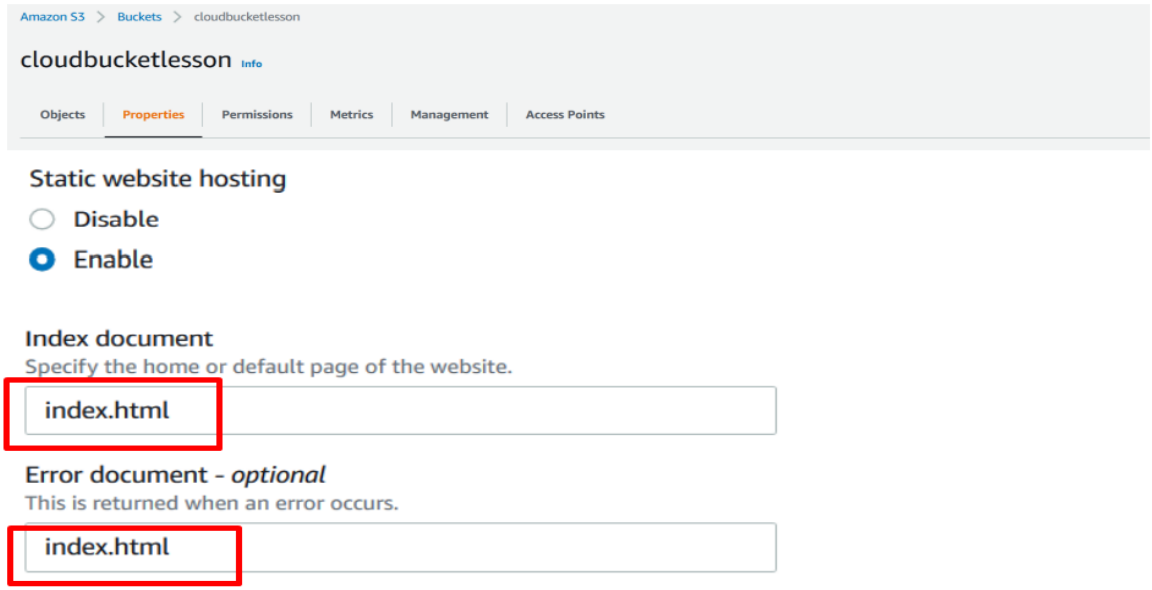


Go to the cloudbucketlesson bucket to upload build folders files of project.

