Don Bosco Institute of Technology(DBIT),Mumbai
Department of Information Technology

Lab Journal

On

I.T/T.E./Sem V/ITL504: Advanced DevOPS Lab

By

24 Swasti Jain

Academic Year: Nov,2022

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Experiment no. 1

Aim: To understand the benefits of Cloud Infrastructure and Setup AWS Cloud9 IDE, Launch AWS Cloud9 IDE and Perform Collaboration Demonstration

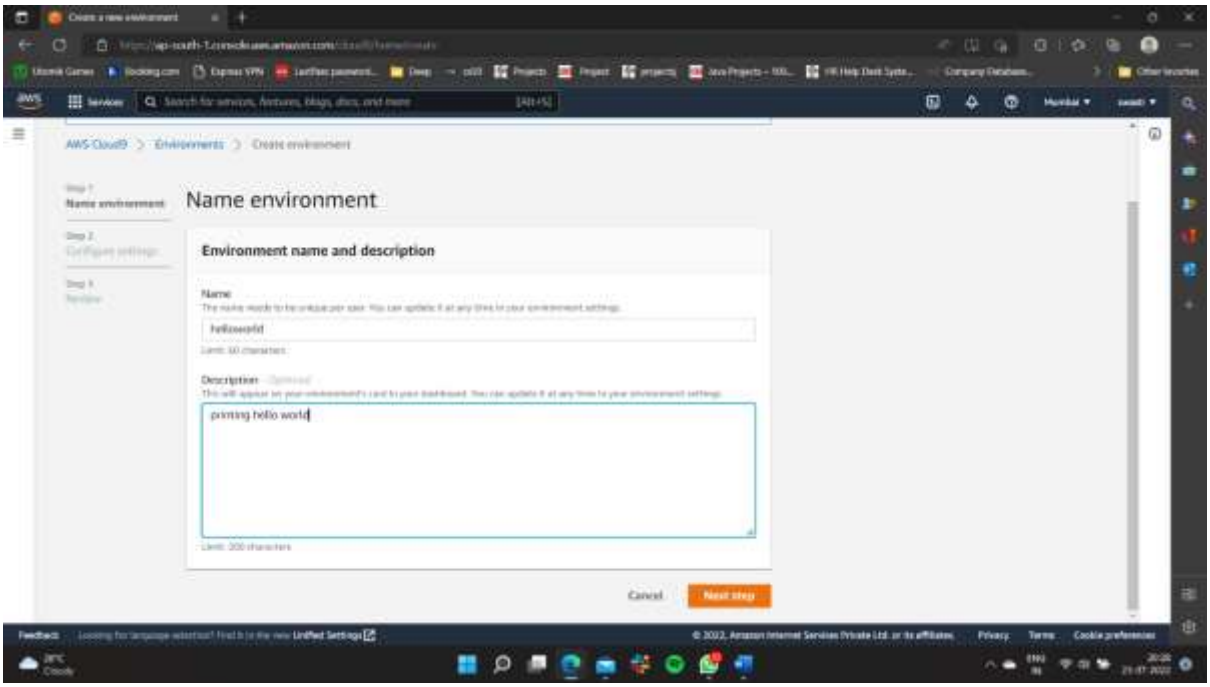
Procedure:

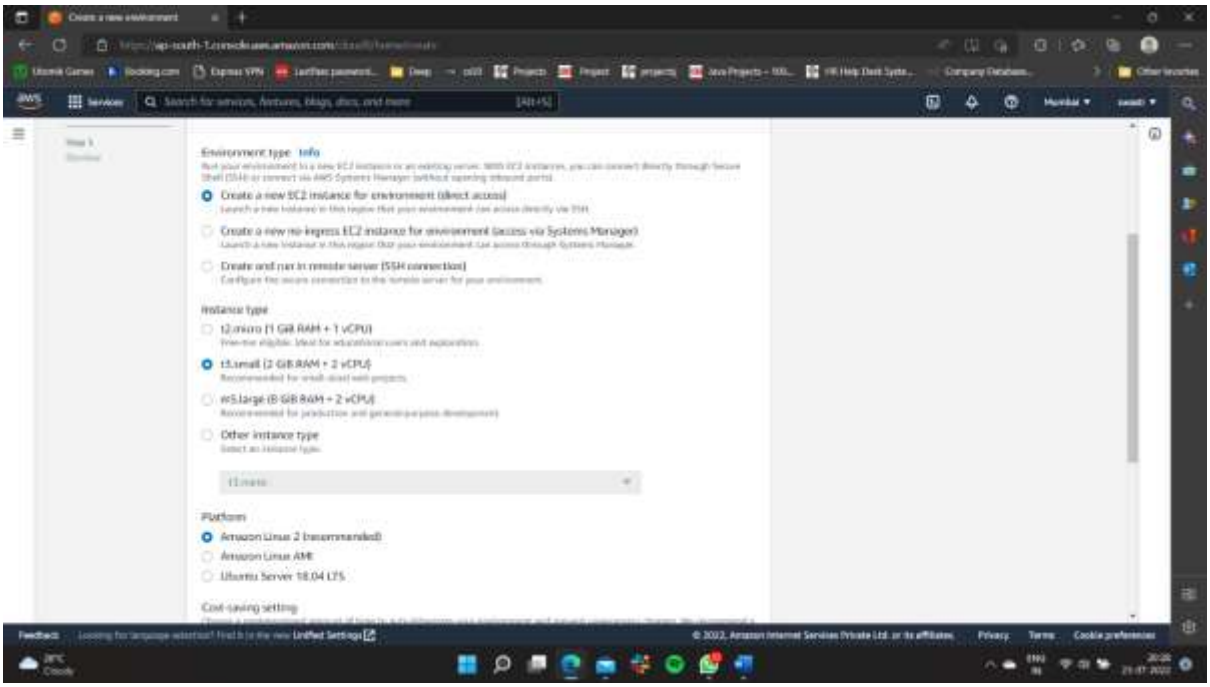
Setup and launch the cloud9 IDE:

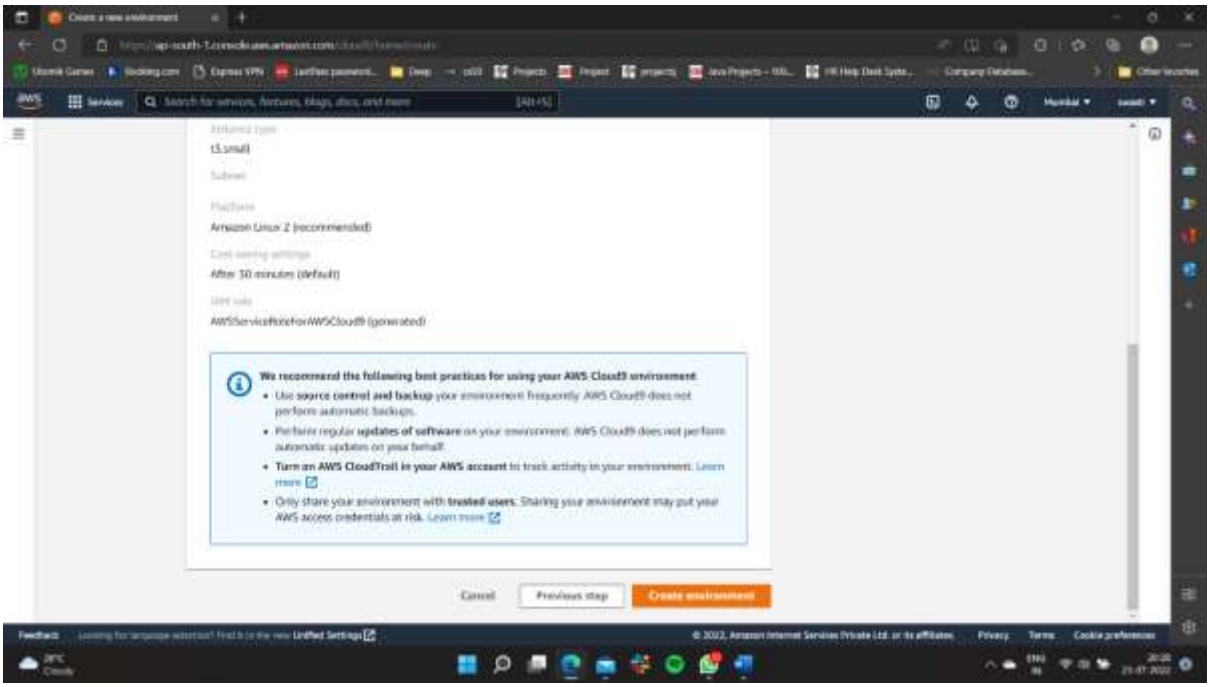
- Create an account on AWS
- After creating an account search for cloud9 in the search bar of aws and click oncloud9
- After that you will land on the cloud9 tool page read all the instruction and click on create environment
- Fill all the details asked and proceed remember select the t2.micro instance since its free● After reviewing, click on create environment. This part of experiment is complete

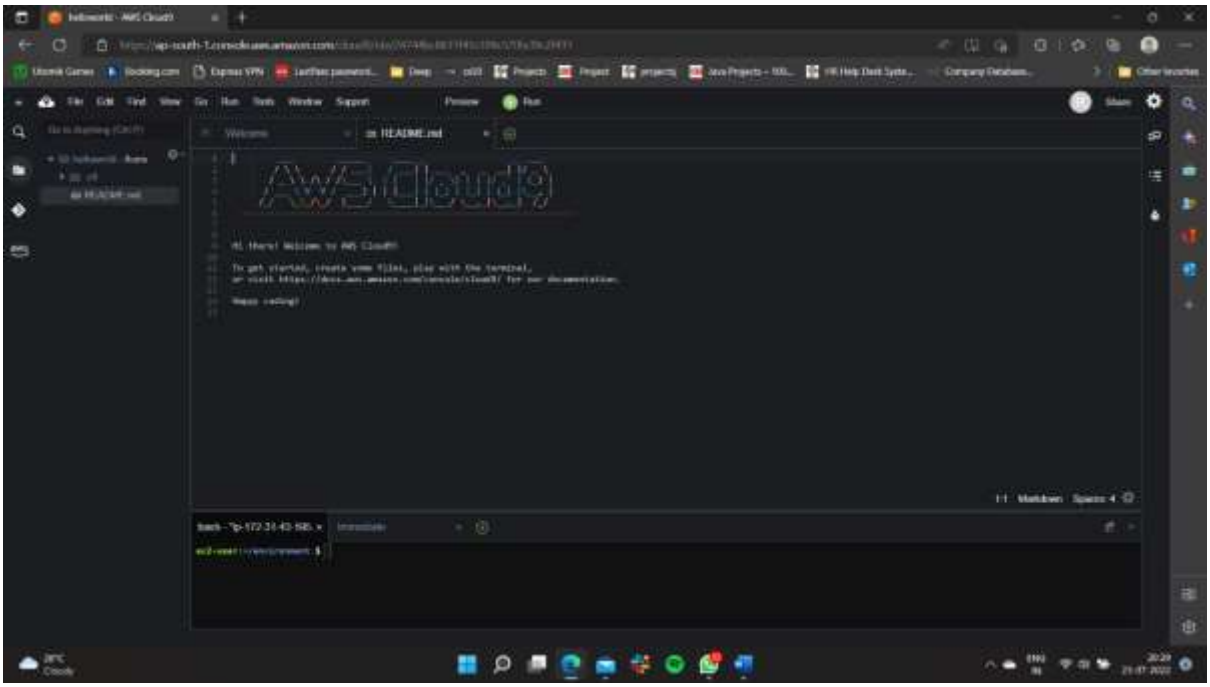
Output :

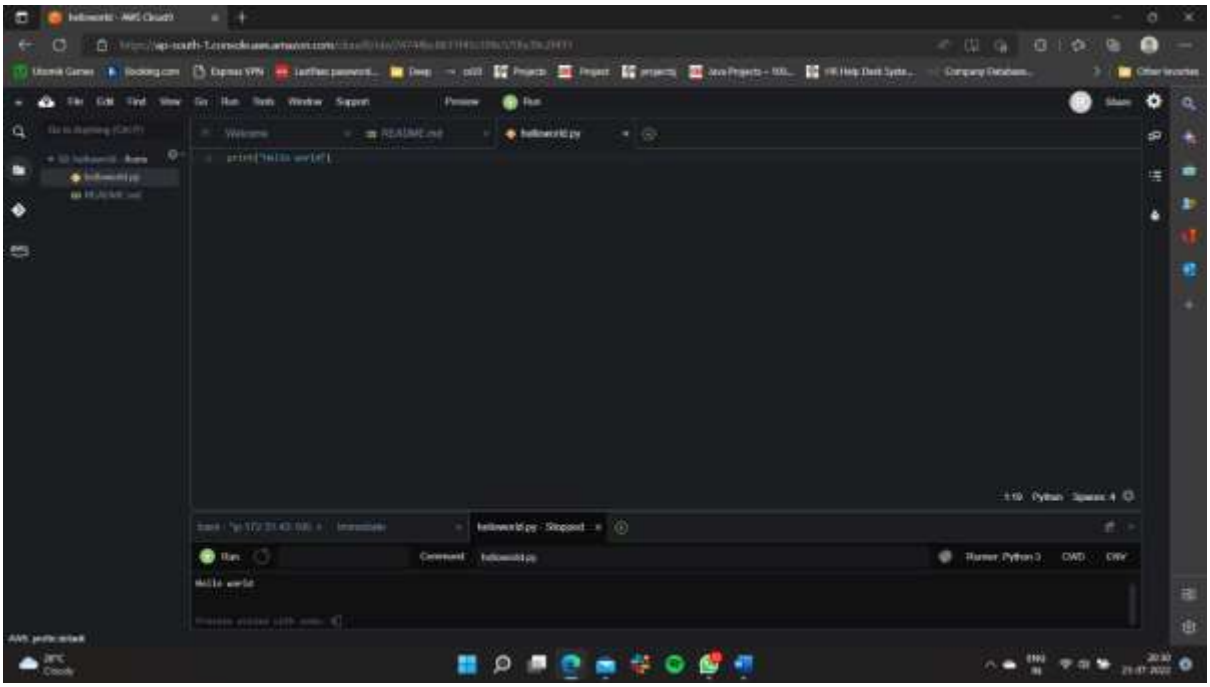
CREATING ENVIRONMENT:

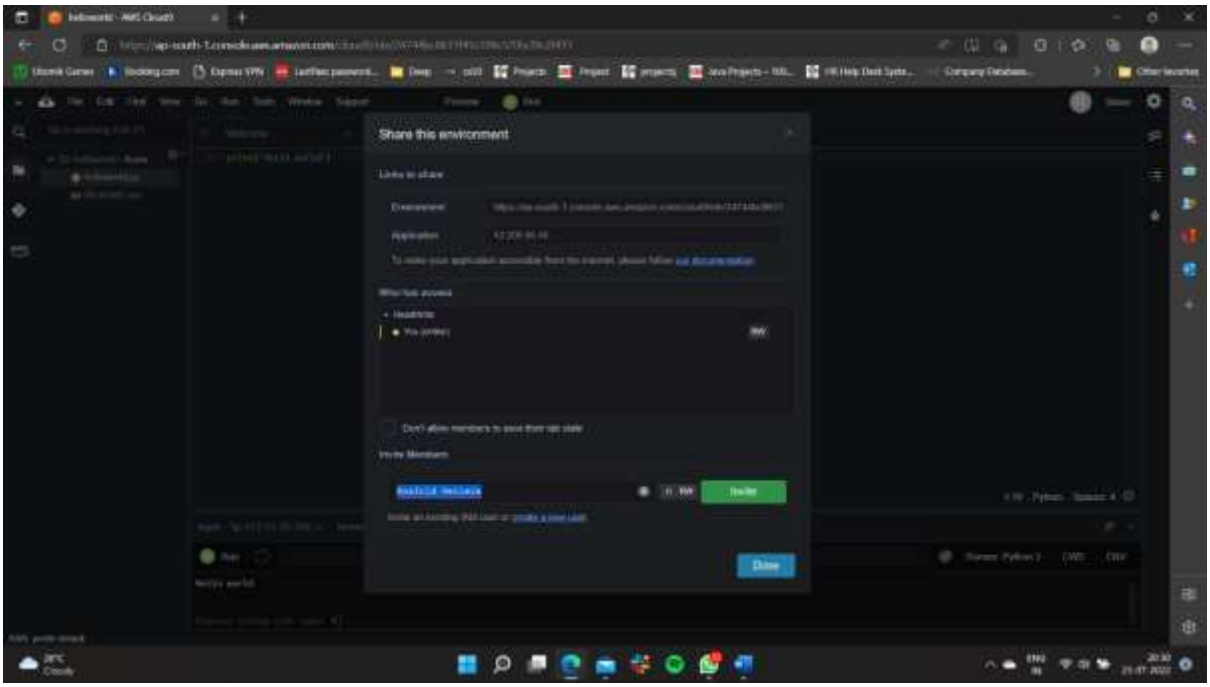

AWS Cloud9 > Environments > Create environment
Name environment
Environment name and description
Name
helloworld
Description
printing hello world
Cancel
Next step


Environment type Info
Create a new EC2 instance for environment (direct access)
Create a new no-ingress EC2 instance for environment (access via Systems Manager)
Create and run in remote server (SSH connection)
Instance type
t2.micro (1 GiB RAM + 1 vCPU)
t3.small (2 GiB RAM + 2 vCPU)
m5.large (8 GiB RAM + 2 vCPU)
Other instance type
Platform
Amazon Linux 2 (recommended)
Amazon Linux AMI
Ubuntu Server 18.04 LTS
Cost-saving setting

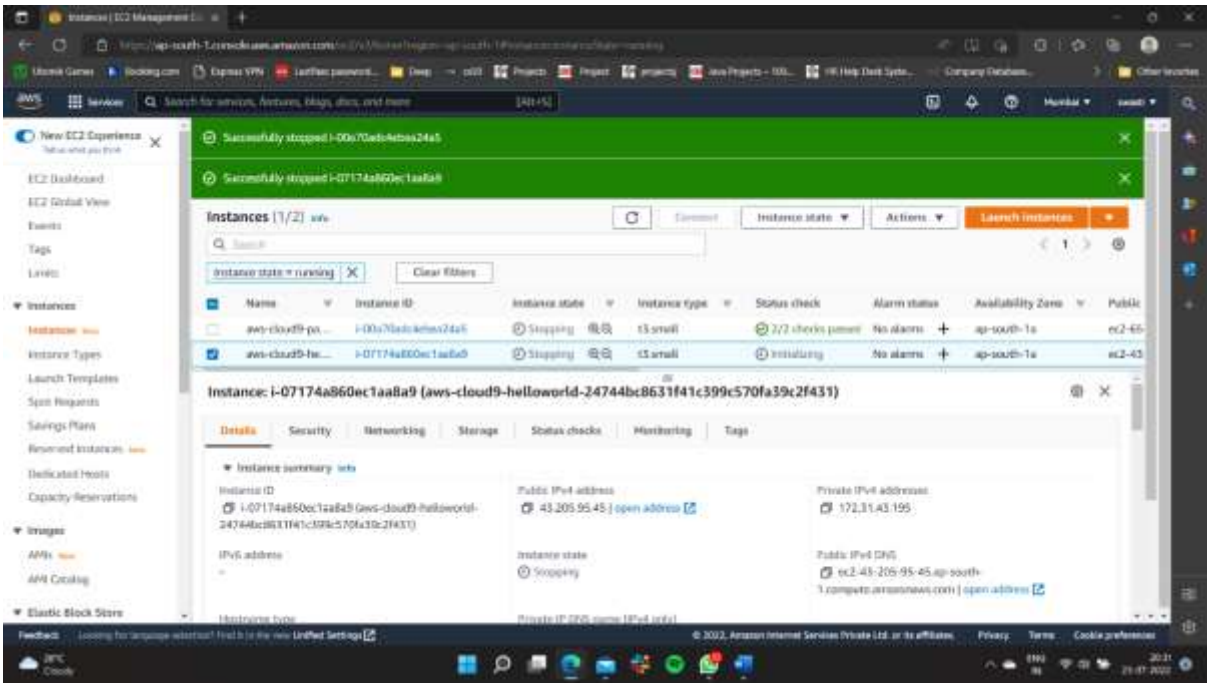

(S small)
Amazon Linux 2 (recommended)
After 30 minutes (default)
AWSServiceRoleForAWSCloud9 (generated)
We recommend the following best practices for using your AWS Cloud9 environment
Use source control and backup your environment frequently. AWS Cloud9 does not perform automatic backups.
Perform regular updates of software on your environment. AWS Cloud9 does not perform automatic updates on your behalf.
Turn on AWS CloudTrail in your AWS account to track activity in your environment. Learn more
Only share your environment with trusted users. Sharing your environment may put your AWS access credentials at risk. Learn more
Cancel
Previous step
Create environment
Feedback
Privacy
Terms
Cookie preferences

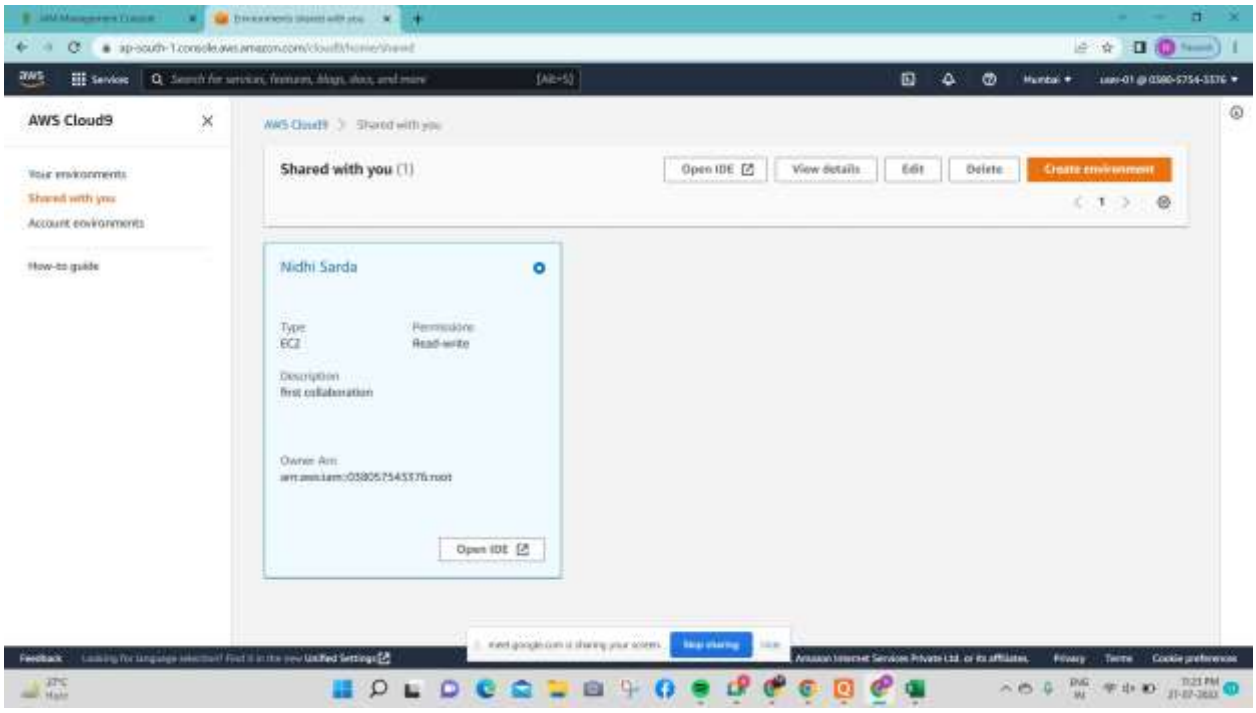



print("hello world")
hello world



Stopping Instances


Successfully stopped i-00a70adc4ebea24a5
Successfully stopped i-07174a860ec1aa8a9
Instances (1/2)
Instance: i-07174a860ec1aa8a9 (aws-cloud9-helloworld-24744bc8631f41c399c570fa39c2f431)
Details
Security
Networking
Storage
Status checks
Monitoring
Tags


AWS Cloud9
Your environments
Shared with you
Account environments
How-to guide
AWS Cloud9 > Shared with you
Shared with you (1)
Open IDE
View details
Edit
Delete
Create environment
Nidhi Sarda
Type
EC2
Permissions
Read-write
Description
first collaboration
Owner Arn
Open IDE

Experiment no. 2

Aim: To build your application using AWS Codebuild and Deploy on S3/SEBS using AWS CodePipeline, deploy Sample Application on EC2 instance using AWS CodeDeploy.

Steps:

Advanced DevOps

NAME :Swasti Jain

CLASS : TE IT

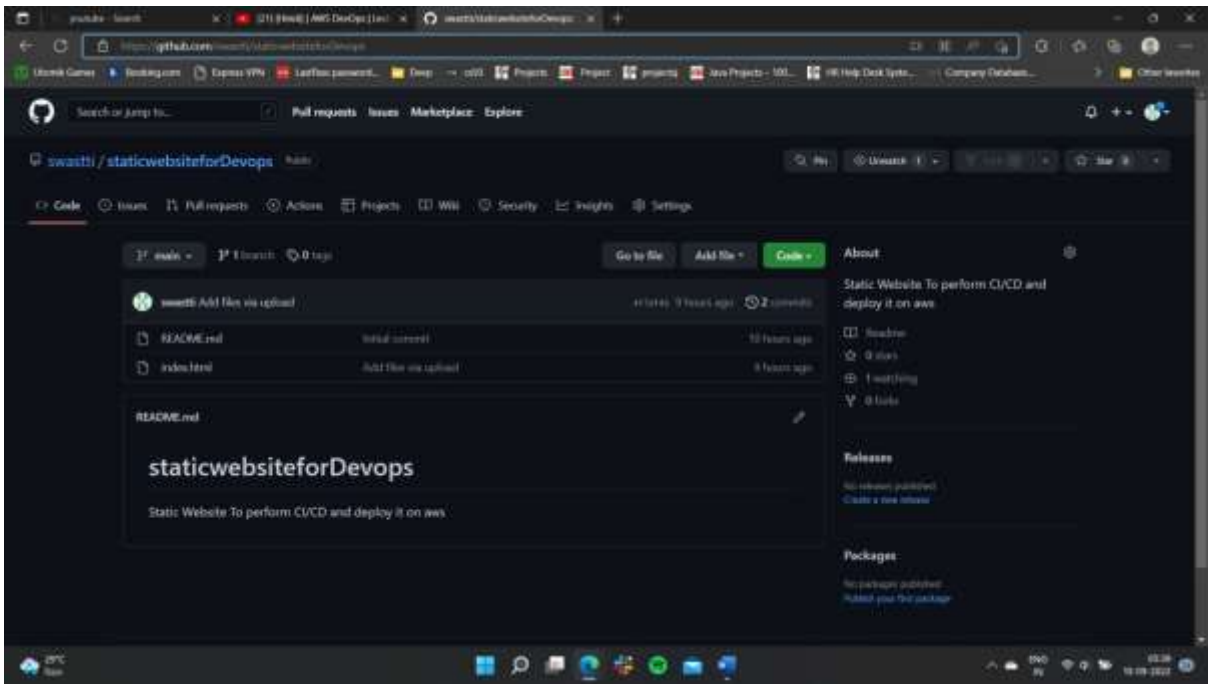
ROLL NO : 24

Exp 2

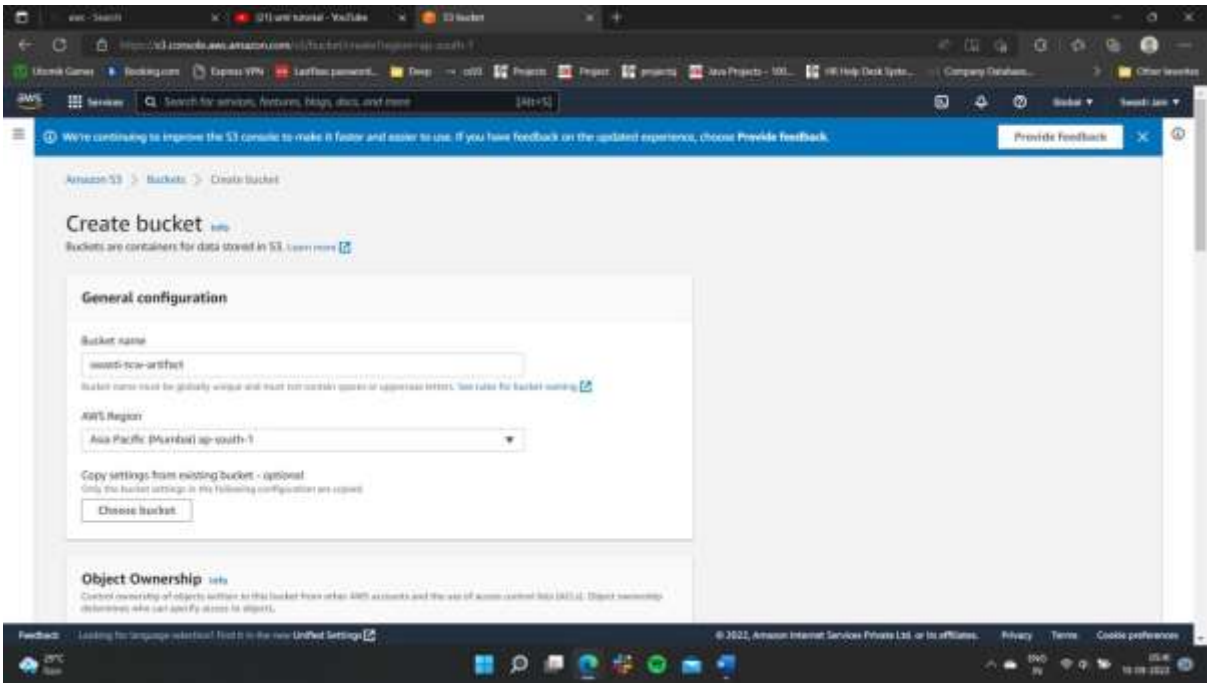
Title : To Build Your Application using AWS CodeBuild and Deploy on S3 / SEBS using AWS CodePipeline, deploy Sample Application on EC2 instance using AWS CodeDeploy

Steps:

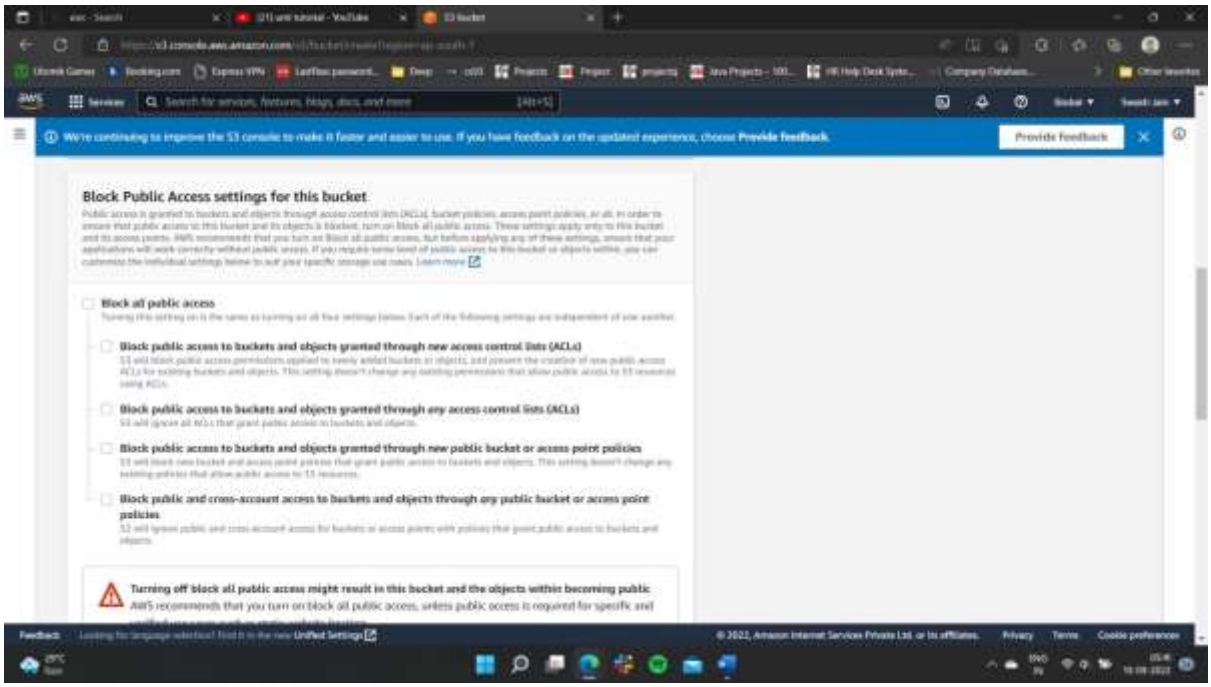
Select a github repository from which you want to deploy the source code
Reference link for Github:[swastti/staticwebsiteforDevops: Static Website To perform CI/CD and deploy it on aws (github.com)]



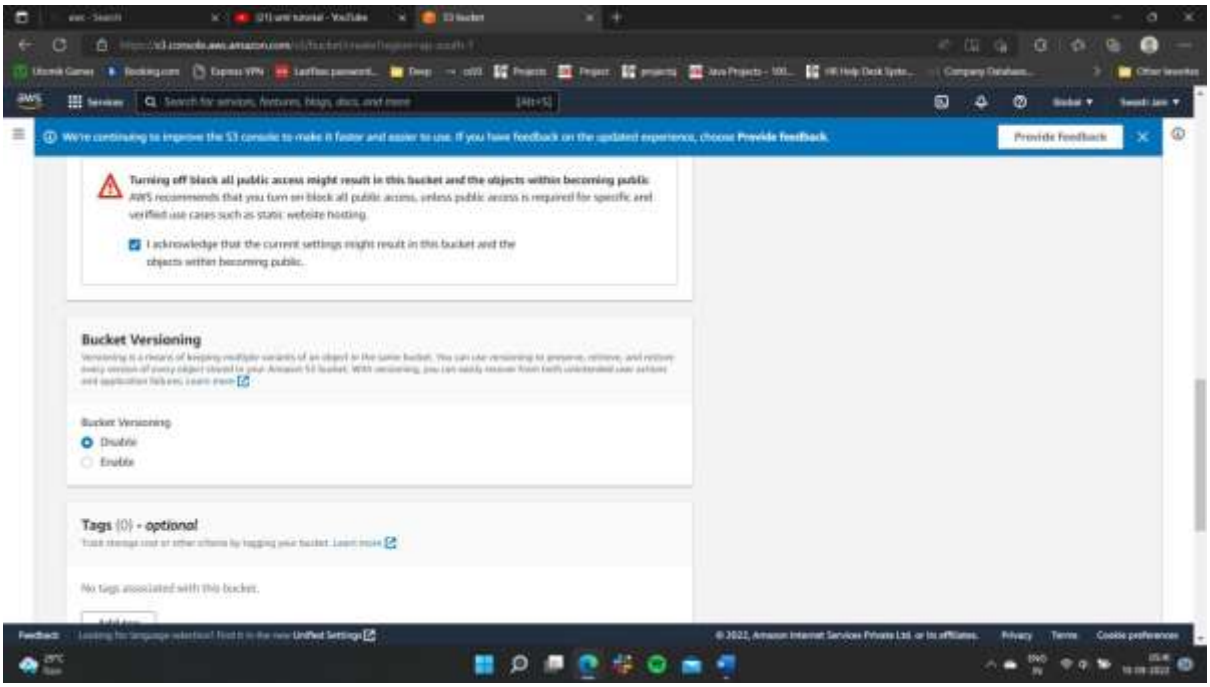
Go to aws console and search for s3 service . Here we have to create 2 buckets one for storing artifacts and the other for deployed code .
Now we start creating the first bucket:

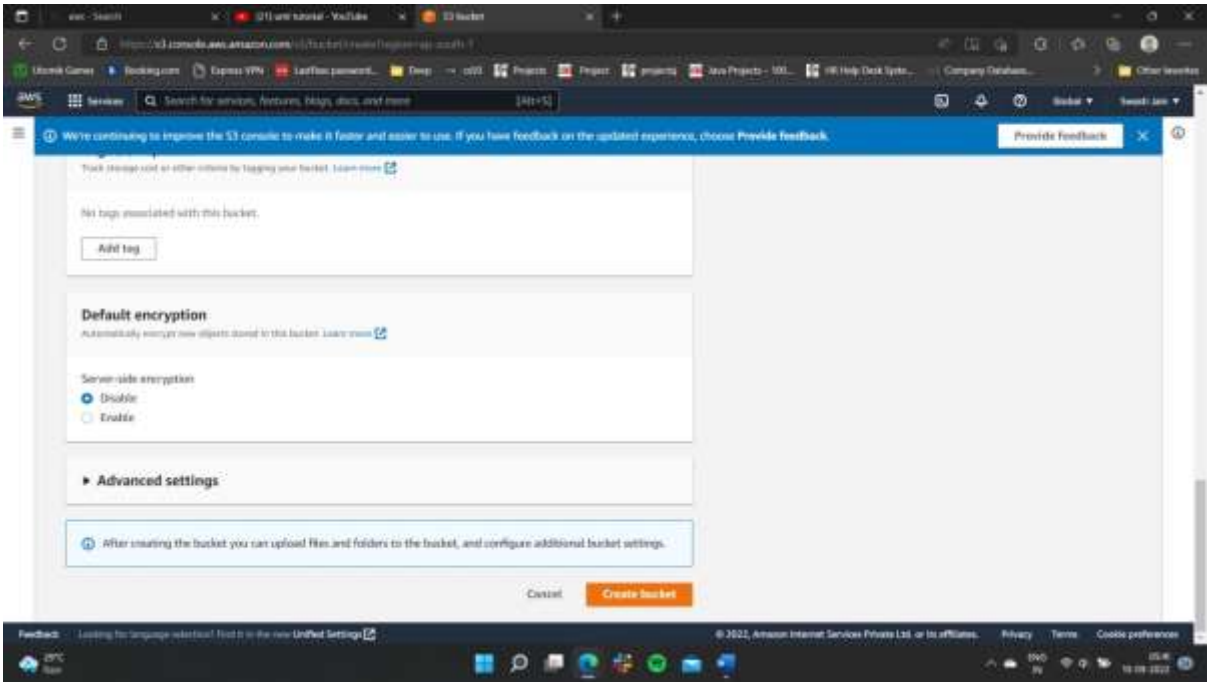


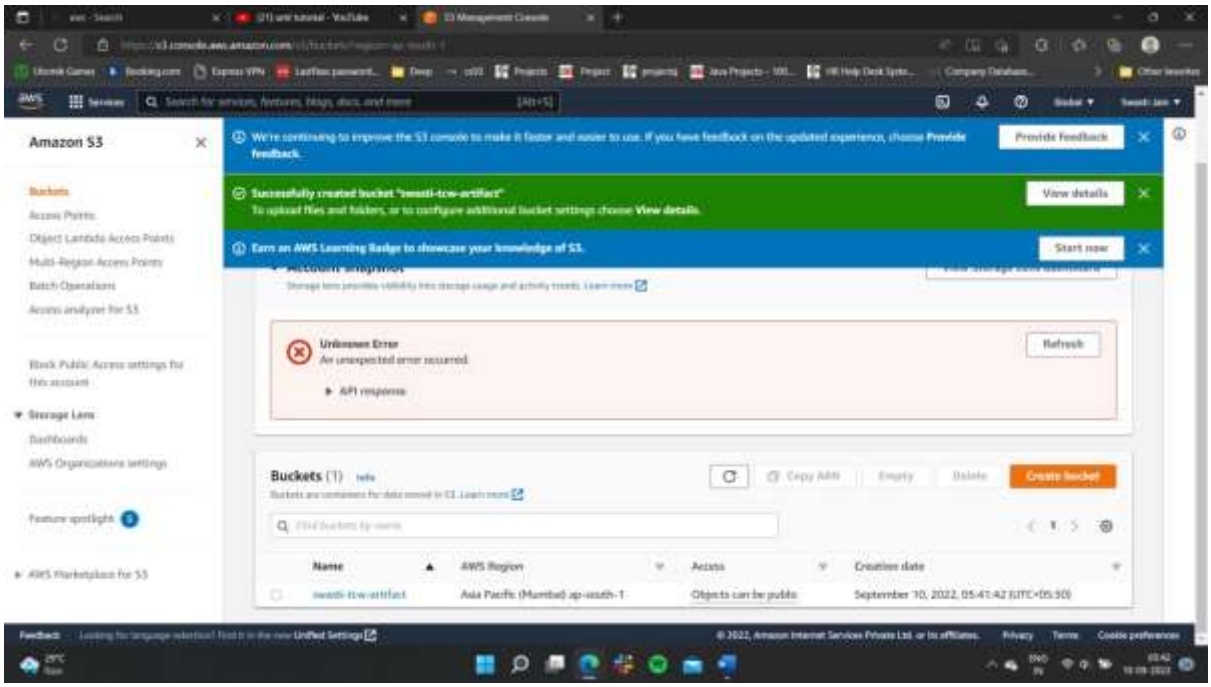
Now we will name the bucket as swasti-tcw-artifacts .



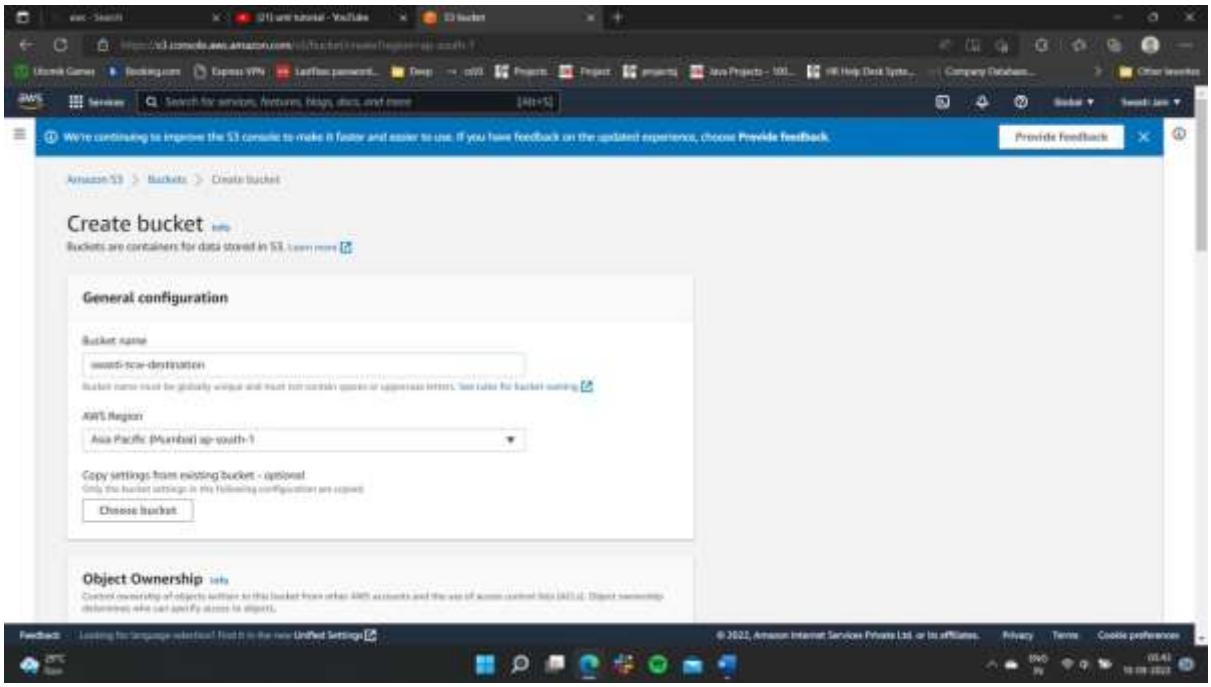
now the only change you have to make is to disable the block all public access and crete bucket and the first bucket will be ready.

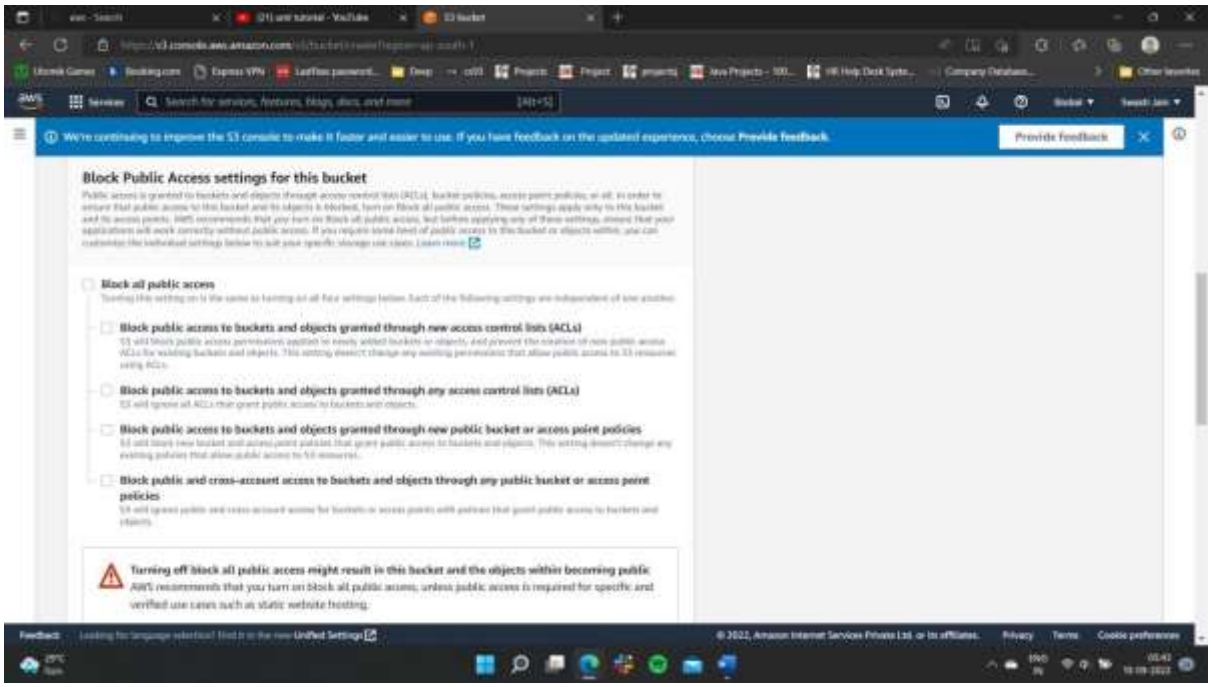

Turning off block all public access might result in this bucket and the objects within becoming public
I acknowledge that the current settings might result in this bucket and the objects within becoming public.
Bucket Versioning
Disable
Enable
Tags (0) - optional
No tags associated with this bucket.

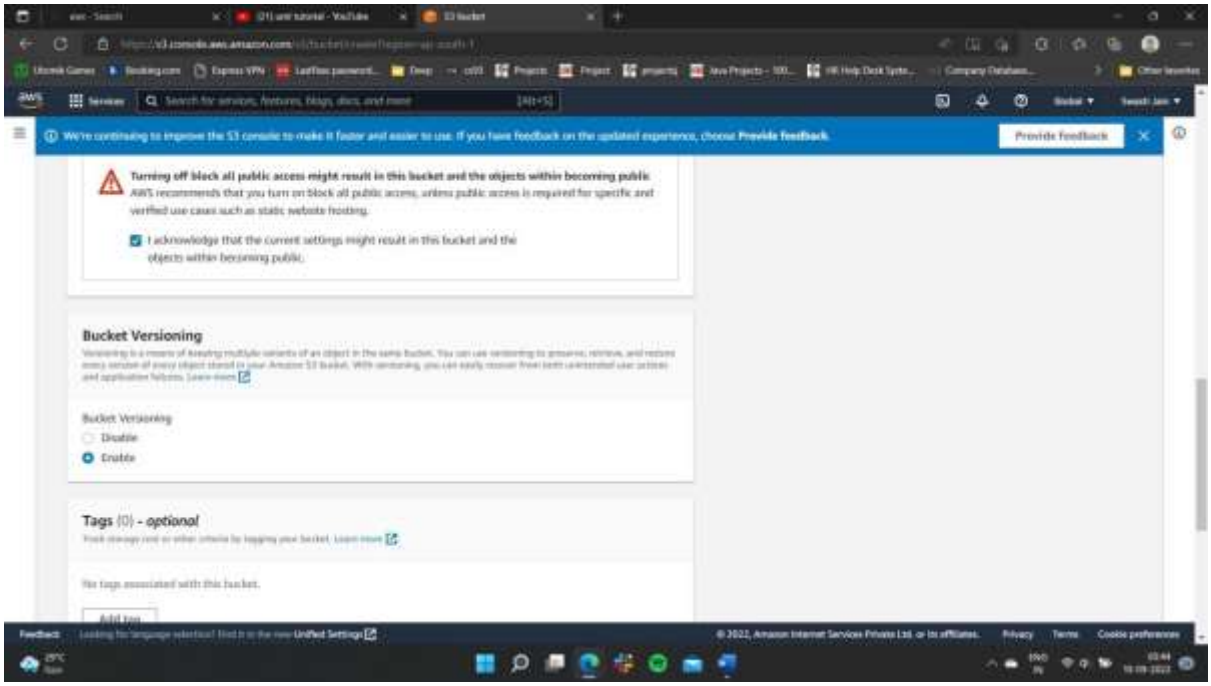

No tags associated with this bucket.
Add tag
Default encryption
Server-side encryption
Disable
Enable
Advanced settings
After creating the bucket you can upload files and folders to the bucket, and configure additional bucket settings.
Cancel
Create bucket



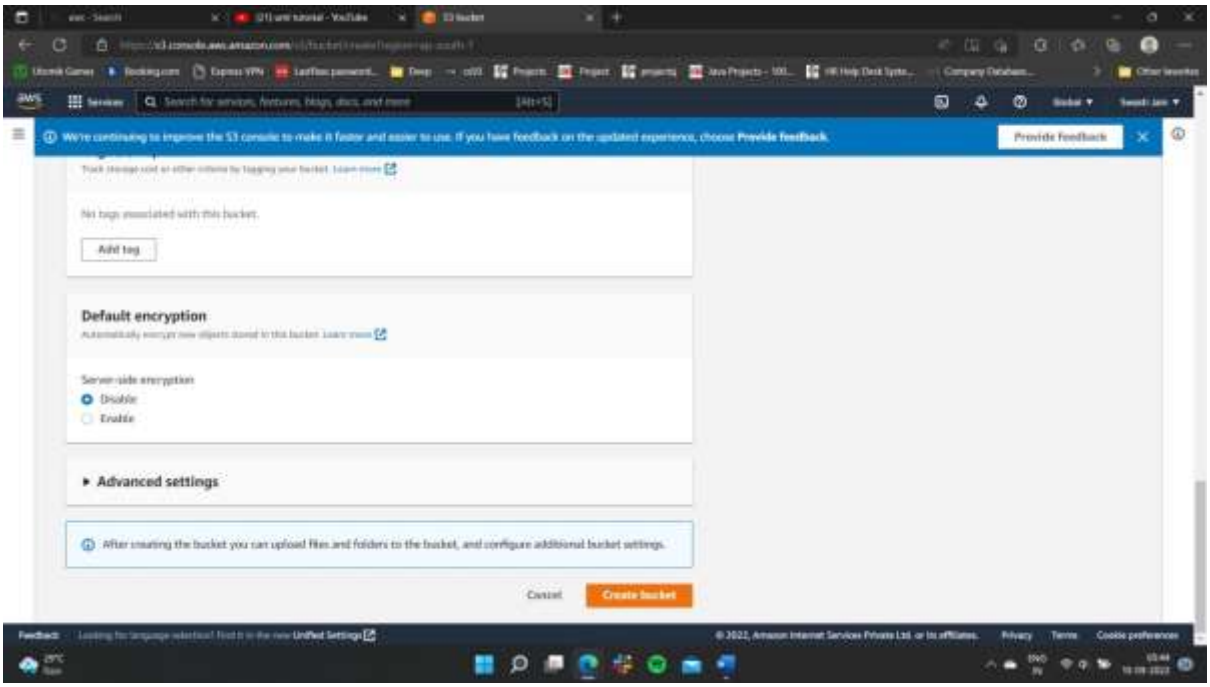
Now in the similar manner we have to create one more bucket for the destination


We're continuing to improve the S3 console to make it faster and easier to use. If you have feedback on the updated experience, choose Provide feedback.
Provide feedback
Amazon S3 > Buckets > Create bucket
Create bucket
Buckets are containers for data stored in S3.
General configuration
Bucket name
swasti-tcw-destination
AWS Region
Asia Pacific (Mumbai) ap-south-1
Copy settings from existing bucket - optional
Choose bucket
Object Ownership
Feedback
© 2022, Amazon Internet Services Private Ltd. or its affiliates.
Privacy
Terms
Cookie preferences

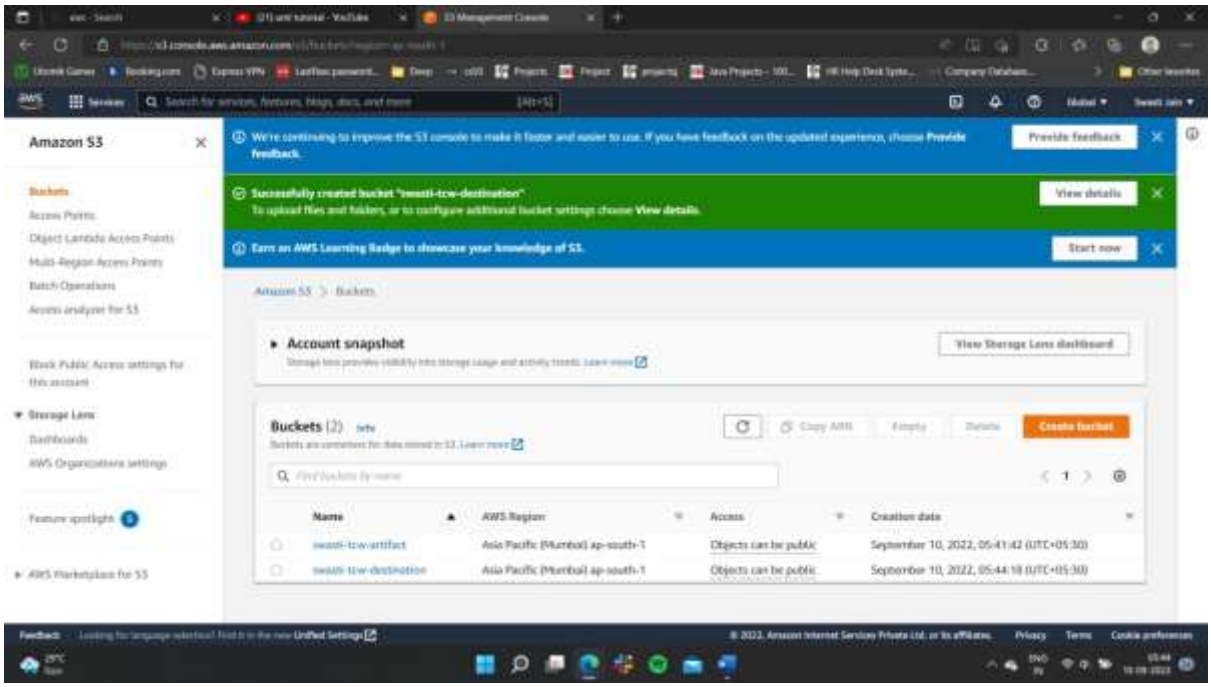

Block Public Access settings for this bucket
Block all public access
Block public access to buckets and objects granted through new access control lists (ACLs)
Block public access to buckets and objects granted through any access control lists (ACLs)
Block public access to buckets and objects granted 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.

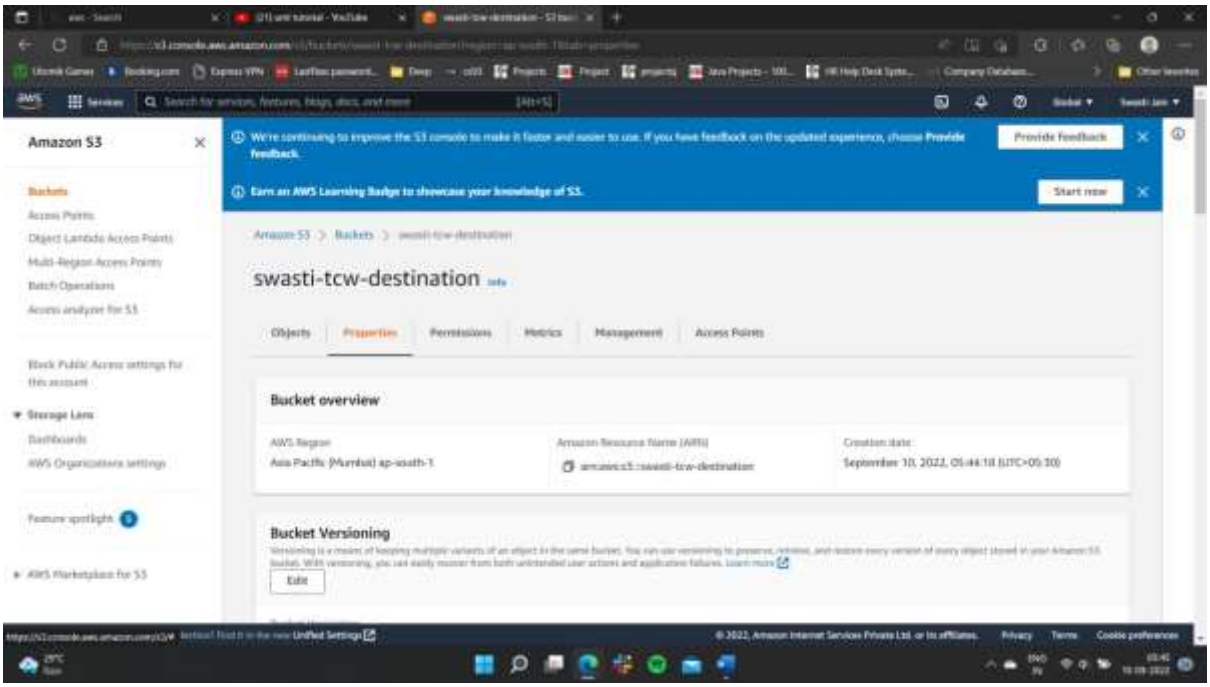

Turning off block all public access might result in this bucket and the objects within becoming public
AWS recommends that you turn on block all public access, unless public access is required for specific and verified use cases such as static website hosting.
I acknowledge that the current settings might result in this bucket and the objects within becoming public.
Bucket Versioning
Bucket Versioning
Disable
Enable
Tags (0) - optional
No tags associated with this bucket.
Add tag

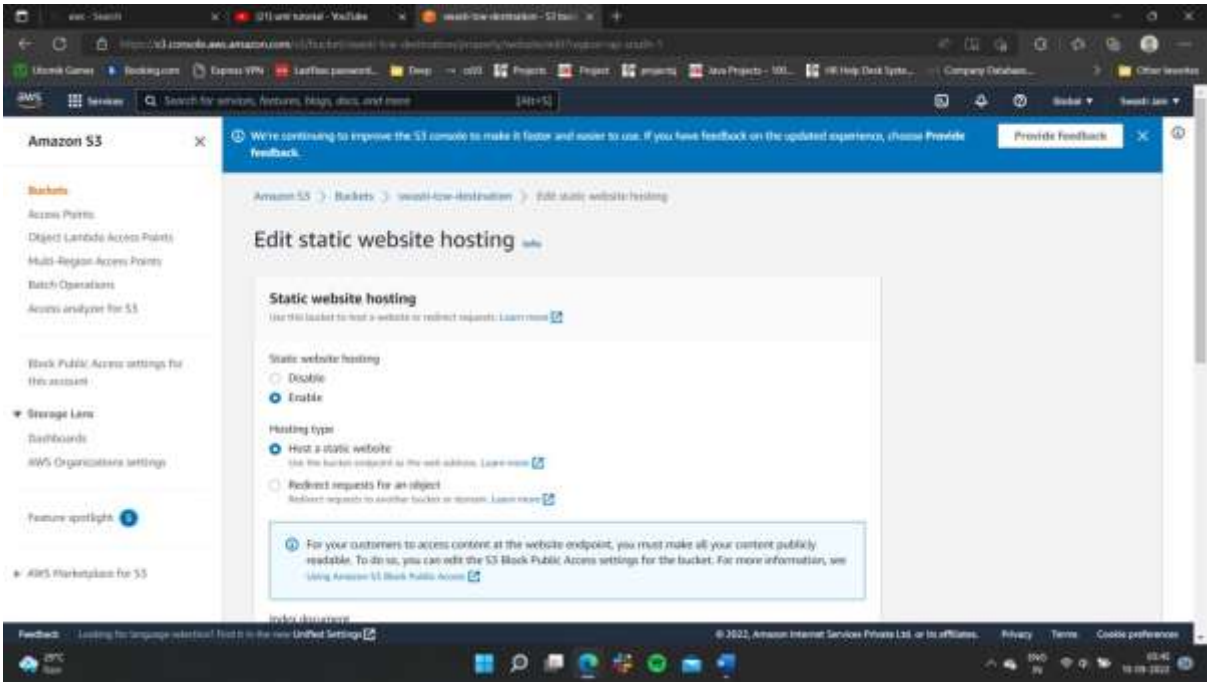
Here the only change for destination bucket is that you have to enable bucket versionin
Now both our buckets are ready.

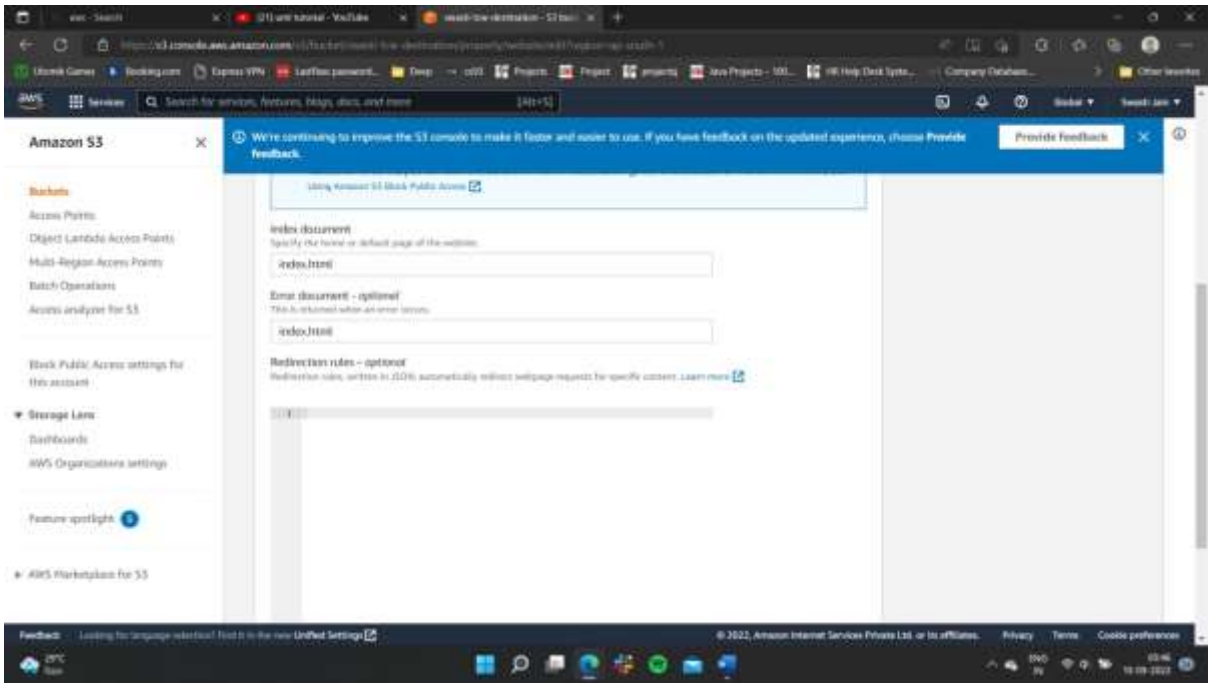


Now we will edit the static website hosting.


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
We're continuing to improve the S3 console to make it faster and easier to use. If you have feedback on the updated experience, choose Provide feedback.
Provide feedback
Successfully created bucket "swasti-tcw-destination"
To upload files and folders, or to configure additional bucket settings choose View details.
View details
Earn an AWS Learning Badge to showcase your knowledge of S3.
Start now
Amazon S3 > Buckets
Account snapshot
View Storage Lens dashboard
Buckets (2) Info
Create bucket
Name
AWS Region
Access
Creation date
swasti-tcw-artifact
Asia Pacific (Mumbai) ap-south-1
Objects can be public
September 10, 2022, 05:41:42 (UTC+05:30)
swasti-tcw-destination
Asia Pacific (Mumbai) ap-south-1
Objects can be public
September 10, 2022, 05:44:18 (UTC+05:30)
Feedback
© 2022, Amazon Internet Services Private Ltd. or its affiliates.
Privacy
Terms
Cookie preferences

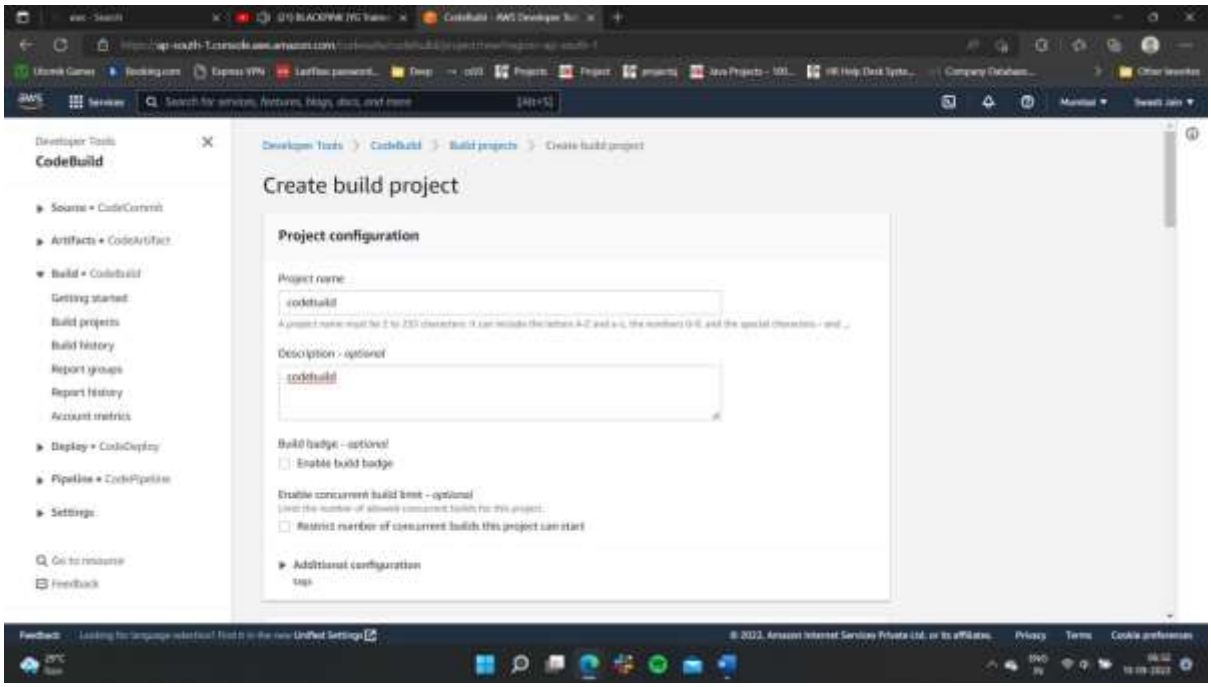

Amazon S3
swasti-tcw-destination
Objects
Properties
Permissions
Metrics
Management
Access Points
Bucket overview
Bucket Versioning
Edit

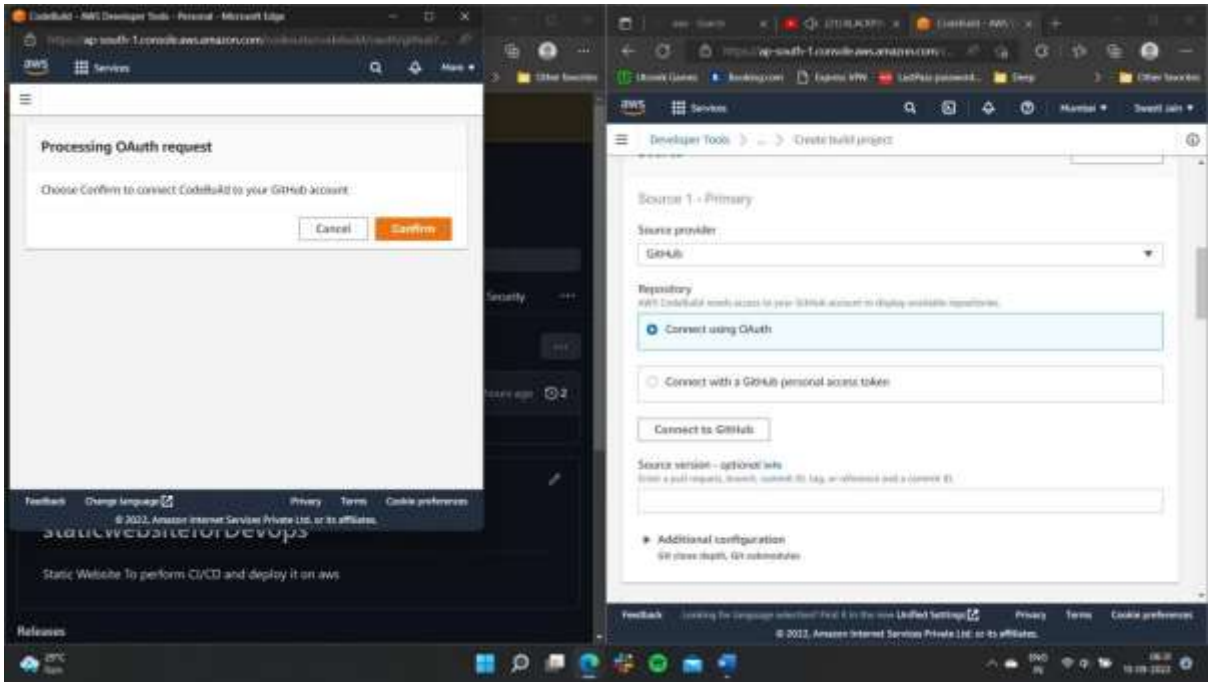

Amazon S3
Edit static website hosting
Static website hosting
Disable
Enable
Hosting type
Host a static website
Redirect requests for an object

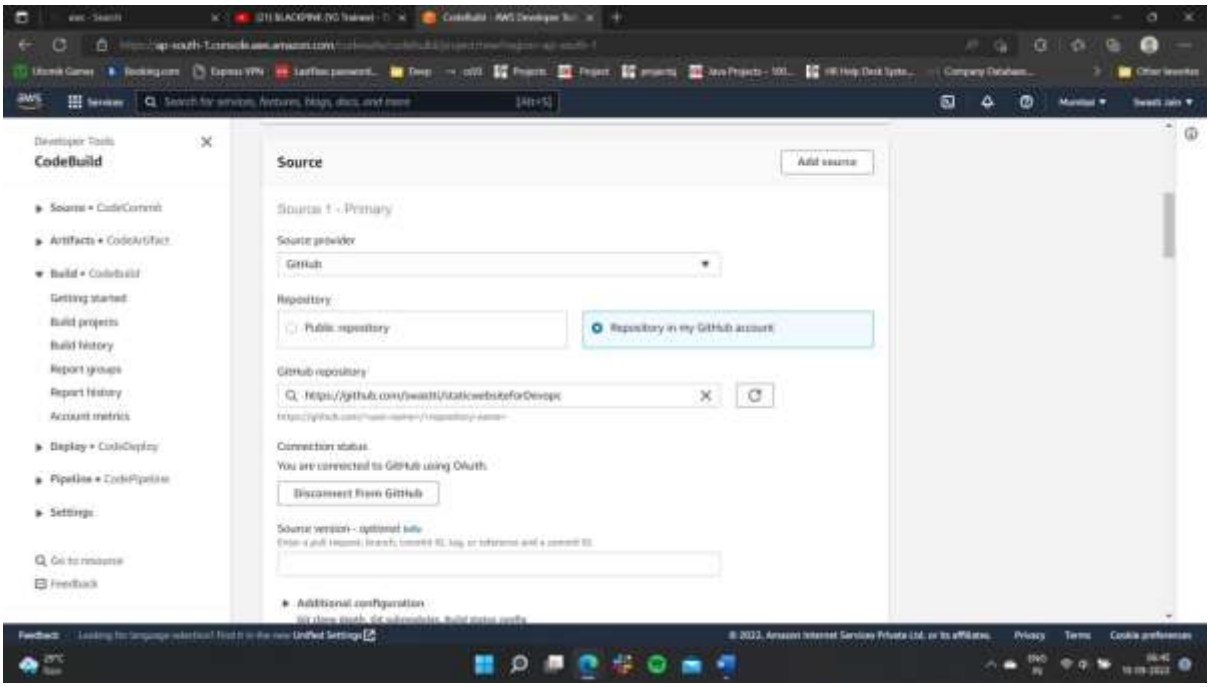


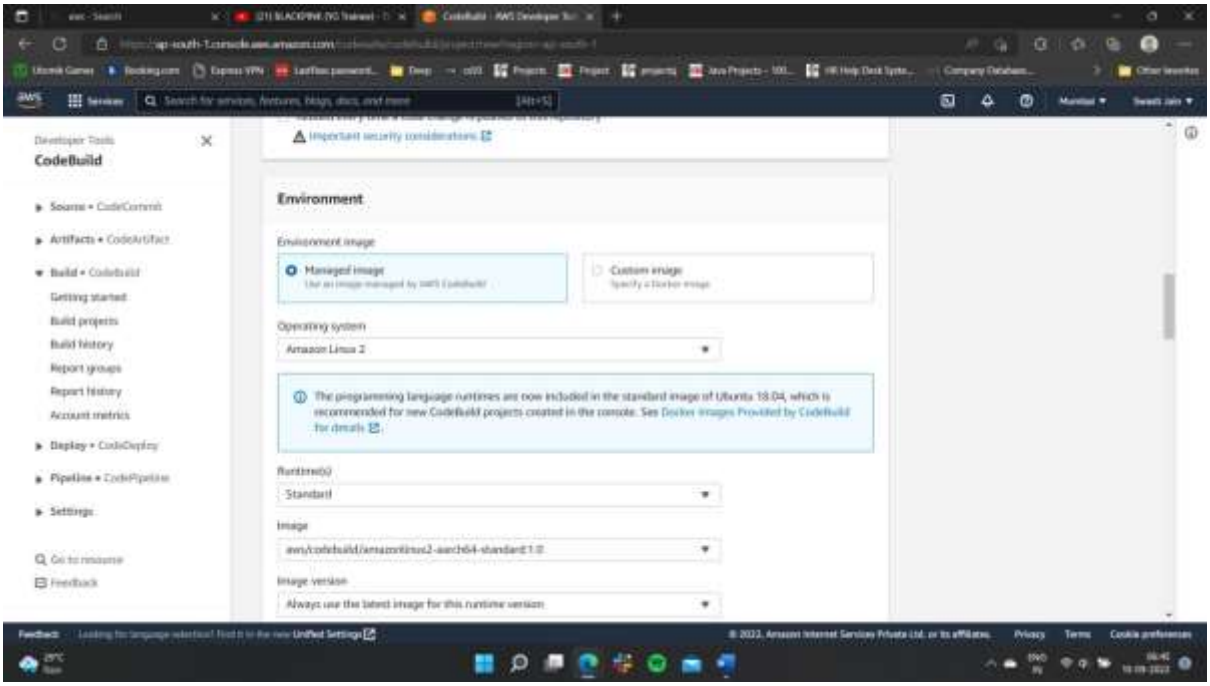
Now we will create a pipeline from github to S3.

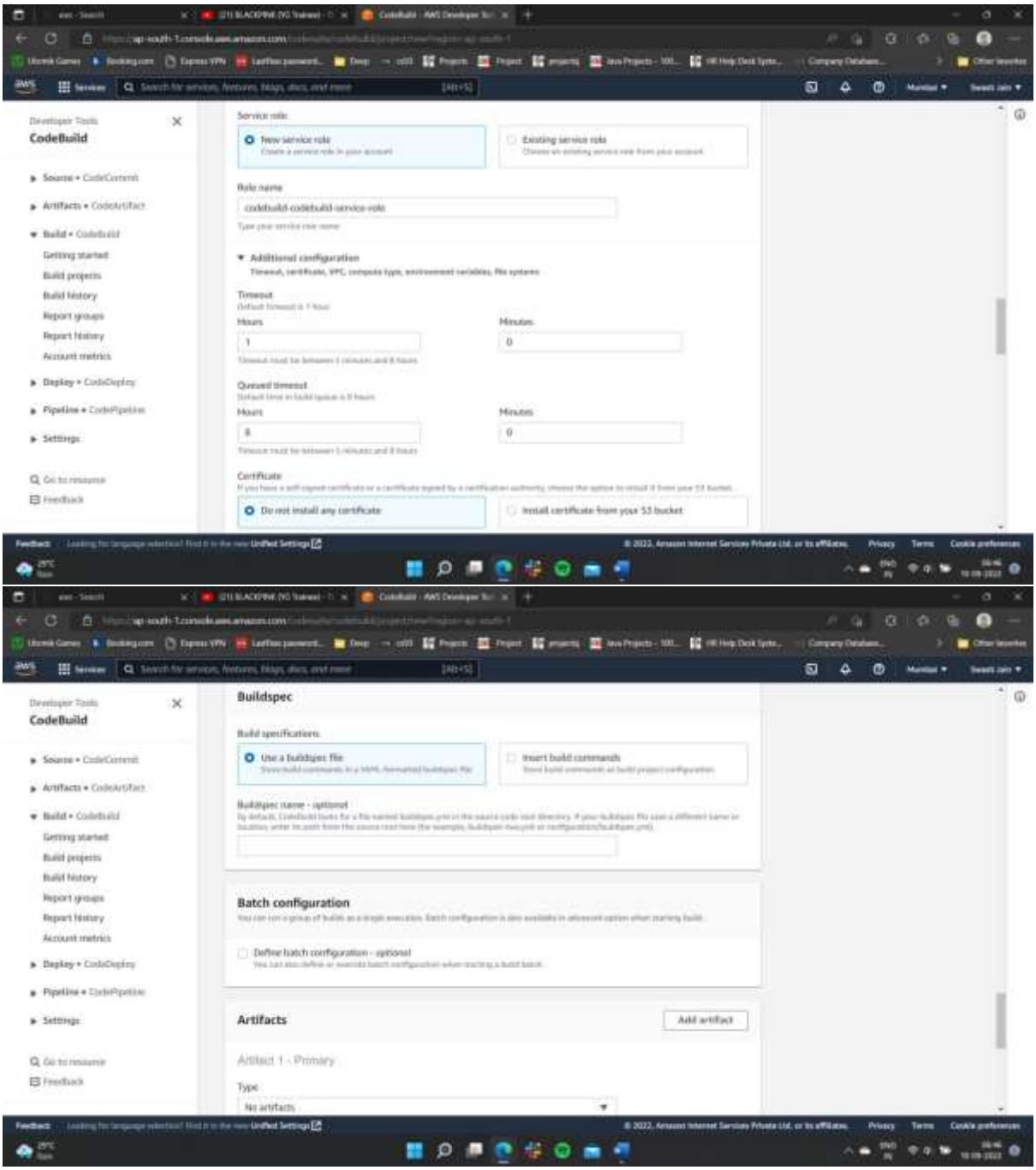

Developer Tools
AWS CodeBuild
Build and test code with elastic scaling. Pay only for the build time you use.
AWS CodeBuild is a fully managed continuous integration service that compiles source code, runs tests, and produces software packages that are ready to deploy. With CodeBuild, you don't need to provision, manage, and scale your own build servers. CodeBuild scales continuously and processes multiple builds concurrently, so your builds are not left waiting in a queue.
Create AWS CodeBuild project
Get started with AWS CodeBuild by creating your first build project.
Create project
Pricing (US)
How it works

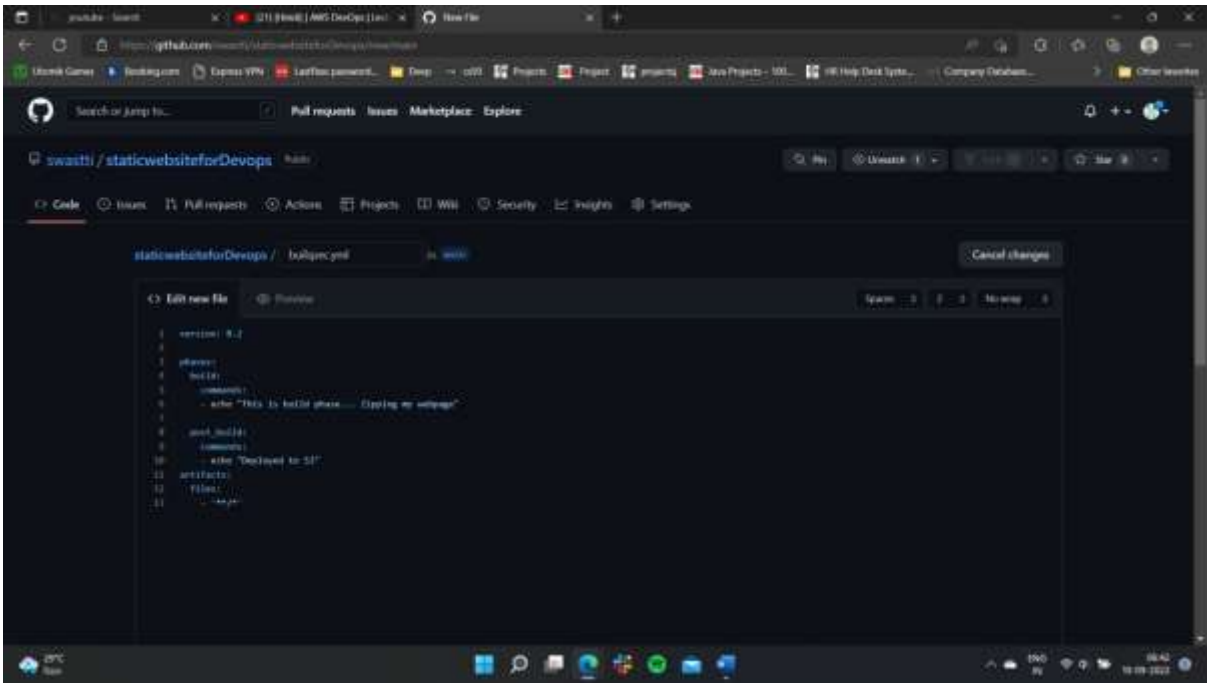

Developer Tools
CodeBuild
Source • CodeCommit
Artifacts • CodeArtifact
Build • CodeBuild
Getting started
Build projects
Build history
Report groups
Report history
Account metrics
Deploy • CodeDeploy
Pipeline • CodePipeline
Settings
Developer Tools > CodeBuild > Build projects > Create build project
Create build project
Project configuration
Project name
codebuild
Description - optional
codebuild
Build badge - optional
Enable build badge
Enable concurrent build limit - optional
Restrict number of concurrent builds this project can start
Additional configuration
tags

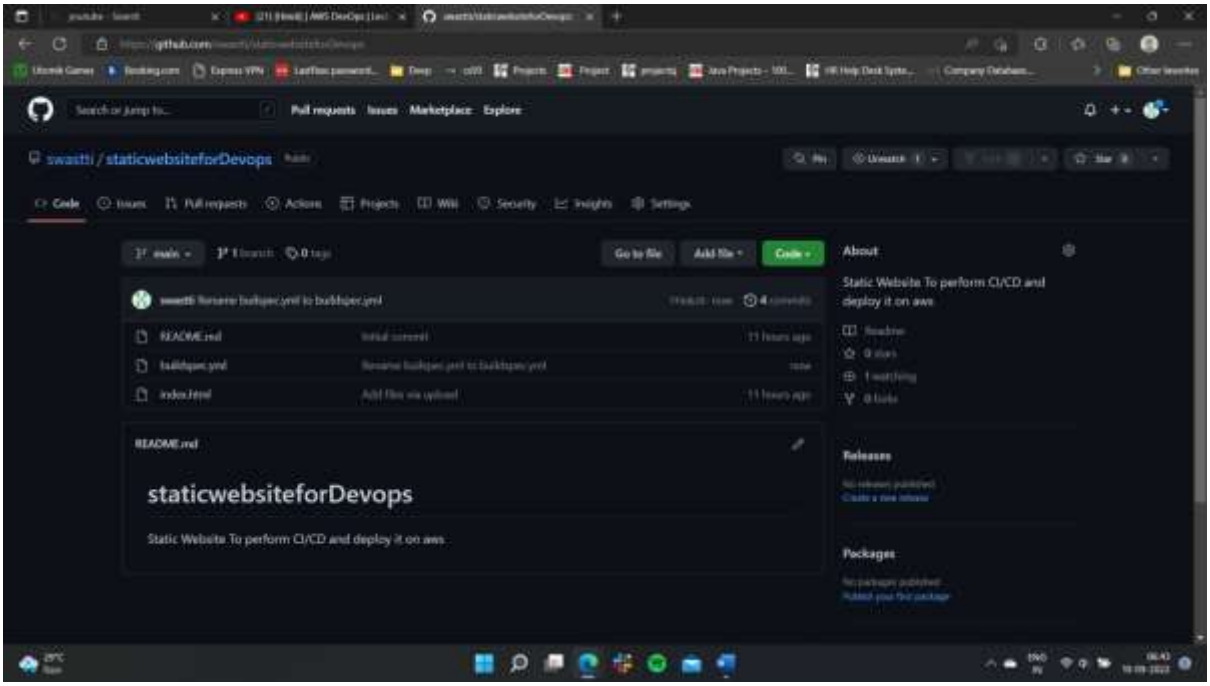

Processing OAuth request
Choose Confirm to connect CodeBuild to your GitHub account
Cancel
Confirm
Static Website To perform CI/CD and deploy it on aws
Releases
Developer Tools > Create build project
Source 1 - Primary
Source provider
GitHub
Repository
Connect using OAuth
Connect with a GitHub personal access token
Connect to GitHub
Source version - optional
Additional configuration

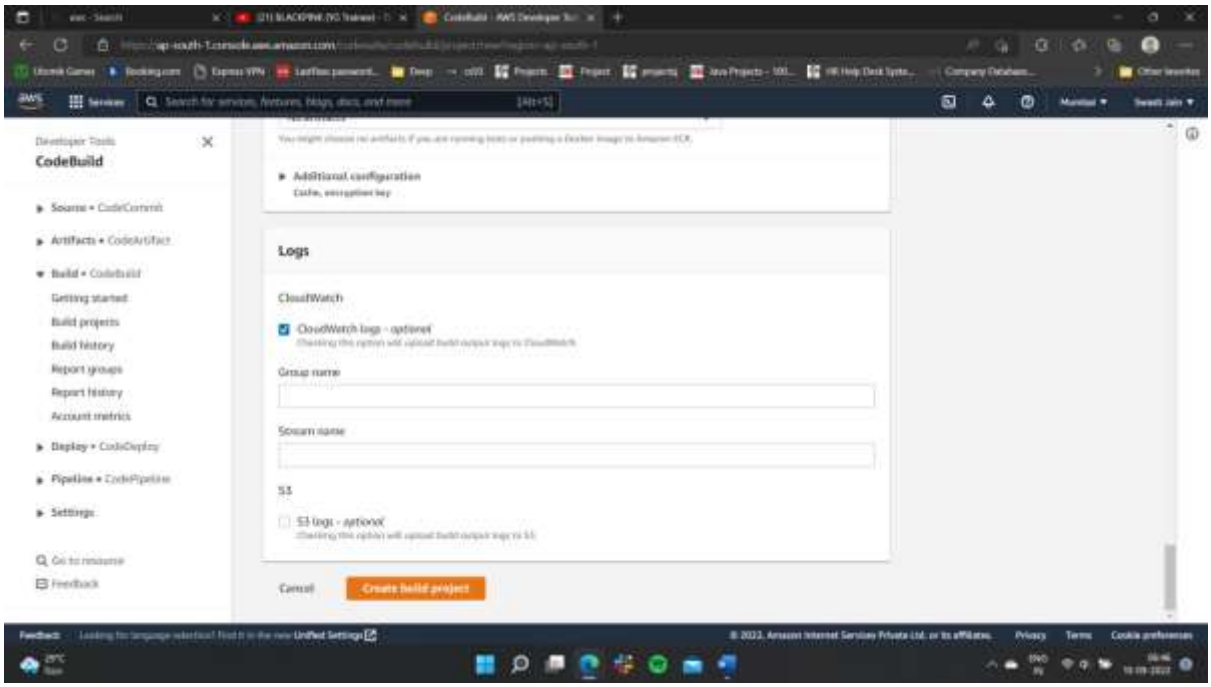

CodeBuild
Source
Add source
Source 1 - Primary
Source provider
GitHub
Repository
Public repository
Repository in my GitHub account
GitHub repository
https://github.com/swasti/staticwebsiteforDevops
Connection status
You are connected to GitHub using OAuth.
Disconnect from GitHub
Source version - optional
Additional configuration

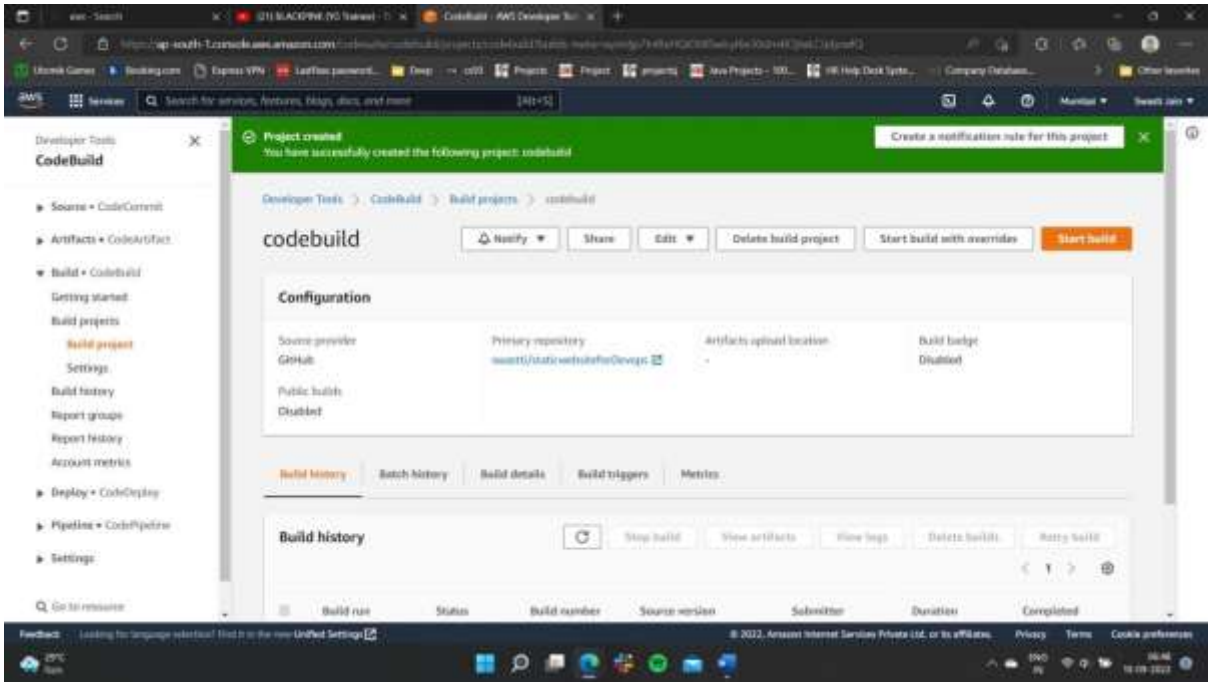

CodeBuild
Environment
Environment image
Managed image
Custom image
Operating system
Amazon Linux 2
Runtime(s)
Standard
Image
Image version
Always use the latest image for this runtime version


Developer Tools
CodeBuild
Source • CodeCommit
Artifacts • CodeArtifact
Build • CodeBuild
Getting started
Build projects
Build history
Report groups
Report history
Account metrics
Deploy • CodeDeploy
Pipeline • CodePipeline
Settings
Service role
New service role
Existing service role
Role name
codebuild-codebuild-service-role
Additional configuration
Timeout
Hours
Minutes
Queued timeout
Certificate
Do not install any certificate
Install certificate from your S3 bucket
Buildspec
Build specifications
Use a buildspec file
Insert build commands
Buildspec name - optional
Batch configuration
Define batch configuration - optional
Artifacts
Add artifact
Artifact 1 - Primary
Type
No artifacts

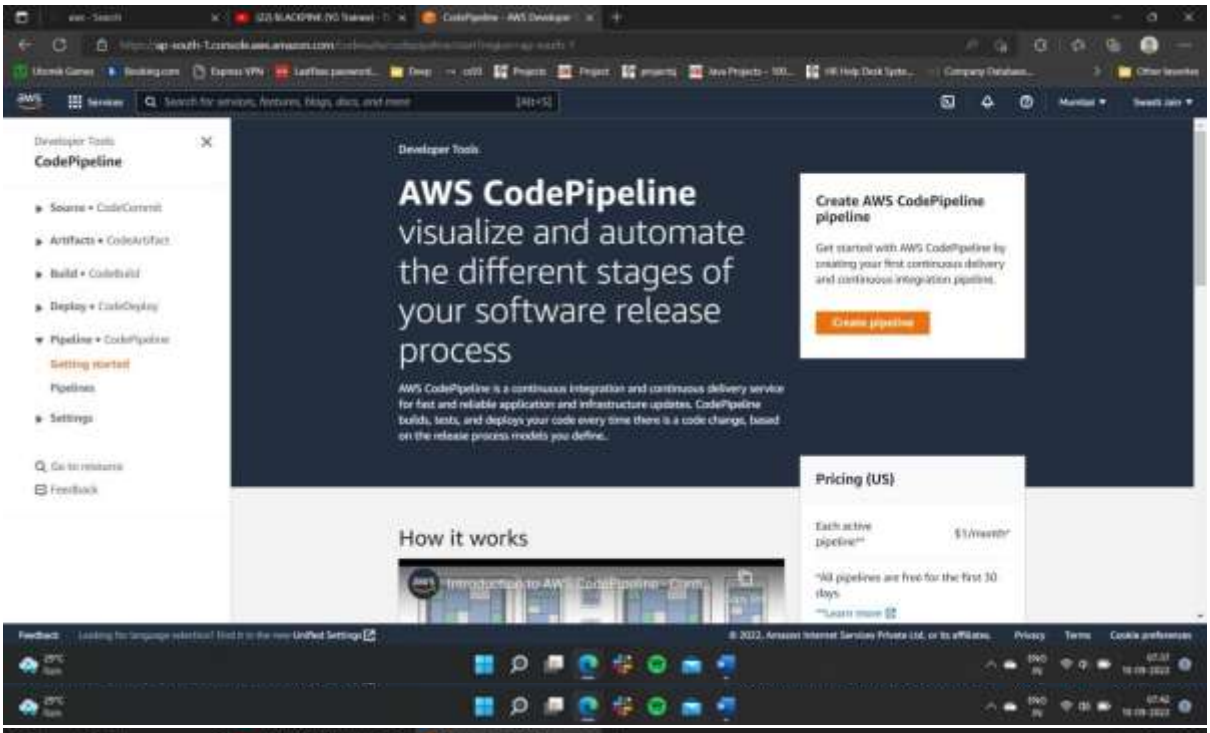

Pull requests
Issues
Marketplace
Explore
swastti / staticwebsiteforDevops
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
staticwebsiteforDevops /
buildspec.yml
Cancel changes
Edit new file

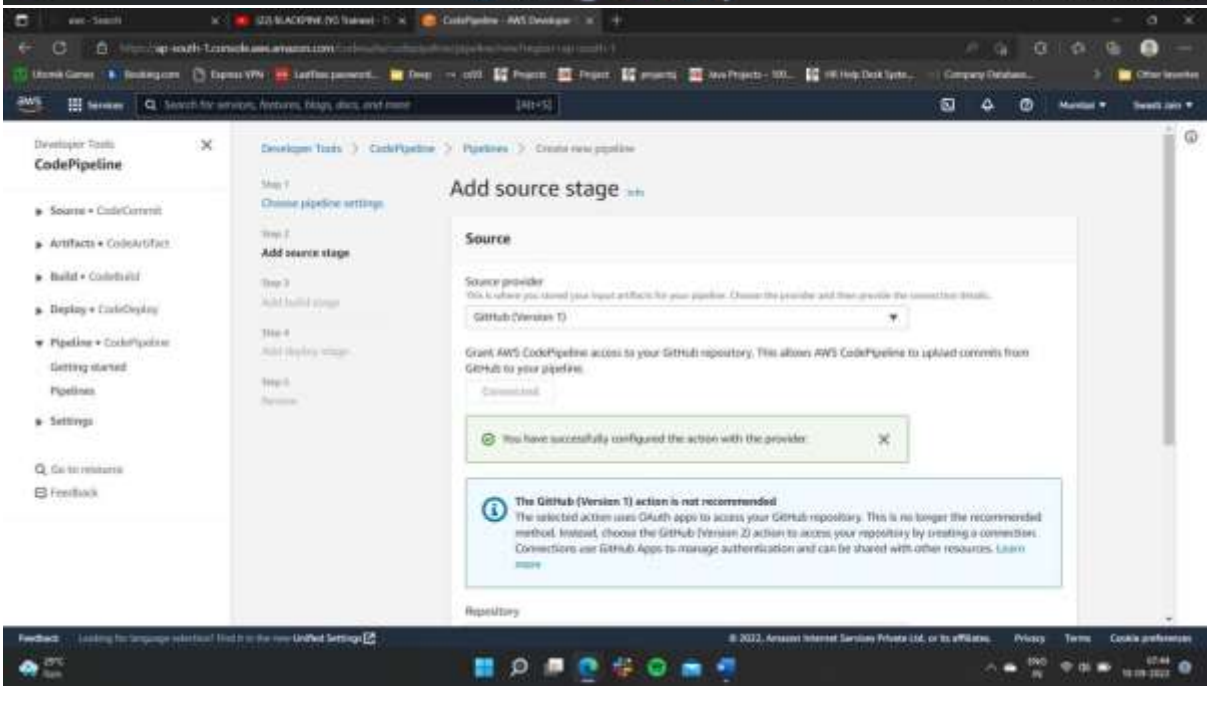

Pull requests
Issues
Marketplace
Explore
swastti / staticwebsiteforDevops
Code
Issues
Pull requests
Actions
Projects
Wiki
Security
Insights
Settings
Go to file
Add file
Code
About
Static Website To perform CI/CD and deploy it on aws
README.md
staticwebsiteforDevops
Static Website To perform CI/CD and deploy it on aws
Releases
Packages

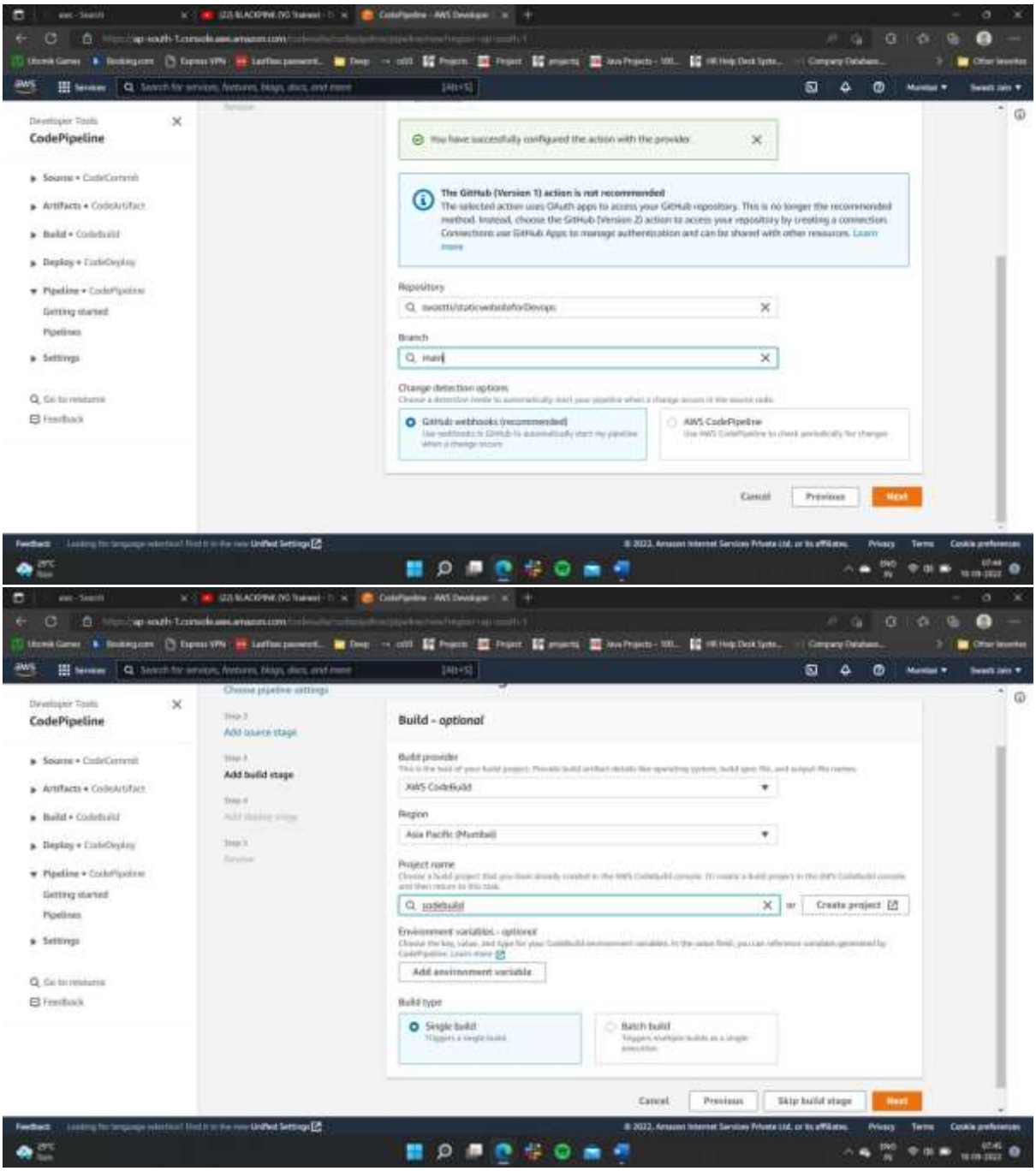

CodeBuild
Additional configuration
Logs
CloudWatch
CloudWatch logs - optional
Group name
Stream name
S3
S3 logs - optional
Cancel
Create build project