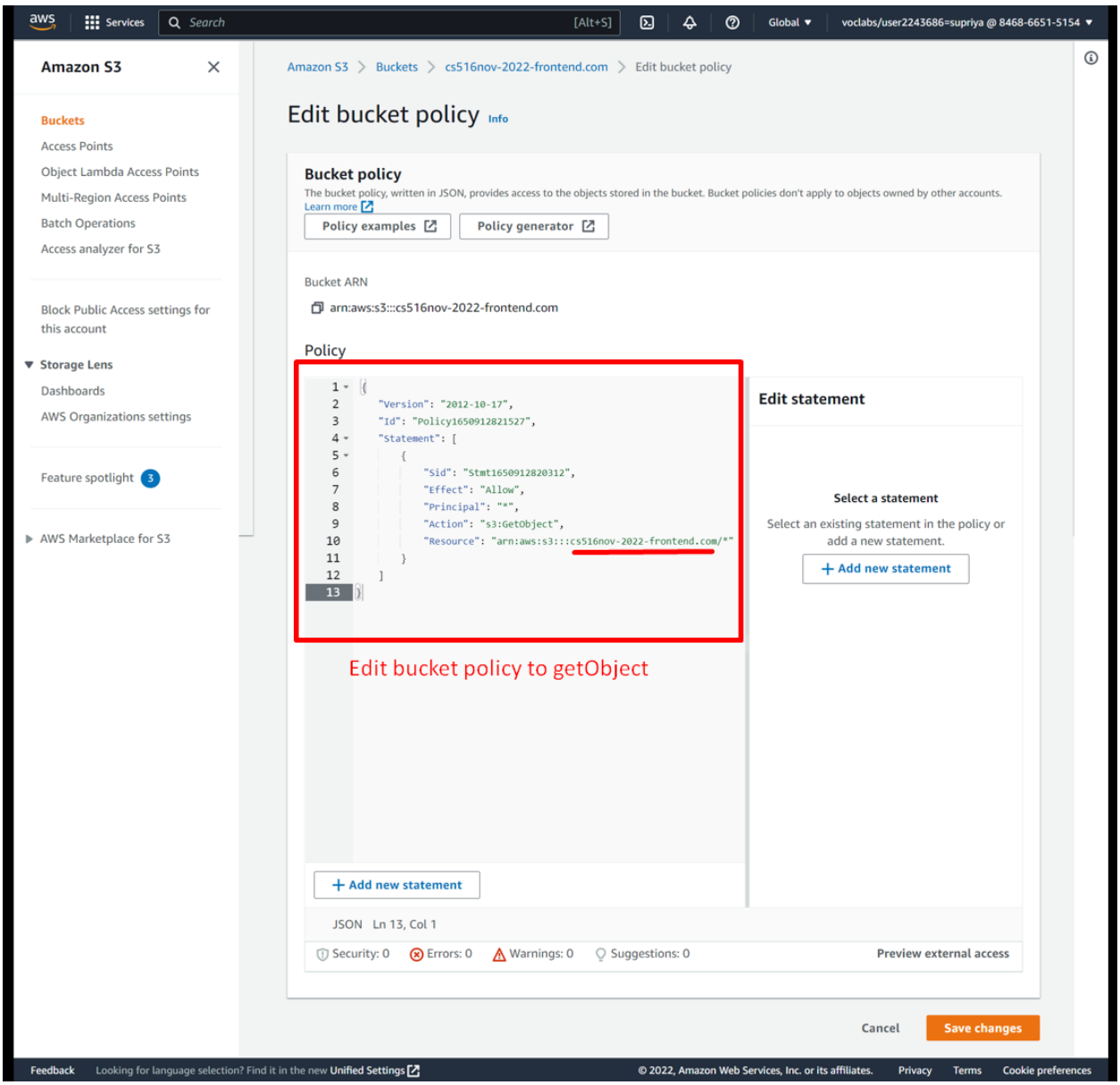
click to the created bucket and upload files or folders of project, you can upload images, videos