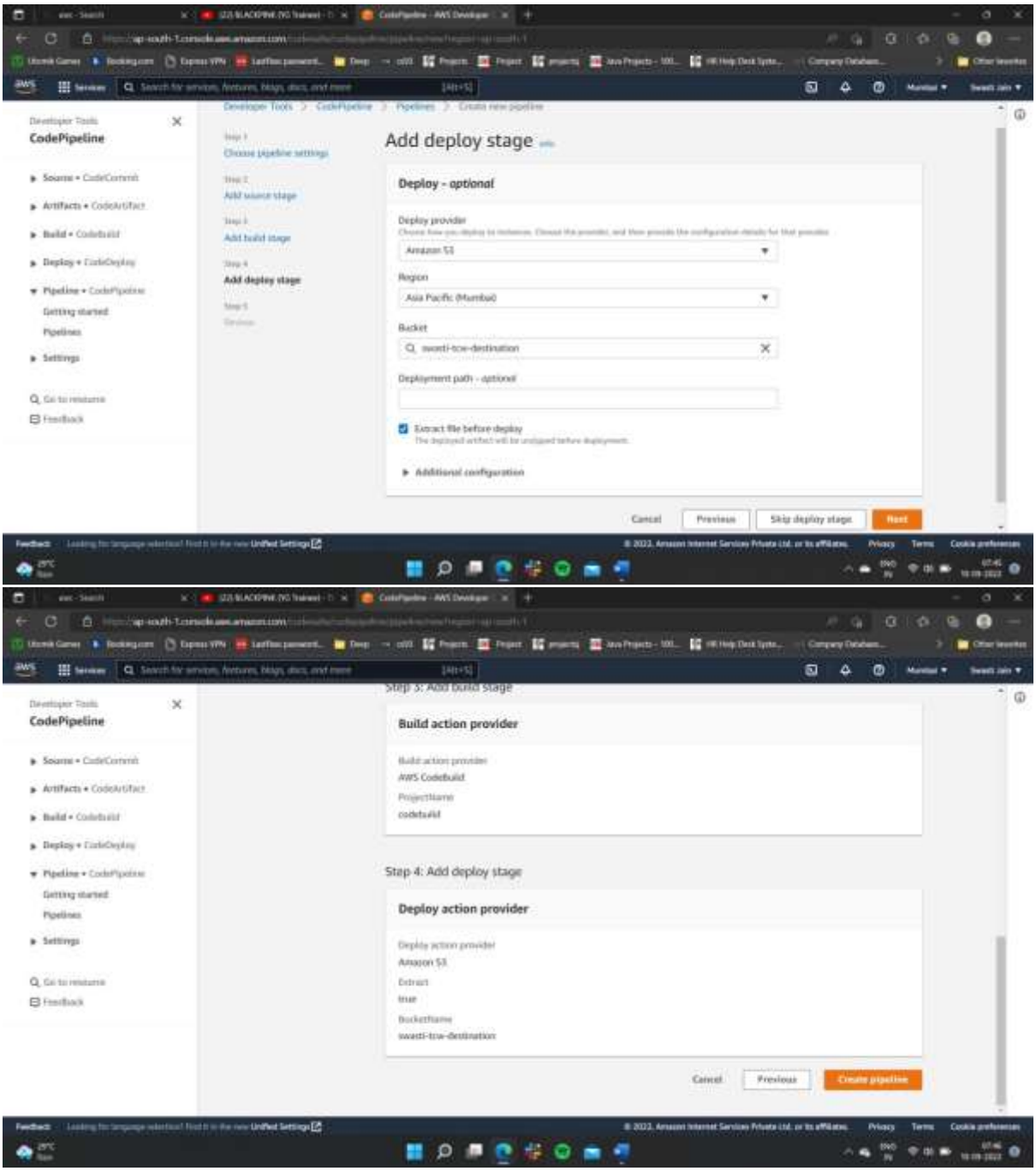

CodeBuild
Project created
You have successfully created the following project: codebuild
Create a notification rule for this project
codebuild
Notify
Share
Edit
Delete build project
Start build with overrides
Start build
Configuration
Source provider
GitHub
Primary repository
Artifacts upload location
Build badge
Disabled
Public builds
Disabled
Build history
Batch history
Build details
Build triggers
Metrics
Build history
Stop build
View artifacts
View logs
Delete builds
Retry build
Build run
Status
Build number
Source version
Submitter
Duration
Completed

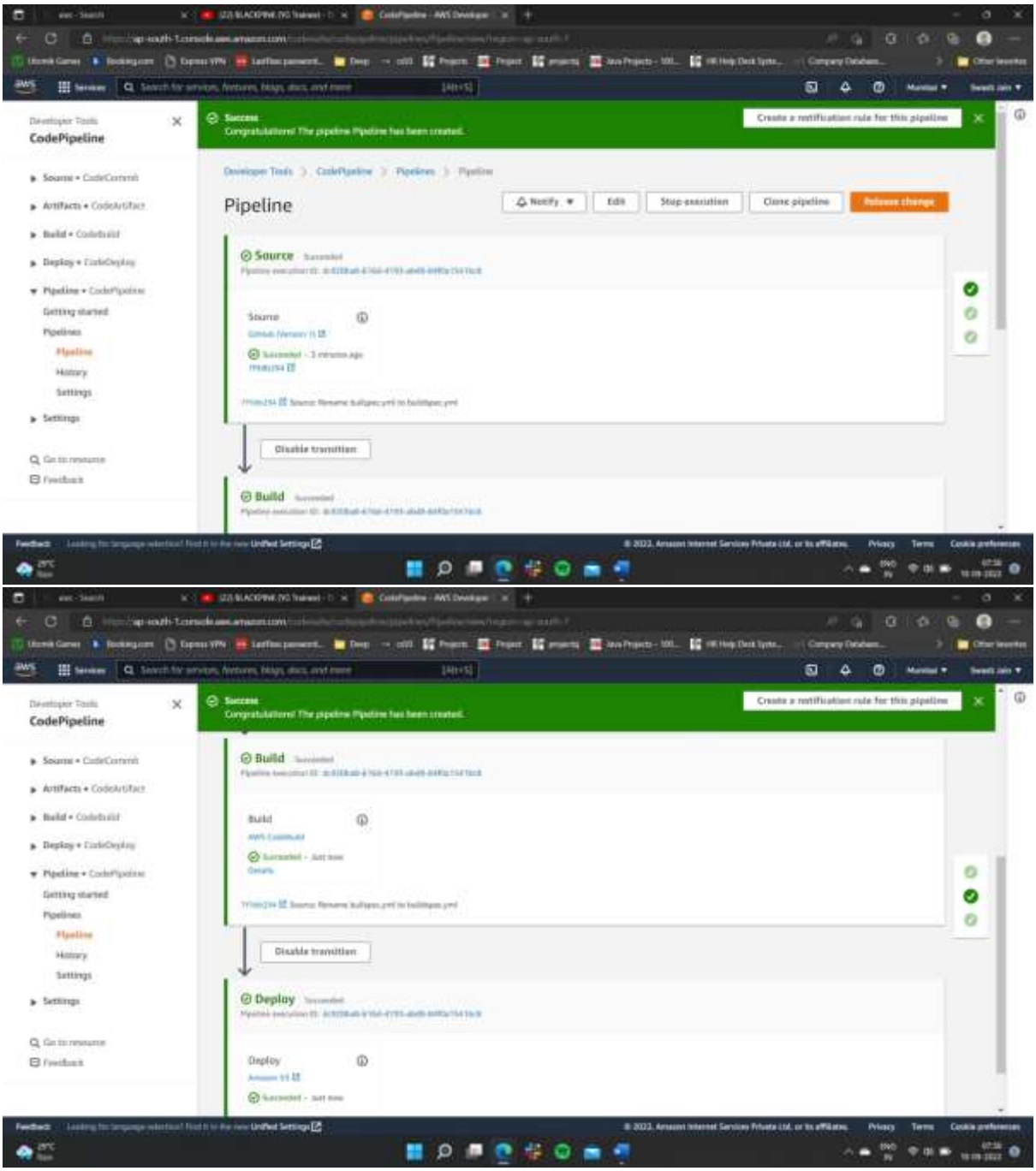
Now our project is ready with us.
Now go to pipeline getting started and then here you have to create a pipeline. Steps for creating pipeline

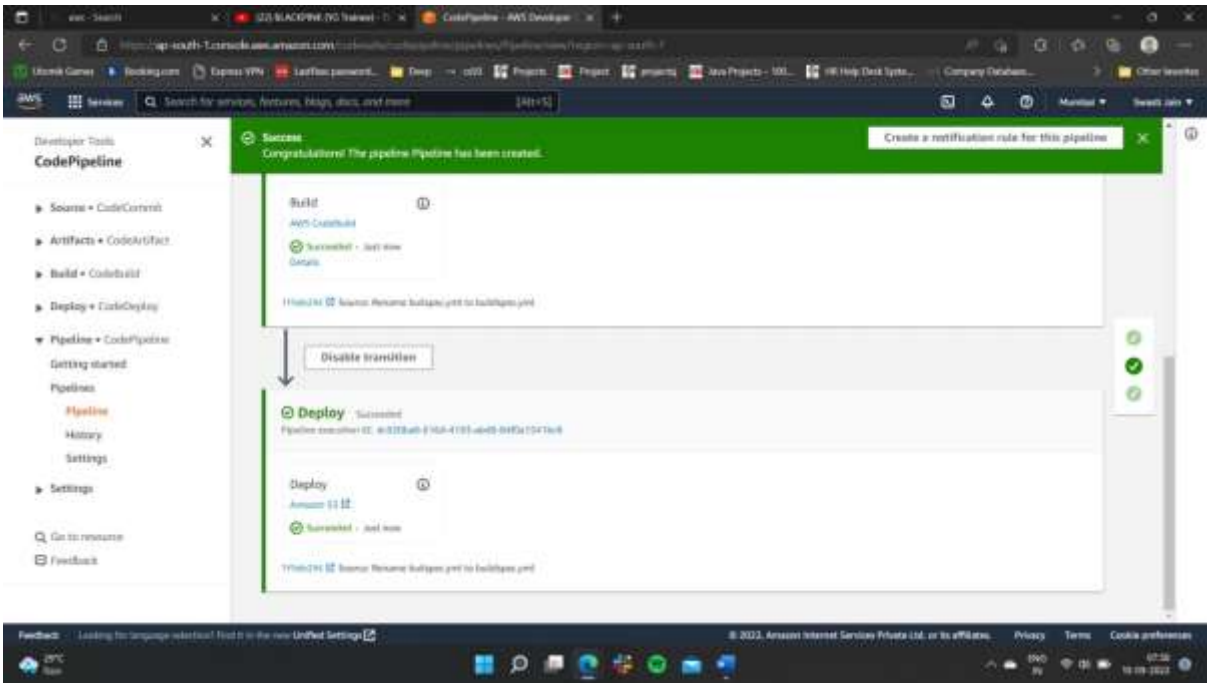


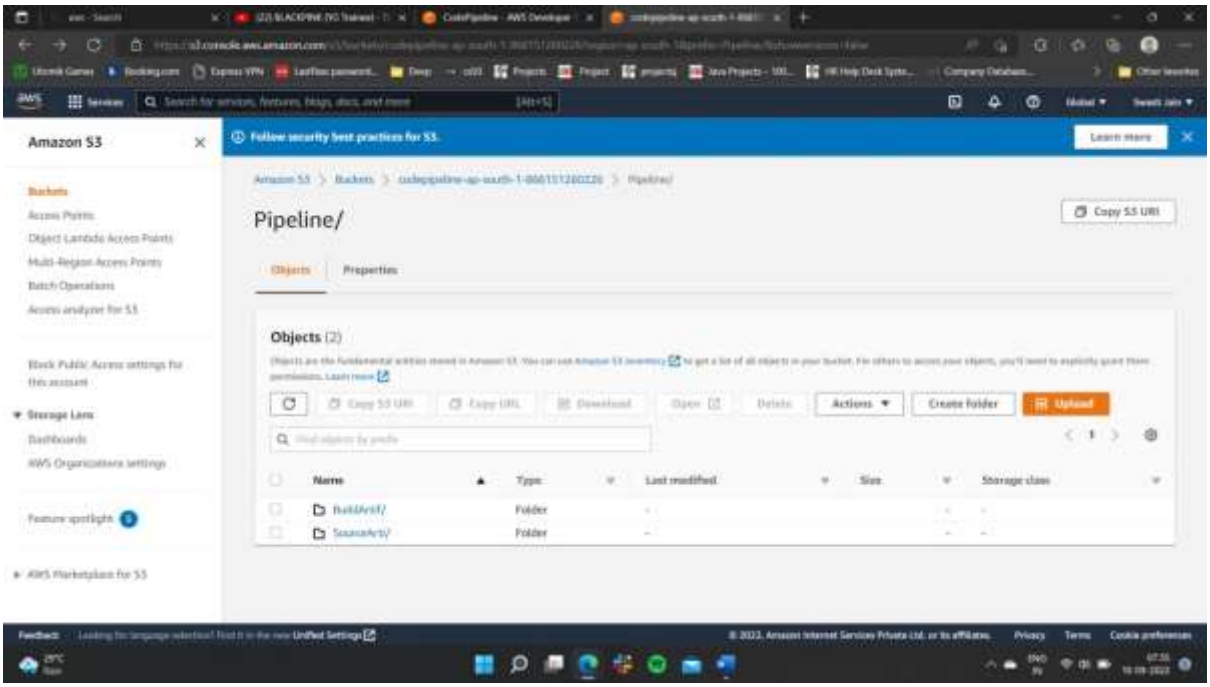


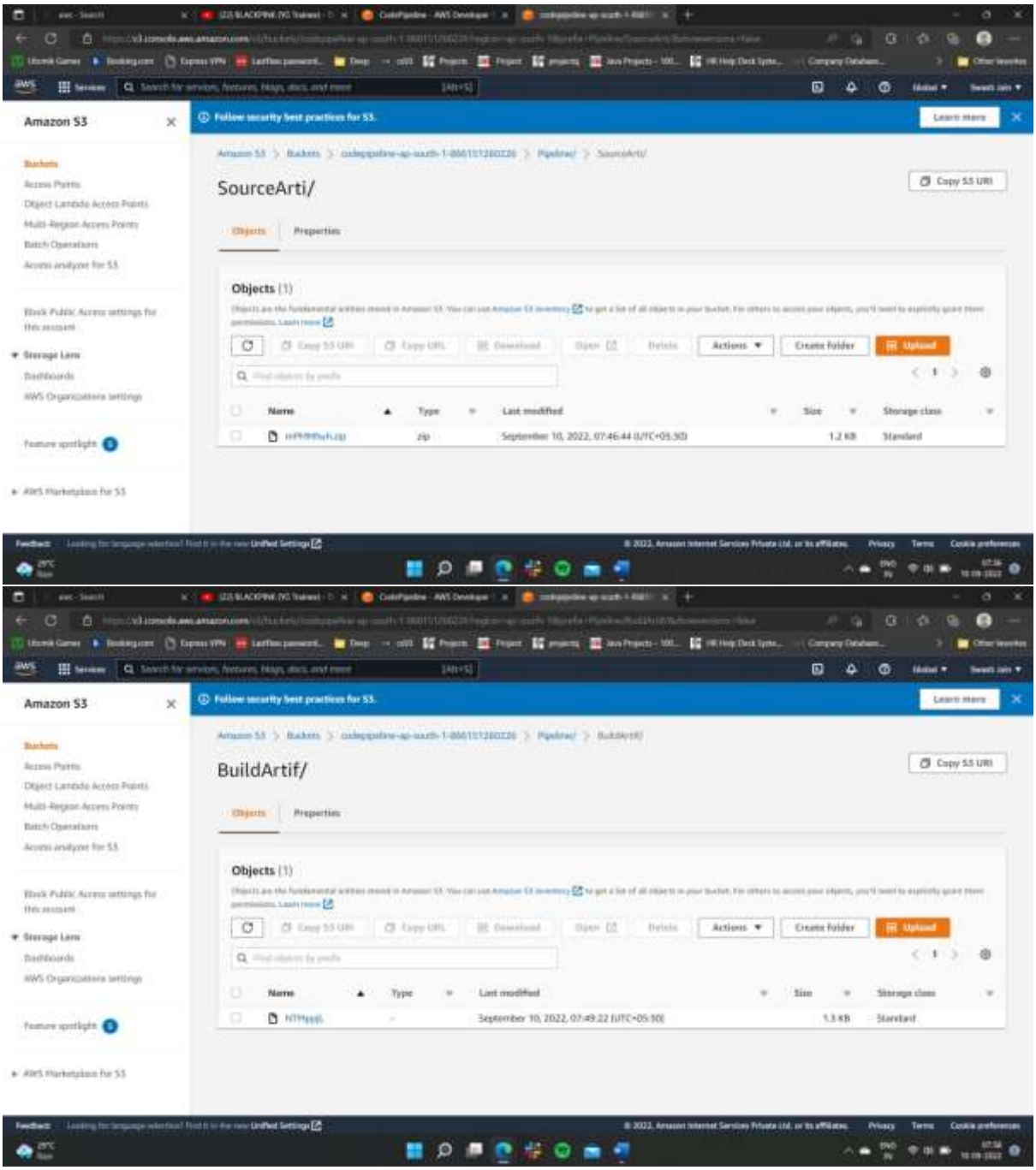

CodePipeline
You have successfully configured the action with the provider
The GitHub (Version 1) action is not recommended
Repository
Branch
main
Change detection options
GitHub webhooks (recommended)
AWS CodePipeline
Cancel
Previous
Next
CodePipeline
Add source stage
Add build stage
Build - optional
Build provider
AWS CodeBuild
Region
Asia Pacific (Mumbai)
Project name
codebuild
Create project
Environment variables - optional
Add environment variable
Build type
Single build
Batch build
Cancel
Previous
Skip build stage
Next

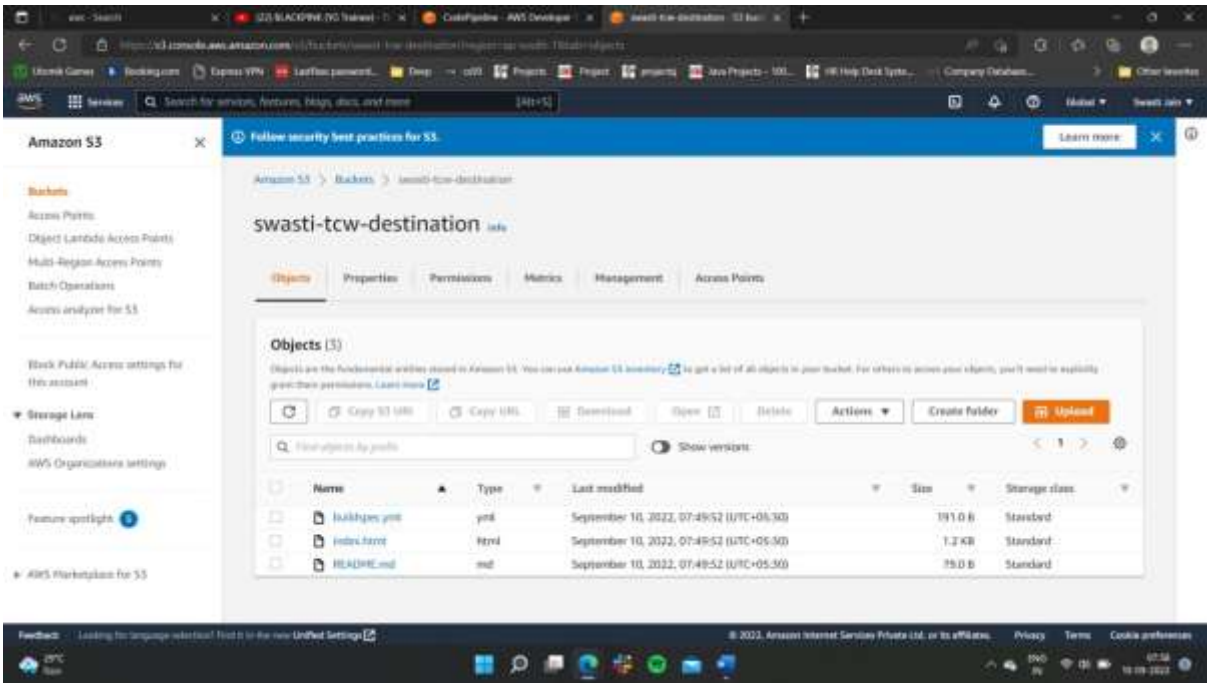

Developer Tools
CodePipeline
Source • CodeCommit
Artifacts • CodeArtifact
Build • CodeBuild
Deploy • CodeDeploy
Pipeline • CodePipeline
Getting started
Pipelines
Settings
Go to resource
Feedback
Developer Tools > CodePipeline > Pipelines > Create new pipeline
Step 1
Choose pipeline settings
Step 2
Add source stage
Step 3
Add build stage
Step 4
Add deploy stage
Step 5
Review
Add deploy stage info
Deploy - optional
Deploy provider
Choose how you deploy to instances. Choose the provider, and then provide the configuration details for that provider.
Amazon S3
Region
Asia Pacific (Mumbai)
Bucket
swasti-tcw-destination
Deployment path - optional
Extract file before deploy
The deployed artifact will be unzipped before deployment.
Additional configuration
Cancel
Previous
Skip deploy stage
Next
Feedback
Looking for language selection? Find it in the new Unified Settings
© 2022, Amazon Internet Services Private Ltd. or its affiliates.
Privacy
Terms
Cookie preferences
Step 3: Add build stage
Build action provider
Build action provider
AWS CodeBuild
ProjectName
codebuild
Step 4: Add deploy stage
Deploy action provider
Deploy action provider
Amazon S3
Extract
true
BucketName
swasti-tcw-destination
Cancel
Previous
Create pipeline

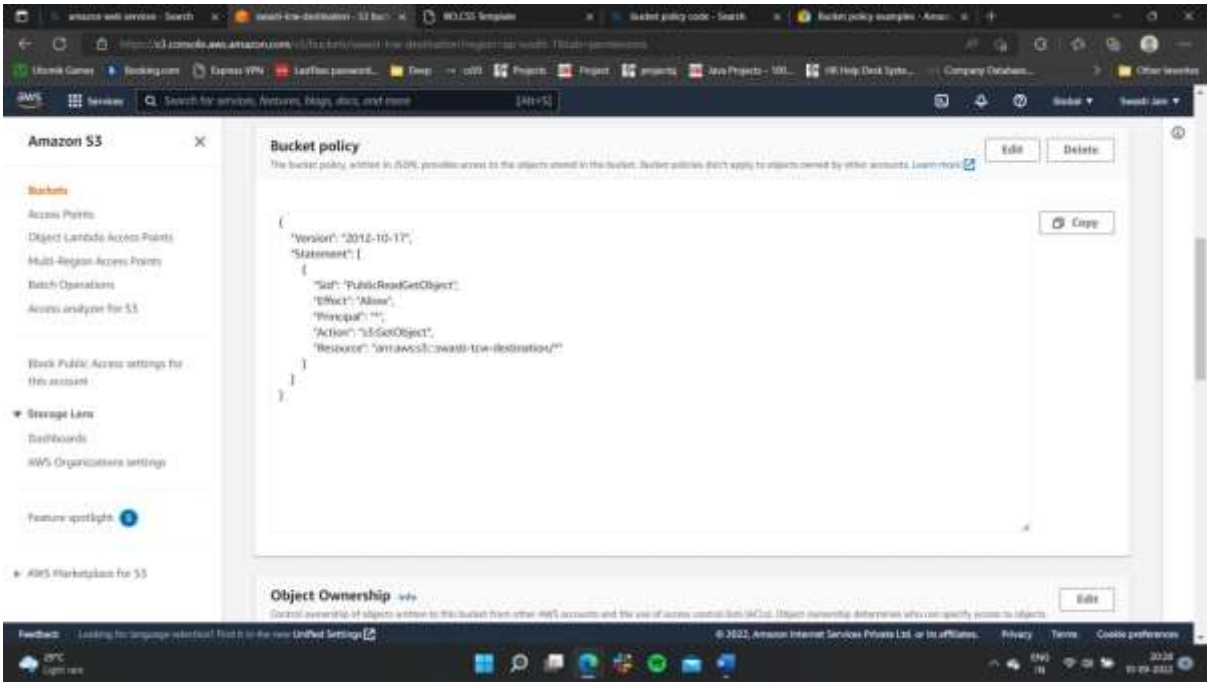

CodePipeline
Success
Congratulations! The pipeline Pipeline has been created.
Create a notification rule for this pipeline
Pipeline
Notify
Edit
Stop execution
Clone pipeline
Release change
Source
Source
Disable transition
Build
CodePipeline
Success
Congratulations! The pipeline Pipeline has been created.
Create a notification rule for this pipeline
Build
Build
Disable transition
Deploy
Deploy

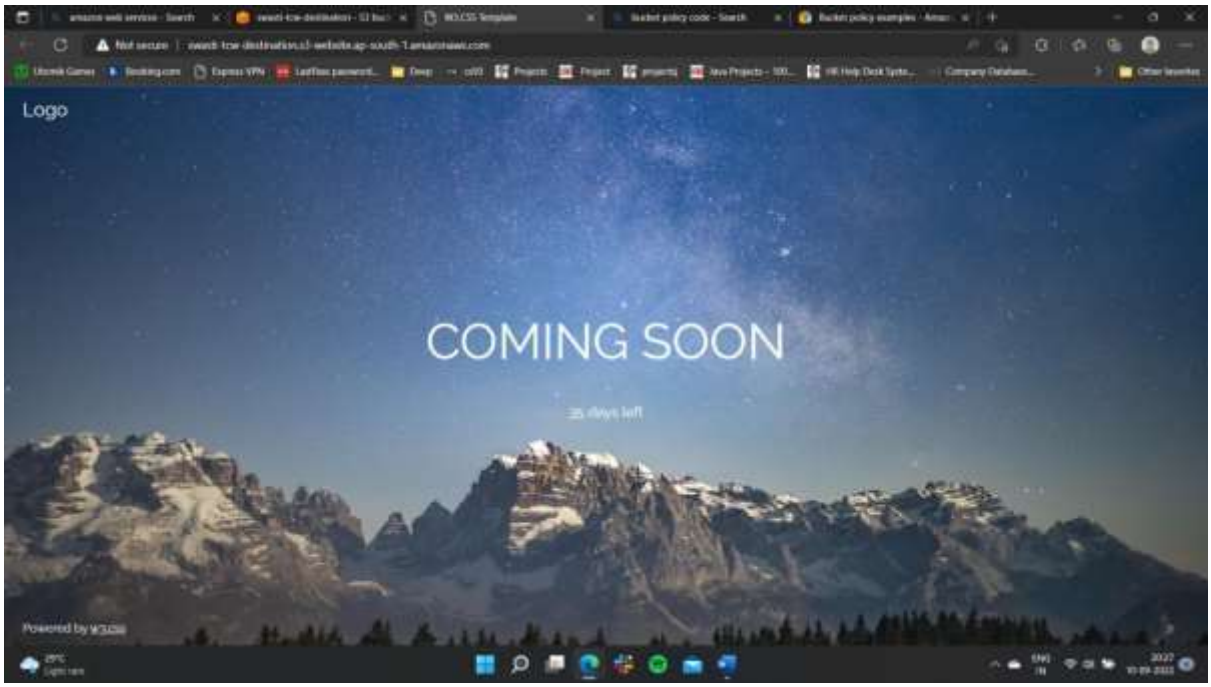

Developer Tools
CodePipeline
Success
Congratulations! The pipeline Pipeline has been created.
Create a notification rule for this pipeline
Source • CodeCommit
Artifacts • CodeArtifact
Build • CodeBuild
Deploy • CodeDeploy
Pipeline • CodePipeline
Getting started
Pipelines
Pipeline
History
Settings
Settings
Build
Disable transition
Deploy
Succeeded
Deploy
Succeeded - Just now
Feedback
Privacy
Terms
Cookie preferences


Amazon S3
Follow security best practices for S3.
Learn more
Pipeline/
Copy S3 URI
Objects
Properties
Objects (2)
Actions
Create folder
Upload
Name
Type
Last modified
Size
Storage class
Folder
Folder


Amazon S3
Follow security best practices for S3.
Learn more
SourceArti/
Copy S3 URI
Objects
Properties
Objects (1)
Actions
Create folder
Upload
Name
Type
Last modified
Size
Storage class
zip
September 10, 2022, 07:46:44 (UTC+05:30)
1.2 KB
Standard
Amazon S3
Follow security best practices for S3.
Learn more
BuildArtif/
Copy S3 URI
Objects
Properties
Objects (1)
Actions
Create folder
Upload
Name
Type
Last modified
Size
Storage class
September 10, 2022, 07:49:22 (UTC+05:30)
1.3 KB
Standard


Amazon S3
Follow security best practices for S3.
Learn more
swasti-tcw-destination
Objects
Properties
Permissions
Metrics
Management
Access Points
Objects (3)
Actions
Create folder
Upload
Show versions
Name
Type
Last modified
Size
Storage class
buildspec.yml
yml
September 10, 2022, 07:49:52 (UTC+05:30)
191.0 B
Standard
index.html
html
September 10, 2022, 07:49:52 (UTC+05:30)
1.2 KB
Standard
README.md
md
September 10, 2022, 07:49:52 (UTC+05:30)
79.0 B
Standard


Amazon S3
Bucket policy
Edit
Delete
Copy
{
"Version": "2012-10-17",
"Statement": [
{
"Sid": "PublicReadGetObject",
"Effect": "Allow",
"Principal": "*",
"Action": "s3:GetObject",
"Resource": "arn:aws:s3:::swasti-tcw-destination/*"
}
]
}
Object Ownership
Edit



W3.CSS Template (swasti-tcw-destination.s3-website.ap-south-1.amazonaws.com)

Experiment no. 5

Name : Swasti Jain

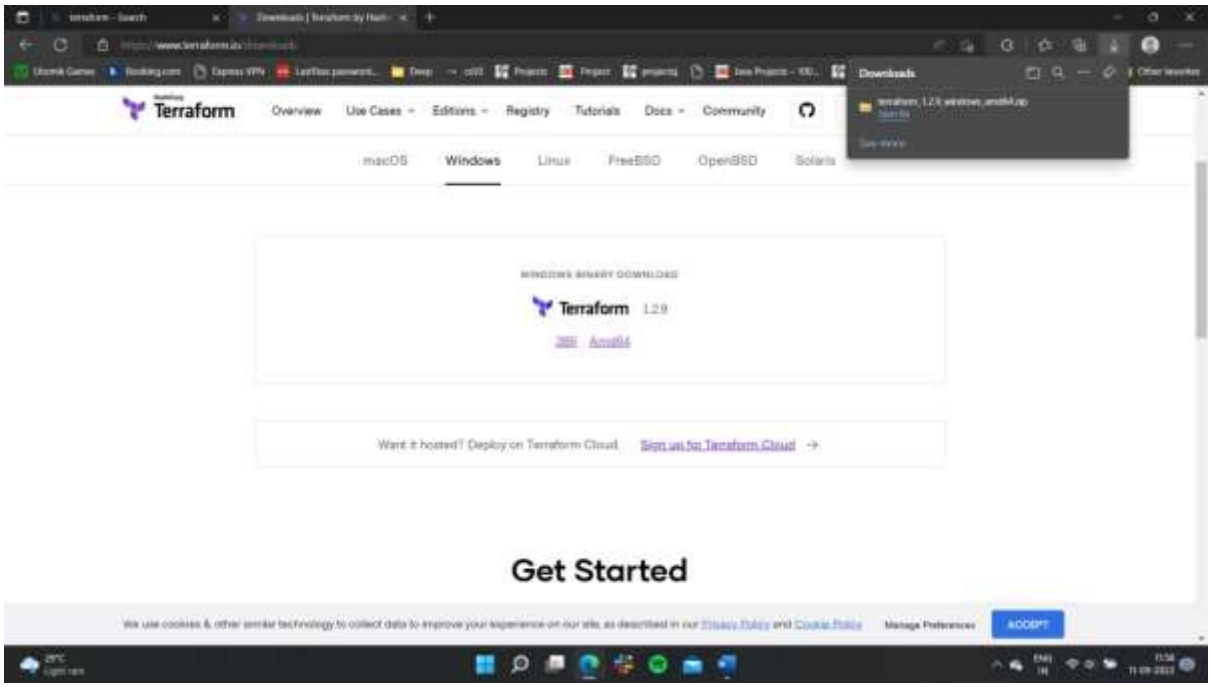
Roll No: 24

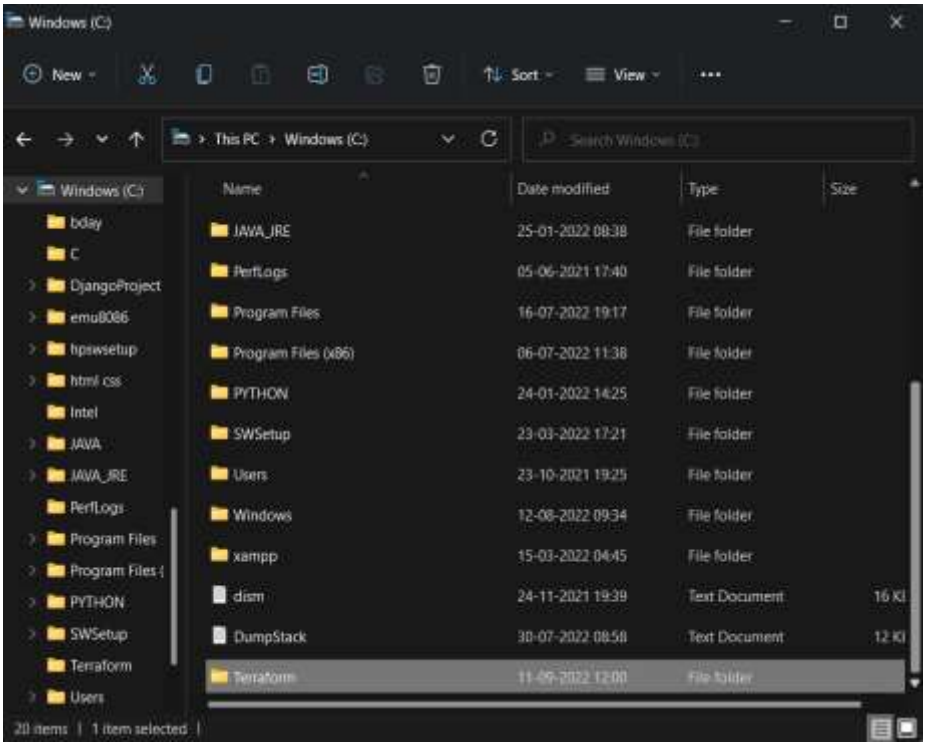
Aim: To understand terraform lifecycle, core concepts/terminologies and install it on any Machine. After that create a folder and a file with extension .tf. Mention the provider and resource in the .tf file as shown below .Before writing the provider get the access key and secret key from aws .Also you will have to get ami from aws

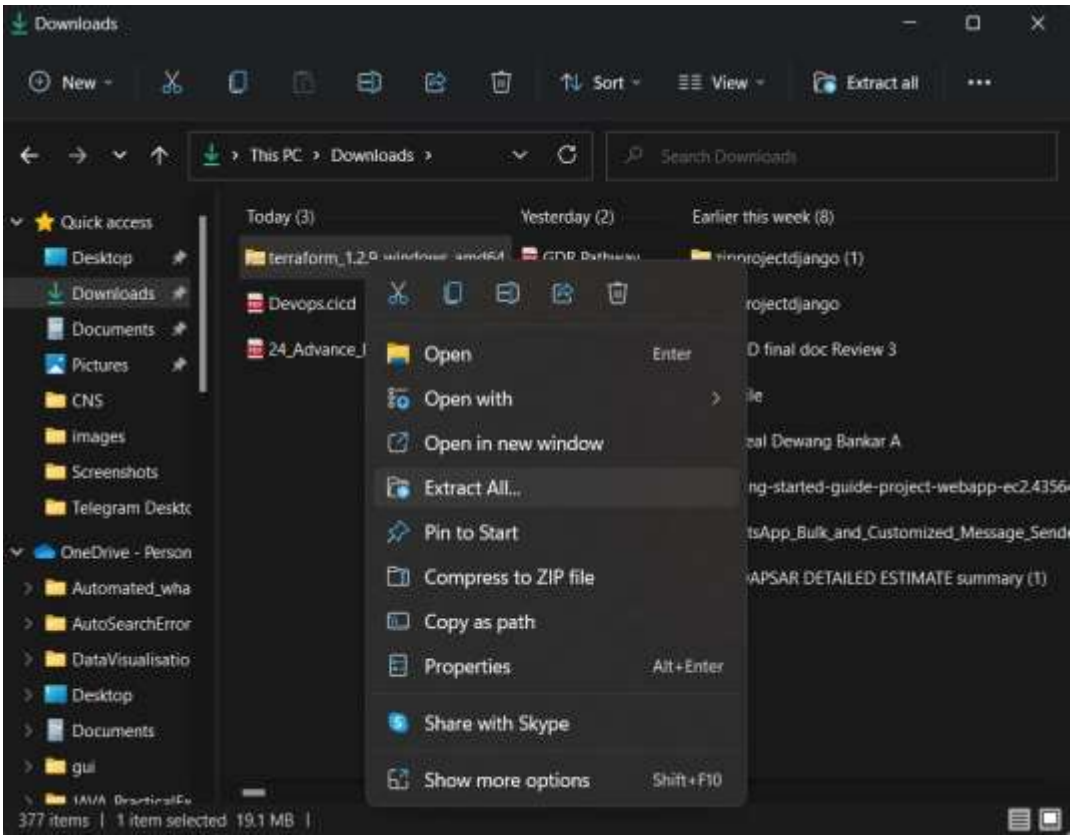
Procedure:

1) Install Terraform package and install it on your machine Link for terraform installation: :https://releases.hashicorp.com/terraform/1.2.7/terraform_1.2.7_wi ndows_amd64.zip

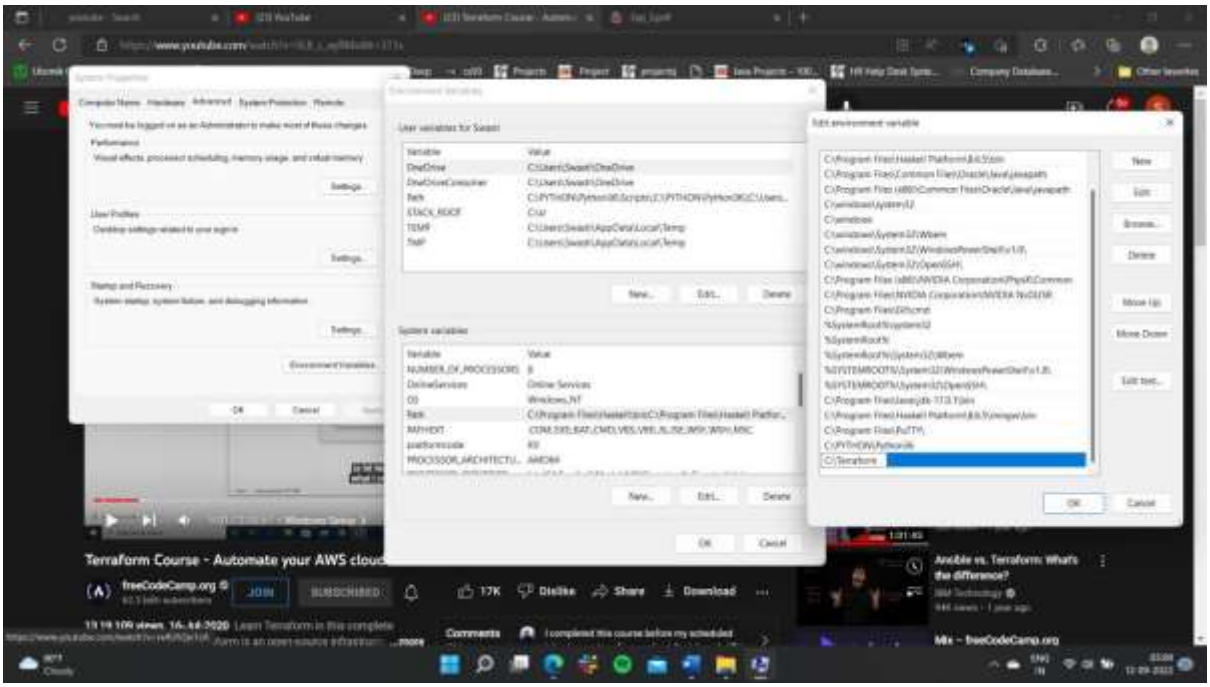
   2)Make a folder named terraform and extract all the downloaded packages over there.


Terraform
Overview
Use Cases
Editions
Registry
Tutorials
Docs
Community
macOS
Windows
Linux
FreeBSD
OpenBSD
Solaris
Downloads
Terraform
Get Started


Windows (C:)
New
Sort
View
This PC › Windows (C:)
Search Windows (C:)
Name
Date modified
Type
Size
JAVA_JRE
25-01-2022 08:38
File folder
PerfLogs
05-06-2021 17:40
File folder
Program Files
16-07-2022 19:17
File folder
Program Files (x86)
06-07-2022 11:38
File folder
PYTHON
24-01-2022 14:25
File folder
SWSetup
23-03-2022 17:21
File folder
Users
23-10-2021 19:25
File folder
Windows
12-08-2022 09:34
File folder
xampp
15-03-2022 04:45
File folder
dism
24-11-2021 19:39
Text Document
16 KI
DumpStack
30-07-2022 08:58
Text Document
12 KI
Terraform
11-09-2022 12:00
File folder
bday
C
DjangoProject
emu8086
hpswsetup
html css
Intel
JAVA
JAVA_JRE
PerfLogs
Program Files
Program Files (
PYTHON
SWSetup
Terraform
Users
20 items | 1 item selected

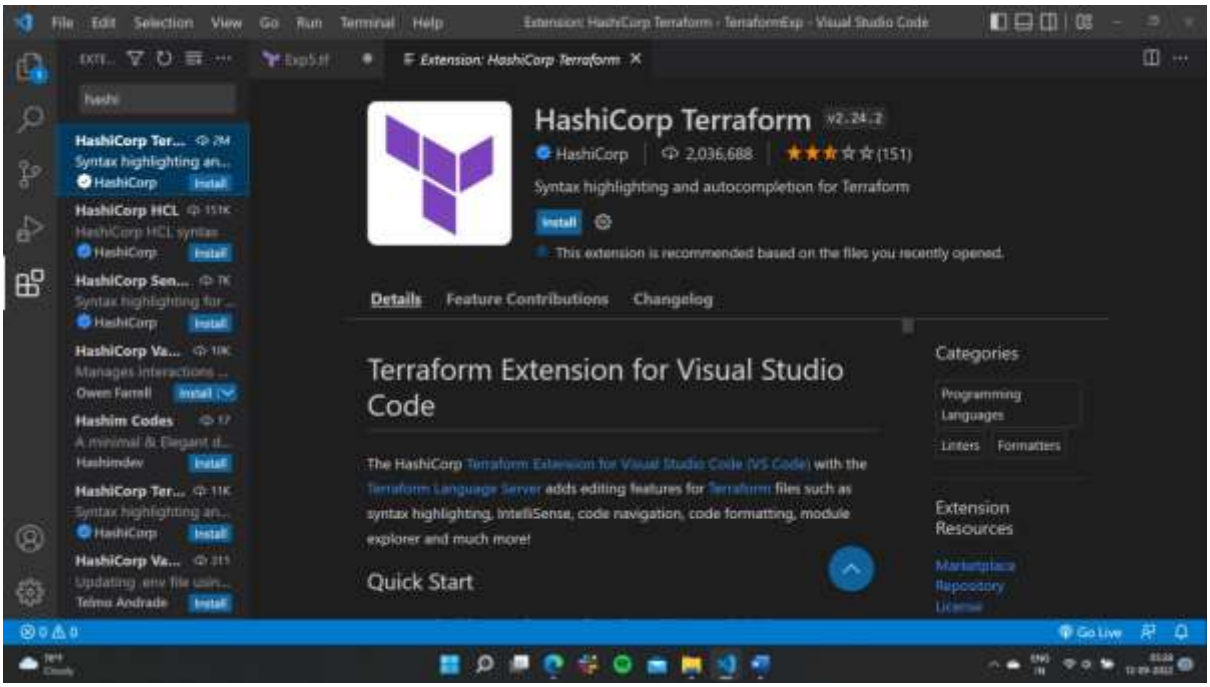


3)Now go to the environment variables and add path of the terraform folder

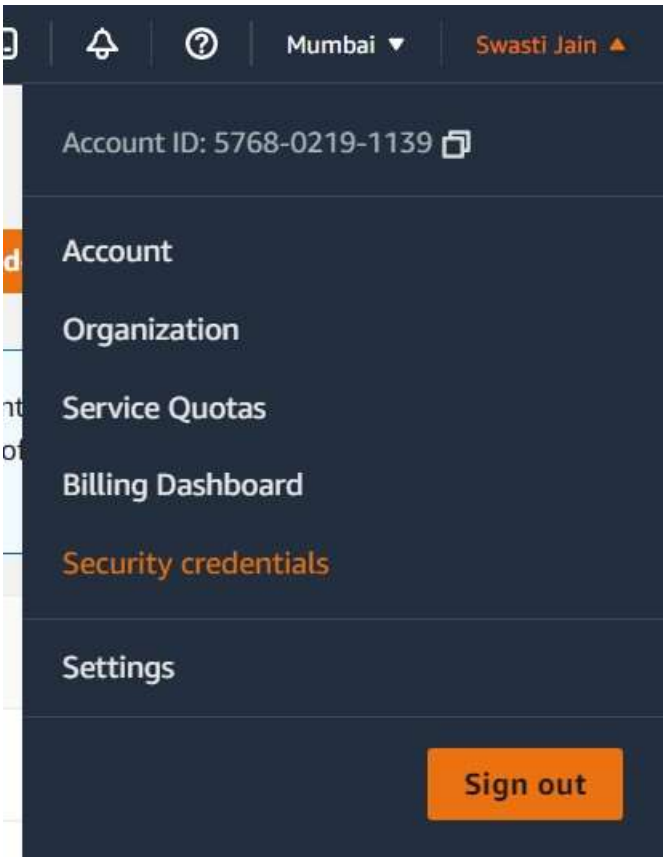


We have successfully configured terraform on our system.

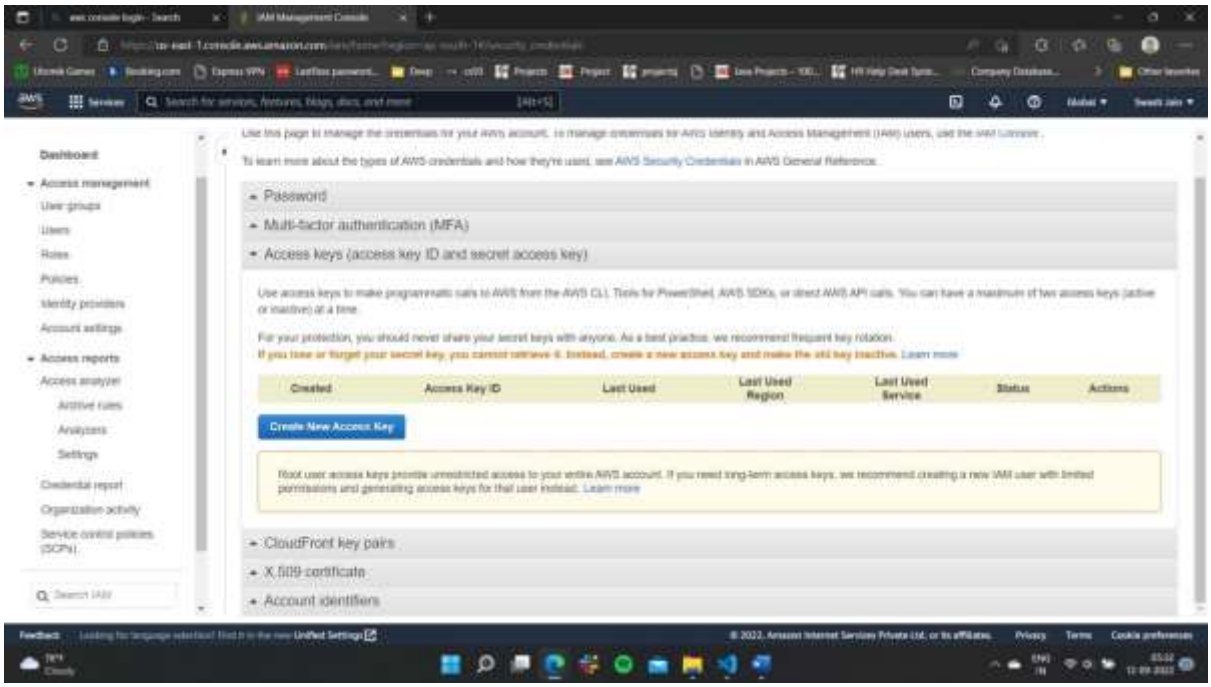
4) Install the terraform extension in VScode



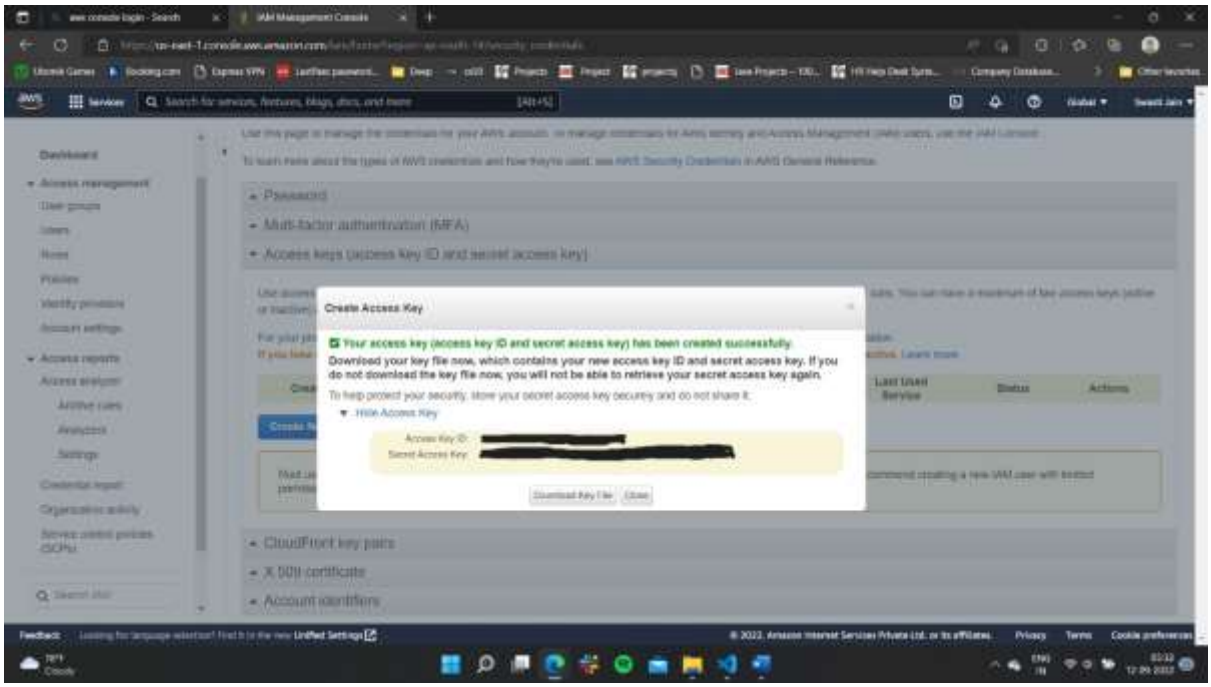
5) Open aws account, Go to Your account and click on security credentials



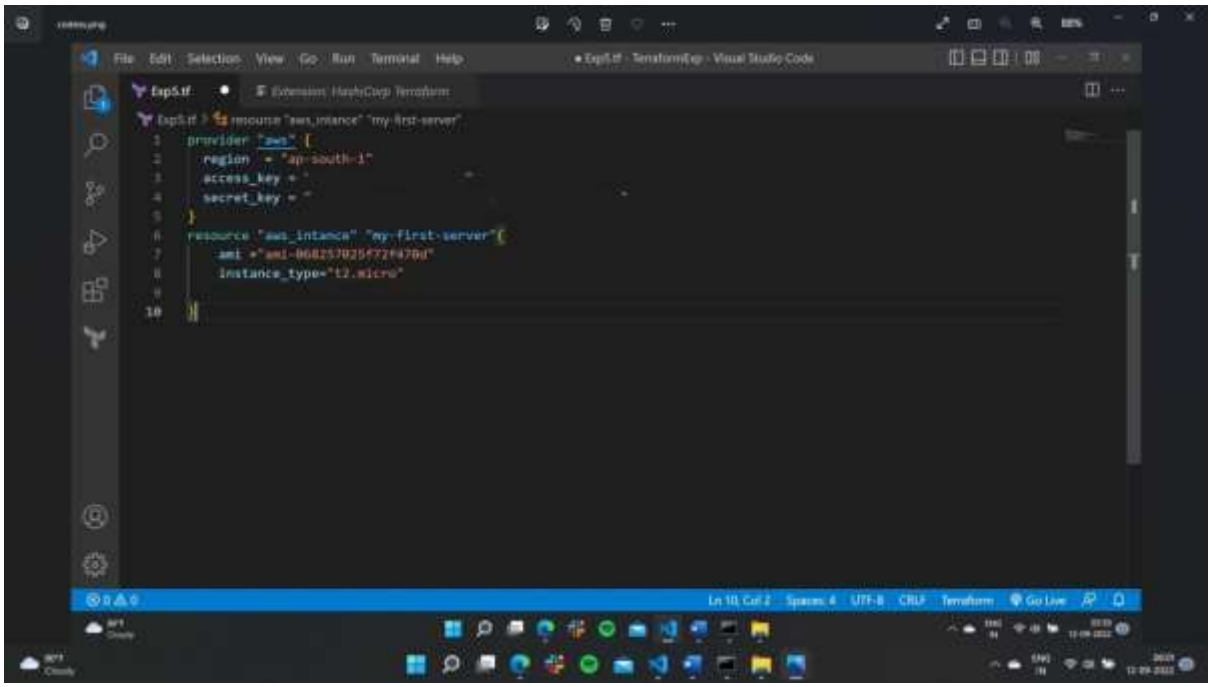
6) Click on Access key if you have a key you can use that only if you don't have a key you have to create a new access key:



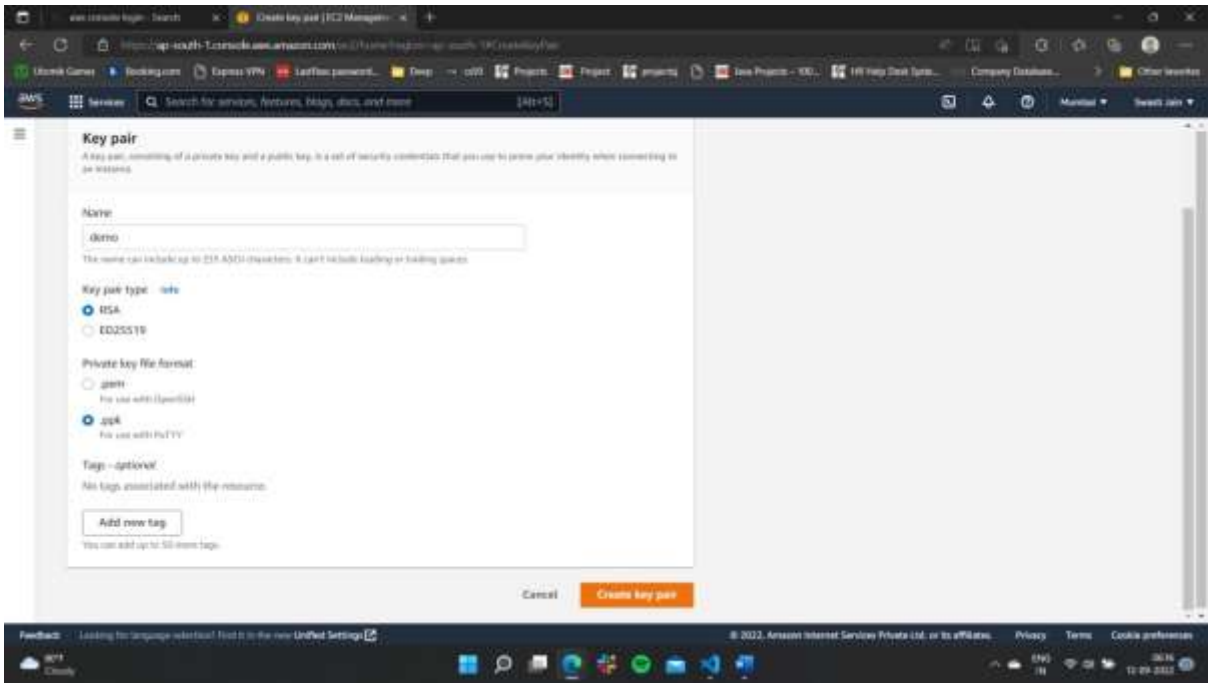
7)Create new access key and also download the root key folder



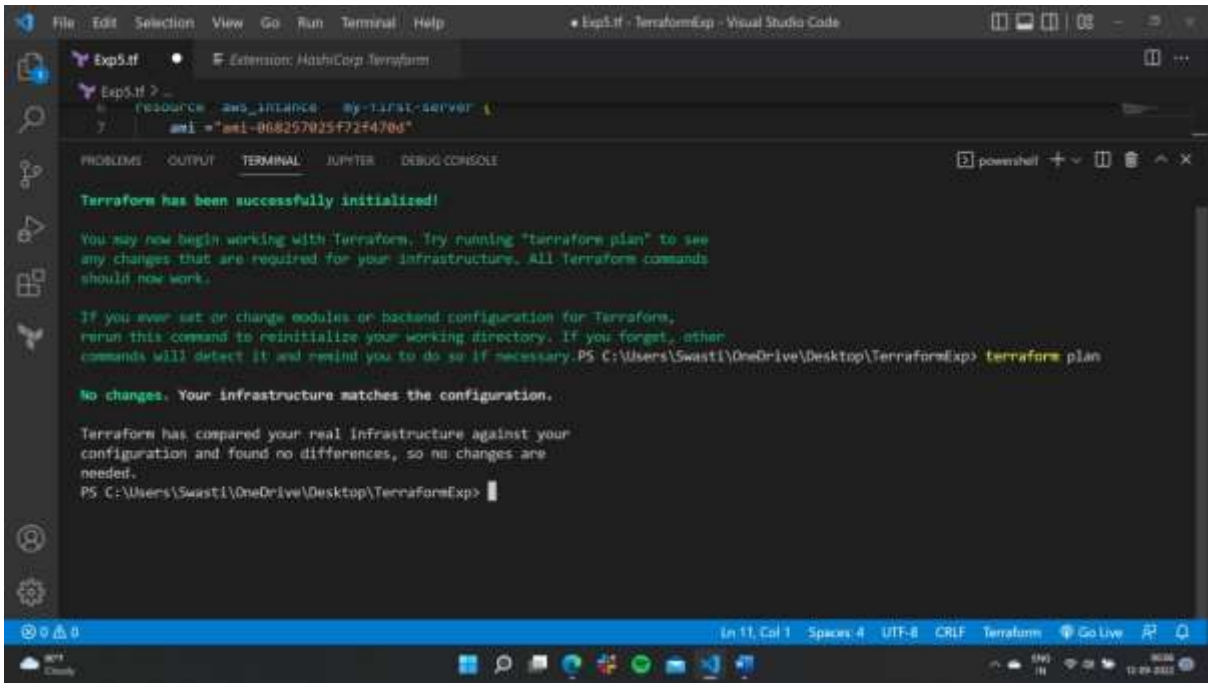
8)Create new folder named terraform and also create .tf file, Now add the code with the access key and secret key



9) Add the key pair name



10) Now we have to initalize terraform


File Edit Selection View Go Run Terminal Help
• Exp5.tf - TerraformExp - Visual Studio Code
Exp5.tf
Extension: HashiCorp Terraform
Exp5.tf > ...
resource "aws_instance" "my-first-server" {
ami ="ami-06825702 5f72f470d"
PROBLEMS OUTPUT TERMINAL JUPYTER DEBUG CONSOLE
powershell
Terraform has been successfully initialized!
You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.
If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.PS C:\Users\Swasti\OneDrive\Desktop\TerraformExp> terraform plan
No changes. Your infrastructure matches the configuration.
Terraform has compared your real infrastructure against your
configuration and found no differences, so no changes are
needed.
PS C:\Users\Swasti\OneDrive\Desktop\TerraformExp>
Ln 11, Col 1 Spaces: 4 UTF-8 CRLF Terraform Go Live

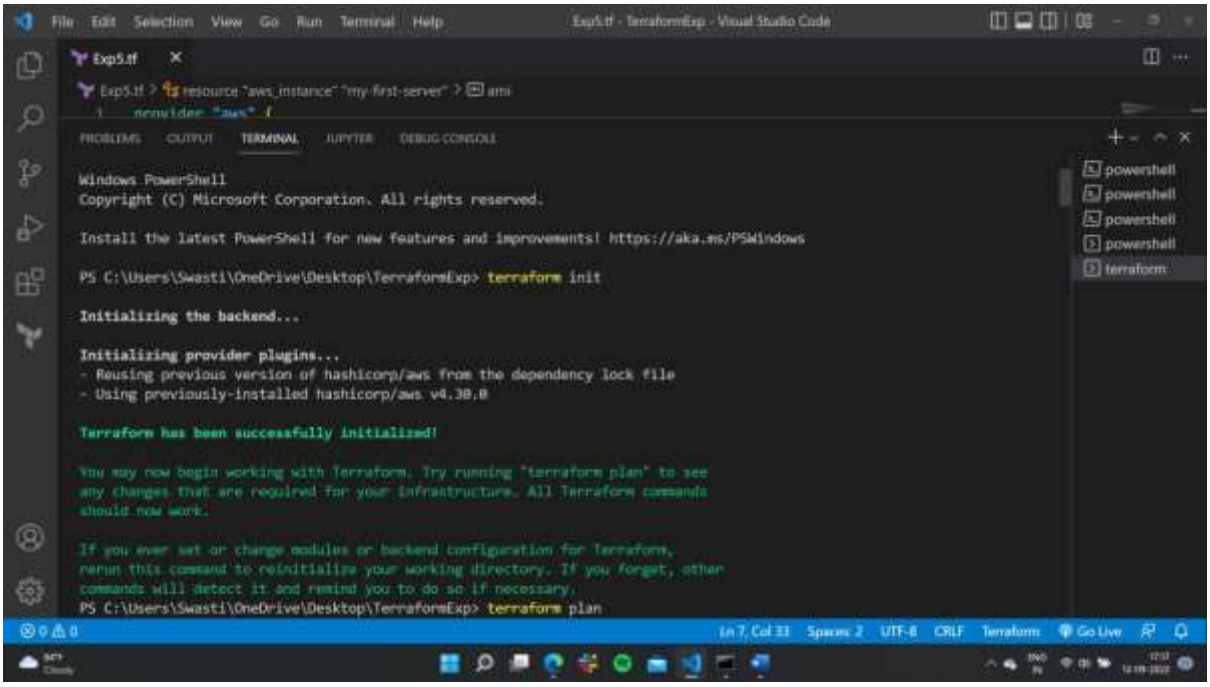
Experiment 6 : Terraform

Name : Swasti Jain

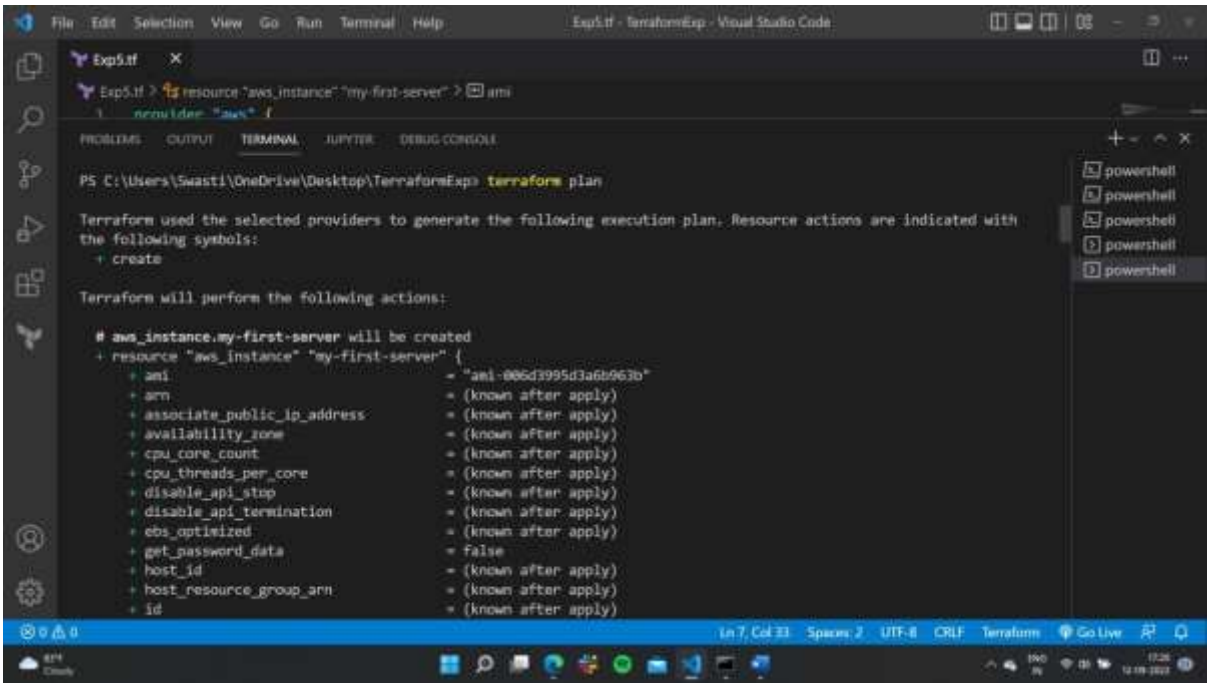
Roll No: 24

Aim: To Build, change, and destroy AWS / GCP /Microsoft Azure/ DigitalOcean infrastructure Using Terraform.

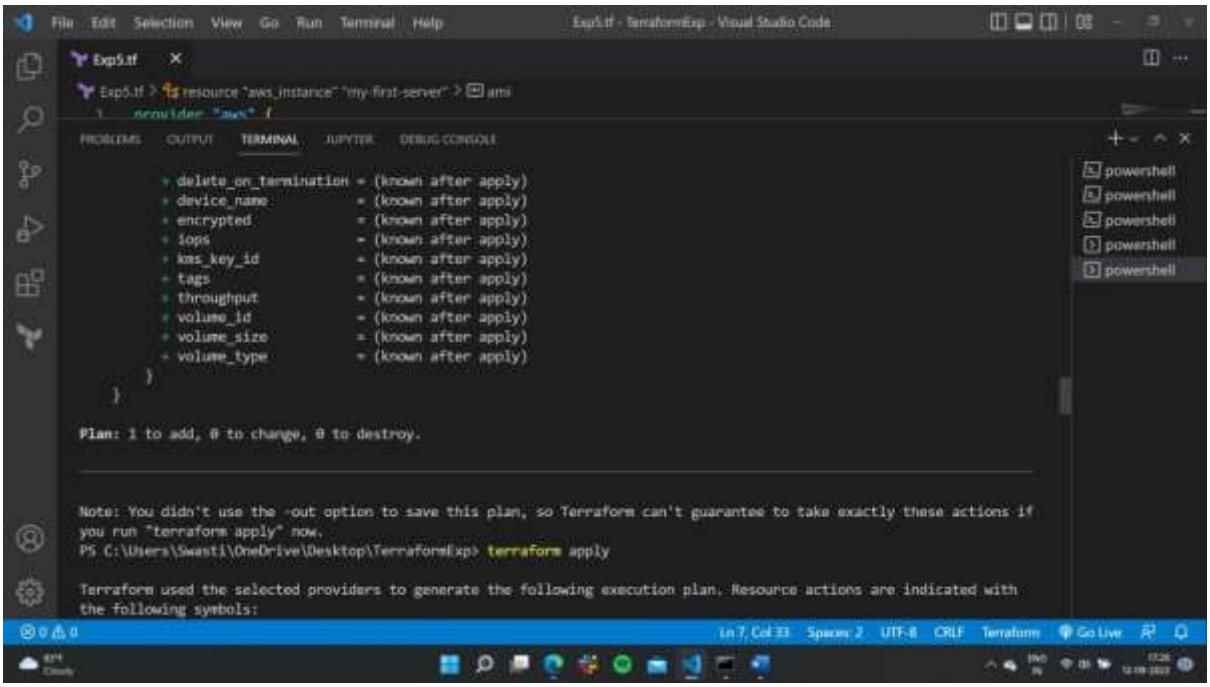
To initalize open cmd and type terraform init



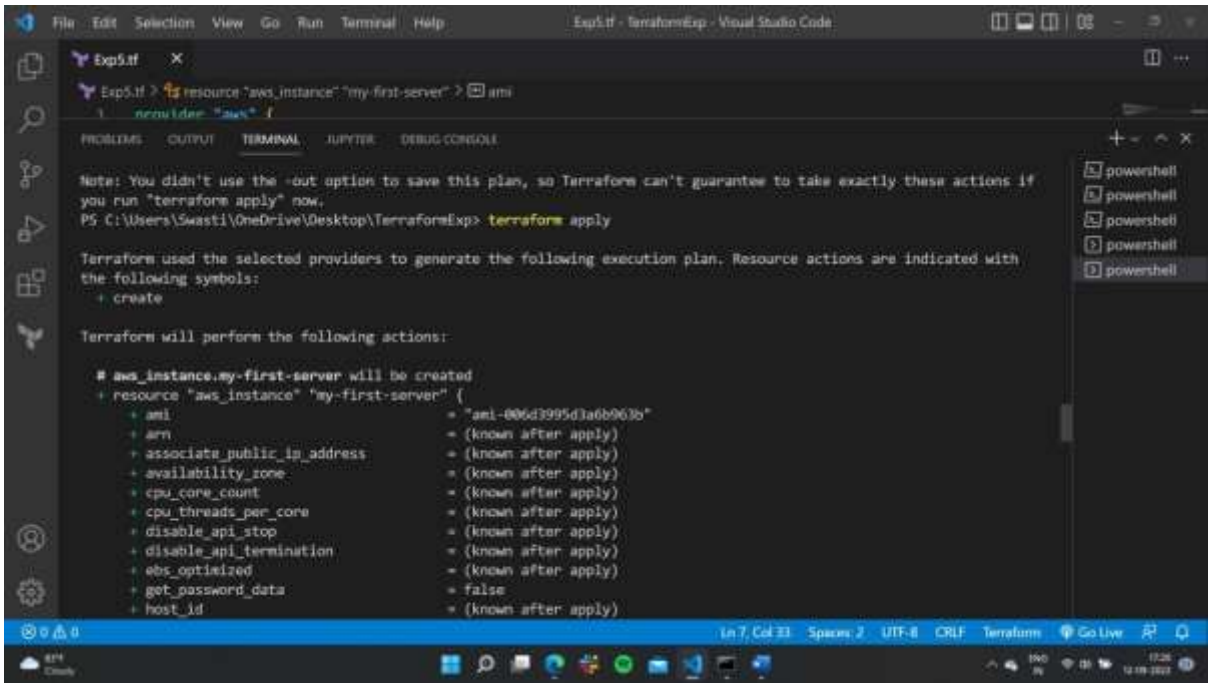
If you want to first see what changes will appear write the command terraform plan

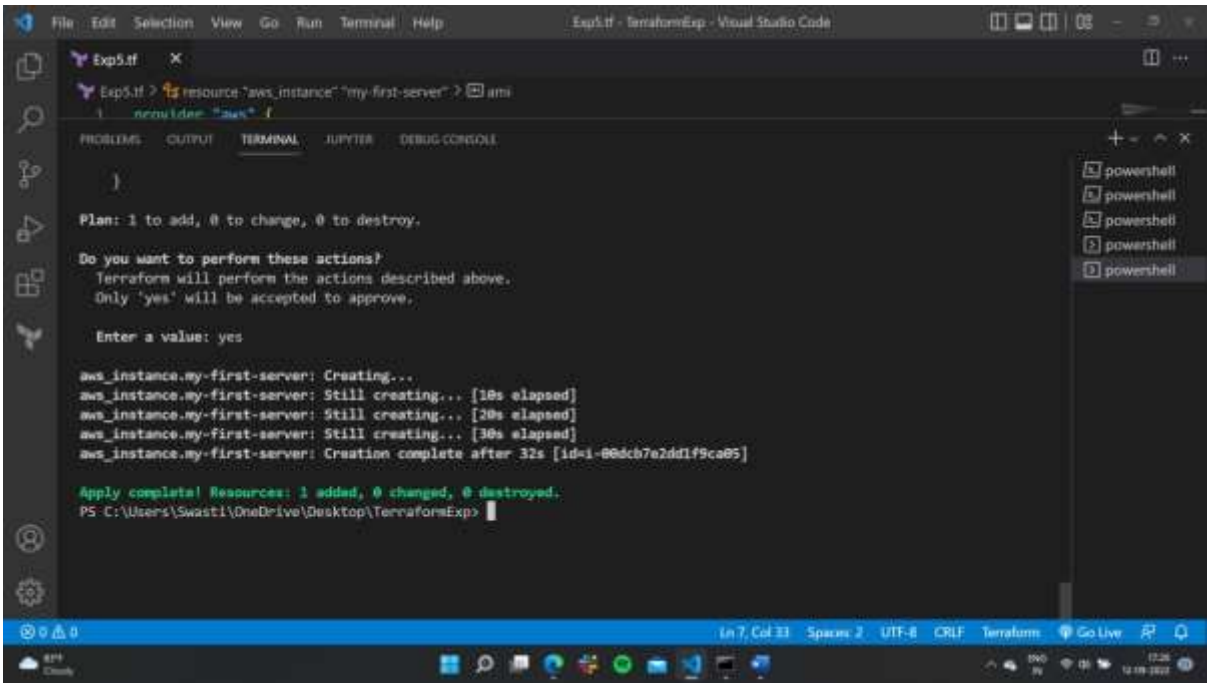


To build a infrastructure using terraform you'll have to use the command terraform apply

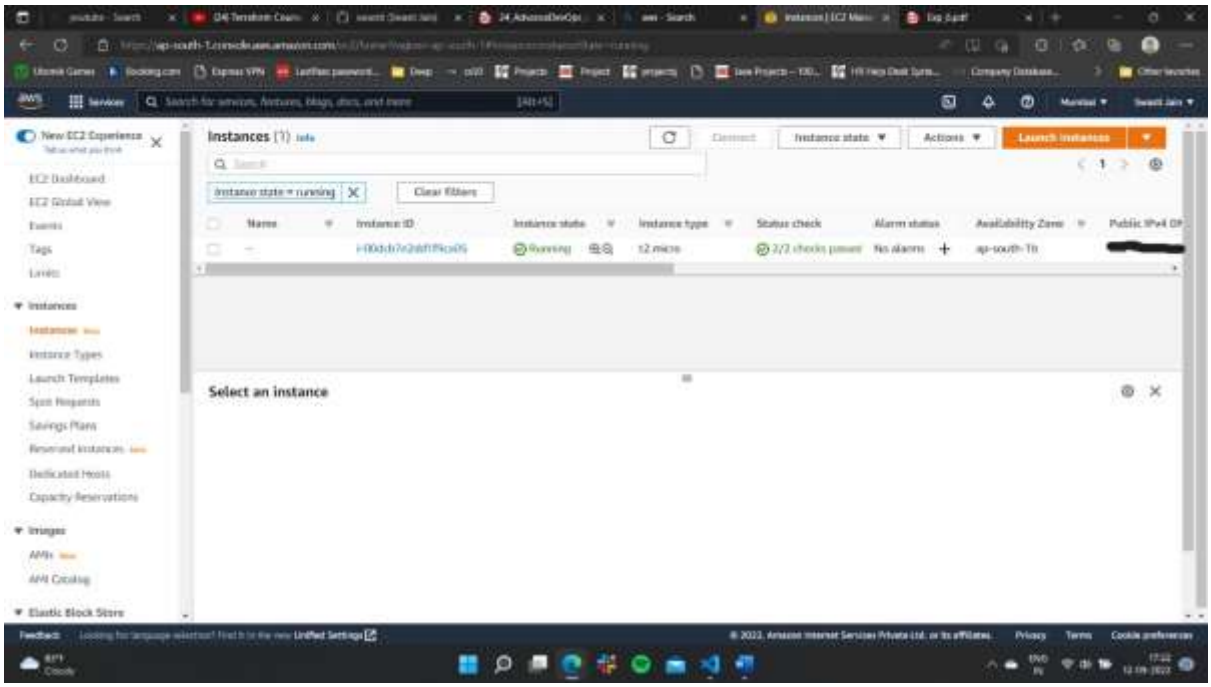


To apply any changes to terraform we will write the changes we want to apply in the .tf file run the terraform apply command

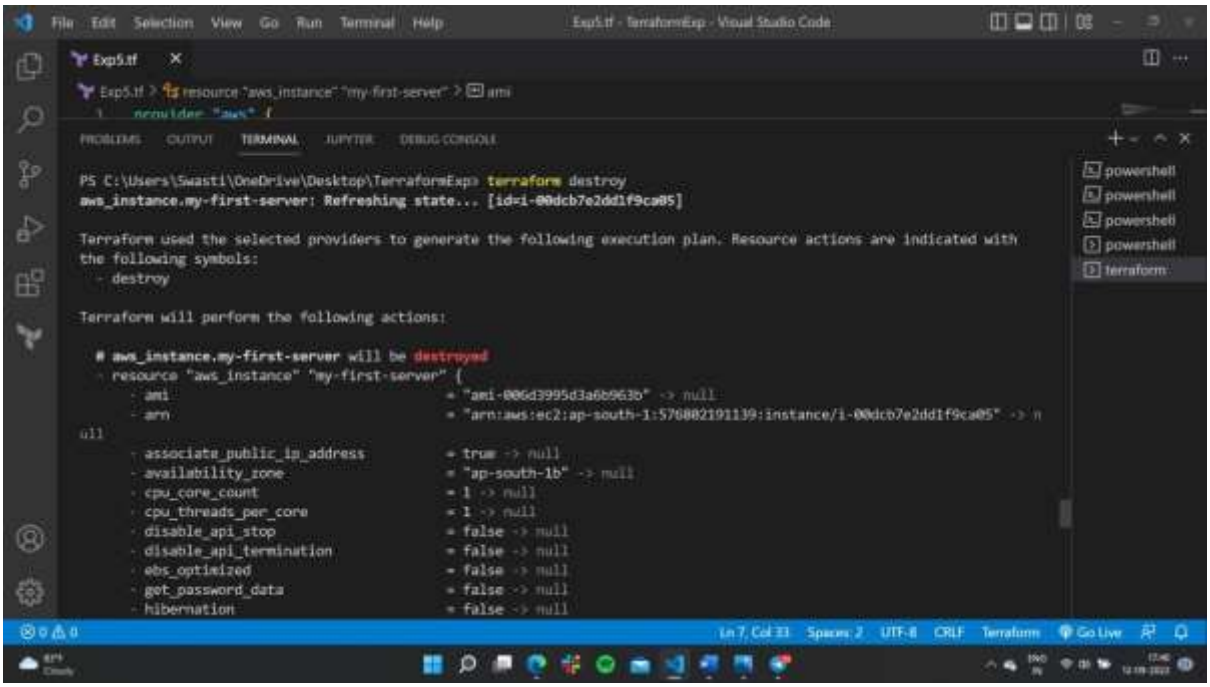

File Edit Selection View Go Run Terminal Help
Exp5.tf - TerraformExp - Visual Studio Code
Exp5.tf
Exp5.tf > resource "aws_instance" "my-first-server" > ami
provider "aws" {
PROBLEMS OUTPUT TERMINAL JUPYTER DEBUG CONSOLE
Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run "terraform apply" now.
PS C:\Users\Swasti\OneDrive\Desktop\TerraformExp> terraform apply
Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create
Terraform will perform the following actions:
# aws_instance.my-first-server will be created
+ resource "aws_instance" "my-first-server" {
+ ami = "ami-006d3995d3a6b963b"
+ arn = (known after apply)
+ associate_public_ip_address = (known after apply)
+ availability_zone = (known after apply)
+ cpu_core_count = (known after apply)
+ cpu_threads_per_core = (known after apply)
+ disable_api_stop = (known after apply)
+ disable_api_termination = (known after apply)
+ ebs_optimized = (known after apply)
+ get_password_data = false
+ host_id = (known after apply)
powershell
powershell
powershell
powershell
powershell
Ln 7, Col 33 Spaces: 2 UTF-8 CRLF Terraform Go Live

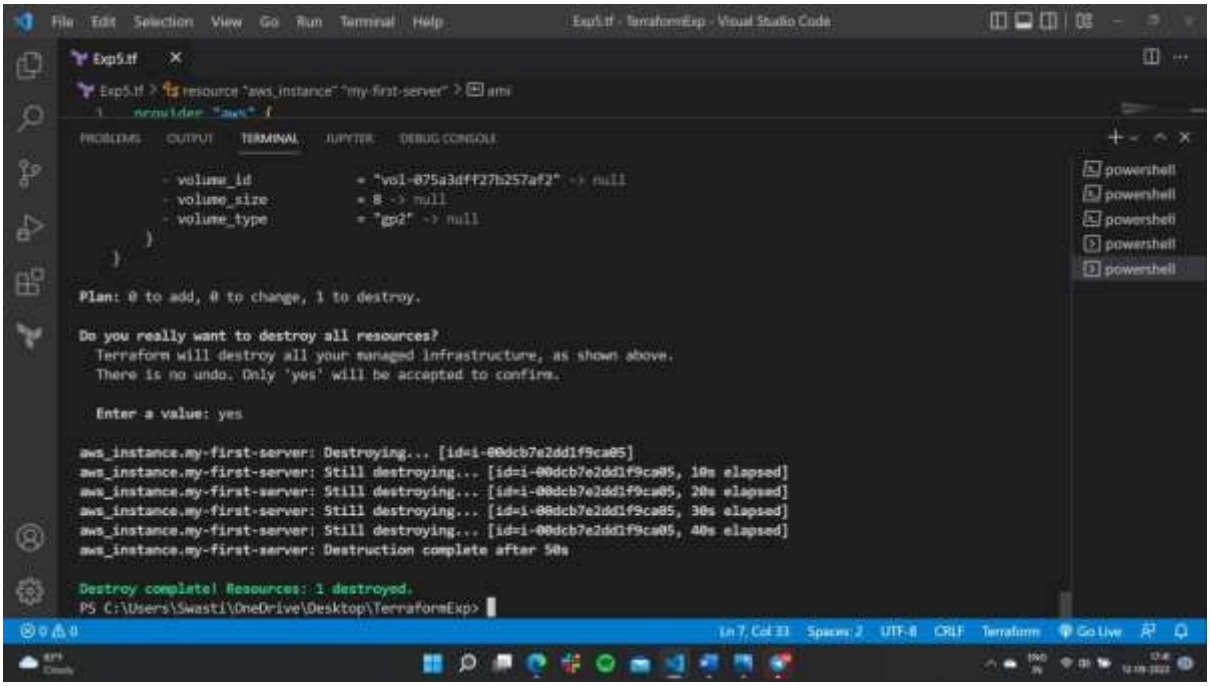


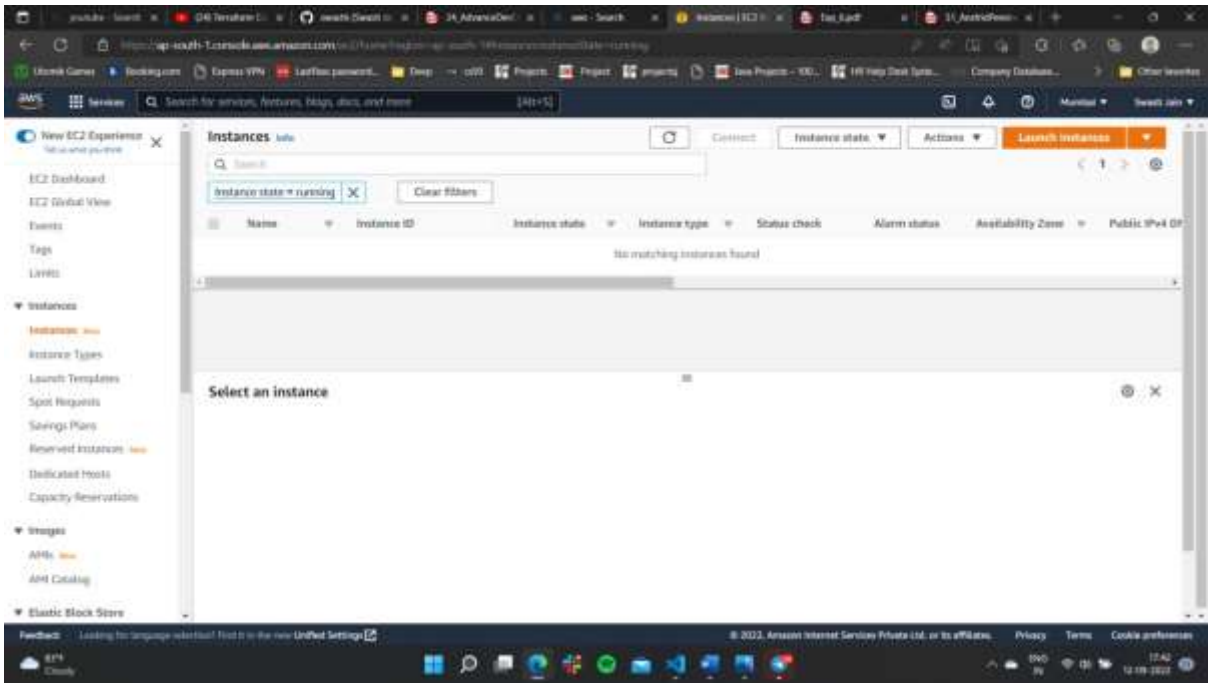
ss of running instance in aws


Instances (1) Info
Instance state
Actions
Launch instances
Clear filters
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DN
Select an instance

Now we have to terminate and destroy the connection. To destroy a terraform infrastructure we will use the command terraform destroy


File Edit Selection View Go Run Terminal Help
Exp5.tf - TerraformExp - Visual Studio Code
Exp5.tf
PROBLEMS OUTPUT TERMINAL JUPYTER DEBUG CONSOLE
PS C:\Users\Swasti\OneDrive\Desktop\TerraformExp> terraform destroy
aws_instance.my-first-server: Refreshing state... [id=i-00dcb7e2dd1f9ca05]
Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
- destroy
Terraform will perform the following actions:
# aws_instance.my-first-server will be destroyed
- resource "aws_instance" "my-first-server" {
- ami = "ami-006d3995d3a6b963b" -> null
- arn = "arn:aws:ec2:ap-south-1:570802191139:instance/i-00dcb7e2dd1f9ca05" -> null
- associate_public_ip_address = true -> null
- availability_zone = "ap-south-1b" -> null
- cpu_core_count = 1 -> null
- cpu_threads_per_core = 1 -> null
- disable_api_stop = false -> null
- disable_api_termination = false -> null
- ebs_optimized = false -> null
- get_password_data = false -> null
- hibernation = false -> null
powershell
powershell
powershell
powershell
terraform
Ln 7, Col 33 Spaces: 2 UTF-8 CRLF Terraform Go Live


File Edit Selection View Go Run Terminal Help
Exp5.tf - TerraformExp - Visual Studio Code
Exp5.tf
PROBLEMS OUTPUT TERMINAL JUPYTER DEBUG CONSOLE
- volume_id = "vol-075a3dff27b257af2" -> null
- volume_size = 8 -> null
- volume_type = "gp2" -> null
}
}
Plan: 0 to add, 0 to change, 1 to destroy.
Do you really want to destroy all resources?
Terraform will destroy all your managed infrastructure, as shown above.
There is no undo. Only 'yes' will be accepted to confirm.
Enter a value: yes
aws_instance.my-first-server: Destroying... [id=i-00dcb7e2dd1f9ca05]
aws_instance.my-first-server: Still destroying... [id=i-00dcb7e2dd1f9ca05, 10s elapsed]
aws_instance.my-first-server: Still destroying... [id=i-00dcb7e2dd1f9ca05, 20s elapsed]
aws_instance.my-first-server: Still destroying... [id=i-00dcb7e2dd1f9ca05, 30s elapsed]
aws_instance.my-first-server: Still destroying... [id=i-00dcb7e2dd1f9ca05, 40s elapsed]
aws_instance.my-first-server: Destruction complete after 50s
Destroy complete! Resources: 1 destroyed.
PS C:\Users\Swasti\OneDrive\Desktop\TerraformExp>
powershell
powershell
powershell
powershell
powershell
Ln 7, Col 33 Spaces: 2 UTF-8 CRLF Terraform Go Live


Instances
Launch instances
Select an instance

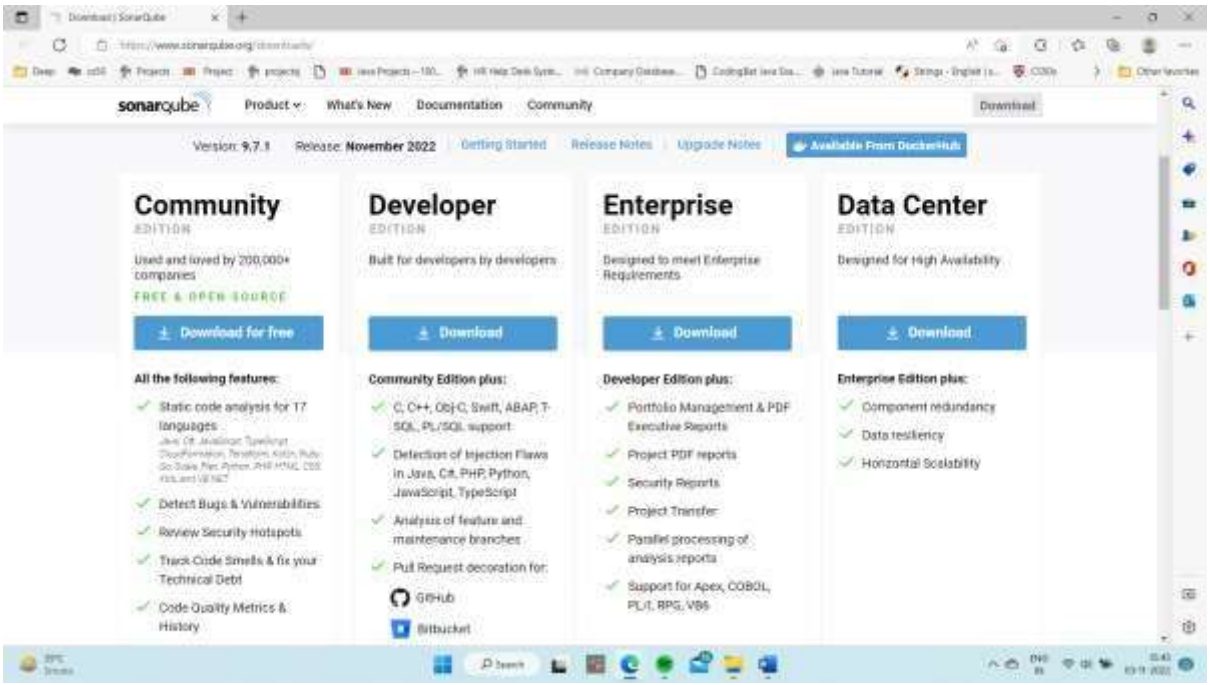
Experiment no. 7

Aim: Perform static analysis using sonarqube and show the analysis.

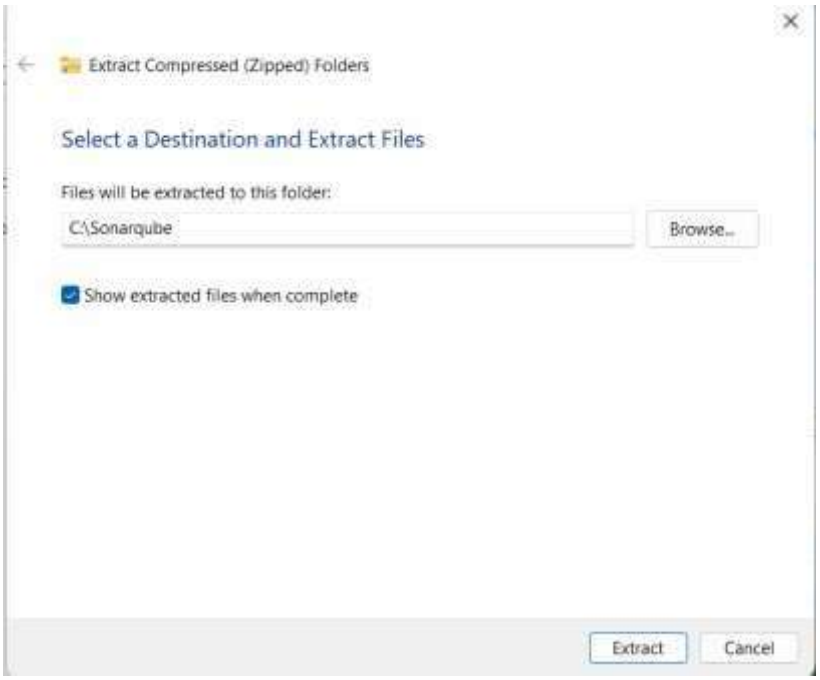
Steps:

Aim: To understand the Static Analysis SAST process and show the analysis of any web based application

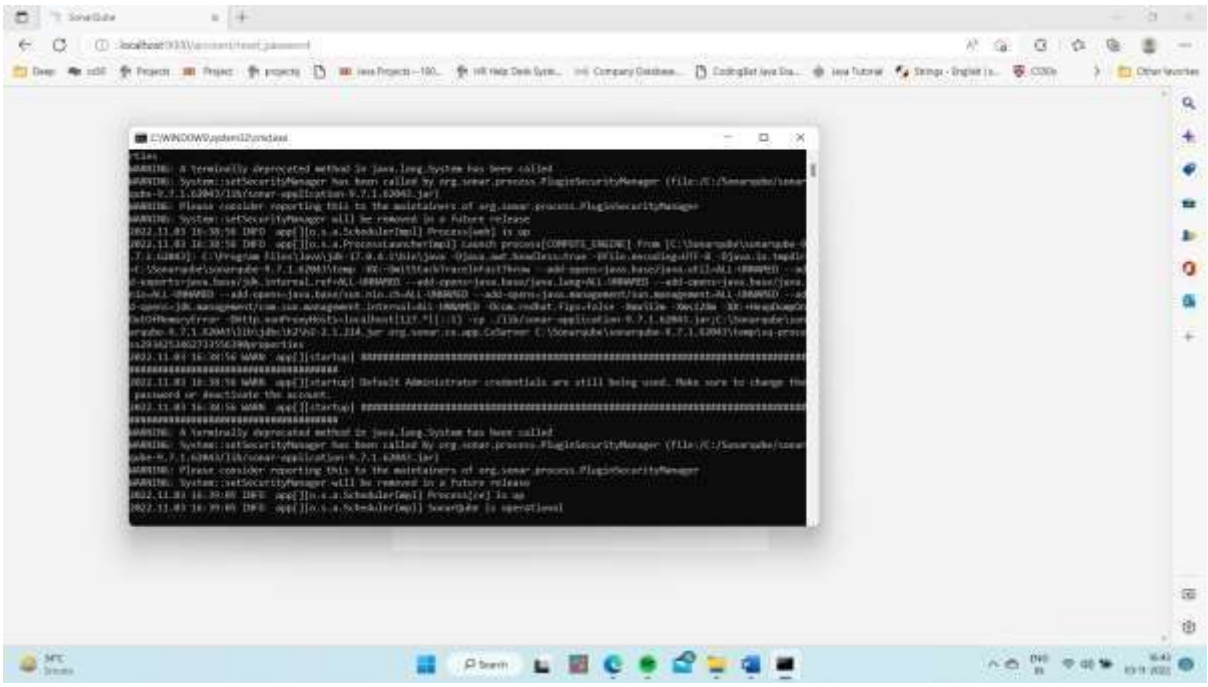
Download the SonarQube Community Edition zip file.

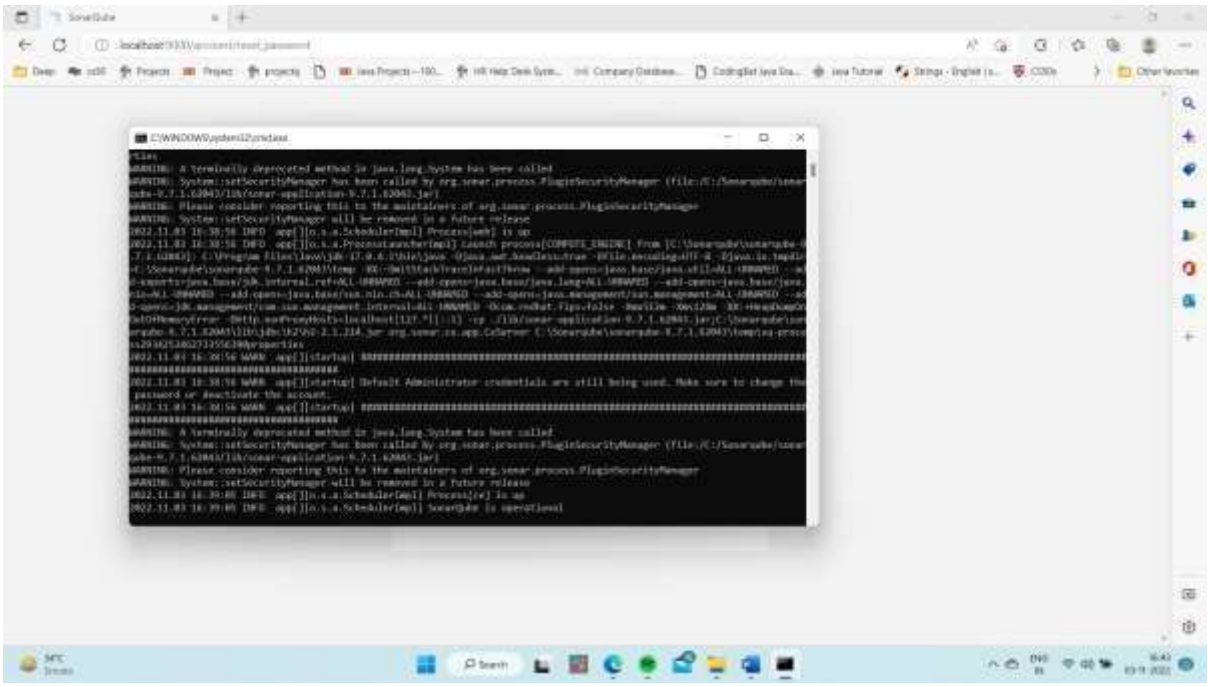


Download and install Java 11 on your system. 3. As a non-rootuser, unzip it, let's say in C:\sonarqube or /opt/sonarqube.