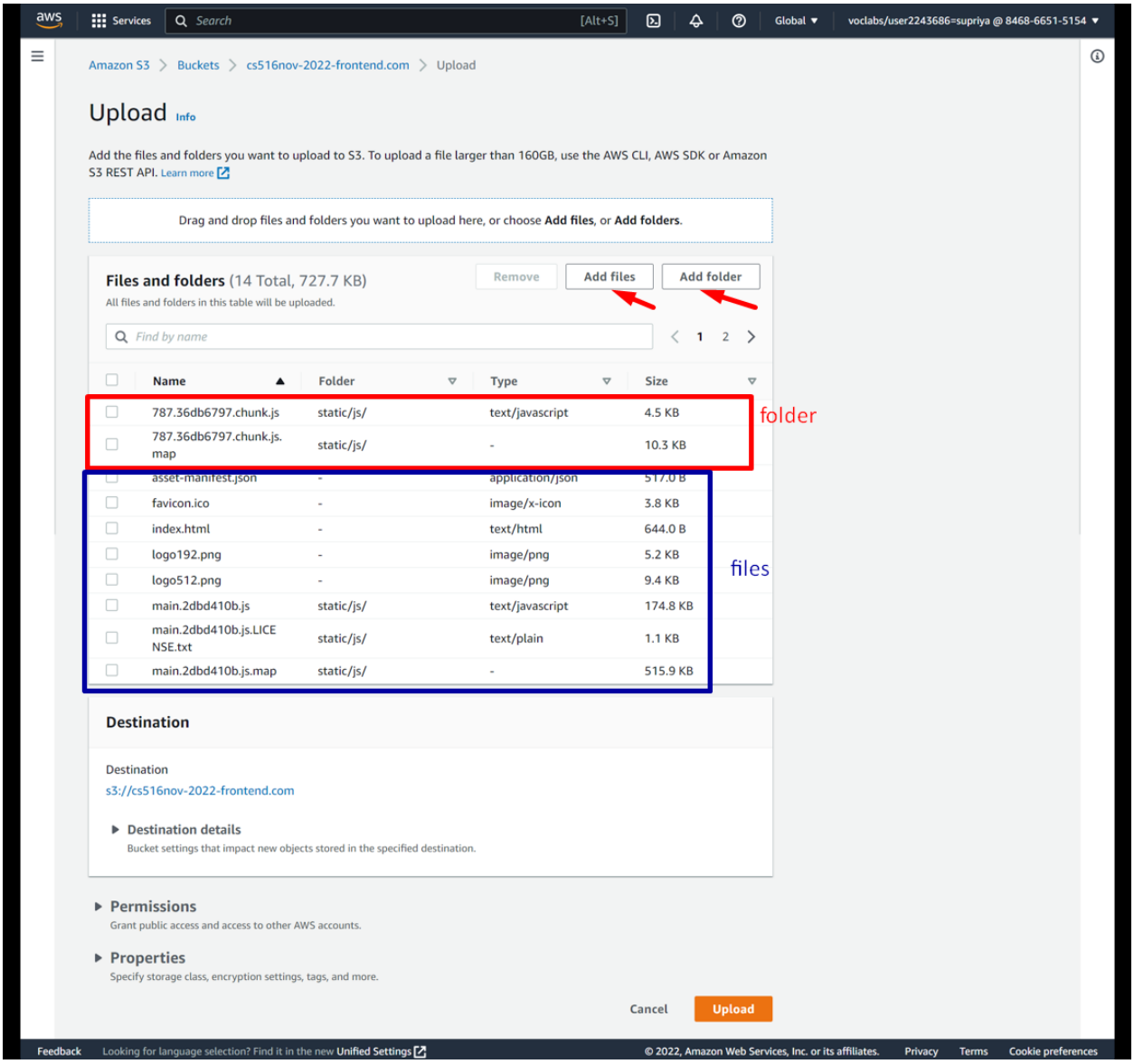


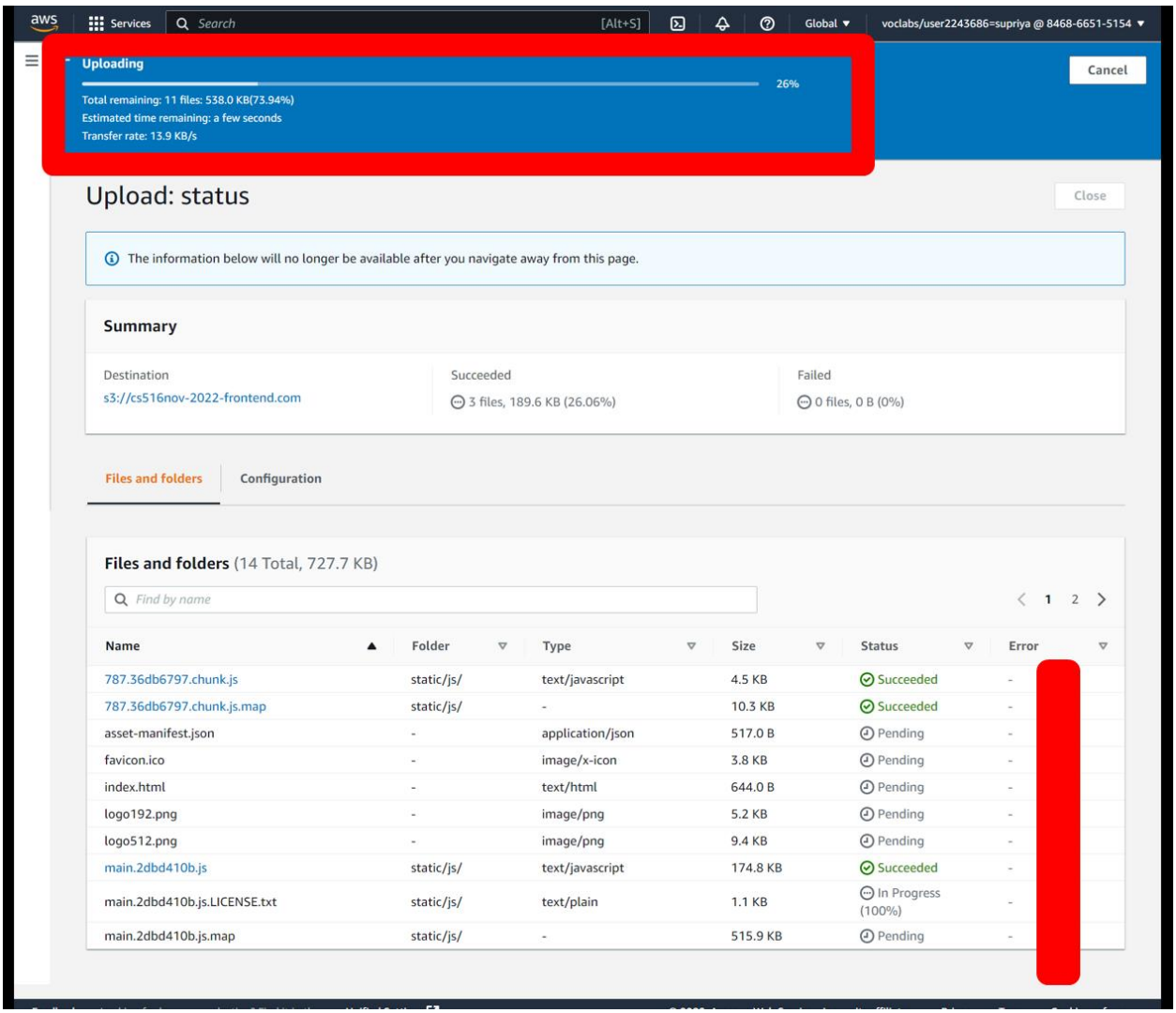
After uploading complete go to the properties tab of bucket.