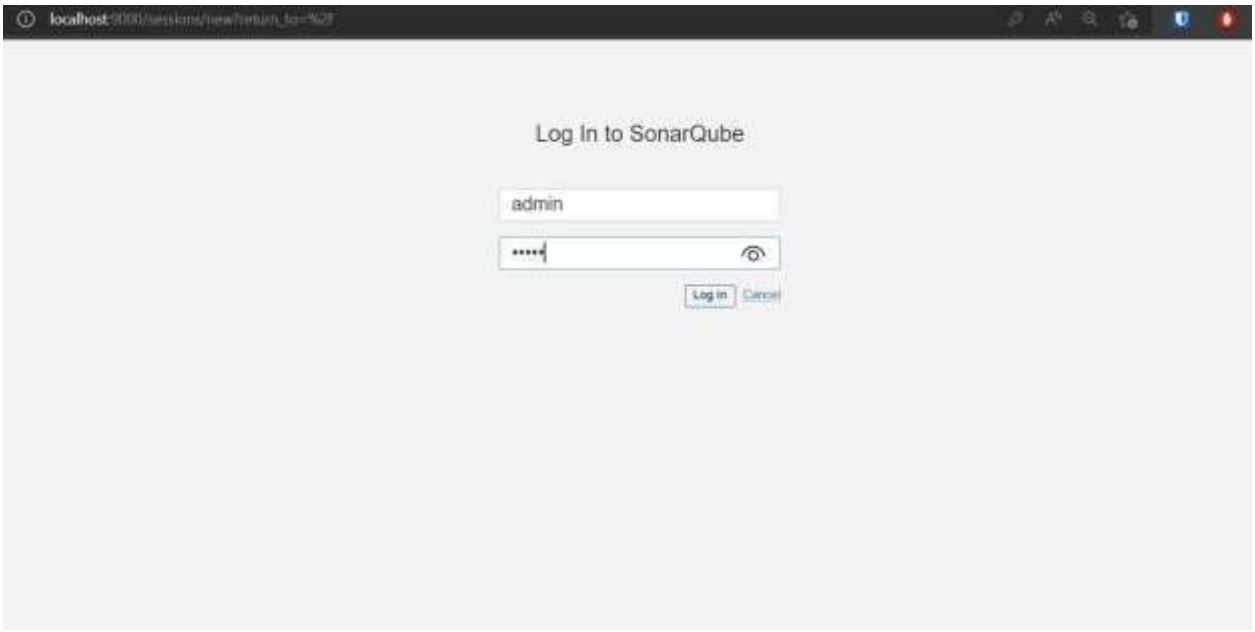


As a non-root user, start the SonarQube Server:



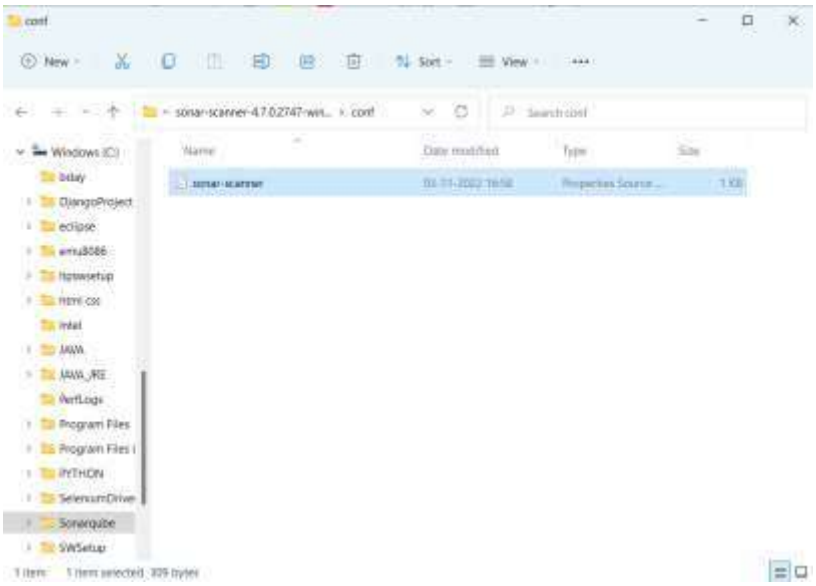


Once your instance is up and running, Log in to http://localhost:9000 using System Administrator credentials

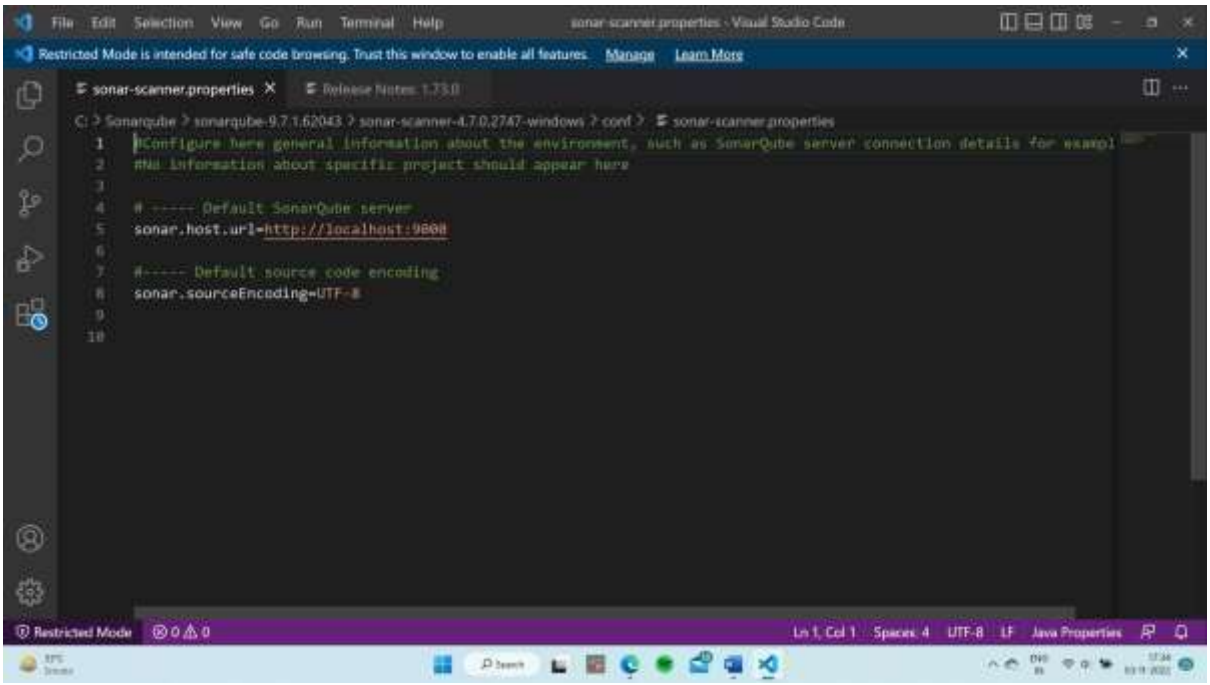


Install sonar scanner from the official link and extract it to the same folder where sonarqube has been installed https://docs.sonarqube.org/latest/analysis/scan/sonarscanner

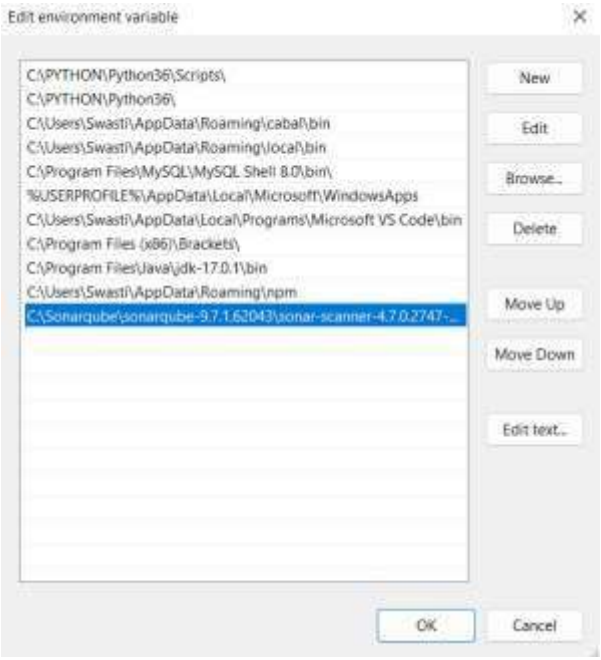
Conf>sonar-scannner



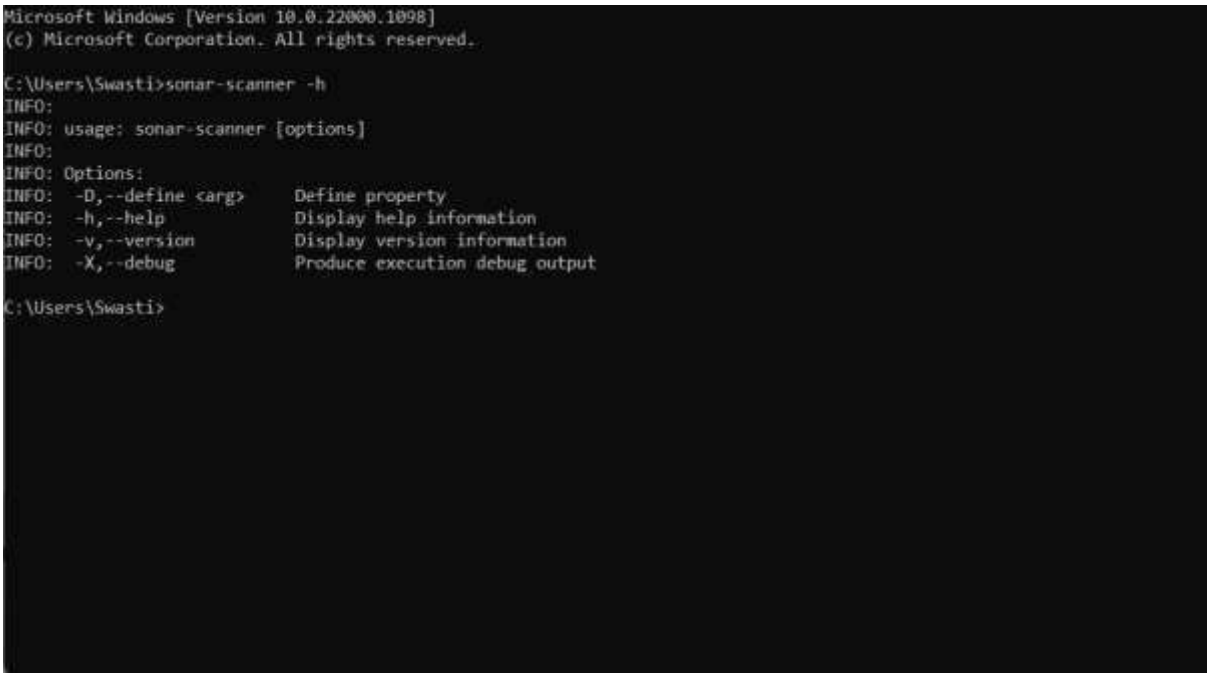
Update the global settings to point to your SonarQube server by editing



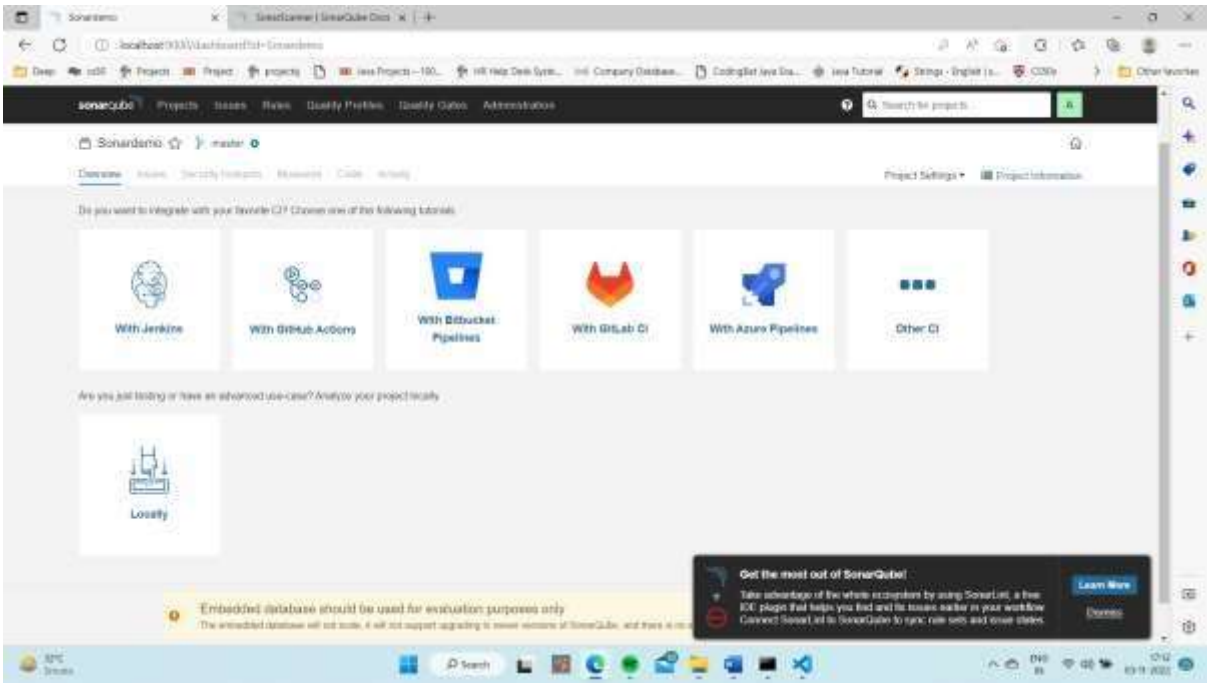
Add the bin path of sonarscanner into the environment variables of your system



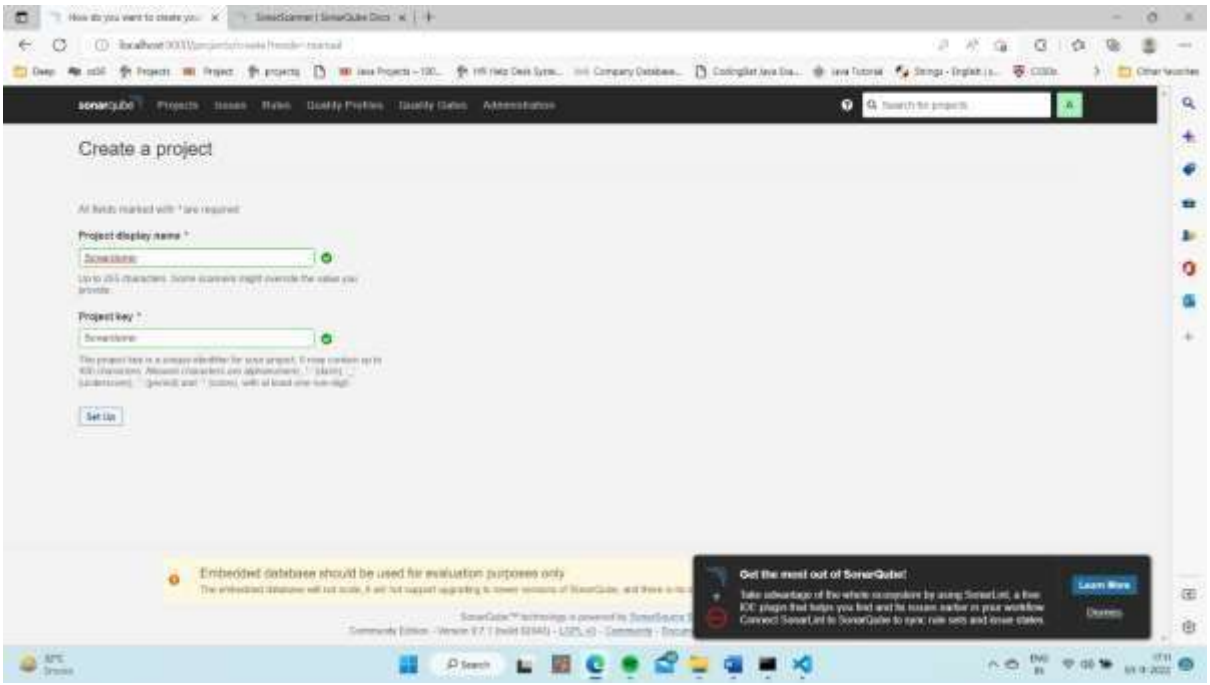
Verify your installation by opening a new shell and executing the command *sonar-scanner -h*



. Now that our sonar-scanner is installed, we will create a project in our sonarqube that is logged in through http://localhost:9000/projects/create.

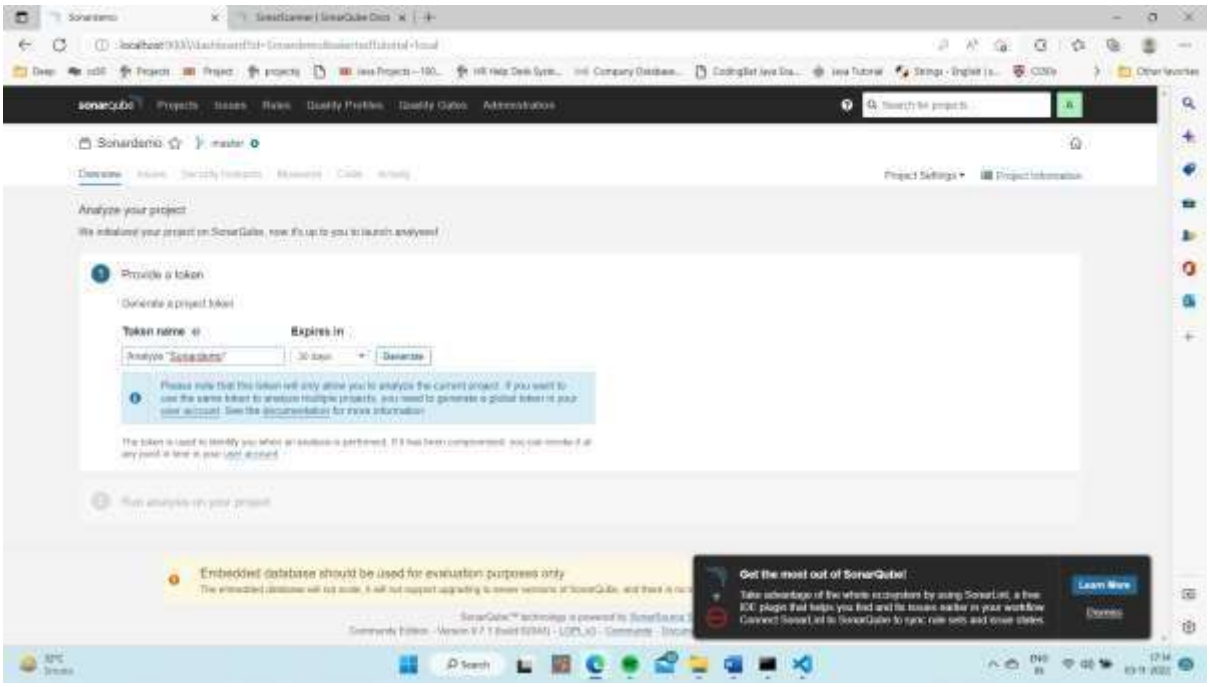


Click on manually and create the project by giving in the values for the asked fields



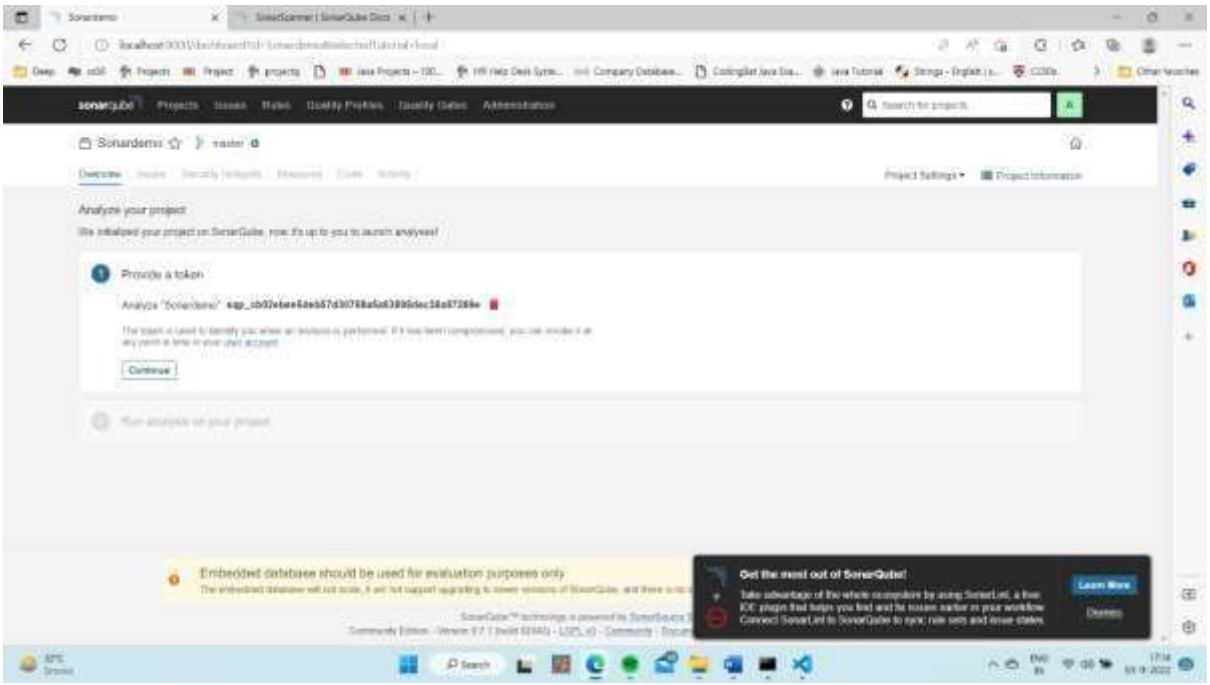
It will look something like this after clicking set up, now in order to analyze the code, click on locally.

Click on generate a token

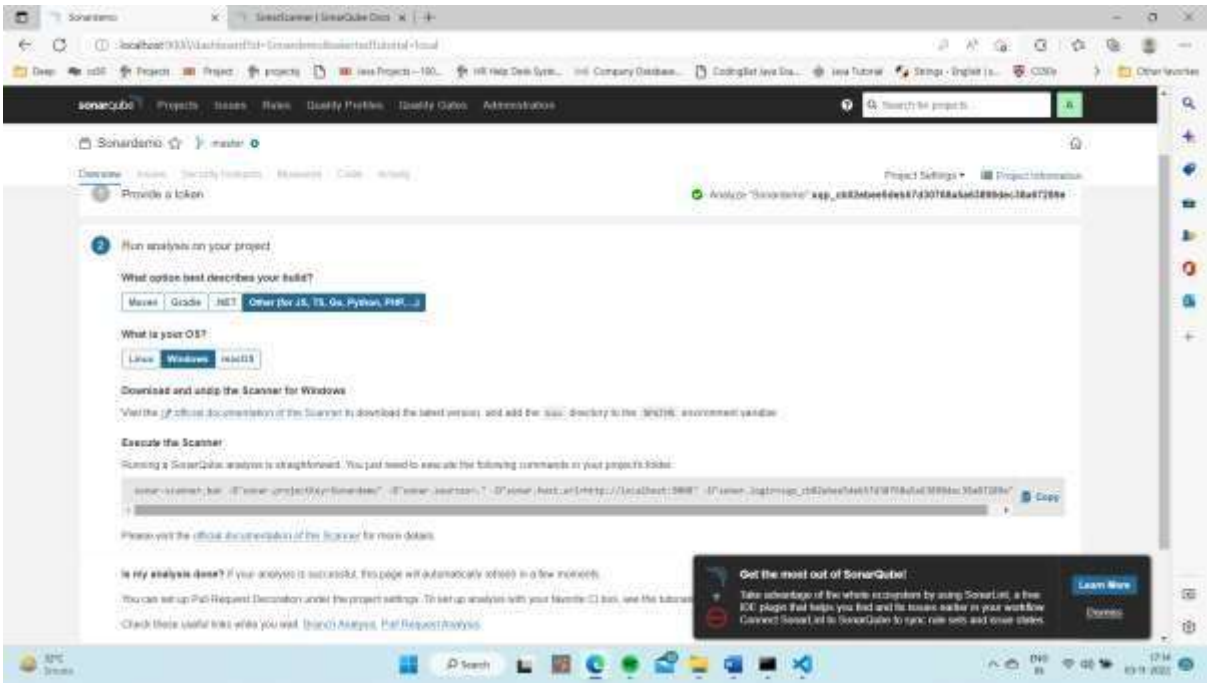


The following output will be received

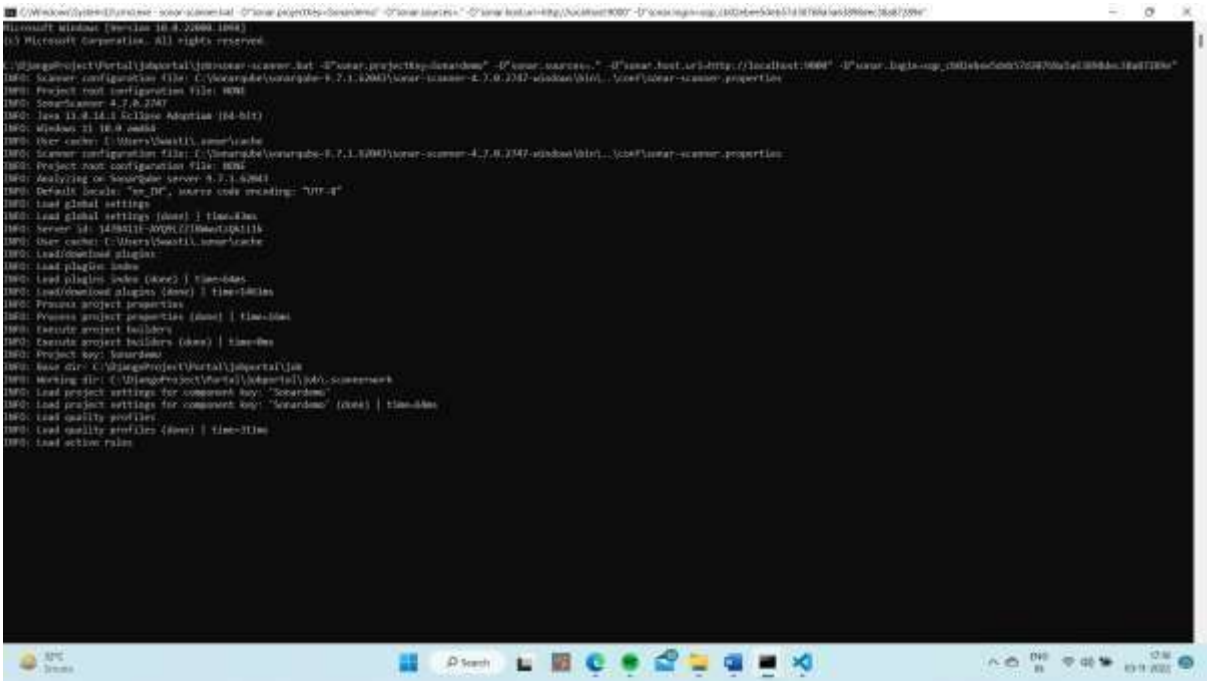
After the token is copied and clicked on continue, then choose your project type



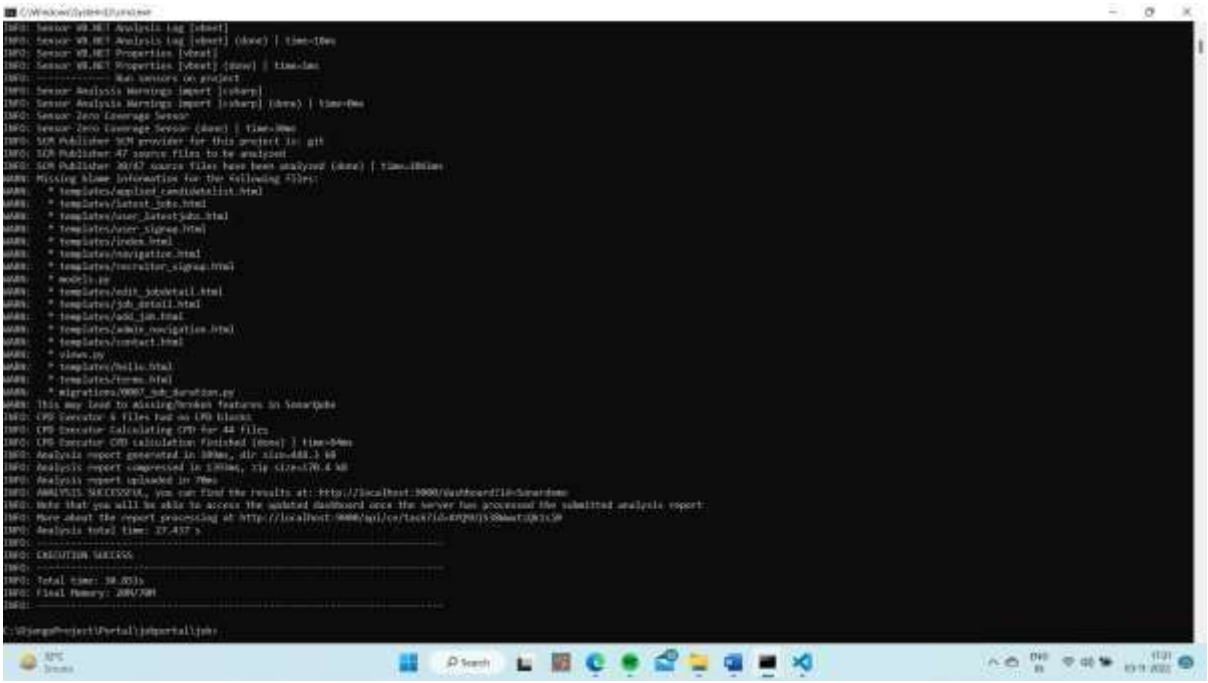
In this case it falls under other



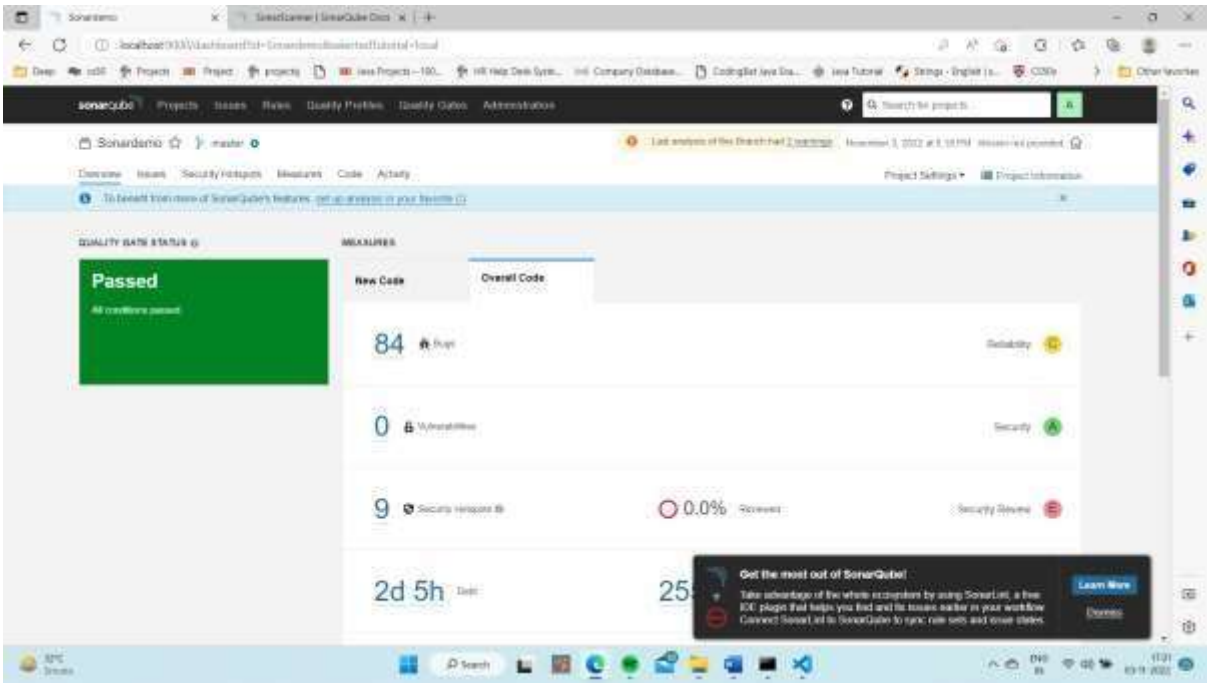
Now go the root of your project directory and run the command given by the sonar scanner

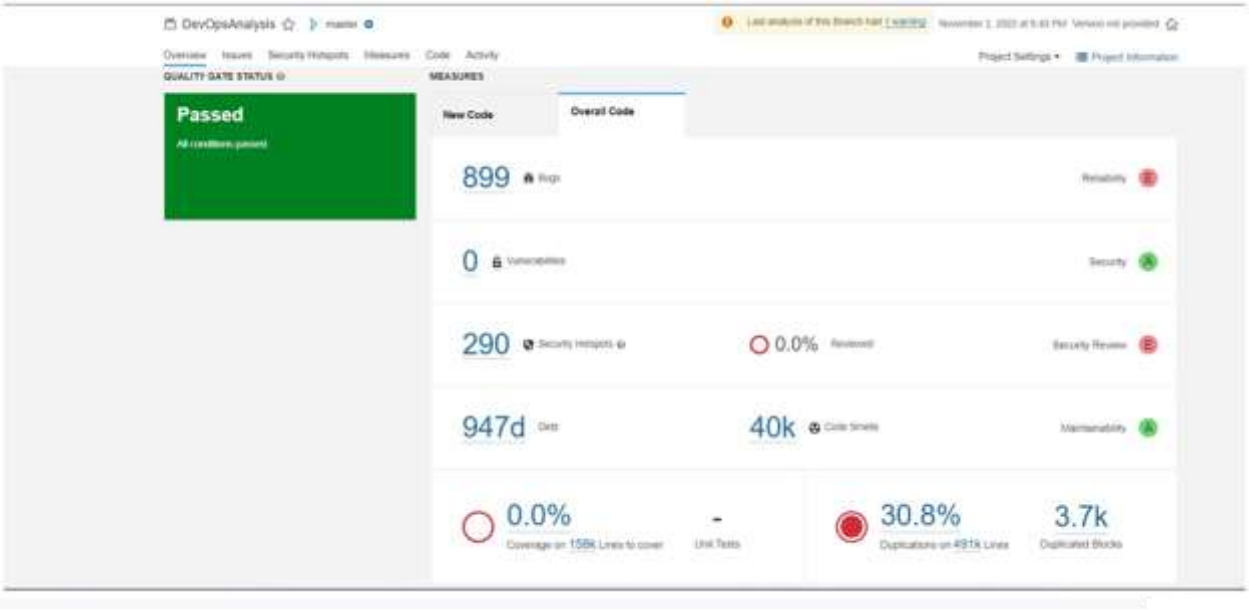


Once the scanning process is done, you'll see the following output



Now we can see the results in our sonarqube dashboard under our project


sonarqube
Projects
Issues
Rules
Quality Profiles
Quality Gates
Administration
Sonardemo
master
Overview
Issues
Security Hotspots
Measures
Code
Activity
Project Settings
Project Information
QUALITY GATE STATUS
Passed
MEASURES
New Code
Overall Code
84
0
9
0.0%
2d 5h
Get the most out of SonarQube!
Learn More
Dismiss



Conclusion: The analysis is performed and displayed in sonarqube successfully.

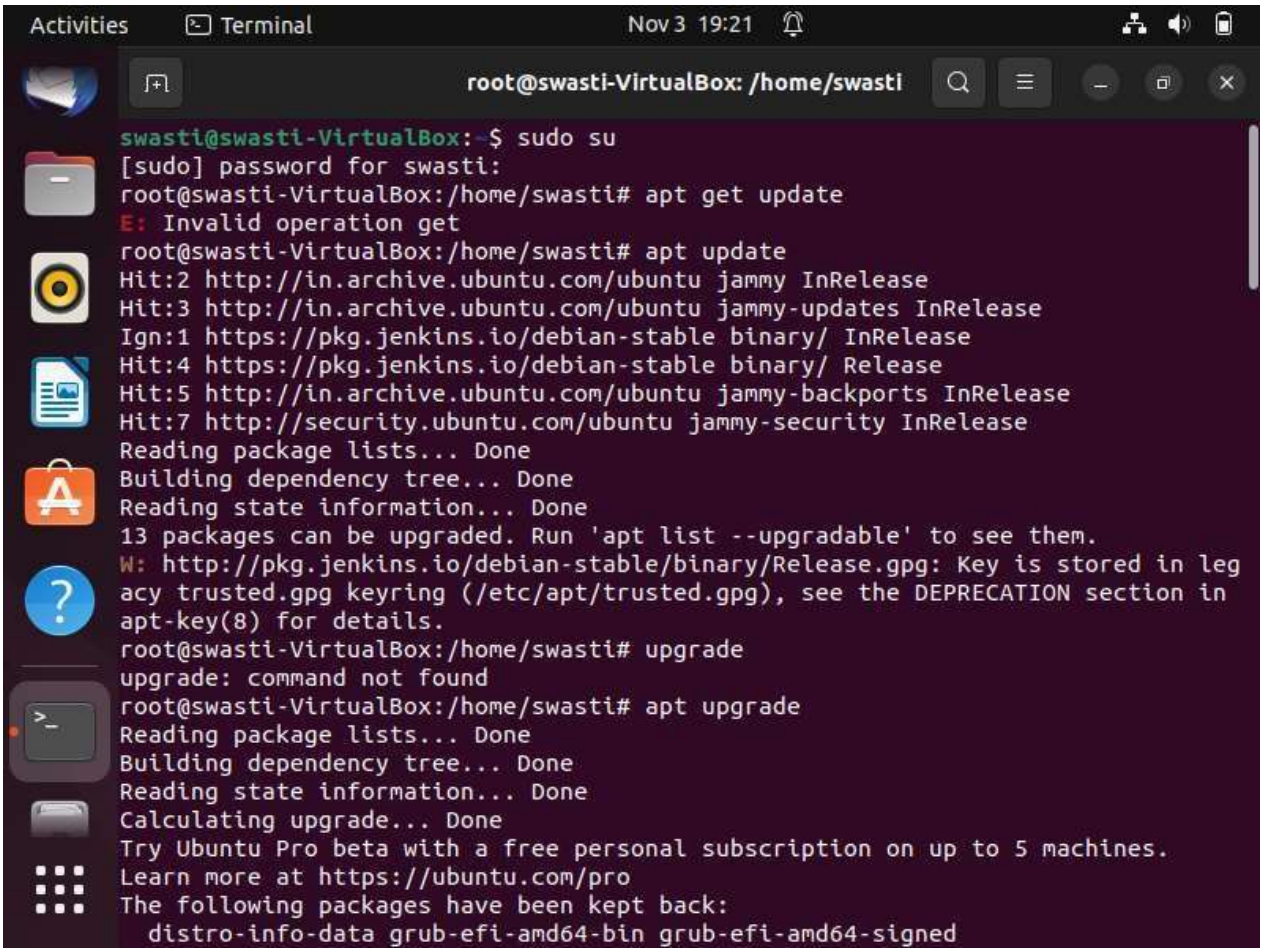
Experiment no. 9

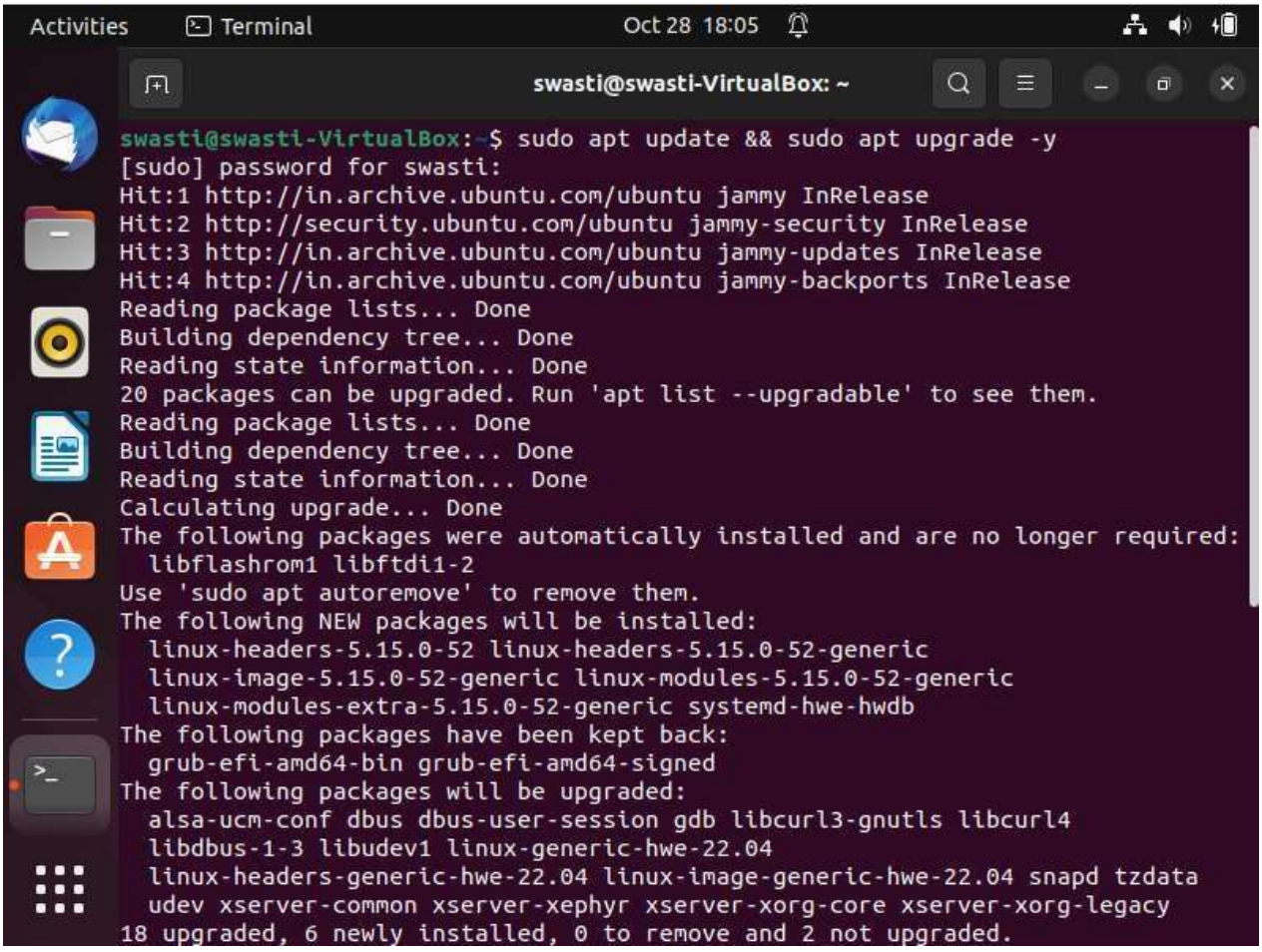
Aim: To understand Continuous monitoring and Installation and configuration of Nagios Core. Plugins and NRPE (Nagios Remote Plugin Executor) on Linux Machine.

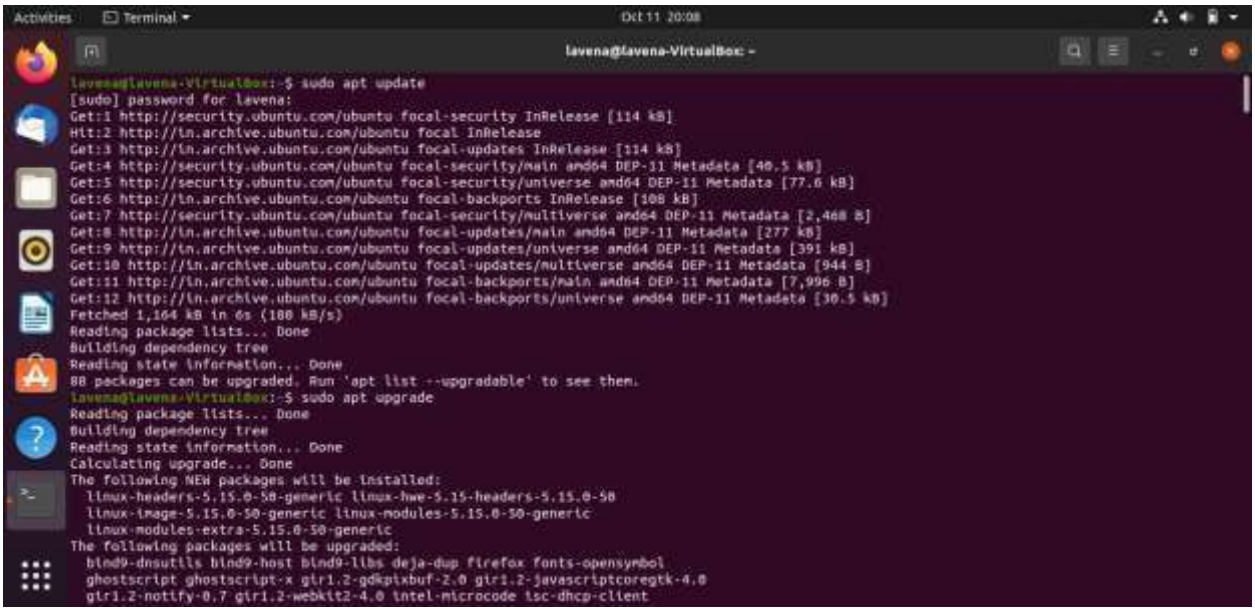
1. Install and Configure Nagios Core

Step 1: Update the system packages.

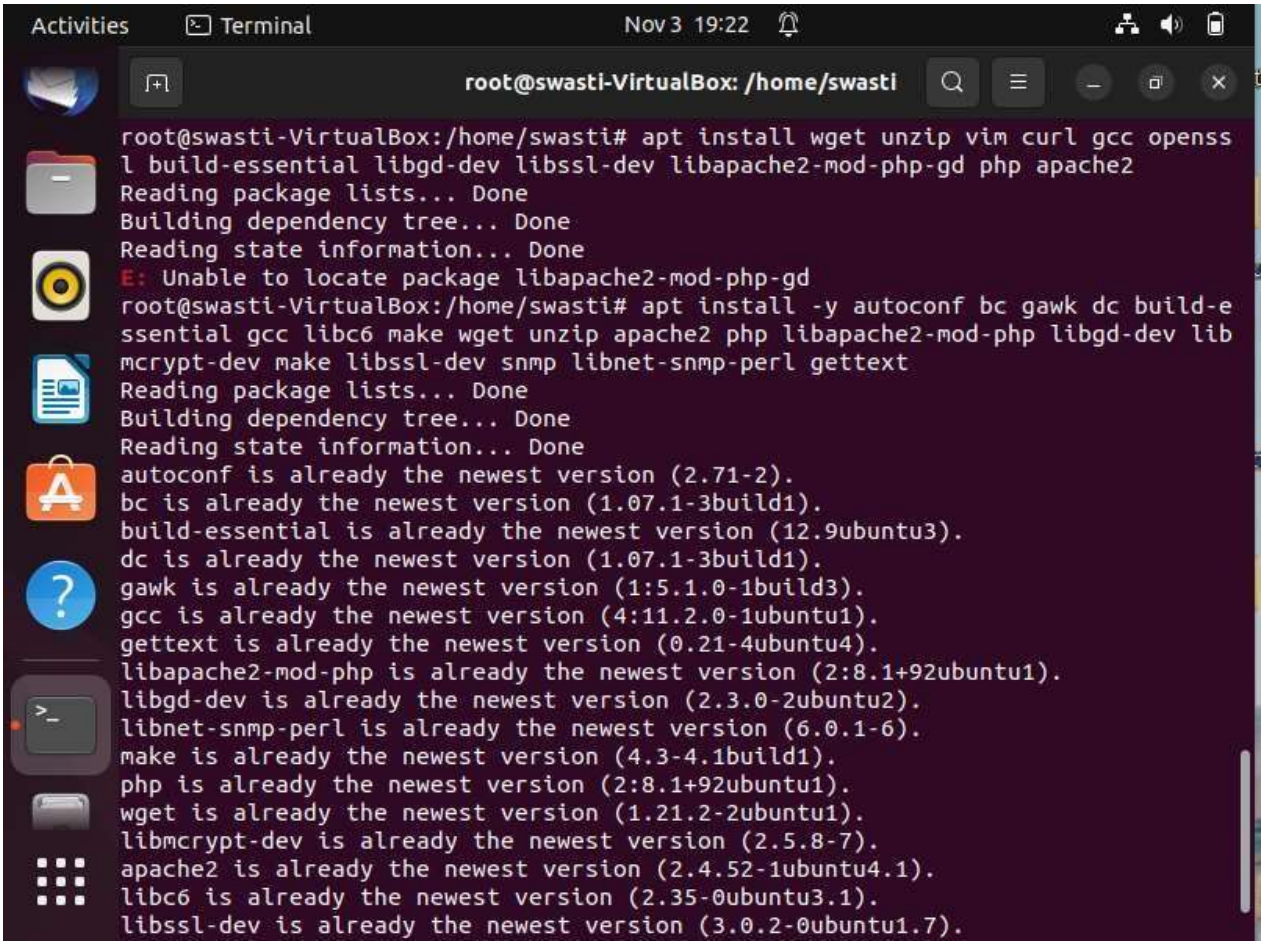
Sudo apt update and sudo apt upgrade:

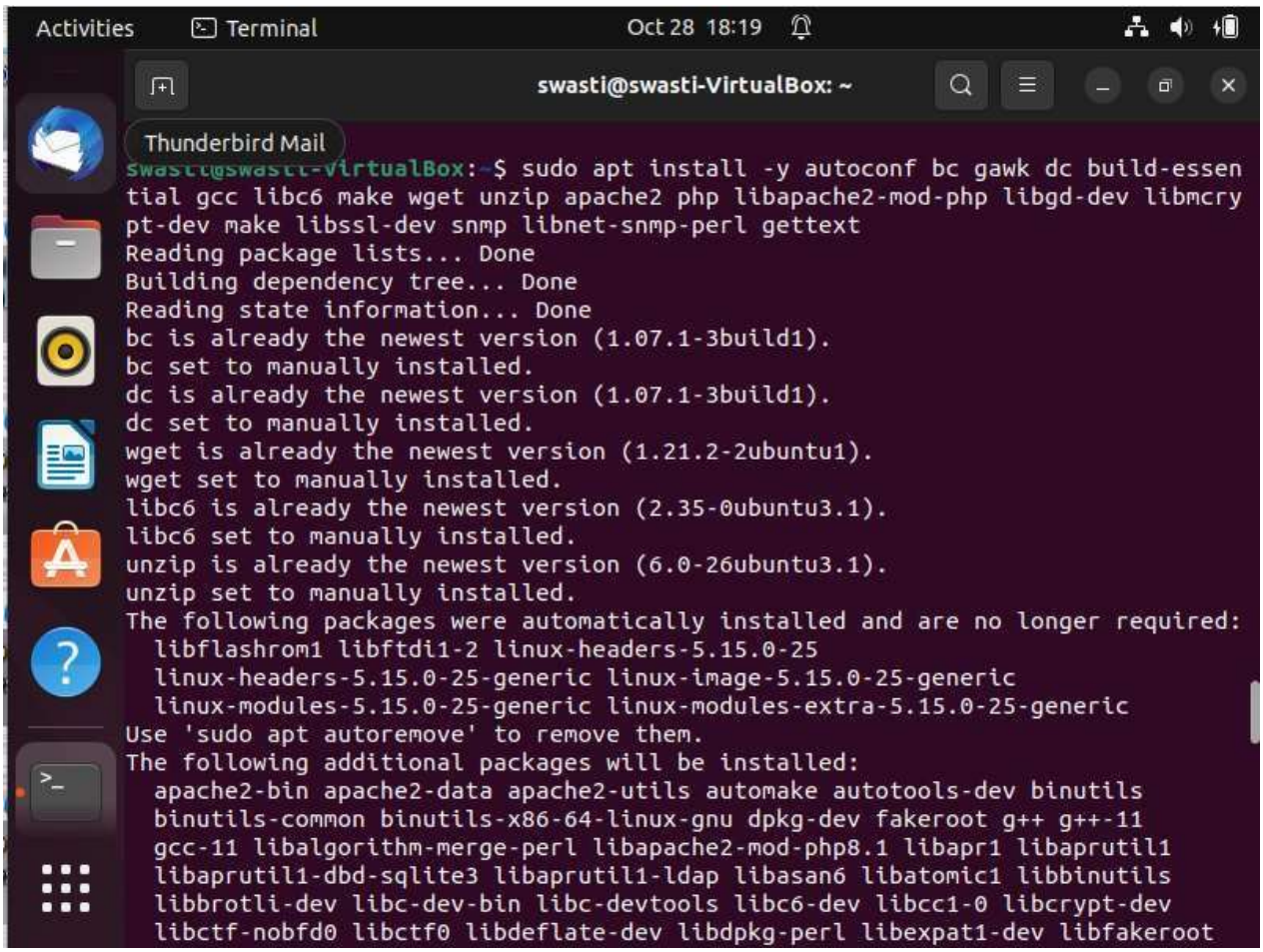

Activities
Terminal
Nov 3 19:21
root@swasti-VirtualBox: /home/swasti
swasti@swasti-VirtualBox:~$ sudo su
[sudo] password for swasti:
root@swasti-VirtualBox:/home/swasti# apt get update
E: Invalid operation get
root@swasti-VirtualBox:/home/swasti# apt update
Hit:2 http://in.archive.ubuntu.com/ubuntu jammy InRelease
Hit:3 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease
Ign:1 https://pkg.jenkins.io/debian-stable binary/ InRelease
Hit:4 https://pkg.jenkins.io/debian-stable binary/ Release
Hit:5 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:7 http://security.ubuntu.com/ubuntu jammy-security InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
13 packages can be upgraded. Run 'apt list --upgradable' to see them.
W: http://pkg.jenkins.io/debian-stable/binary/Release.gpg: Key is stored in leg
acy trusted.gpg keyring (/etc/apt/trusted.gpg), see the DEPRECATION section in
apt-key(8) for details.
root@swasti-VirtualBox:/home/swasti# upgrade
upgrade: command not found
root@swasti-VirtualBox:/home/swasti# apt upgrade
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
Try Ubuntu Pro beta with a free personal subscription on up to 5 machines.
Learn more at https://ubuntu.com/pro
The following packages have been kept back:
distro-info-data grub-efi-amd64-bin grub-efi-amd64-signed


Activities
Terminal
Oct 28 18:05
swasti@swasti-VirtualBox: ~
swasti@swasti-VirtualBox:~$ sudo apt update && sudo apt upgrade -y
[sudo] password for swasti:
Hit:1 http://in.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:3 http://in.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:4 http://in.archive.ubuntu.com/ubuntu jammy-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
20 packages can be upgraded. Run 'apt list --upgradable' to see them.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Calculating upgrade... Done
The following packages were automatically installed and are no longer required:
libflashrom1 libftdi1-2
Use 'sudo apt autoremove' to remove them.
The following NEW packages will be installed:
linux-headers-5.15.0-52 linux-headers-5.15.0-52-generic
linux-image-5.15.0-52-generic linux-modules-5.15.0-52-generic
linux-modules-extra-5.15.0-52-generic systemd-hwe-hwdb
The following packages have been kept back:
grub-efi-amd64-bin grub-efi-amd64-signed
The following packages will be upgraded:
alsa-ucm-conf dbus dbus-user-session gdb libcurl3-gnutls libcurl4
libdbus-1-3 libudev1 linux-generic-hwe-22.04
linux-headers-generic-hwe-22.04 linux-image-generic-hwe-22.04 snapd tzdata
udev xserver-common xserver-xephyr xserver-xorg-core xserver-xorg-legacy
18 upgraded, 6 newly installed, 0 to remove and 2 not upgraded.

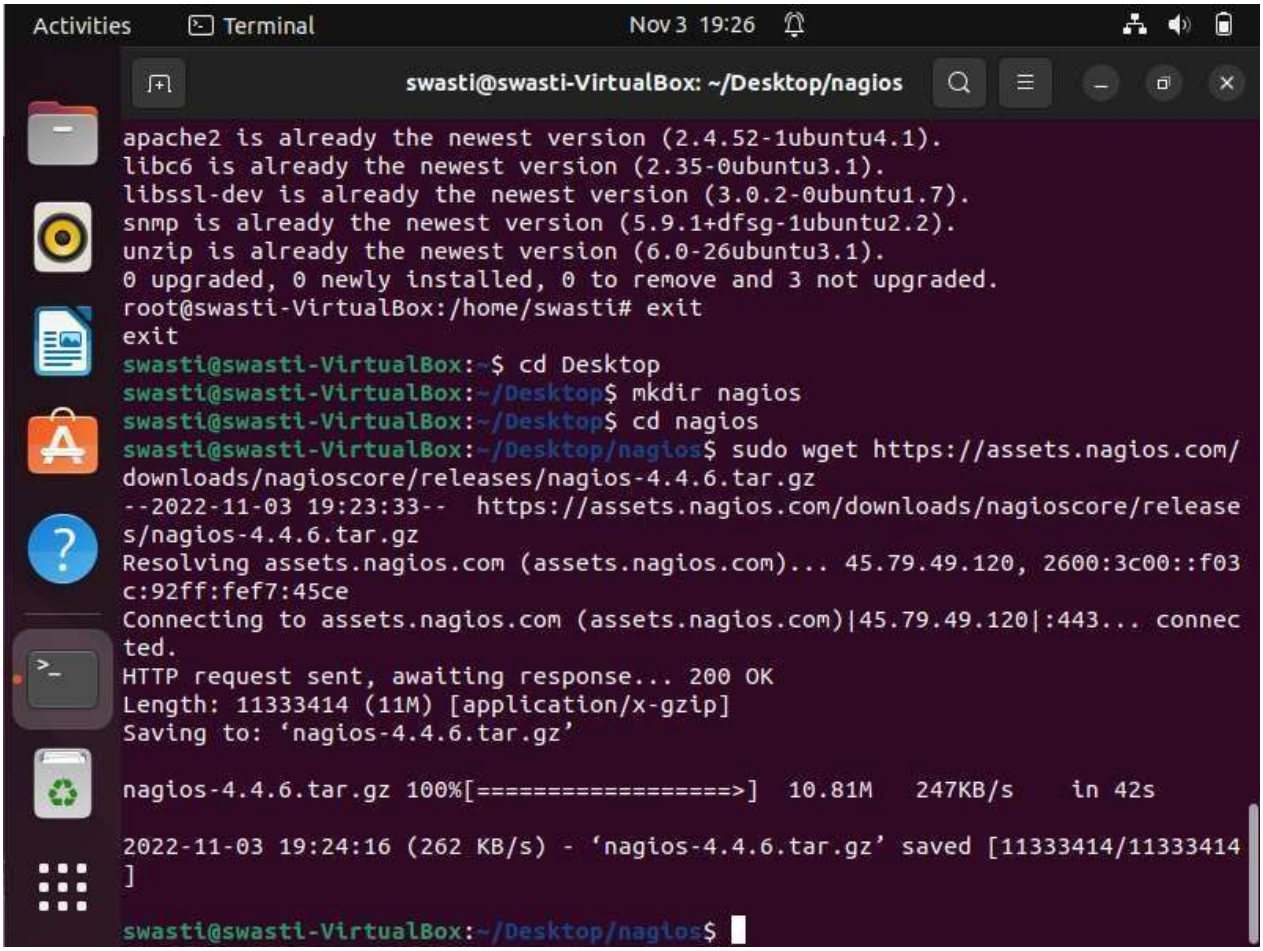

Activities
Terminal
Oct 11 20:08
lavena@lavena-VirtualBox: ~
lavena@lavena-VirtualBox:~$ sudo apt update
[sudo] password for lavena:
Get:1 http://security.ubuntu.com/ubuntu focal-security InRelease [114 kB]
Hit:2 http://in.archive.ubuntu.com/ubuntu focal InRelease
Get:3 http://in.archive.ubuntu.com/ubuntu focal-updates InRelease [114 kB]
Get:4 http://security.ubuntu.com/ubuntu focal-security/main amd64 DEP-11 Metadata [40.5 kB]
Get:5 http://security.ubuntu.com/ubuntu focal-security/universe amd64 DEP-11 Metadata [77.6 kB]
Get:6 http://in.archive.ubuntu.com/ubuntu focal-backports InRelease [108 kB]
Get:7 http://security.ubuntu.com/ubuntu focal-security/multiverse amd64 DEP-11 Metadata [2,468 B]
Get:8 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 DEP-11 Metadata [277 kB]
Get:9 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 DEP-11 Metadata [391 kB]
Get:10 http://in.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 DEP-11 Metadata [944 B]
Get:11 http://in.archive.ubuntu.com/ubuntu focal-backports/main amd64 DEP-11 Metadata [7,996 B]
Get:12 http://in.archive.ubuntu.com/ubuntu focal-backports/universe amd64 DEP-11 Metadata [30.5 kB]
Fetched 1,164 kB in 6s (180 kB/s)
Reading package lists... Done
Building dependency tree
Reading state information... Done
88 packages can be upgraded. Run 'apt list --upgradable' to see them.
lavena@lavena-VirtualBox:~$ sudo apt upgrade
Reading package lists... Done
Building dependency tree
Reading state information... Done
Calculating upgrade... Done
The following NEW packages will be installed:
linux-headers-5.15.0-50-generic linux-hwe-5.15-headers-5.15.0-50
linux-image-5.15.0-50-generic linux-modules-5.15.0-50-generic
linux-modules-extra-5.15.0-50-generic
The following packages will be upgraded:
bind9-dnsutils bind9-host bind9-libs deja-dup firefox fonts-opensymbol
ghostscript ghostscript-x gir1.2-gdkpixbuf-2.0 gir1.2-javascriptcoregtk-4.0
gir1.2-notify-0.7 gir1.2-webkit2-4.0 intel-microcode isc-dhcp-client

Step 2: Install all the required packages




Activities
Terminal
Oct 28 18:19
swasti@swasti-VirtualBox: ~
Thunderbird Mail
swasti@swasti-VirtualBox:~$ sudo apt install -y autoconf bc gawk dc build-essen
tial gcc libc6 make wget unzip apache2 php libapache2-mod-php libgd-dev libmcry
pt-dev make libssl-dev snmp libnet-snmp-perl gettext
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
bc is already the newest version (1.07.1-3build1).
bc set to manually installed.
dc is already the newest version (1.07.1-3build1).
dc set to manually installed.
wget is already the newest version (1.21.2-2ubuntu1).
wget set to manually installed.
libc6 is already the newest version (2.35-0ubuntu3.1).
libc6 set to manually installed.
unzip is already the newest version (6.0-26ubuntu3.1).
unzip set to manually installed.
The following packages were automatically installed and are no longer required:
libflashrom1 libftdi1-2 linux-headers-5.15.0-25
linux-headers-5.15.0-25-generic linux-image-5.15.0-25-generic
linux-modules-5.15.0-25-generic linux-modules-extra-5.15.0-25-generic
Use 'sudo apt autoremove' to remove them.
The following additional packages will be installed:
apache2-bin apache2-data apache2-utils automake autotools-dev binutils
binutils-common binutils-x86-64-linux-gnu dpkg-dev fakeroot g++ g++-11
gcc-11 libalgorithm-merge-perl libapache2-mod-php8.1 libapr1 libaprutil1
libaprutil1-dbd-sqlite3 libaprutil1-ldap libasan6 libatomic1 libbinutils
libbrotli-dev libc-dev-bin libc-devtools libc6-dev libcc1-0 libcrypt-dev
libctf-nobfd0 libctf0 libdeflate-dev libdpkg-perl libexpat1-dev libfakeroot

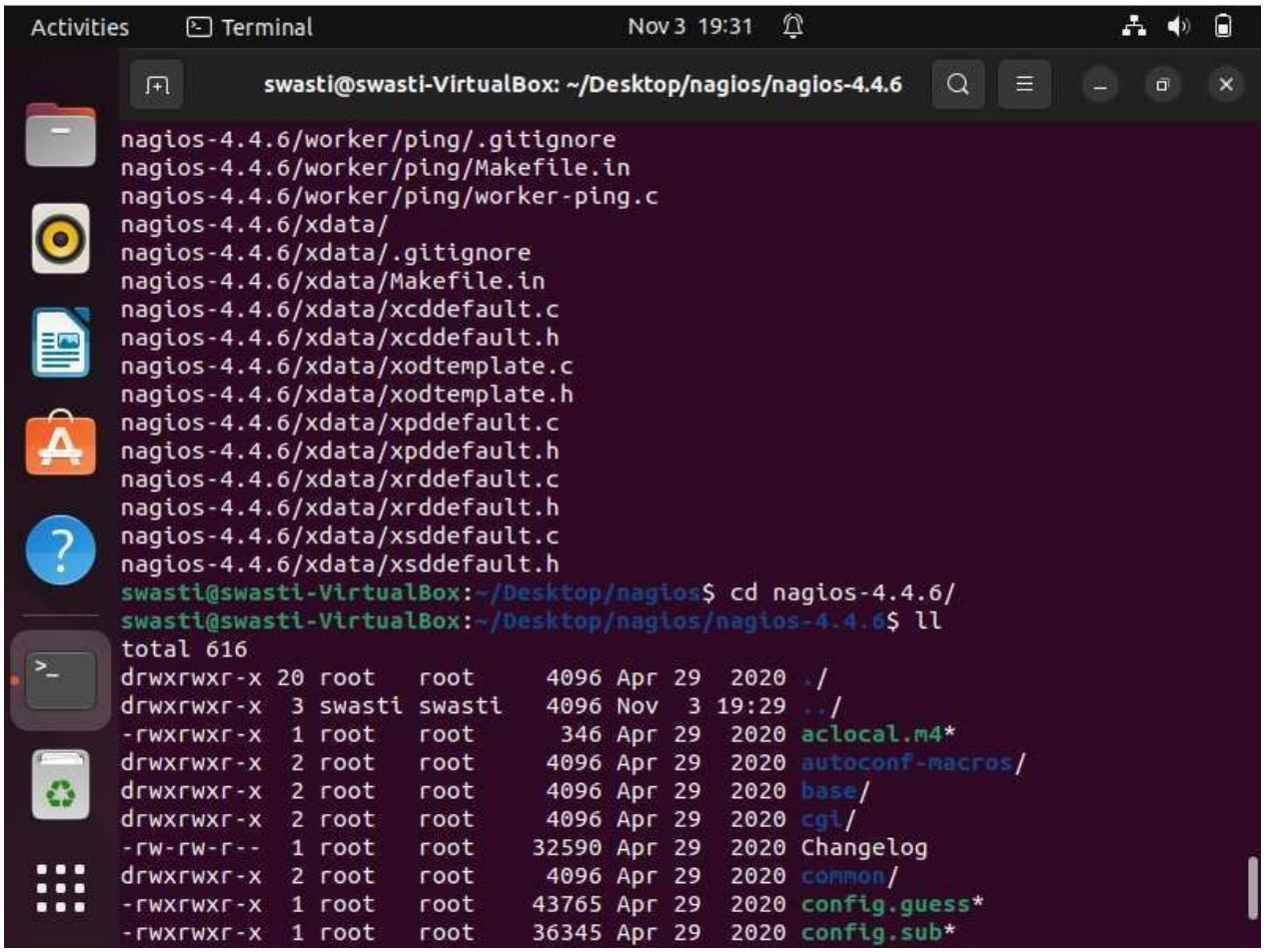
Step 3: Download Nagios Core Setup files



```
swasti@swasti-VirtualBox:~/Desktop/nagios$ ll
total 11076
drwxrwxr-x  2 swasti swasti     4096 Nov  3 19:23 ./
drwxr-xr-x 10 swasti swasti     4096 Nov  3 19:23 ../
-rw-r--r--  1 root   root   11333414 May  5  2020 nagios-4.4.6.tar.gz
swasti@swasti-VirtualBox:~/Desktop/nagios$
```

Step 4: Extract the downloaded files.

```
swasti@swasti-VirtualBox:~/Desktop/nagios$ sudo tar -xvf nagios-4.4.6.tar.gz
nagios-4.4.6/
nagios-4.4.6/.gitignore
nagios-4.4.6/.travis.yml
```



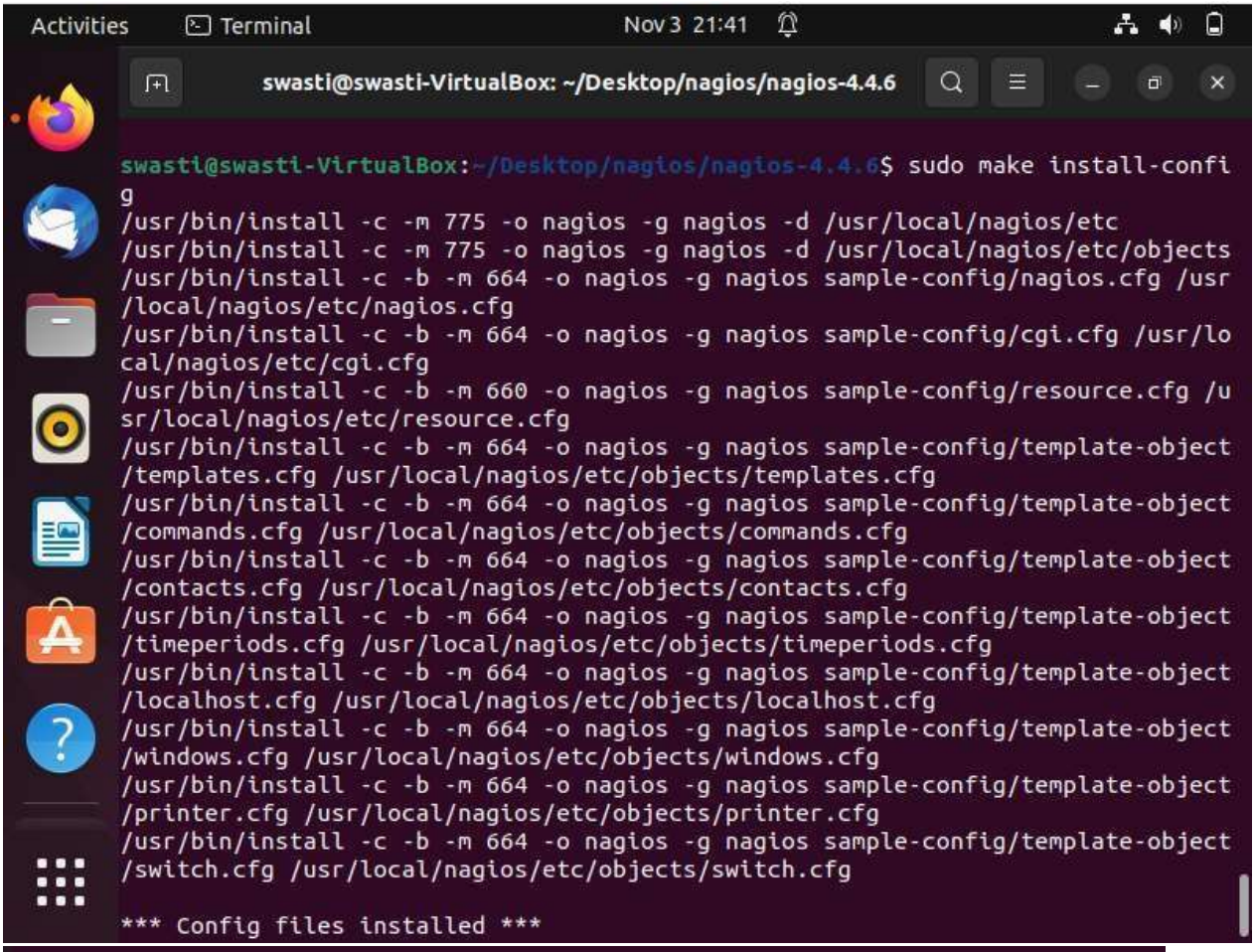
```
swasti@swasti-VirtualBox:~/Desktop/nagios/nagios-4.4.6$ sudo ./configure --with
-httpd-conf=/etc/apache2/sites-enabled
checking for a BSD-compatible install... /usr/bin/install -c
checking build system type... x86_64-pc-linux-gnu
checking host system type... x86_64-pc-linux-gnu
checking for gcc... gcc
checking whether the C compiler works... yes
checking for C compiler default output file name... a.out
checking for suffix of executables...
checking whether we are cross compiling... no
checking for suffix of object files... o
checking whether we are using the GNU C compiler... yes
checking whether gcc accepts -g... yes
checking for gcc option to accept ISO C89... none needed
checking whether make sets $(MAKE)... yes
```

```
swasti@swasti-VirtualBox:~/Desktop/nagios/nagios-4.4.6$ sudo make all
cd ./base && make
make[1]: Entering directory '/home/swasti/Desktop/nagios/nagios-4.4.6/base'
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE -c -o nagios.o nagios.c
nagios.c: In function ‘main’:
nagios.c:611:25: warning: ignoring return value of ‘asprintf’ declared with att
ribute ‘warn_unused_result’ [-Wunused-result]
  611 |                         asprintf(&mac->x[MACRO_PROCESSSTARTTIME], "%llu
", (unsigned long long)program_start);
      |                         ^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
nagios.c:841:25: warning: ignoring return value of ‘asprintf’ declared with att
```

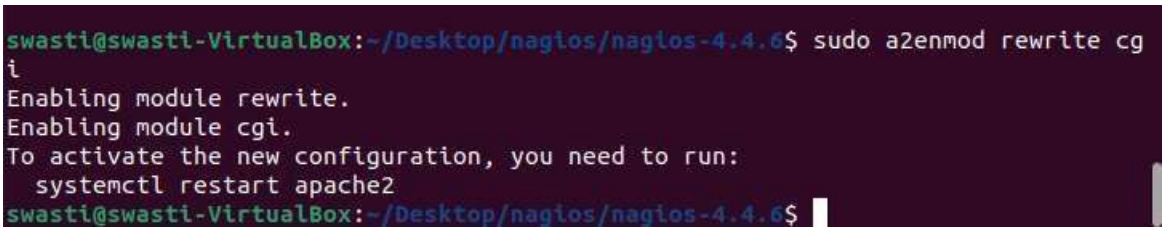
```
swasti@swasti-VirtualBox:~/Desktop/nagios/nagios-4.4.6$ sudo make install-group
-users
make: *** No rule to make target 'install-group-users'.  Stop.
swasti@swasti-VirtualBox:~/Desktop/nagios/nagios-4.4.6$ sudo make install-group
s-users
Group nagios already exists
User nagios already exists
swasti@swasti-VirtualBox:~/Desktop/nagios/nagios-4.4.6$ sudo usermod -a -G nagi
os www-data
swasti@swasti-VirtualBox:~/Desktop/nagios/nagios-4.4.6$ sudo make install
cd ./base && make install
make[1]: Entering directory '/home/swasti/Desktop/nagios/nagios-4.4.6/base'
/usr/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/bin
/usr/bin/install -c -s -m 774 -o nagios -g nagios nagios /usr/local/nagios/bin
/usr/bin/install -c -s -m 774 -o nagios -g nagios nagiostats /usr/local/nagios/
bin
make[1]: Leaving directory '/home/swasti/Desktop/nagios/nagios-4.4.6/base'
cd ./cgi && make install
make[1]: Entering directory '/home/swasti/Desktop/nagios/nagios-4.4.6/cgi'
make install-basic
make[2]: Entering directory '/home/swasti/Desktop/nagios/nagios-4.4.6/cgi'
```

```
swasti@swasti-VirtualBox:~/Desktop/nagios/nagios-4.4.6$ sudo make install-init
[sudo] password for swasti:
Sorry, try again.
[sudo] password for swasti:
/usr/bin/install -c -m 755 -d -o root -g root /lib/systemd/system
/usr/bin/install -c -m 755 -o root -g root startup/default-service /lib/systemd
/system/nagios.service
swasti@swasti-VirtualBox:~/Desktop/nagios/nagios-4.4.6$
```

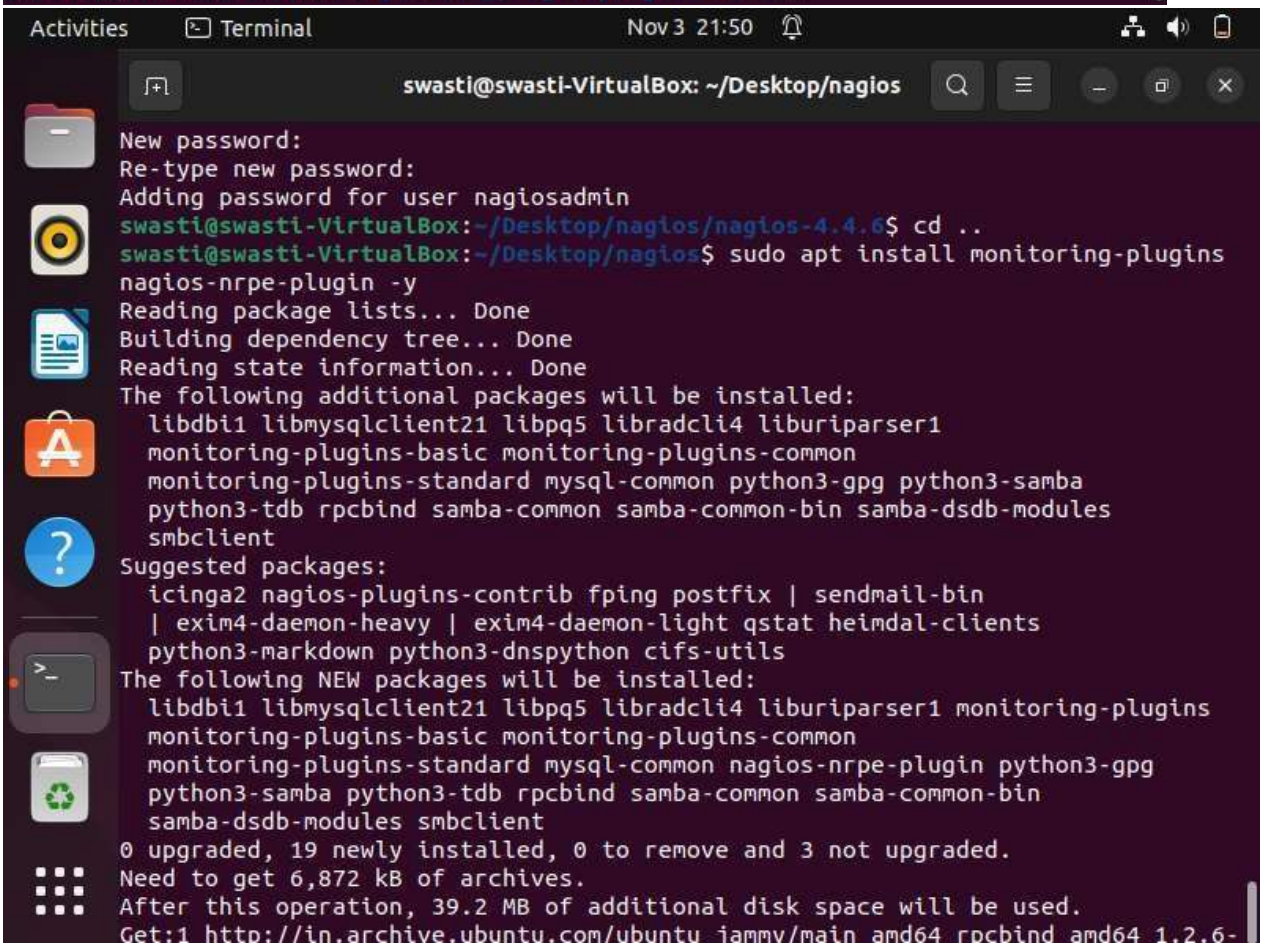
```
swasti@swasti-VirtualBox:~/Desktop/nagios/nagios-4.4.6$ sudo make install-comma
ndmode
/usr/bin/install -c -m 775 -o nagios -g nagios -d /usr/local/nagios/var/rw
chmod g+s /usr/local/nagios/var/rw

*** External command directory configured ***

swasti@swasti-VirtualBox:~/Desktop/nagios/nagios-4.4.6$
```




```
swasti@swasti-VirtualBox:~/Desktop/nagios/nagios-4.4.6$ sudo make install-webconf
/usr/bin/install -c -m 644 sample-config/httpd.conf /etc/apache2/sites-enabled/nagios.conf
if [ 0 -eq 1 ]; then \
        ln -s /etc/apache2/sites-enabled/nagios.conf /etc/apache2/sites-enabled/nagios.conf; \
fi

*** Nagios/Apache conf file installed ***

swasti@swasti-VirtualBox:~/Desktop/nagios/nagios-4.4.6$
```

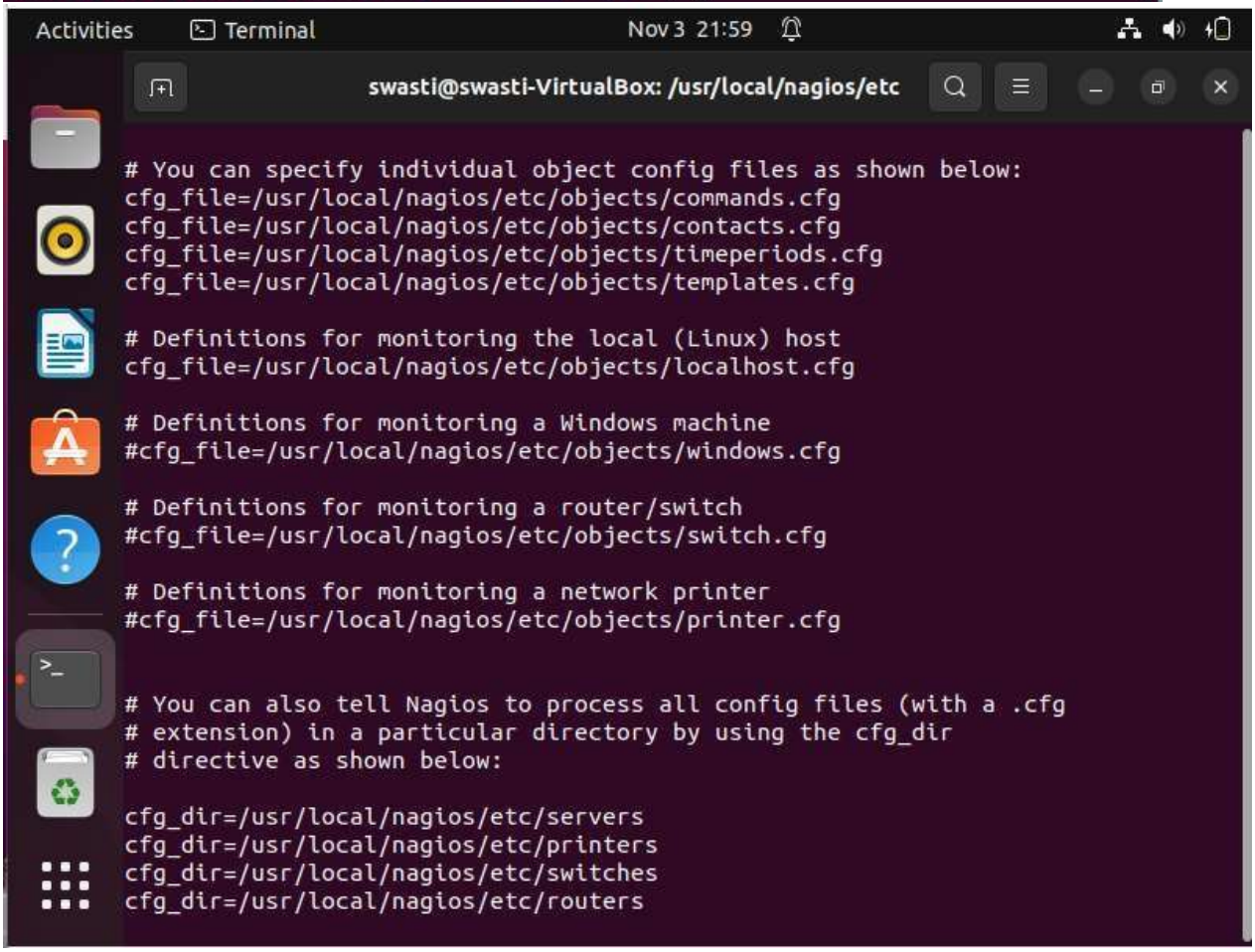

swasti@swasti-VirtualBox:~/Desktop/nagios/nagios-4.4.6$ sudo a2enmod rewrite cg
i
Enabling module rewrite.
Enabling module cgi.
To activate the new configuration, you need to run:
systemctl restart apache2
swasti@swasti-VirtualBox:~/Desktop/nagios/nagios-4.4.6$

```
swasti@swasti-VirtualBox:~/Desktop/nagios/nagios-4.4.6$ sudo htpasswd -c /usr/l
ocal/nagios/etc/htpasswd.users nagiosadmin
New password:
Re-type new password:
Adding password for user nagiosadmin
swasti@swasti-VirtualBox:~/Desktop/nagios/nagios-4.4.6$
```



```
swasti@swasti-VirtualBox:~/Desktop/nagios$ cd /usr/local/nagios/etc/
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ ll
total 84
drwxrwxr-x 3 nagios nagios  4096 Nov  3 21:48 ./
drwxr-xr-x 8 root   root    4096 Nov  3 21:41 ../
-rw-rw-r-- 1 nagios nagios 13710 Nov  3 21:41 cgi.cfg
-rw-r--r-- 1 root   root      50 Nov  3 21:49 htpasswd.users
-rw-rw-r-- 1 nagios nagios 45843 Nov  3 21:41 nagios.cfg
drwxrwxr-x 2 nagios nagios  4096 Nov  3 21:41 objects/
-rw-rw---- 1 nagios nagios  1312 Nov  3 21:41 resource.cfg
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ vim nagios.cfg
Command 'vim' not found, but can be installed with:
sudo apt install vim         # version 2:8.2.3995-1ubuntu2.1, or
sudo apt install vim-tiny    # version 2:8.2.3995-1ubuntu2.1
sudo apt install neovim      # version 0.6.1-3
sudo apt install vim-athena  # version 2:8.2.3995-1ubuntu2
sudo apt install vim-gtk3    # version 2:8.2.3995-1ubuntu2
sudo apt install vim-nox     # version 2:8.2.3995-1ubuntu2
swasti@swasti-VirtualBox:/usr/local/nagios/etc$
```

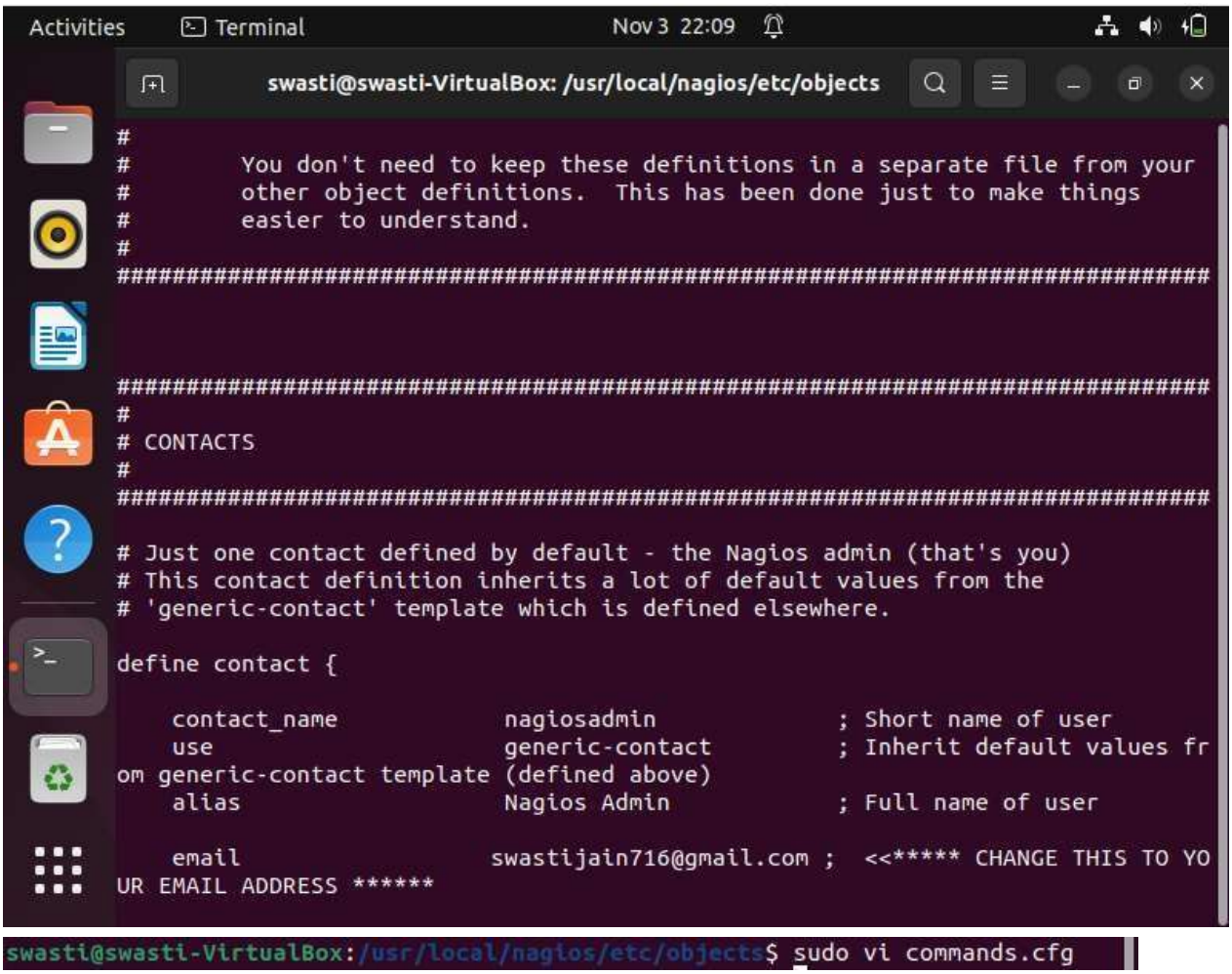
```
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ sudo vi nagios.cfg
swasti@swasti-VirtualBox:/usr/local/nagios/etc$
```

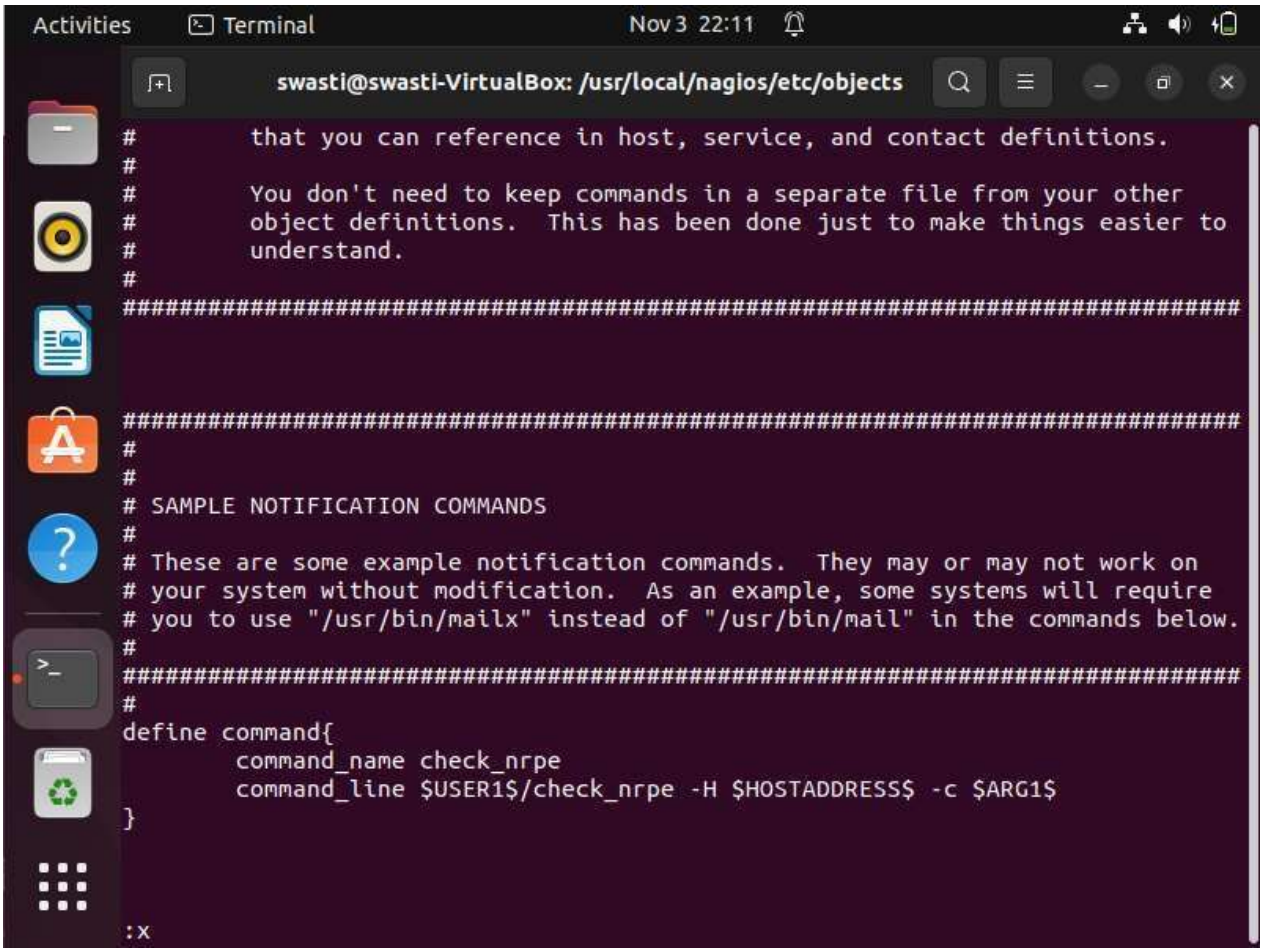


```
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ sudo mkdir servers printers swi
tches routers
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ ll
total 100
drwxrwxr-x 7 nagios nagios  4096 Nov  3 22:00 ./
drwxr-xr-x 8 root   root    4096 Nov  3 21:41 ../
-rw-rw-r-- 1 nagios nagios 13710 Nov  3 21:41 cgi.cfg
-rw-r--r-- 1 root   root      50 Nov  3 21:49 htpasswd.users
-rw-rw-r-- 1 nagios nagios 45839 Nov  3 21:59 nagios.cfg
drwxrwxr-x 2 nagios nagios  4096 Nov  3 21:41 objects/
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 printers/
-rw-rw---- 1 nagios nagios  1312 Nov  3 21:41 resource.cfg
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 routers/
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 servers/
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 switches/
swasti@swasti-VirtualBox:/usr/local/nagios/etc$
```

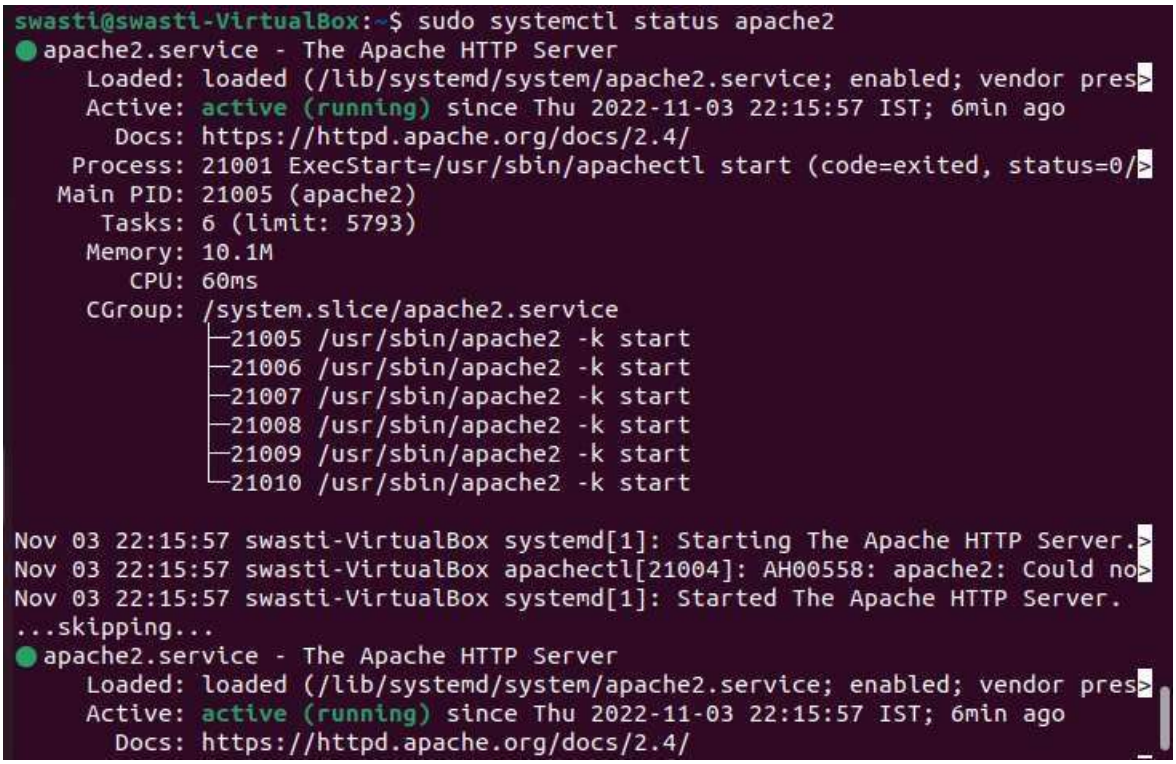
```
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ sudo vi resource.cfg
```

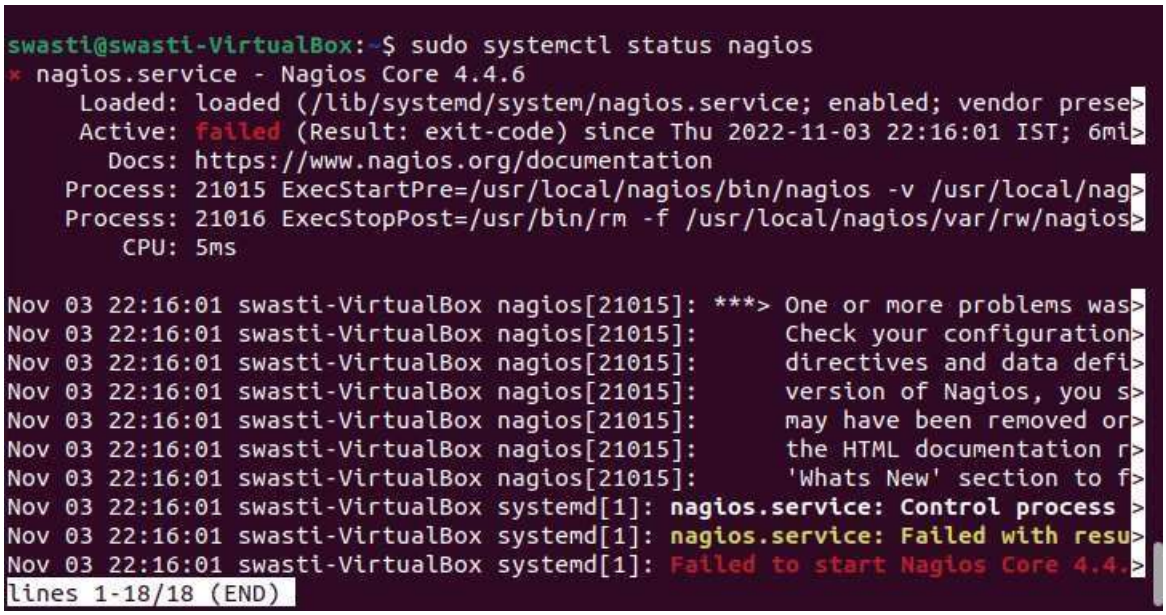
```
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ cd objects/
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$ ll
total 60
drwxrwxr-x 2 nagios nagios  4096 Nov  3 21:41 ./
drwxrwxr-x 7 nagios nagios  4096 Nov  3 22:06 ../
-rw-rw-r-- 1 nagios nagios  6747 Nov  3 21:41 commands.cfg
-rw-rw-r-- 1 nagios nagios  1797 Nov  3 21:41 contacts.cfg
-rw-rw-r-- 1 nagios nagios  4777 Nov  3 21:41 localhost.cfg
-rw-rw-r-- 1 nagios nagios  3001 Nov  3 21:41 printer.cfg
-rw-rw-r-- 1 nagios nagios  3484 Nov  3 21:41 switch.cfg
-rw-rw-r-- 1 nagios nagios 12533 Nov  3 21:41 templates.cfg
-rw-rw-r-- 1 nagios nagios  3512 Nov  3 21:41 timeperiods.cfg
-rw-rw-r-- 1 nagios nagios  4074 Nov  3 21:41 windows.cfg
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$ sudo contacts.cfg
```

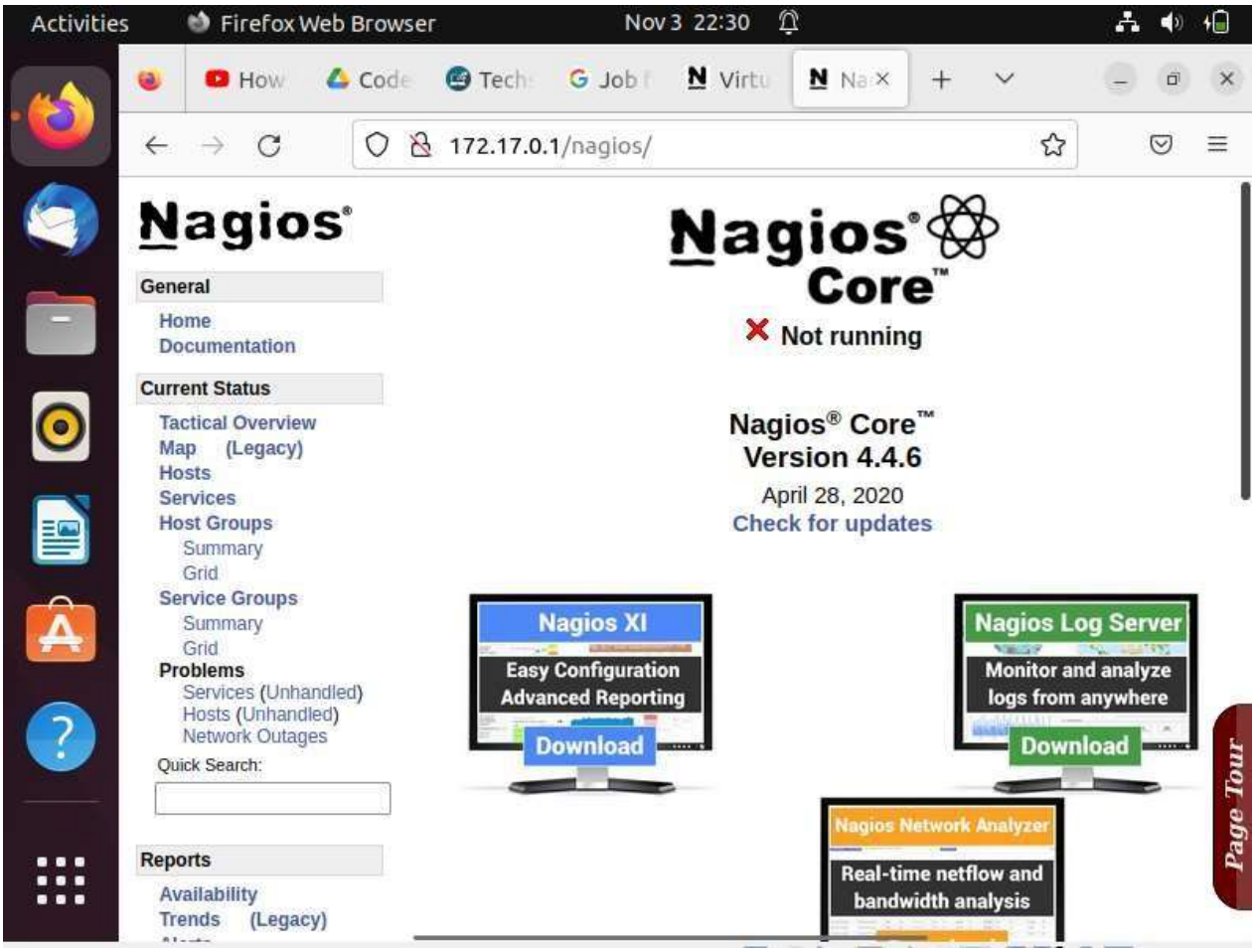

Activities
Terminal
Nov 3 22:09
swasti@swasti-VirtualBox: /usr/local/nagios/etc/objects
#
You don't need to keep these definitions in a separate file from your
other object definitions. This has been done just to make things
easier to understand.
#
###
###
#
CONTACTS
#
###
# Just one contact defined by default - the Nagios admin (that's you)
# This contact definition inherits a lot of default values from the
# 'generic-contact' template which is defined elsewhere.
define contact {
contact_name nagiosadmin ; Short name of user
use generic-contact ; Inherit default values fr
om generic-contact template (defined above)
alias Nagios Admin ; Full name of user
email swastijain716@gmail.com ; <<***** CHANGE THIS TO YO
UR EMAIL ADDRESS ******
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$ sudo vi commands.cfg


Activities
Terminal
Nov 3 22:11
swasti@swasti-VirtualBox: /usr/local/nagios/etc/objects
that you can reference in host, service, and contact definitions.
#
You don't need to keep commands in a separate file from your other
object definitions. This has been done just to make things easier to
understand.
#
##
##
#
#
SAMPLE NOTIFICATION COMMANDS
#
These are some example notification commands. They may or may not work on
your system without modification. As an example, some systems will require
you to use "/usr/bin/mailx" instead of "/usr/bin/mail" in the commands below.
#
##
#
define command{
command_name check_nrpe
command_line $USER1$/check_nrpe -H $HOSTADDRESS$ -c $ARG1$
}
:x

```
swasti@swasti-VirtualBox:~$ sudo ufw status
Status: inactive
swasti@swasti-VirtualBox:~$ sudo systemctl restart apache2
swasti@swasti-VirtualBox:~$ sudo systemctl restart nagios
Job for nagios.service failed because the control process exited with error cod
e.
See "systemctl status nagios.service" and "journalctl -xeu nagios.service" for
details.
swasti@swasti-VirtualBox:~$ sudo systemctl enable apache2
Synchronizing state of apache2.service with SysV service script with /lib/syste
md/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable apache2
swasti@swasti-VirtualBox:~$ sudo systemctl enable nagios
Created symlink /etc/systemd/system/multi-user.target.wants/nagios.service → /l
ib/systemd/system/nagios.service.
```


swasti@swasti-VirtualBox:~$ sudo systemctl status apache2
apache2.service - The Apache HTTP Server
Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor pres>
Active: active (running) since Thu 2022-11-03 22:15:57 IST; 6min ago
Docs: https://httpd.apache.org/docs/2.4/
Process: 21001 ExecStart=/usr/sbin/apachectl start (code=exited, status=0/>
Main PID: 21005 (apache2)
Tasks: 6 (limit: 5793)
Memory: 10.1M
CPU: 60ms
CGroup: /system.slice/apache2.service
├─21005 /usr/sbin/apache2 -k start
├─21006 /usr/sbin/apache2 -k start
├─21007 /usr/sbin/apache2 -k start
├─21008 /usr/sbin/apache2 -k start
├─21009 /usr/sbin/apache2 -k start
└─21010 /usr/sbin/apache2 -k start
Nov 03 22:15:57 swasti-VirtualBox systemd[1]: Starting The Apache HTTP Server.>
Nov 03 22:15:57 swasti-VirtualBox apachectl[21004]: AH00558: apache2: Could no>
Nov 03 22:15:57 swasti-VirtualBox systemd[1]: Started The Apache HTTP Server.
...skipping...
apache2.service - The Apache HTTP Server
Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor pres>
Active: active (running) since Thu 2022-11-03 22:15:57 IST; 6min ago
Docs: https://httpd.apache.org/docs/2.4/


swasti@swasti-VirtualBox:~$ sudo systemctl status nagios
× nagios.service - Nagios Core 4.4.6
Loaded: loaded (/lib/systemd/system/nagios.service; enabled; vendor prese>
Active: failed (Result: exit-code) since Thu 2022-11-03 22:16:01 IST; 6mi>
Docs: https://www.nagios.org/documentation
Process: 21015 ExecStartPre=/usr/local/nagios/bin/nagios -v /usr/local/nag>
Process: 21016 ExecStopPost=/usr/bin/rm -f /usr/local/nagios/var/rw/nagios>
CPU: 5ms
Nov 03 22:16:01 swasti-VirtualBox nagios[21015]: ***> One or more problems was>
Nov 03 22:16:01 swasti-VirtualBox nagios[21015]: Check your configuration>
Nov 03 22:16:01 swasti-VirtualBox nagios[21015]: directives and data defi>
Nov 03 22:16:01 swasti-VirtualBox nagios[21015]: version of Nagios, you s>
Nov 03 22:16:01 swasti-VirtualBox nagios[21015]: may have been removed or>
Nov 03 22:16:01 swasti-VirtualBox nagios[21015]: the HTML documentation r>
Nov 03 22:16:01 swasti-VirtualBox nagios[21015]: 'Whats New' section to f>
Nov 03 22:16:01 swasti-VirtualBox systemd[1]: nagios.service: Control process >
Nov 03 22:16:01 swasti-VirtualBox systemd[1]: nagios.service: Failed with resu>
Nov 03 22:16:01 swasti-VirtualBox systemd[1]: Failed to start Nagios Core 4.4.>
lines 1-18/18 (END)



Successfully Installed and Configured Nagios Plugins

Reference: https://www.vultr.com/de/docs/install-nagios-on-ubuntu-20-

04/?lang=de&utm_source=performancemax-apac&utm_medium=paidmedia&obility_id=16876059738&utm_adgroup=&utm_campaign=&utm_term=&utm_content=&gclid=Cj0KCQjwyOuYBhCGARIsAIdGQRO6LONSLKjtHlQs1smDa4yHgeTmA1meVkPAToKqKrekrNzvsNbFiAaAjUMEALw_wcB

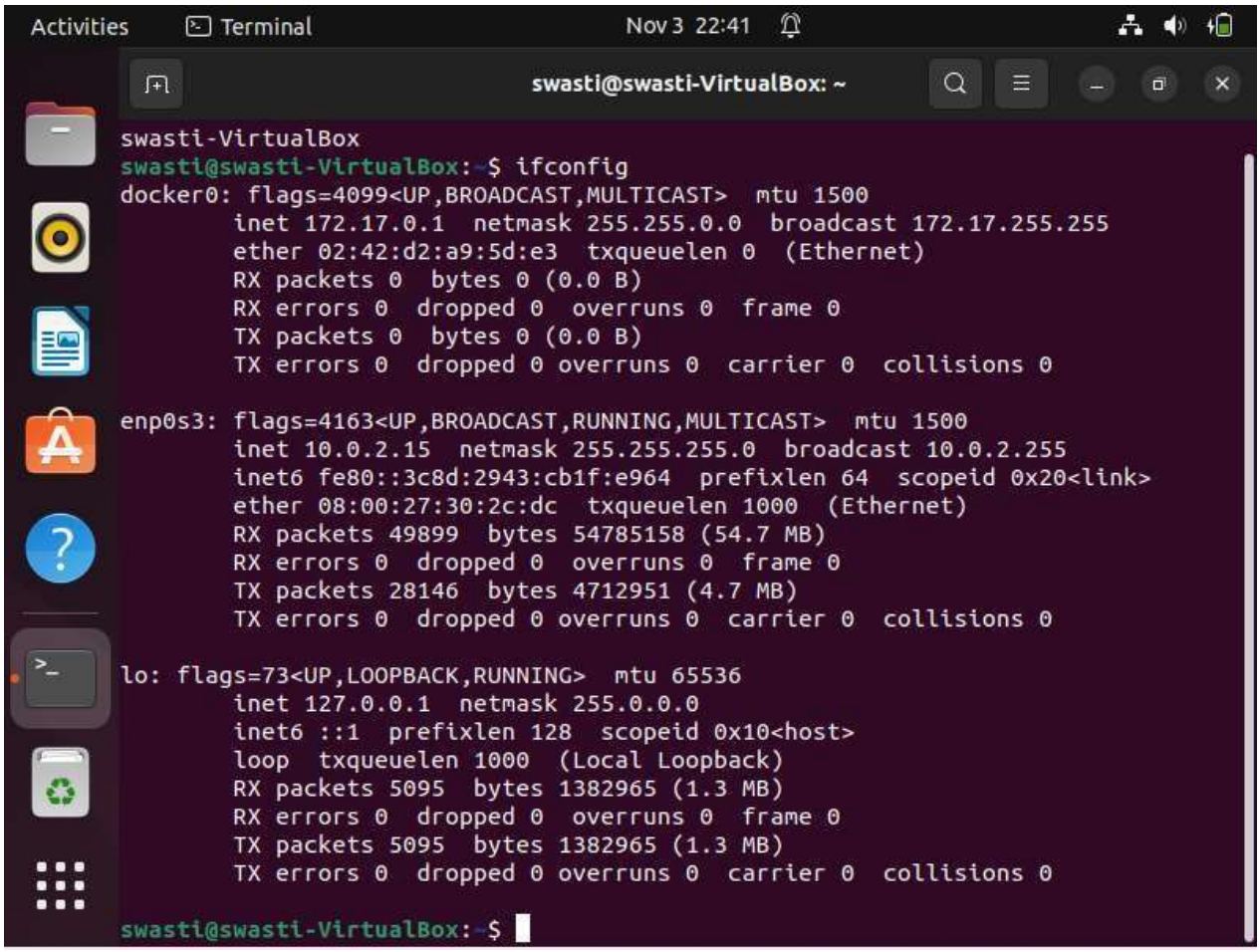
Experiment no. 10

Aim: To perform Port, Service monitoring, Windows/Linux server monitoring using Nagios.