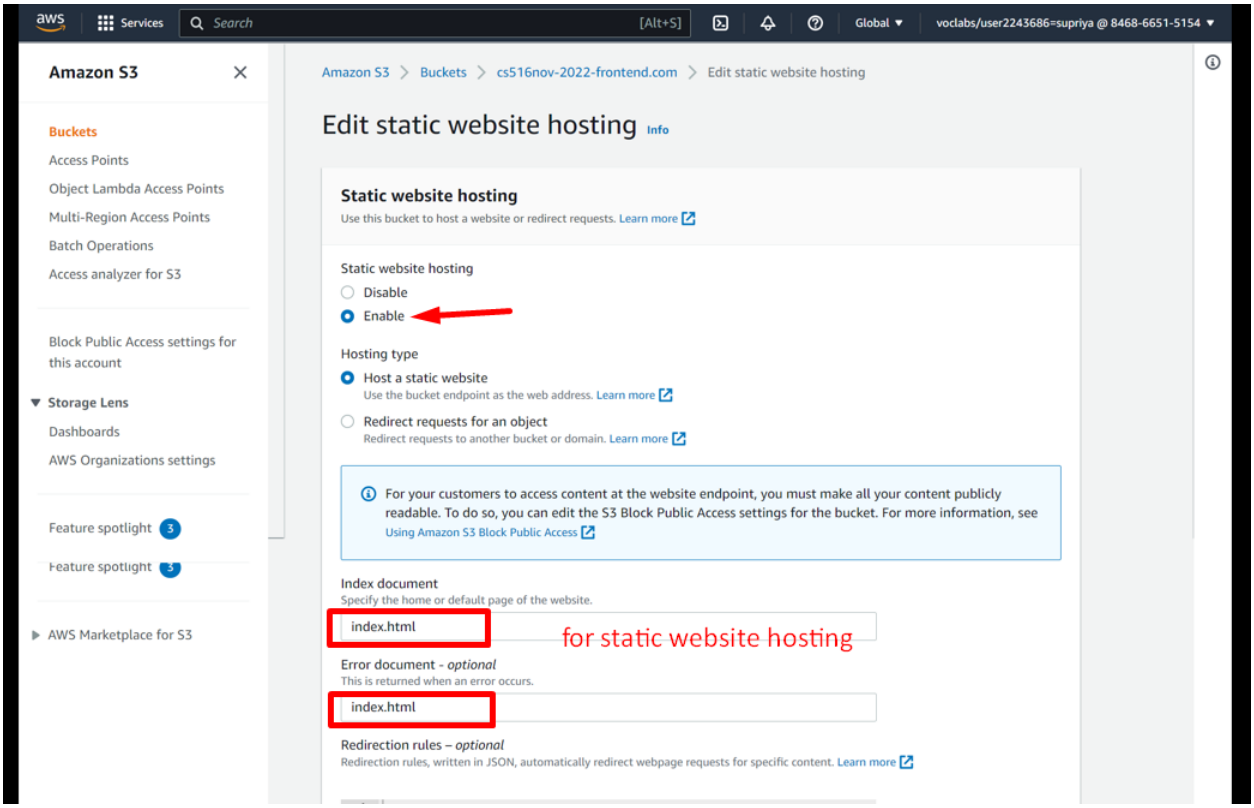


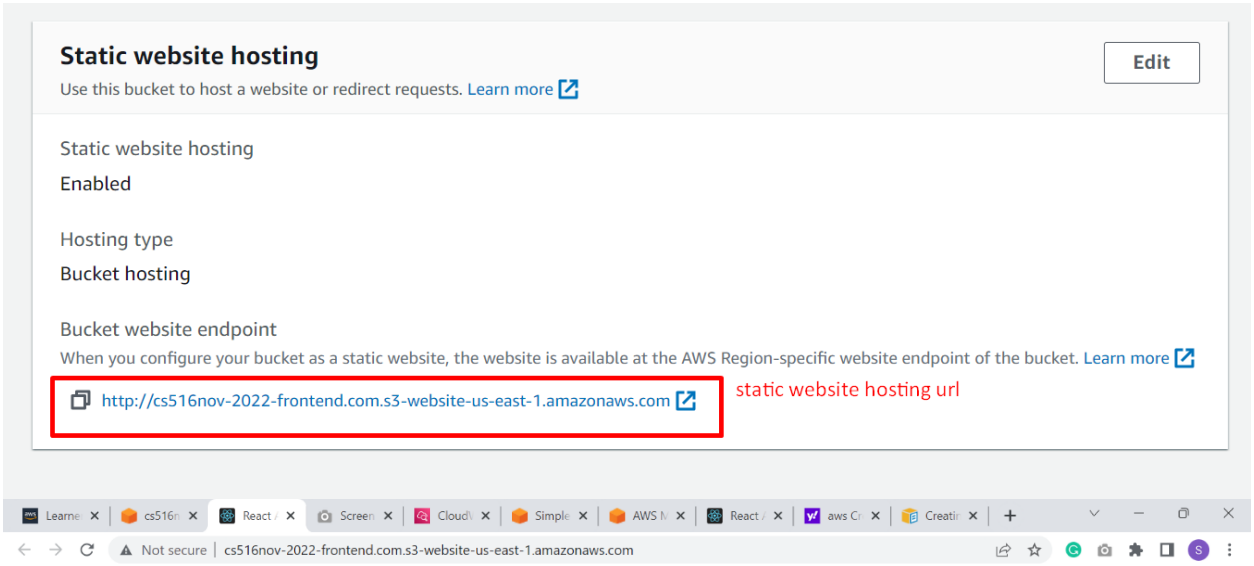
Then save changes.