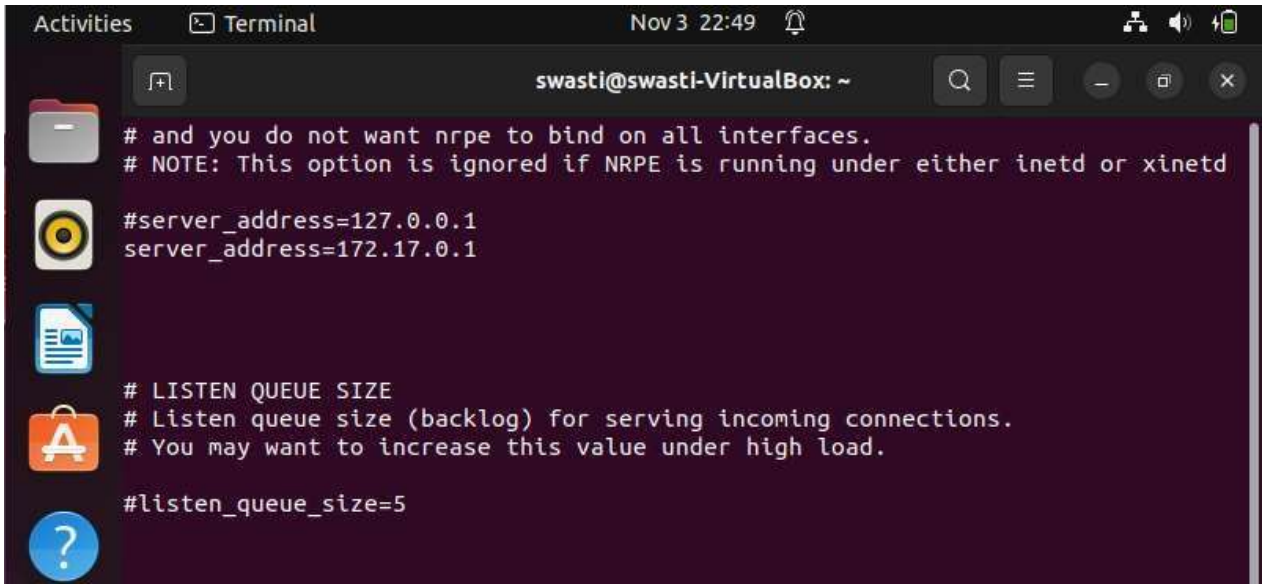
Prerequisite: Install Nagios Server

Used server:
Nagios Server: 172.12.0.1
Nagios Client: 172.12.0.1

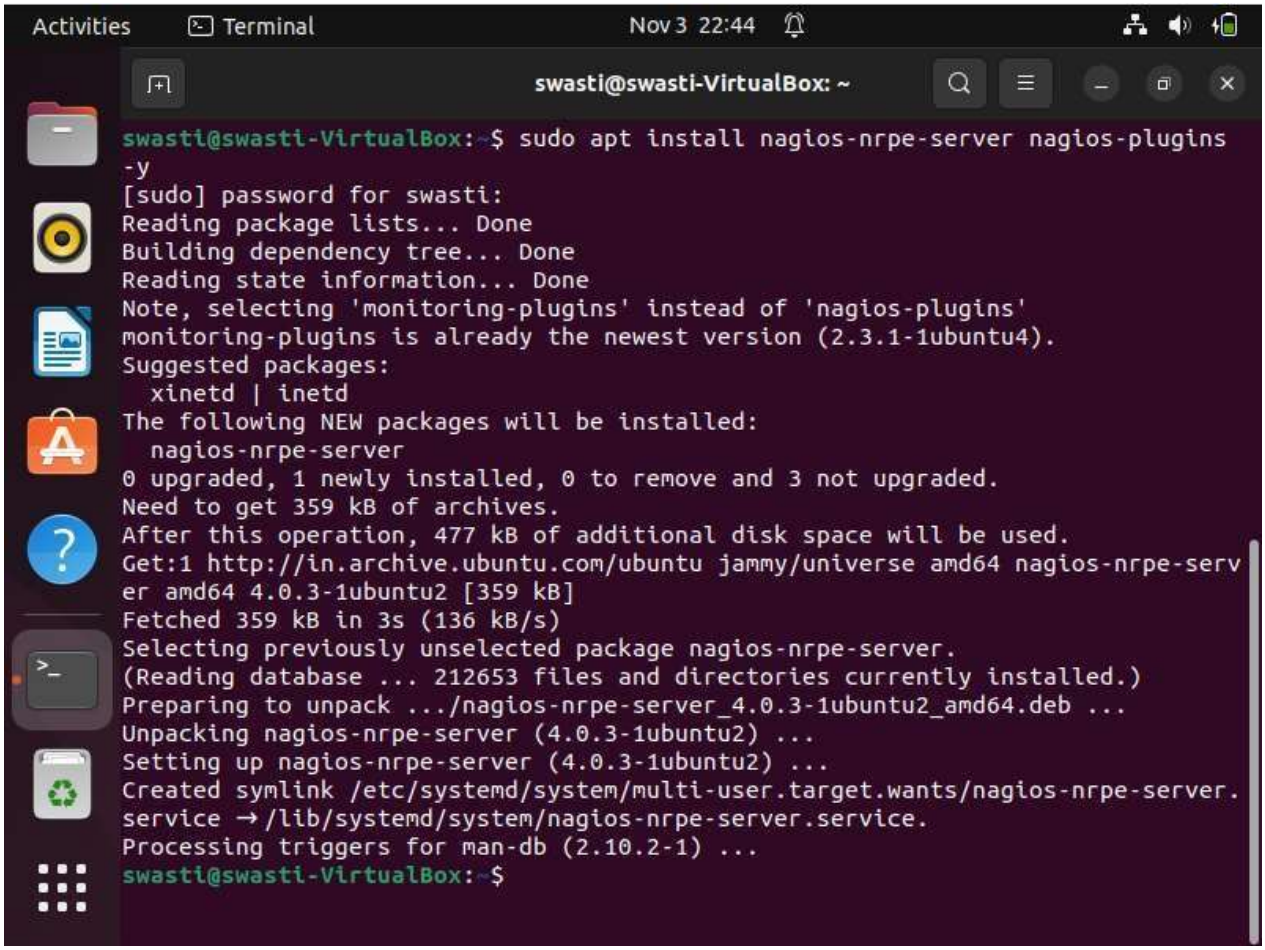
Step 1 : Check Hostname and IP of Linux Host


Activities
Terminal
Nov 3 22:41
swasti@swasti-VirtualBox: ~
swasti-VirtualBox
swasti@swasti-VirtualBox:~$ ifconfig
docker0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
inet 172.17.0.1 netmask 255.255.0.0 broadcast 172.17.255.255
ether 02:42:d2:a9:5d:e3 txqueuelen 0 (Ethernet)
RX packets 0 bytes 0 (0.0 B)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 0 bytes 0 (0.0 B)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
inet6 fe80::3c8d:2943:cb1f:e964 prefixlen 64 scopeid 0x20<link>
ether 08:00:27:30:2c:dc txqueuelen 1000 (Ethernet)
RX packets 49899 bytes 54785158 (54.7 MB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 28146 bytes 4712951 (4.7 MB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x10<host>
loop txqueuelen 1000 (Local Loopback)
RX packets 5095 bytes 1382965 (1.3 MB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 5095 bytes 1382965 (1.3 MB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
swasti@swasti-VirtualBox:~$

Step

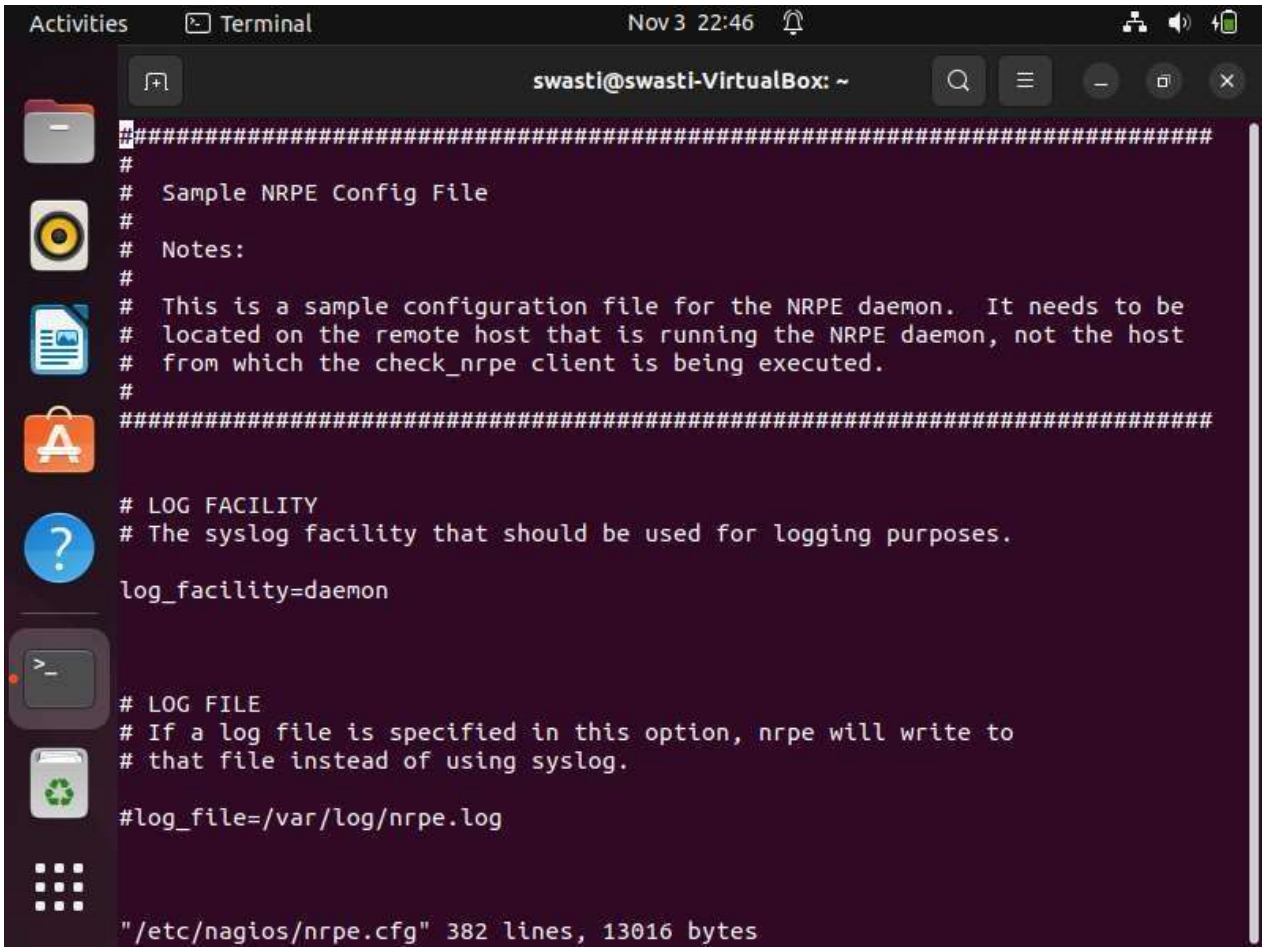


Step 2: Install NRPE and Nagios Plugins



Step 3: Edit /etc/nagios/nrpe.cfg file to configure the NRPE agent using command

$ sudo vim /etc/nagios/nrpe.cfg

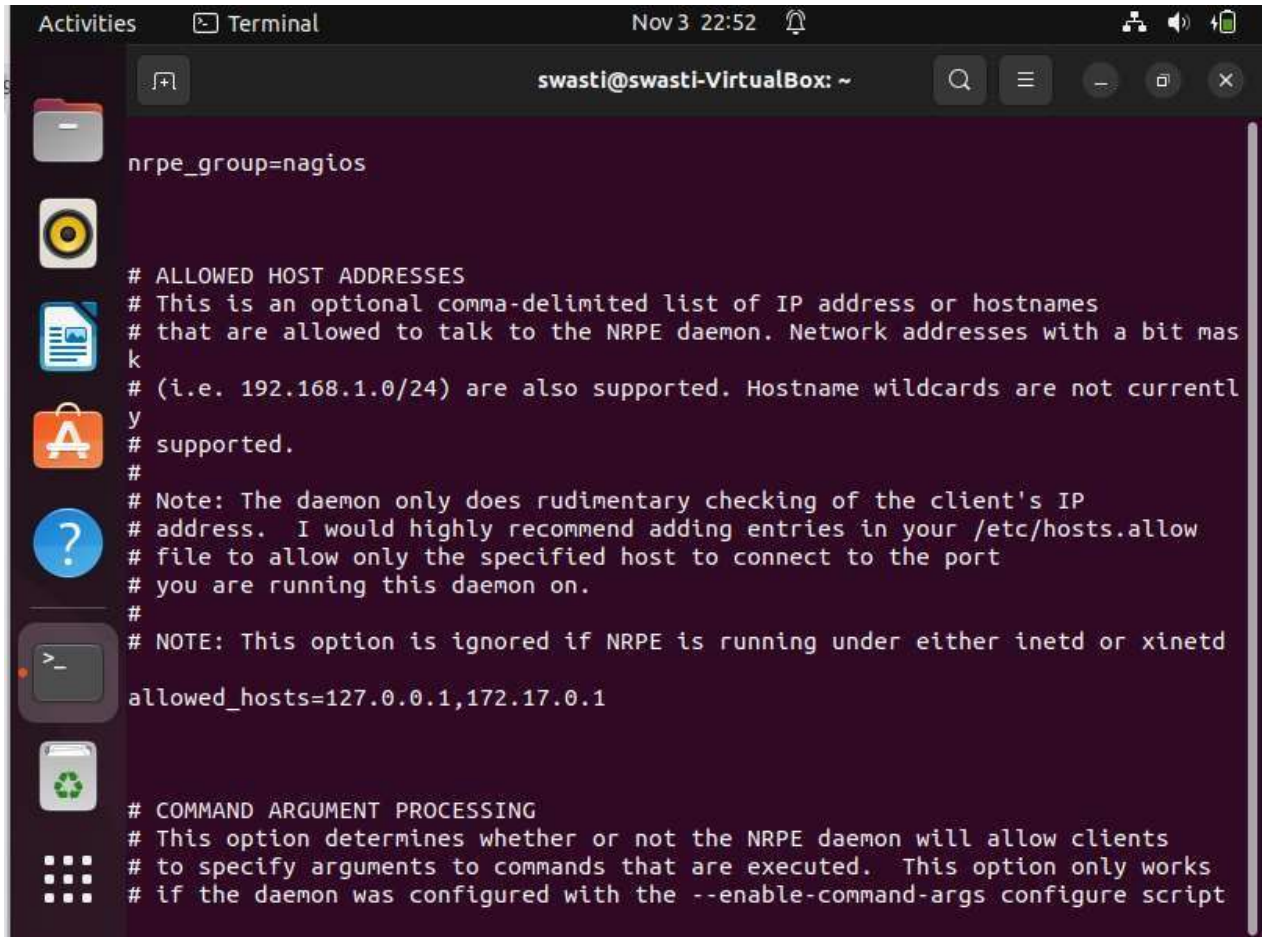


4: Find and edit line 62 – add server address
(Press I to insert)

Step 5: Find and edit line 106: add allowed host

Step

6: Press Esc to exit Insert mode and type :x and press enter to save and exit the file



Step 7: Restart and enable NRPE services to make the changes active

```
swasti@swasti-VirtualBox:~$ sudo systemctl restart nagios-nrpe-server
swasti@swasti-VirtualBox:~$ sudo systemctl enable nagios-nrpe-server
Synchronizing state of nagios-nrpe-server.service with SysV service script with
 /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable nagios-nrpe-server
swasti@swasti-VirtualBox:~$
```

8: Check UFW Firewall status and enable UFW

```
swasti@swasti-VirtualBox:~$ sudo ufw status
Status: inactive
swasti@swasti-VirtualBox:~$
```

Step 9: By default, Nagios NRPE agent listens on port 5666. You need to open 5666 on your Firewall

```
swasti@swasti-VirtualBox:~$ sudo ufw allow 5666/tcp
Rules updated
Rules updated (v6)
swasti@swasti-VirtualBox:~$
```

10: Verify that the port has been allowed. Also don't forget to allow port ssh Firewall to remote access.

```
swasti@swasti-VirtualBox:~$ sudo ufw status
Status: inactive
swasti@swasti-VirtualBox:~$ sudo ufw allow 5666/tcp
Rules updated
Rules updated (v6)
swasti@swasti-VirtualBox:~$ sudo ufw status
Status: inactive
swasti@swasti-VirtualBox:~$ sudo ufw allow 5666/tcp
Skipping adding existing rule
Skipping adding existing rule (v6)
swasti@swasti-VirtualBox:~$ sudo ufw status
Status: inactive
swasti@swasti-VirtualBox:~$ sudo ufw allow ssh
Rules updated
Rules updated (v6)
swasti@swasti-VirtualBox:~$
```

We have successfully installed and configure NRPE agent on Remote Linux Host.

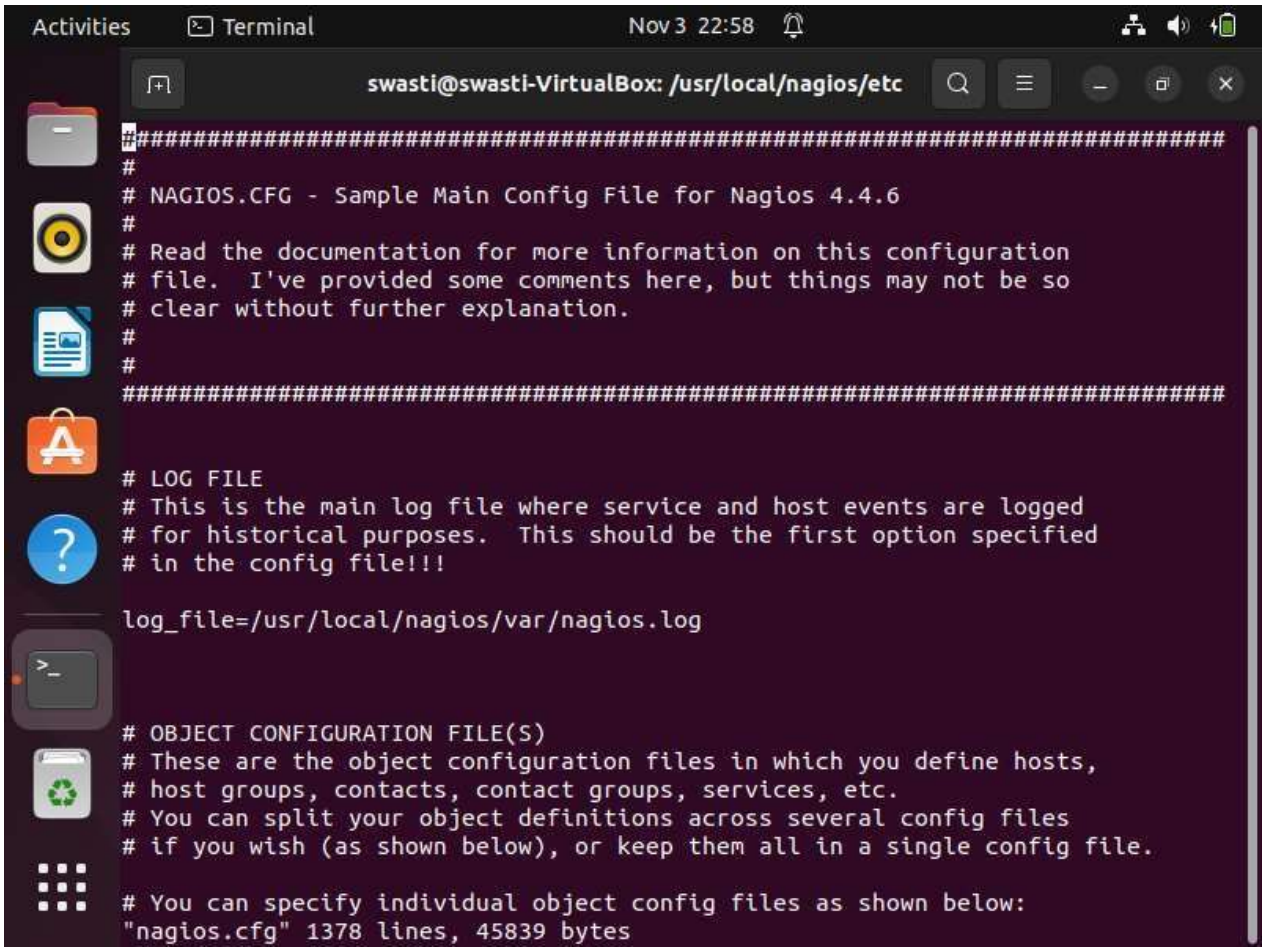
Step 11: Go to /usr/local/nagios/etc/ and use command ll

Step

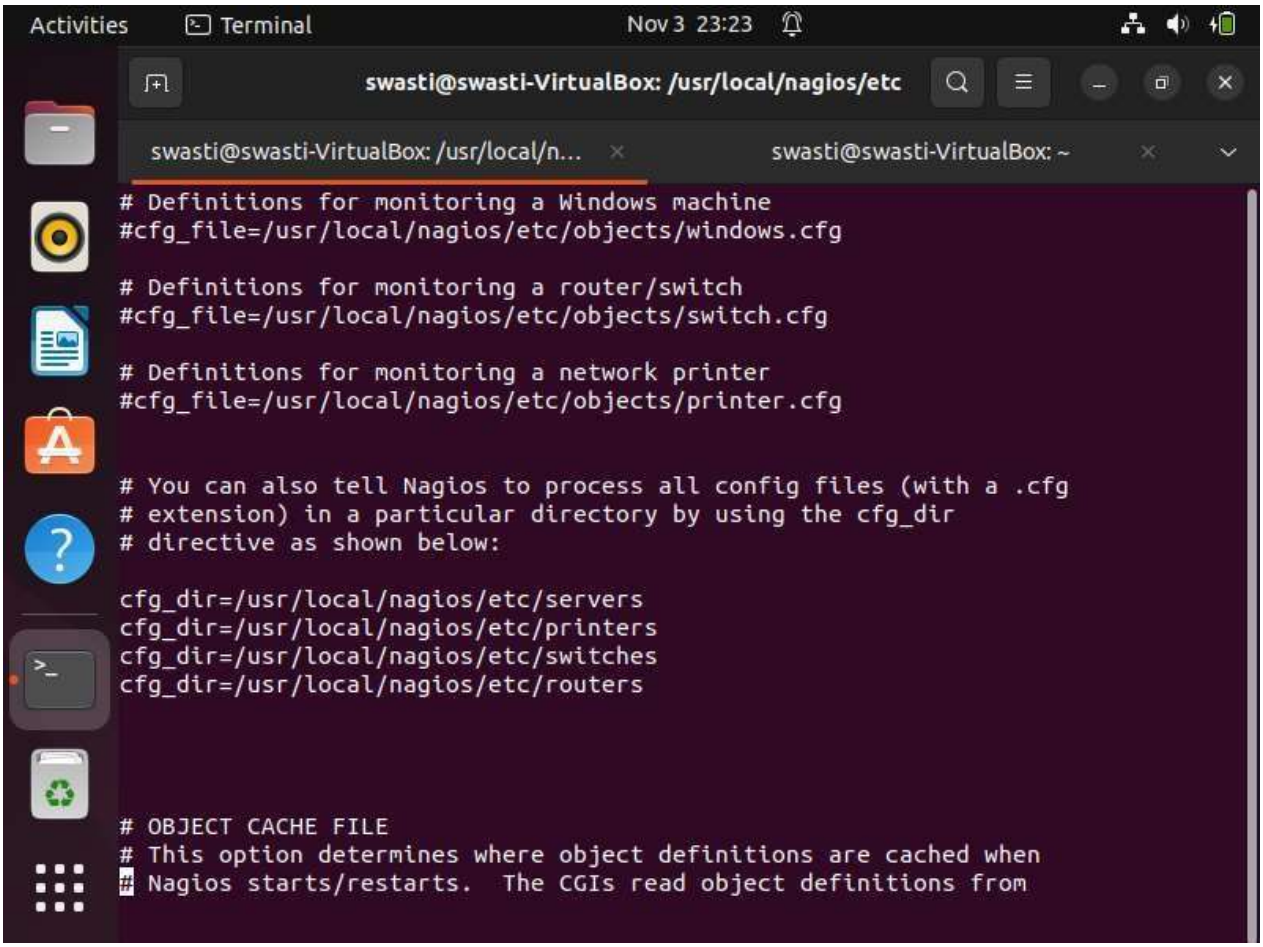
```
swasti@swasti-VirtualBox: $ cd /usr/local/nagios/etc
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ ll
total 100
drwxrwxr-x 7 nagios nagios  4096 Nov  3 22:06 ./
drwxr-xr-x 8 root   root    4096 Nov  3 21:41 ../
-rw-rw-r-- 1 nagios nagios 13710 Nov  3 21:41 cgi.cfg
-rw-r--r-- 1 root   root      50 Nov  3 21:49 htpasswd.users
-rw-rw-r-- 1 nagios nagios 45839 Nov  3 21:59 nagios.cfg
drwxrwxr-x 2 nagios nagios  4096 Nov  3 22:12 objects/
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 printers/
-rw-rw---- 1 nagios nagios  1313 Nov  3 22:06 resource.cfg
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 routers/
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 servers/
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 switches/
swasti@swasti-VirtualBox:/usr/local/nagios/etc$
```

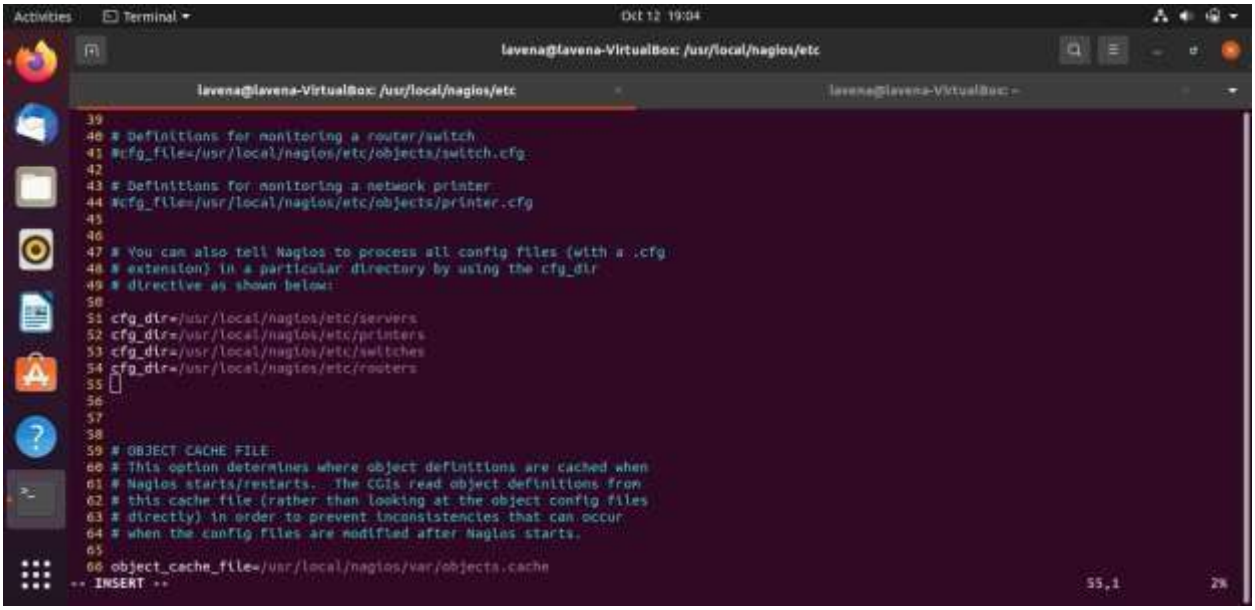
12: If there is no ‘servers’ folder, then create one to store all server host configuration. Using command

$ sudo vim nagios.cfg



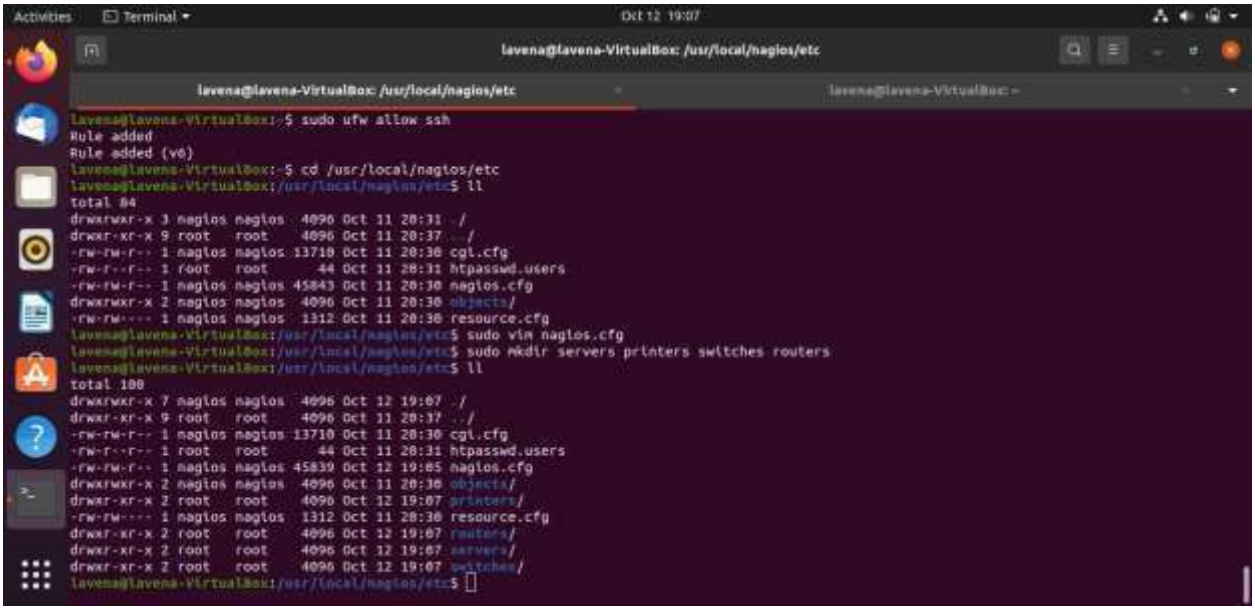
Step 13: add the following lines

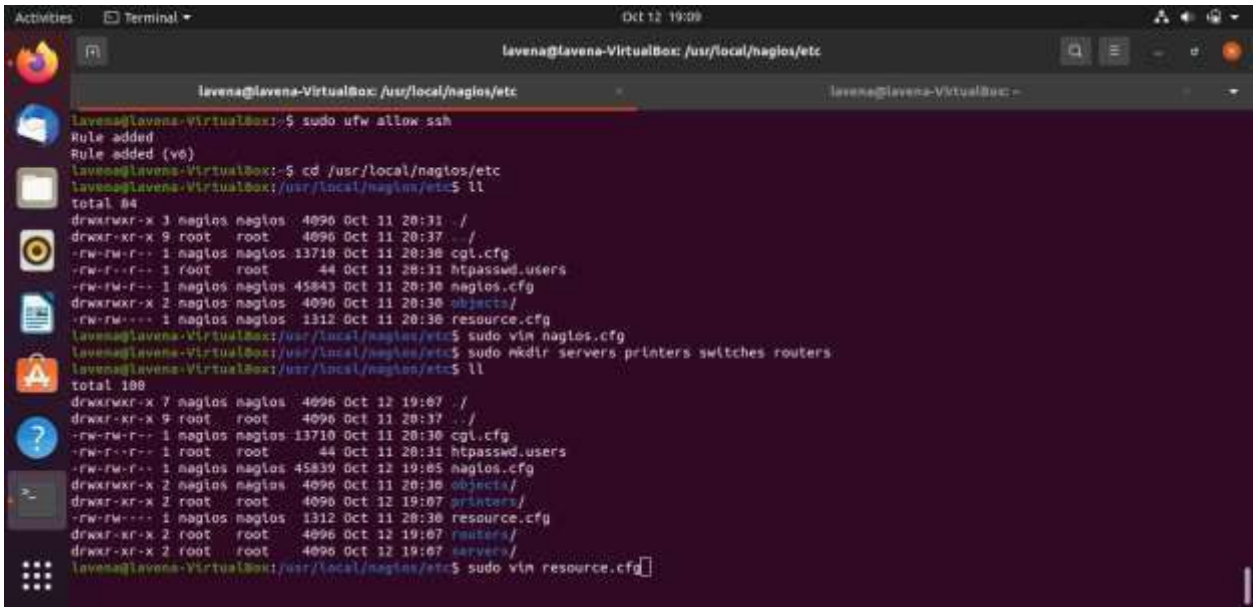

Activities
Terminal
Nov 3 23:23
swasti@swasti-VirtualBox: /usr/local/nagios/etc
swasti@swasti-VirtualBox: /usr/local/n...
swasti@swasti-VirtualBox: ~
Definitions for monitoring a Windows machine
#cfg_file=/usr/local/nagios/etc/objects/windows.cfg
Definitions for monitoring a router/switch
#cfg_file=/usr/local/nagios/etc/objects/switch.cfg
Definitions for monitoring a network printer
#cfg_file=/usr/local/nagios/etc/objects/printer.cfg
# You can also tell Nagios to process all config files (with a .cfg
# extension) in a particular directory by using the cfg_dir
# directive as shown below:
cfg_dir=/usr/local/nagios/etc/servers
cfg_dir=/usr/local/nagios/etc/printers
cfg_dir=/usr/local/nagios/etc/switches
cfg_dir=/usr/local/nagios/etc/routers
# OBJECT CACHE FILE
# This option determines where object definitions are cached when
# Nagios starts/restarts. The CGIs read object definitions from

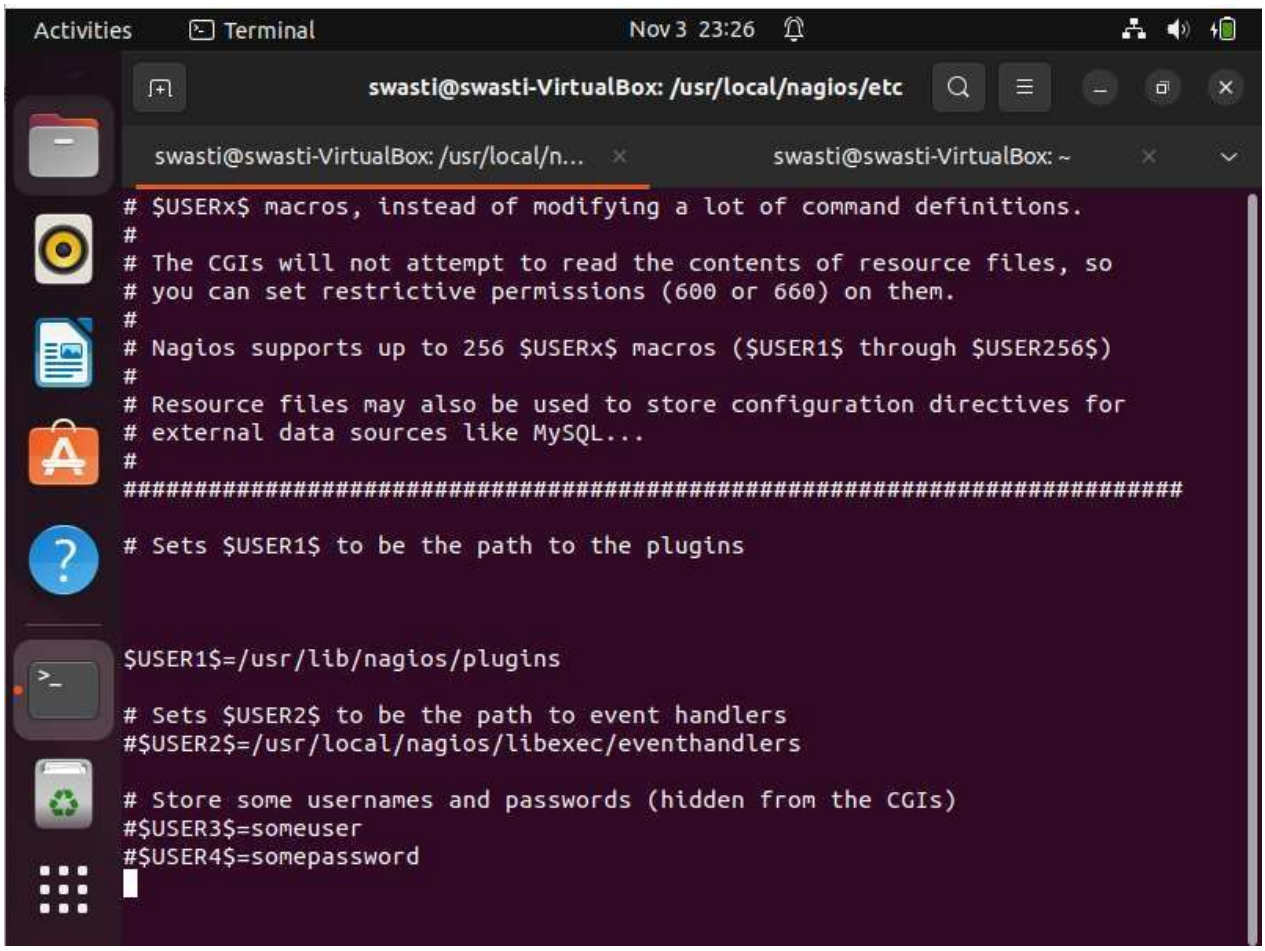


14: Create directory of server

```
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ sudo vi nagios.cfg
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ ll
total 100
drwxrwxr-x 7 nagios nagios  4096 Nov  3 23:23 ./
drwxr-xr-x 8 root   root    4096 Nov  3 21:41 ../
-rw-rw-r-- 1 nagios nagios 13710 Nov  3 21:41 cgi.cfg
-rw-r--r-- 1 root   root      50 Nov  3 21:49 htpasswd.users
-rw-rw-r-- 1 nagios nagios 45839 Nov  3 21:59 nagios.cfg
drwxrwxr-x 2 nagios nagios  4096 Nov  3 22:12 objects/
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 printers/
-rw-rw---- 1 nagios nagios  1313 Nov  3 22:06 resource.cfg
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 routers/
drwxrwxr-x 2 nagios nagios  4096 Nov  3 23:17 servers/
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 switches/
```

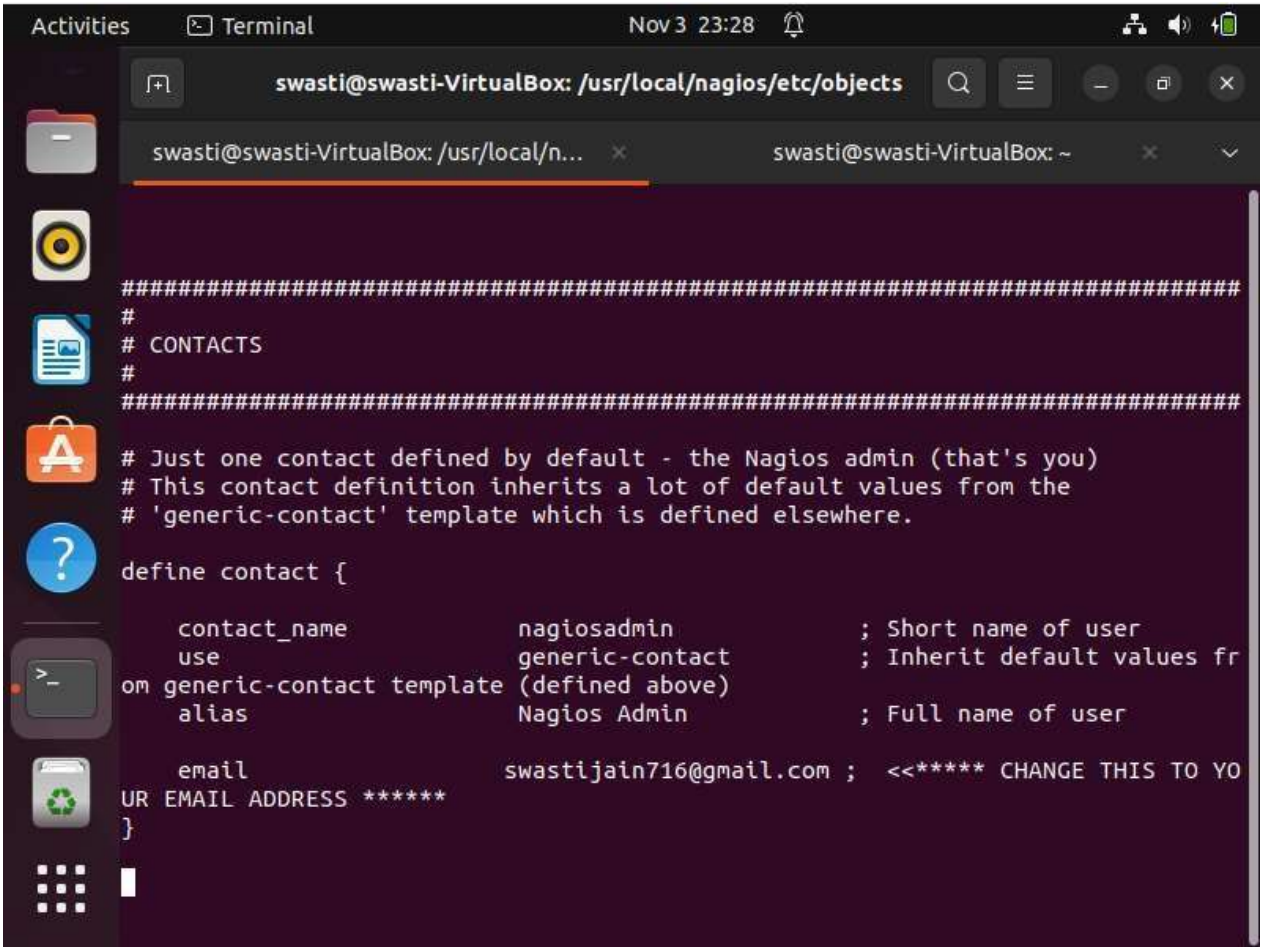

Activities
Terminal
Oct 12 19:07
lavena@lavena-VirtualBox: /usr/local/nagios/etc
lavena@lavena-VirtualBox: /usr/local/nagios/etc
lavena@lavena-VirtualBox: ~
lavena@lavena-VirtualBox:~$ sudo ufw allow ssh
Rule added
Rule added (v6)
lavena@lavena-VirtualBox:~$ cd /usr/local/nagios/etc
lavena@lavena-VirtualBox:/usr/local/nagios/etc$ ll
total 84
drwxrwxr-x 3 nagios nagios 4096 Oct 11 20:31 ./
drwxr-xr-x 9 root root 4096 Oct 11 20:37 ../
-rw-rw-r-- 1 nagios nagios 13710 Oct 11 20:30 cgi.cfg
-rw-r--r-- 1 root root 44 Oct 11 20:31 htpasswd.users
-rw-rw-r-- 1 nagios nagios 45843 Oct 11 20:30 nagios.cfg
drwxrwxr-x 2 nagios nagios 4096 Oct 11 20:30 objects/
-rw-rw---- 1 nagios nagios 1312 Oct 11 20:30 resource.cfg
lavena@lavena-VirtualBox:/usr/local/nagios/etc$ sudo vim nagios.cfg
lavena@lavena-VirtualBox:/usr/local/nagios/etc$ sudo mkdir servers printers switches routers
lavena@lavena-VirtualBox:/usr/local/nagios/etc$ ll
total 100
drwxrwxr-x 7 nagios nagios 4096 Oct 12 19:07 ./
drwxr-xr-x 9 root root 4096 Oct 11 20:37 ../
-rw-rw-r-- 1 nagios nagios 13710 Oct 11 20:30 cgi.cfg
-rw-r--r-- 1 root root 44 Oct 11 20:31 htpasswd.users
-rw-rw-r-- 1 nagios nagios 45839 Oct 12 19:05 nagios.cfg
drwxrwxr-x 2 nagios nagios 4096 Oct 11 20:30 objects/
drwxr-xr-x 2 root root 4096 Oct 12 19:07 printers/
-rw-rw---- 1 nagios nagios 1312 Oct 11 20:30 resource.cfg
drwxr-xr-x 2 root root 4096 Oct 12 19:07 routers/
drwxr-xr-x 2 root root 4096 Oct 12 19:07 servers/
drwxr-xr-x 2 root root 4096 Oct 12 19:07 switches/
lavena@lavena-VirtualBox:/usr/local/nagios/etc$


Activities
Terminal
Oct 12 19:09
lavena@lavena-VirtualBox: /usr/local/nagios/etc
lavena@lavena-VirtualBox: /usr/local/nagios/etc
lavena@lavena-VirtualBox: ~
lavena@lavena-VirtualBox:~$ sudo ufw allow ssh
Rule added
Rule added (v6)
lavena@lavena-VirtualBox:~$ cd /usr/local/nagios/etc
lavena@lavena-VirtualBox:/usr/local/nagios/etc$ ll
total 84
drwxrwxr-x 3 nagios nagios 4096 Oct 11 20:31 ./
drwxr-xr-x 9 root root 4096 Oct 11 20:37 ../
-rw-rw-r-- 1 nagios nagios 13710 Oct 11 20:30 cgi.cfg
-rw-r--r-- 1 root root 44 Oct 11 20:31 htpasswd.users
-rw-rw-r-- 1 nagios nagios 45843 Oct 11 20:30 nagios.cfg
drwxrwxr-x 2 nagios nagios 4096 Oct 11 20:30 objects/
-rw-rw---- 1 nagios nagios 1312 Oct 11 20:30 resource.cfg
lavena@lavena-VirtualBox:/usr/local/nagios/etc$ sudo vim nagios.cfg
lavena@lavena-VirtualBox:/usr/local/nagios/etc$ sudo mkdir servers printers switches routers
lavena@lavena-VirtualBox:/usr/local/nagios/etc$ ll
total 100
drwxrwxr-x 7 nagios nagios 4096 Oct 12 19:07 ./
drwxr-xr-x 9 root root 4096 Oct 11 20:37 ../
-rw-rw-r-- 1 nagios nagios 13710 Oct 11 20:30 cgi.cfg
-rw-r--r-- 1 root root 44 Oct 11 20:31 htpasswd.users
-rw-rw-r-- 1 nagios nagios 45839 Oct 12 19:05 nagios.cfg
drwxrwxr-x 2 nagios nagios 4096 Oct 11 20:30 objects/
drwxr-xr-x 2 root root 4096 Oct 12 19:07 printers/
-rw-rw---- 1 nagios nagios 1312 Oct 11 20:30 resource.cfg
drwxr-xr-x 2 root root 4096 Oct 12 19:07 routers/
drwxr-xr-x 2 root root 4096 Oct 12 19:07 servers/
lavena@lavena-VirtualBox:/usr/local/nagios/etc$ sudo vim resource.cfg