Amazon S3
Buckets
Access Points
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
Access analyzer for S3
Block Public Access settings for this account
Storage Lens
Dashboards
AWS Organizations settings
Feature spotlight
AWS Marketplace for S3
Amazon S3 > Buckets > cs516nov-2022-frontend.com > Edit bucket policy
Edit bucket policy Info
Bucket policy
The bucket policy, written in JSON, provides access to the objects stored in the bucket. Bucket policies don't apply to objects owned by other accounts.
Learn more
Policy examples
Policy generator
Bucket ARN
arn:aws:s3:::cs516nov-2022-frontend.com
Policy
{
"Version": "2012-10-17",
"Id": "Policy1650912821527",
"Statement": [
{
"Sid": "Stmt1650912820312",
"Effect": "Allow",
"Principal": "*",
"Action": "s3:GetObject",
"Resource": "arn:aws:s3:::cs516nov-2022-frontend.com/*"
}
]
}
Edit statement
Select a statement
Select an existing statement in the policy or add a new statement.
+ Add new statement
Edit bucket policy to getObject
+ Add new statement
JSON Ln 13, Col 1
Security: 0
Errors: 0
Warnings: 0
Suggestions: 0
Preview external access
Cancel
Save changes
Feedback
Looking for language selection? Find it in the new Unified Settings
© 2022, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences


aws
Services
Search
[Alt+S]
Global
voclabs/user2243686=supriya @ 8468-6651-5154
Amazon S3 > Buckets > cs516nov-2022-frontend.com > Upload
Upload Info
Add the files and folders you want to upload to S3. To upload a file larger than 160GB, use the AWS CLI, AWS SDK or Amazon S3 REST API. Learn more
Drag and drop files and folders you want to upload here, or choose Add files, or Add folders.
Files and folders (14 Total, 727.7 KB)
All files and folders in this table will be uploaded.
Remove
Add files
Add folder
Find by name
1 2
Name
Folder
Type
Size
787.36db6797.chunk.js
static/js/
text/javascript
4.5 KB
787.36db6797.chunk.js.map
static/js/
-
10.3 KB
asset-manifest.json
-
application/json
517.0 B
favicon.ico
-
image/x-icon
3.8 KB
index.html
-
text/html
644.0 B
logo192.png
-
image/png
5.2 KB
logo512.png
-
image/png
9.4 KB
main.2dbd410b.js
static/js/
text/javascript
174.8 KB
main.2dbd410b.js.LICENSE.txt
static/js/
text/plain
1.1 KB
main.2dbd410b.js.map
static/js/
-
515.9 KB
folder
files
Destination
Destination
s3://cs516nov-2022-frontend.com
Destination details
Bucket settings that impact new objects stored in the specified destination.
Permissions
Grant public access and access to other AWS accounts.
Properties
Specify storage class, encryption settings, tags, and more.
Cancel
Upload
Feedback
Looking for language selection? Find it in the new Unified Settings
© 2022, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences


aws
Services
Search
[Alt+S]
Global
voclabs/user2243686=supriya @ 8468-6651-5154
Uploading
26%
Total remaining: 11 files: 538.0 KB(73.94%)
Estimated time remaining: a few seconds
Transfer rate: 13.9 KB/s
Cancel
Upload: status
Close
The information below will no longer be available after you navigate away from this page.
Summary
Destination
s3://cs516nov-2022-frontend.com
Succeeded
3 files, 189.6 KB (26.06%)
Failed
0 files, 0 B (0%)
Files and folders
Configuration
Files and folders (14 Total, 727.7 KB)
Find by name
1
2
Name
Folder
Type
Size
Status
Error
787.36db6797.chunk.js
static/js/
text/javascript
4.5 KB
Succeeded
787.36db6797.chunk.js.map
static/js/
-
10.3 KB
Succeeded
asset-manifest.json
-
application/json
517.0 B
Pending
favicon.ico
-
image/x-icon
3.8 KB
Pending
index.html
-
text/html
644.0 B
Pending
logo192.png
-
image/png
5.2 KB
Pending
logo512.png
-
image/png
9.4 KB
Pending
main.2dbd410b.js
static/js/
text/javascript
174.8 KB
Succeeded
main.2dbd410b.js.LICENSE.txt
static/js/
text/plain
1.1 KB
In Progress (100%)
main.2dbd410b.js.map
static/js/
-
515.9 KB
Pending





Cloud Computing course

1. Supriya Ghising
2. Anna
3. Simran