Activities
Terminal
Nov 3 23:26
swasti@swasti-VirtualBox: /usr/local/nagios/etc
swasti@swasti-VirtualBox: /usr/local/n...
swasti@swasti-VirtualBox: ~
$USERx$ macros, instead of modifying a lot of command definitions.
#
The CGIs will not attempt to read the contents of resource files, so
you can set restrictive permissions (600 or 660) on them.
#
Nagios supports up to 256 $USERx$ macros ($USER1$ through $USER256$)
#
Resource files may also be used to store configuration directives for
external data sources like MySQL...
#
##
Sets $USER1$ to be the path to the plugins
$USER1$=/usr/lib/nagios/plugins
Sets $USER2$ to be the path to event handlers
#$USER2$=/usr/local/nagios/libexec/eventhandlers
Store some usernames and passwords (hidden from the CGIs)
#$USER3$=someuser
#$USER4$=somepassword

```
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ sudo vi resource.cfg
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ ll
total 100
drwxrwxr-x 7 nagios nagios  4096 Nov  3 23:26 ./
drwxr-xr-x 8 root   root    4096 Nov  3 21:41 ../
-rw-rw-r-- 1 nagios nagios 13710 Nov  3 21:41 cgi.cfg
-rw-r--r-- 1 root   root      50 Nov  3 21:49 htpasswd.users
-rw-rw-r-- 1 nagios nagios 45839 Nov  3 21:59 nagios.cfg
drwxrwxr-x 2 nagios nagios  4096 Nov  3 22:12 objects/
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 printers/
-rw-rw---- 1 nagios nagios  1313 Nov  3 22:06 resource.cfg
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 routers/
drwxrwxr-x 2 nagios nagios  4096 Nov  3 23:17 servers/
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 switches/
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ cd objects/
```

```
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ cd objects/
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$ ll
total 60
drwxrwxr-x 2 nagios nagios  4096 Nov  3 22:12 ./
drwxrwxr-x 7 nagios nagios  4096 Nov  3 23:26 ../
-rw-rw-r-- 1 nagios nagios  6848 Nov  3 22:12 commands.cfg
-rw-rw-r-- 1 nagios nagios  1805 Nov  3 22:09 contacts.cfg
-rw-rw-r-- 1 nagios nagios  4777 Nov  3 21:41 localhost.cfg
-rw-rw-r-- 1 nagios nagios  3001 Nov  3 21:41 printer.cfg
-rw-rw-r-- 1 nagios nagios  3484 Nov  3 21:41 switch.cfg
-rw-rw-r-- 1 nagios nagios 12533 Nov  3 21:41 templates.cfg
-rw-rw-r-- 1 nagios nagios  3512 Nov  3 21:41 timeperiods.cfg
-rw-rw-r-- 1 nagios nagios  4074 Nov  3 21:41 windows.cfg
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$ sudo vi contacts.cfg
```




```
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$ sudo ufw status
Status: inactive
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$ sudo ufw allow apache
Skipping adding existing rule
Skipping adding existing rule (v6)
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$ sudo ufw status
Status: inactive
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$ sudo ufw reload
Firewall not enabled (skipping reload)
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$
```

```
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$ sudo systemctl restart
apache2
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$ sudo systemctl restart
nagios
Job for nagios.service failed because the control process exited with error cod
e.
See "systemctl status nagios.service" and "journalctl -xeu nagios.service" for
details.
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$ sudo systemctl enable a
pache2
Synchronizing state of apache2.service with SysV service script with /lib/syste
md/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable apache2
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$ sudo systemctl enable n
agios
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$
```

```
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$ sudo systemctl status a
pache2
● apache2.service - The Apache HTTP Server
     Loaded: loaded (/lib/systemd/system/apache2.service; enabled; vendor pres>
     Active: active (running) since Thu 2022-11-03 23:30:29 IST; 1min 40s ago
       Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 22456 (apache2)
      Tasks: 6 (limit: 5793)
     Memory: 10.4M
        CPU: 44ms
     CGroup: /system.slice/apache2.service
             ├─22456 /usr/sbin/apache2 -k start
             ├─22457 /usr/sbin/apache2 -k start
             ├─22458 /usr/sbin/apache2 -k start
             ├─22459 /usr/sbin/apache2 -k start
             ├─22460 /usr/sbin/apache2 -k start
             └─22461 /usr/sbin/apache2 -k start

Nov 03 23:30:29 swasti-VirtualBox systemd[1]: Starting The Apache HTTP Server.>
Nov 03 23:30:29 swasti-VirtualBox apachectl[22455]: AH00558: apache2: Could no>
Nov 03 23:30:29 swasti-VirtualBox systemd[1]: Started The Apache HTTP Server.

swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$
```

```
swasti@swasti-VirtualBox:/usr/local/nagios/etc/objects$ sudo systemctl status n
agios
× nagios.service - Nagios Core 4.4.6
     Loaded: loaded (/lib/systemd/system/nagios.service; enabled; vendor prese>
     Active: failed (Result: exit-code) since Thu 2022-11-03 23:30:36 IST; 59s>
       Docs: https://www.nagios.org/documentation
        CPU: 4ms

Nov 03 23:30:36 swasti-VirtualBox nagios[22466]: ***> One or more problems was>
Nov 03 23:30:36 swasti-VirtualBox nagios[22466]:      Check your configuration>
Nov 03 23:30:36 swasti-VirtualBox nagios[22466]:      directives and data defi>
Nov 03 23:30:36 swasti-VirtualBox nagios[22466]:      version of Nagios, you s>
Nov 03 23:30:36 swasti-VirtualBox nagios[22466]:      may have been removed or>
Nov 03 23:30:36 swasti-VirtualBox nagios[22466]:      the HTML documentation r>
Nov 03 23:30:36 swasti-VirtualBox nagios[22466]:      'Whats New' section to f>
Nov 03 23:30:36 swasti-VirtualBox systemd[1]: nagios.service: Control process >
Nov 03 23:30:36 swasti-VirtualBox systemd[1]: nagios.service: Failed with resu>
Nov 03 23:30:36 swasti-VirtualBox systemd[1]: Failed to start Nagios Core 4.4.>
```

Step 15: Change permission on servers folder

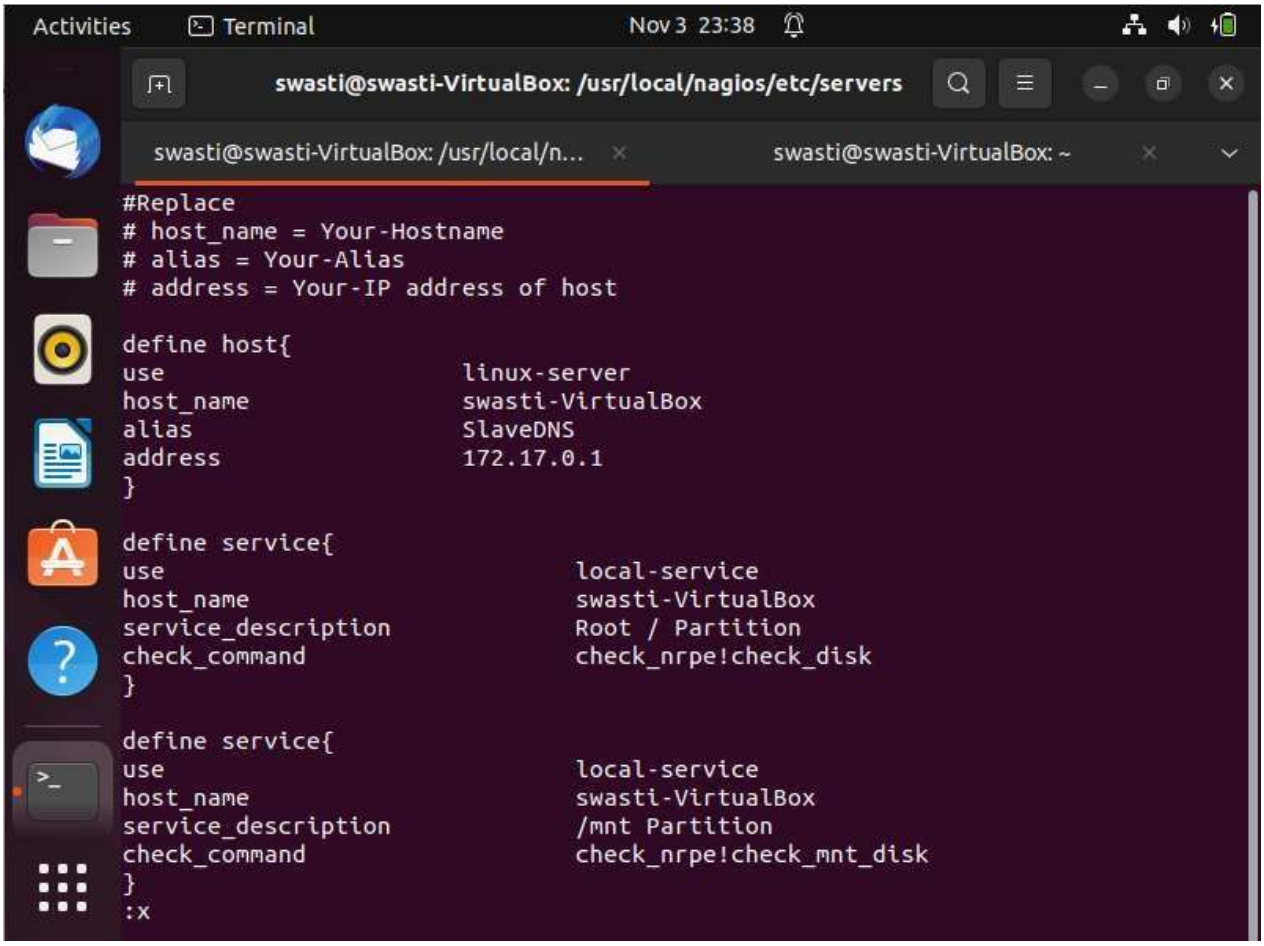
```
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ sudo chmod 775 servers/
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ sudo chown nagios:nagios server
s/
swasti@swasti-VirtualBox:/usr/local/nagios/etc$ ll
total 100
drwxrwxr-x 7 nagios nagios  4096 Nov  3 23:00 ./
drwxr-xr-x 8 root   root    4096 Nov  3 21:41 ../
-rw-rw-r-- 1 nagios nagios 13710 Nov  3 21:41 cgi.cfg
-rw-r--r-- 1 root   root      50 Nov  3 21:49 htpasswd.users
-rw-rw-r-- 1 nagios nagios 45839 Nov  3 21:59 nagios.cfg
drwxrwxr-x 2 nagios nagios  4096 Nov  3 22:12 objects/
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 printers/
-rw-rw---- 1 nagios nagios  1313 Nov  3 22:06 resource.cfg
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 routers/
drwxrwxr-x 2 nagios nagios  4096 Nov  3 22:00 servers/
drwxr-xr-x 2 root   root    4096 Nov  3 22:00 switches/
```

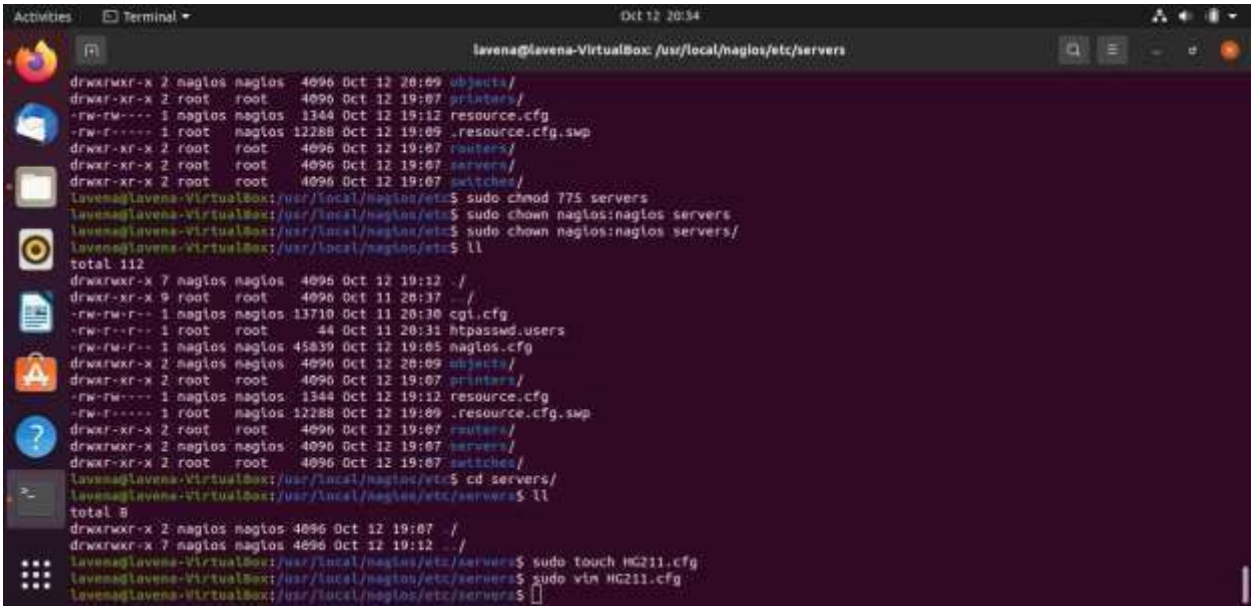
cd

Step 16: Go to servers directory and create a new configuration called “HG211.cfg” for define Remote Linux Host. Open and add the following content:-

```
#Replace :
# host_name = Your-Hostname
# alias = Your-Alias
# address = Your-IP address of host
define
host{
```

```
use                     linux-server
host_name               swasti-
VirtualBox alias
SlaveDNS address
172.12.0.1  }
define service{
use                             local-service host_name
lavena-VirtualBox service_description            Root
/ Partition check_command
check_nrpe!check_disk
}
define service{
use                             local-service host_name
lavena-VirtualBox service_description            /mnt
Partition  check_command
check_nrpe!check_mnt_disk
}
define service{
use                             local-service host_name
lavena-VirtualBox service_description
Current Users check_command
check_nrpe!check_users
}
define service{
use                             local-service host_name
lavena-VirtualBox service_description            Total
Processes  check_command
check_nrpe!check_total_procs
}
define service{
use                             local-service host_name
lavena-VirtualBox service_description
Current Load check_command
check_nrpe!check_load }
```





Step 17: Change permission on HG211.cfg

```
swasti@swasti-VirtualBox:/usr/local/nagios/etc/servers$ sudo vi HG211.cfg
swasti@swasti-VirtualBox:/usr/local/nagios/etc/servers$ ll
total 16
drwxrwxr-x 2 nagios nagios 4096 Nov  3 23:38 ./
drwxrwxr-x 7 nagios nagios 4096 Nov  3 23:26 ../
-rw-r--r-- 1 root   root   1349 Nov  3 23:38 HG211.cfg
-rw-rw-r-- 1 nagios nagios 1352 Nov  3 23:17 swasti-VirtualBox.cfg
swasti@swasti-VirtualBox:/usr/local/nagios/etc/servers$ sudo chown nagios:nagio
s HG211.cfg
swasti@swasti-VirtualBox:/usr/local/nagios/etc/servers$ sudo chmod 664 HG211.cf
g
swasti@swasti-VirtualBox:/usr/local/nagios/etc/servers$
```

Step 18: Verify Nagios configuration file for any errors in Nagios server

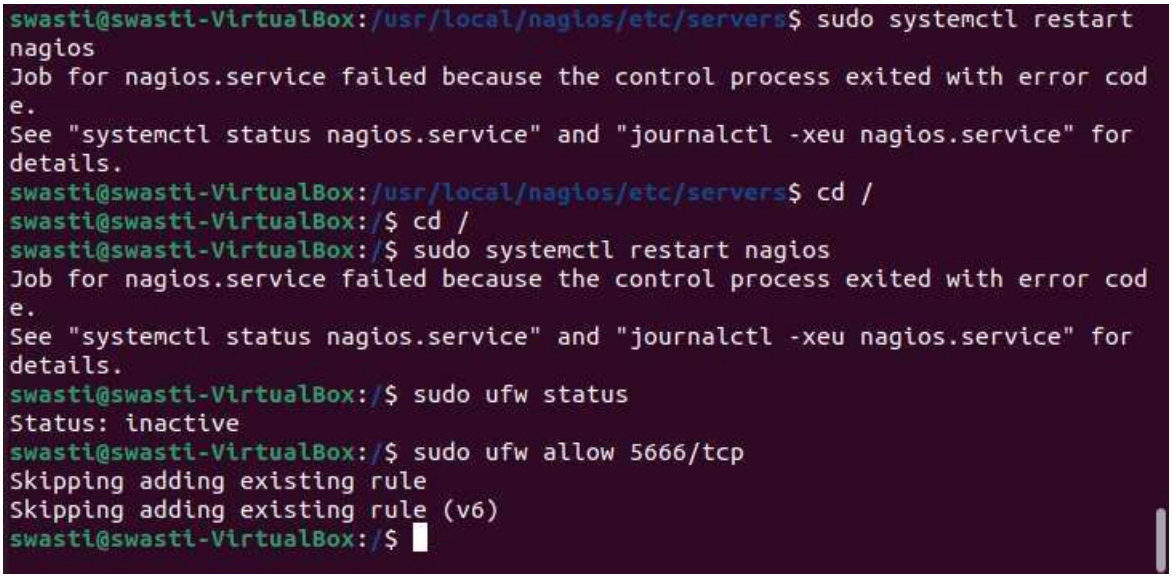
Total warnings: 0

Total Errors: 0

Step 19: Restart Nagios server

```
swasti@swasti-VirtualBox:/usr/local/nagios/etc/servers$ sudo systemctl restart
nagios
Job for nagios.service failed because the control process exited with error cod
e.
See "systemctl status nagios.service" and "journalctl -xeu nagios.service" for
details.
swasti@swasti-VirtualBox:/usr/local/nagios/etc/servers$ cd /
swasti@swasti-VirtualBox:/$ cd /
swasti@swasti-VirtualBox:/$ sudo systemctl restart nagios
Job for nagios.service failed because the control process exited with error cod
e.
See "systemctl status nagios.service" and "journalctl -xeu nagios.service" for
details.
swasti@swasti-VirtualBox:/$ sudo ufw status
Status: inactive
swasti@swasti-VirtualBox:/$ sudo ufw allow 5666/tcp
Skipping adding existing rule
Skipping adding existing rule (v6)
swasti@swasti-VirtualBox:/$
```

Step 20: Allow port 5666 on your Firewall

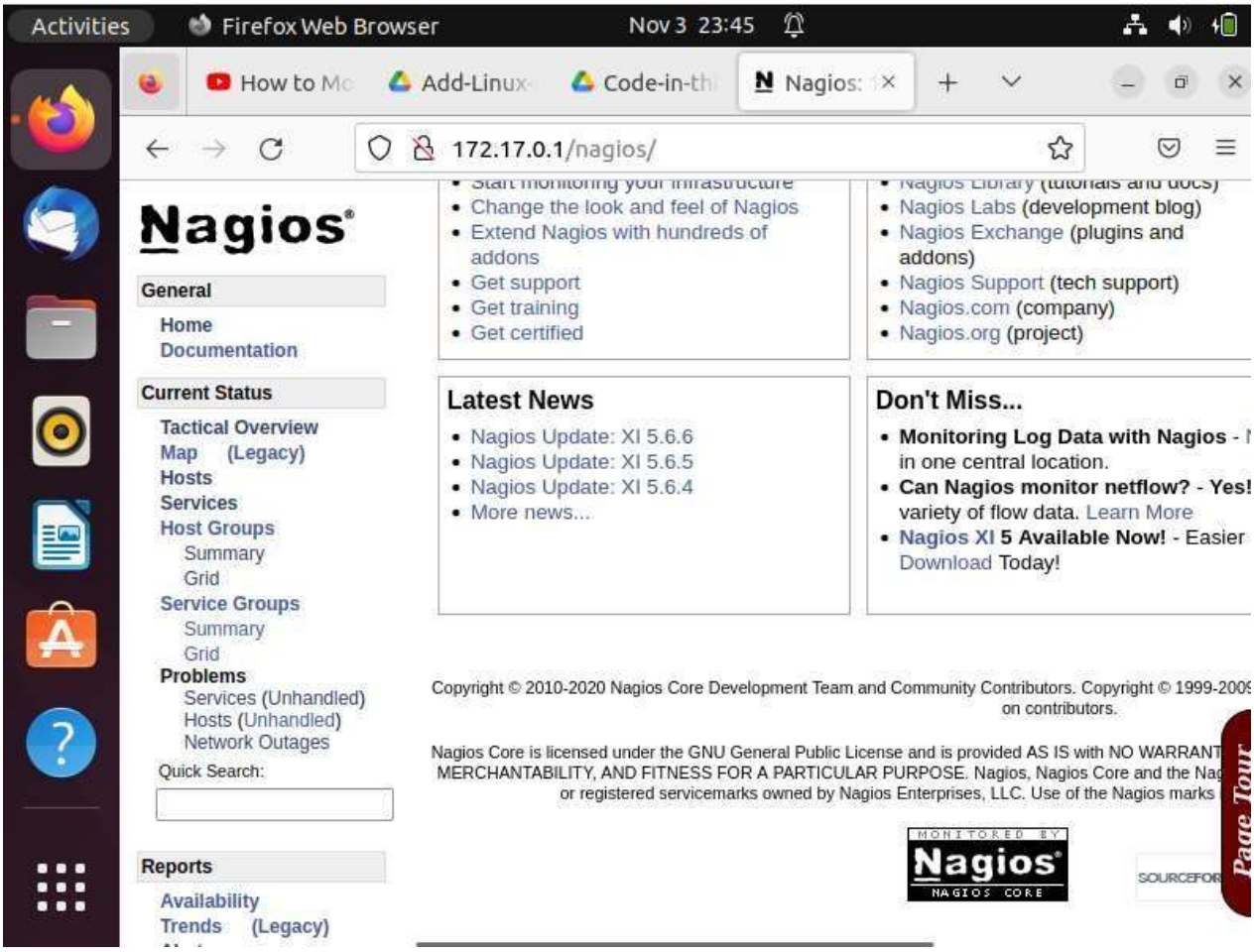


Step 21: If faced error while viewing web interface, use command

$ sudo htpasswd /usr/local/nagios/etc/htpasswd.users nagiosadmin nagiosadmin

Use nagiosadmin as your username and password while logging in web interface.

Step 22: Check Nagios web interface, Host under Current Status.



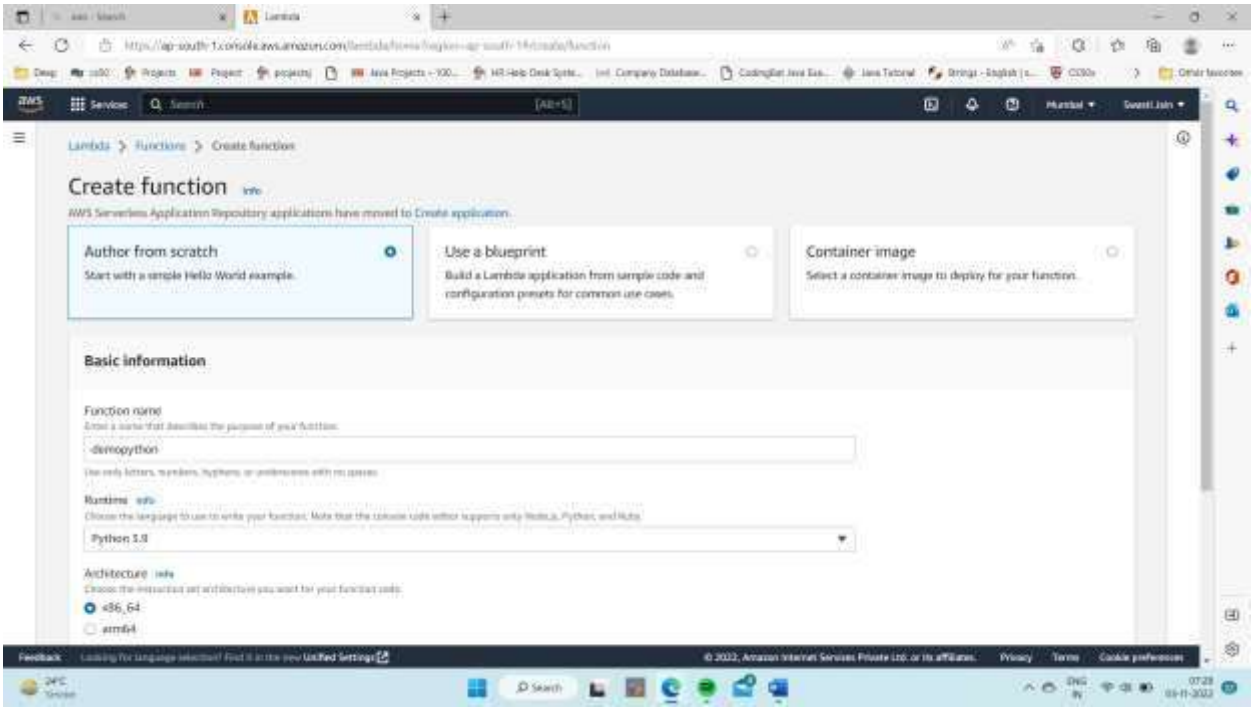
Reference: https://www.youtube.com/watch?v=HOqA1zVEWSk

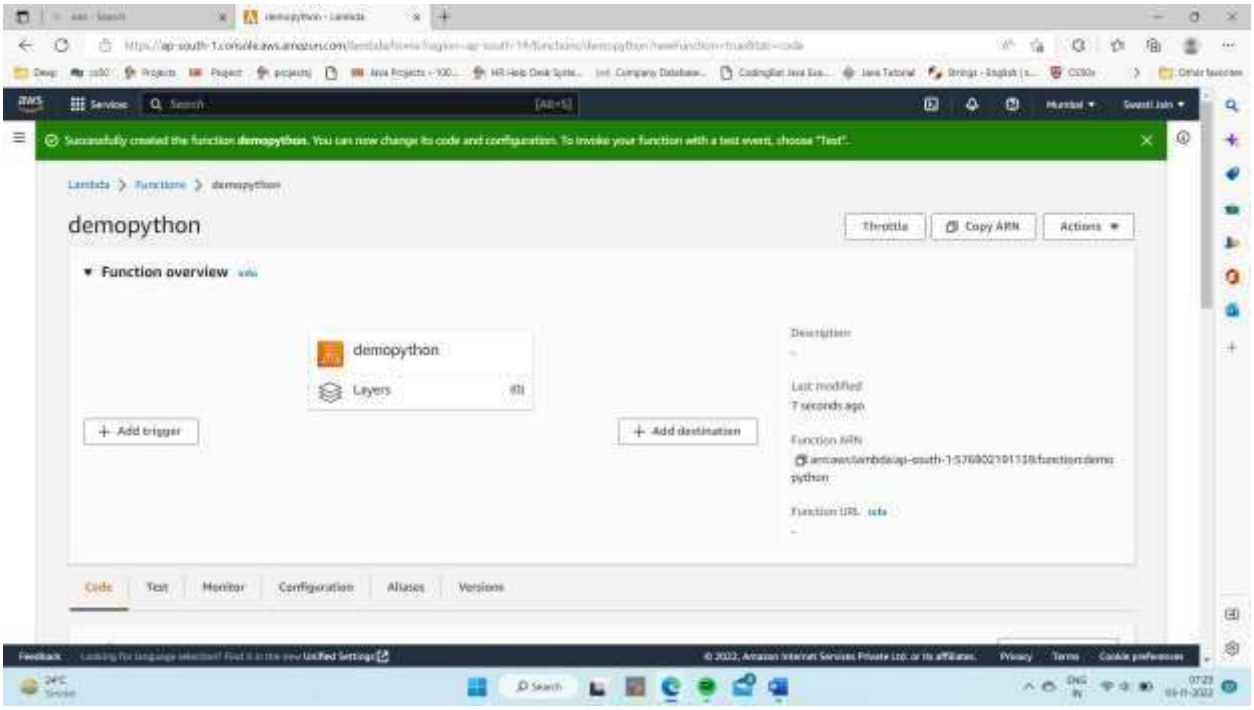
Experiment no. 11

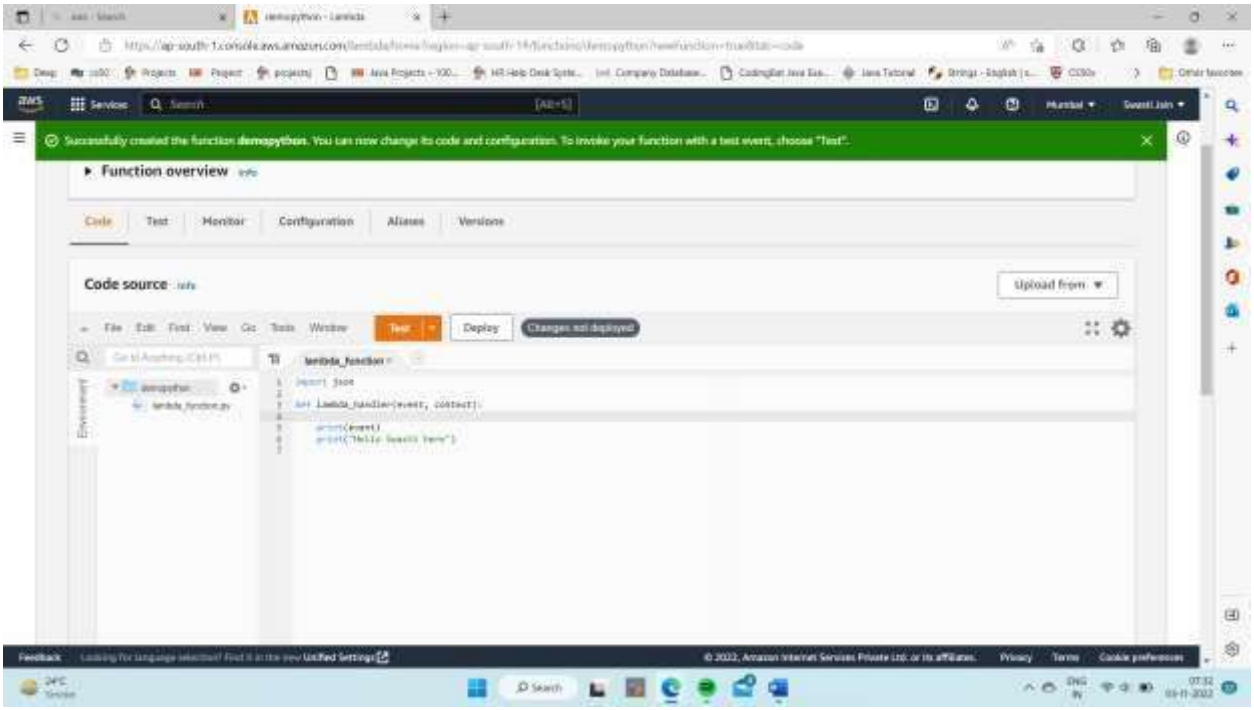
Aim: To understand AWS Lambda, its workflow, and various functions and create your first Lambda functions using Python / Java / Nodejs

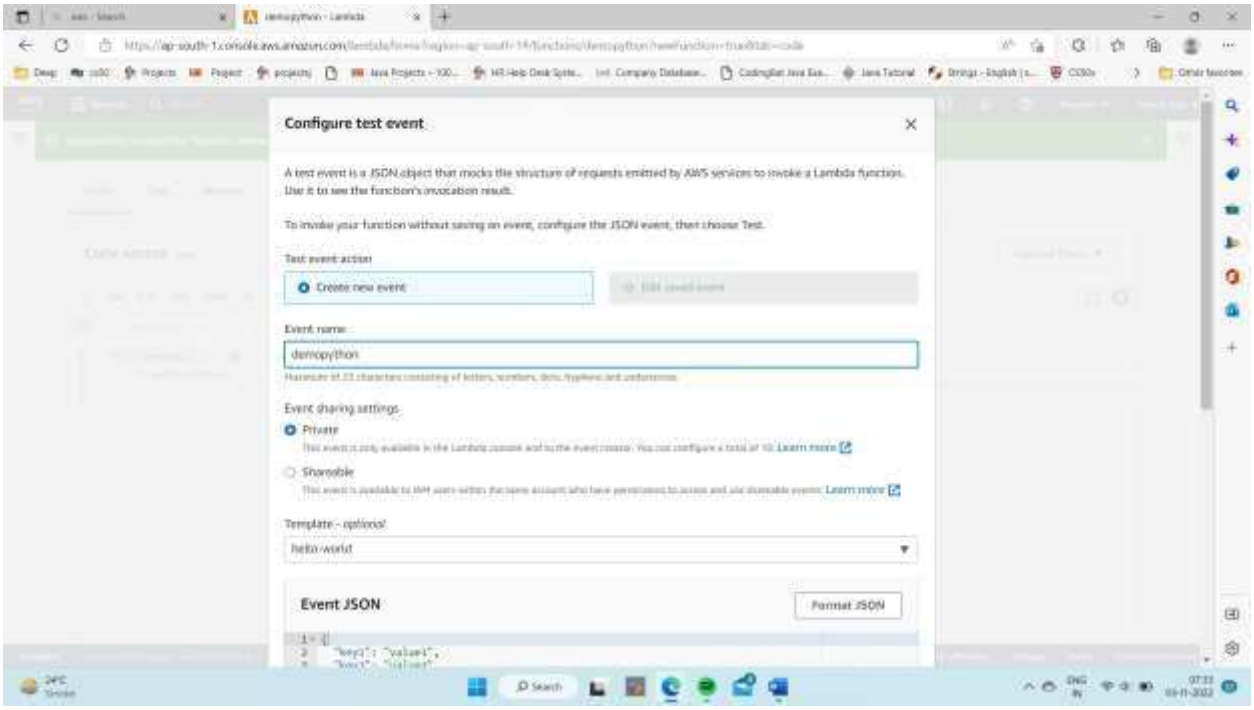
Steps:

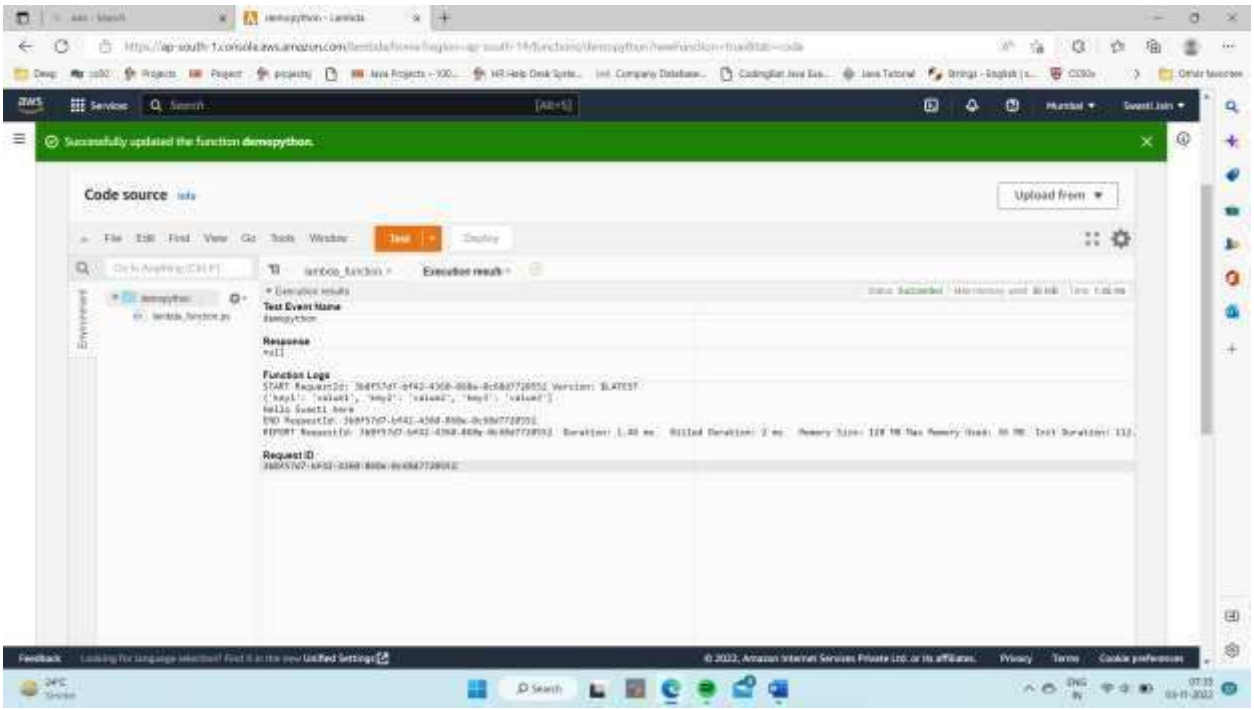
To understand AWS Lambda, its workflow, and various functions and create your first Lambda functions using Python / Java / Nodejs

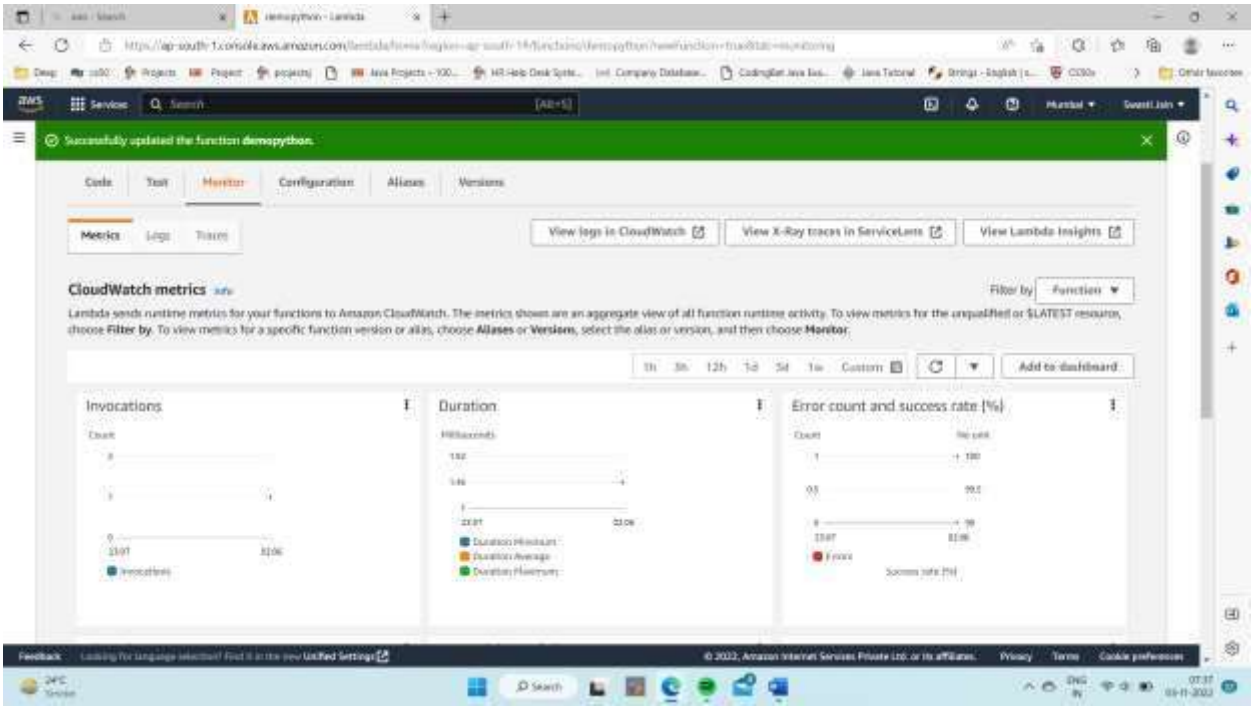


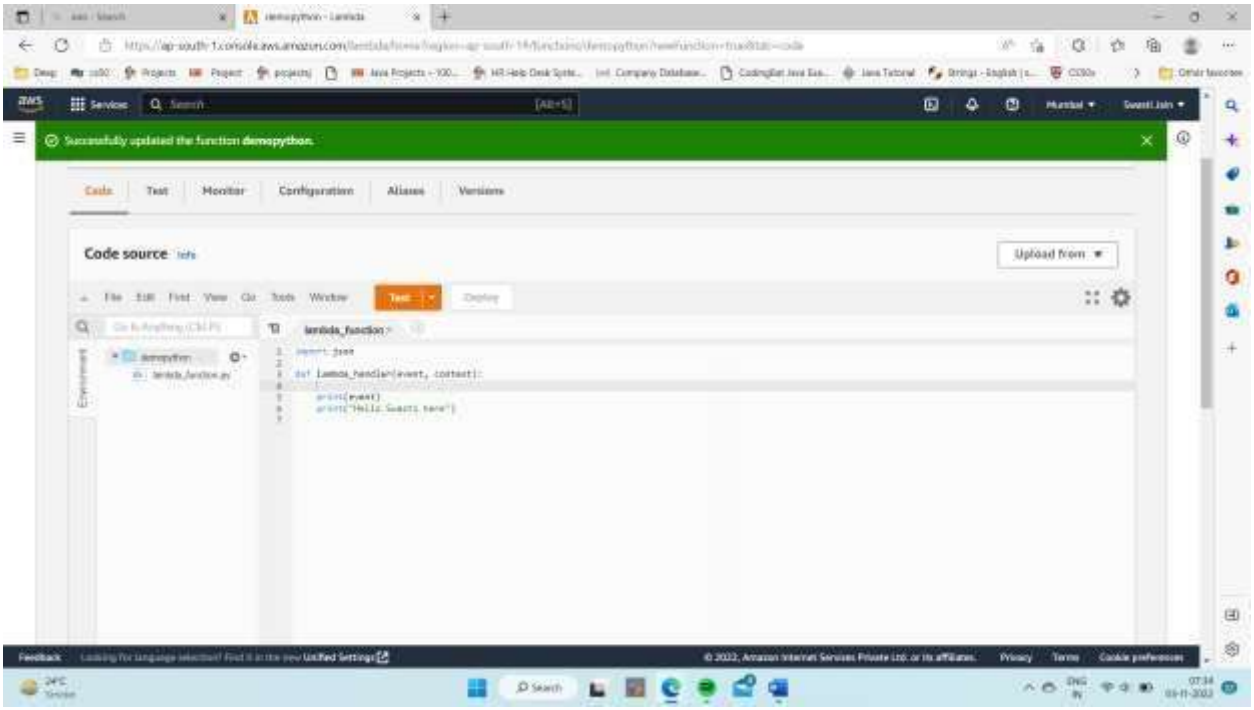

Successfully created the function demopython. You can now change its code and configuration. To invoke your function with a test event, choose "Test".
Lambda > Functions > demopython
demopython
Throttle
Copy ARN
Actions
Function overview
demopython
Layers
+ Add trigger
+ Add destination
Description
Last modified
7 seconds ago
Function ARN
Function URL
Code
Test
Monitor
Configuration
Aliases
Versions


Successfully created the function demopython. You can now change its code and configuration. To invoke your function with a test event, choose "Test".
Function overview
Code
Test
Monitor
Configuration
Aliases
Versions
Code source
Upload from
File
Edit
Find
View
Go
Tools
Window
Test
Deploy
Changes not deployed
lambda_function
lambda_function.py
import json
def lambda_handler(event, context):
print(event)
print("Hello Swathi here")


Configure test event
A test event is a JSON object that mocks the structure of requests emitted by AWS services to invoke a Lambda function. Use it to see the function's invocation result.
To invoke your function without saving an event, configure the JSON event, then choose Test.
Test event action
Create new event
Event name
demopython
Event sharing settings
Private
Shareable
Template - optional
hello-world
Event JSON
Format JSON


Successfully updated the function demopython.
Code source
Upload from
Test Event Name
demopython
Response
null
Function Logs
Request ID





Conclusion: Successfully created Lambda functions using Python.

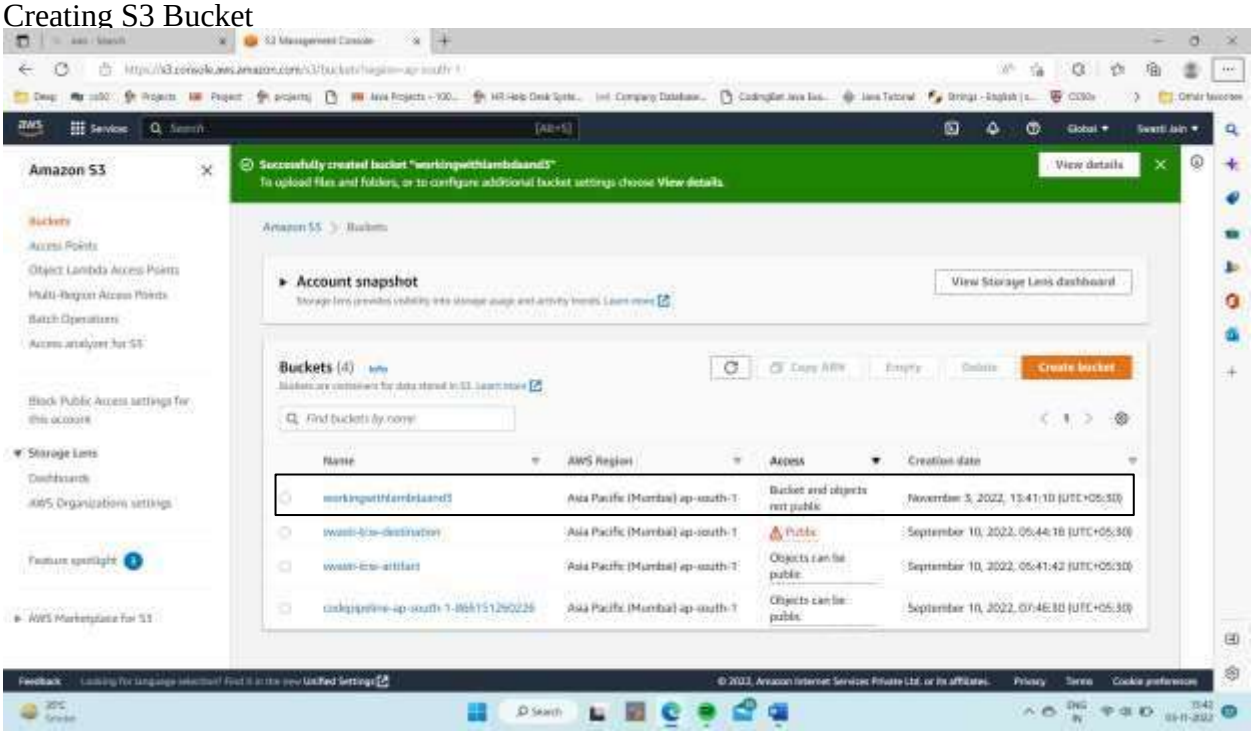
Experiment no. 12

Aim: To create a Lambda function that will log “An Image has been added” once add you an object to a specific bucket in S3.

To start using AWS Lambda with Amazon S3, we need the following −

- Create S3 Bucket
- Create role which has permission to work with s3 and lambda
- Create lambda function and add s3 as the trigger.

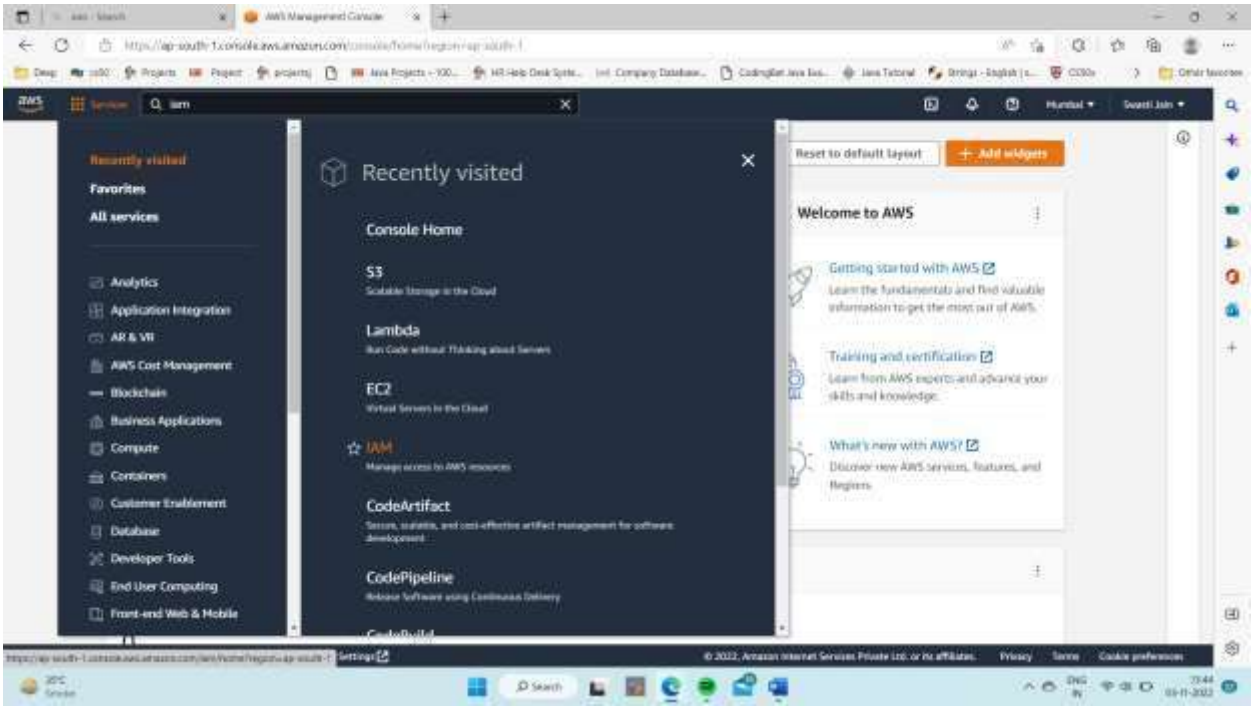
Creating S3 Bucket

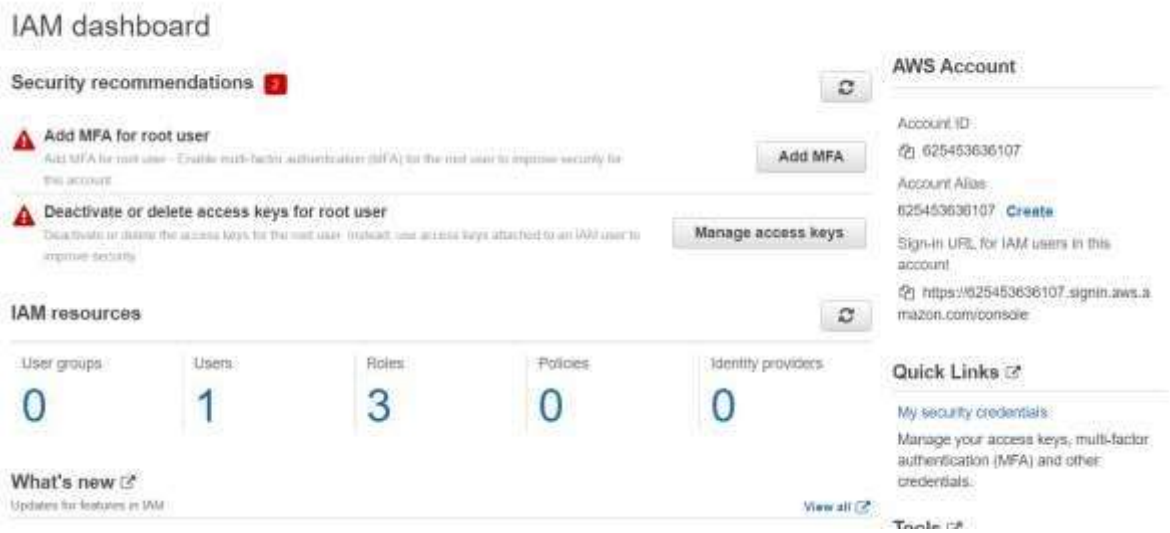


Create Role that Works with S3 and Lambda

To create role that works with S3 and Lambda, please follow the Steps given below :

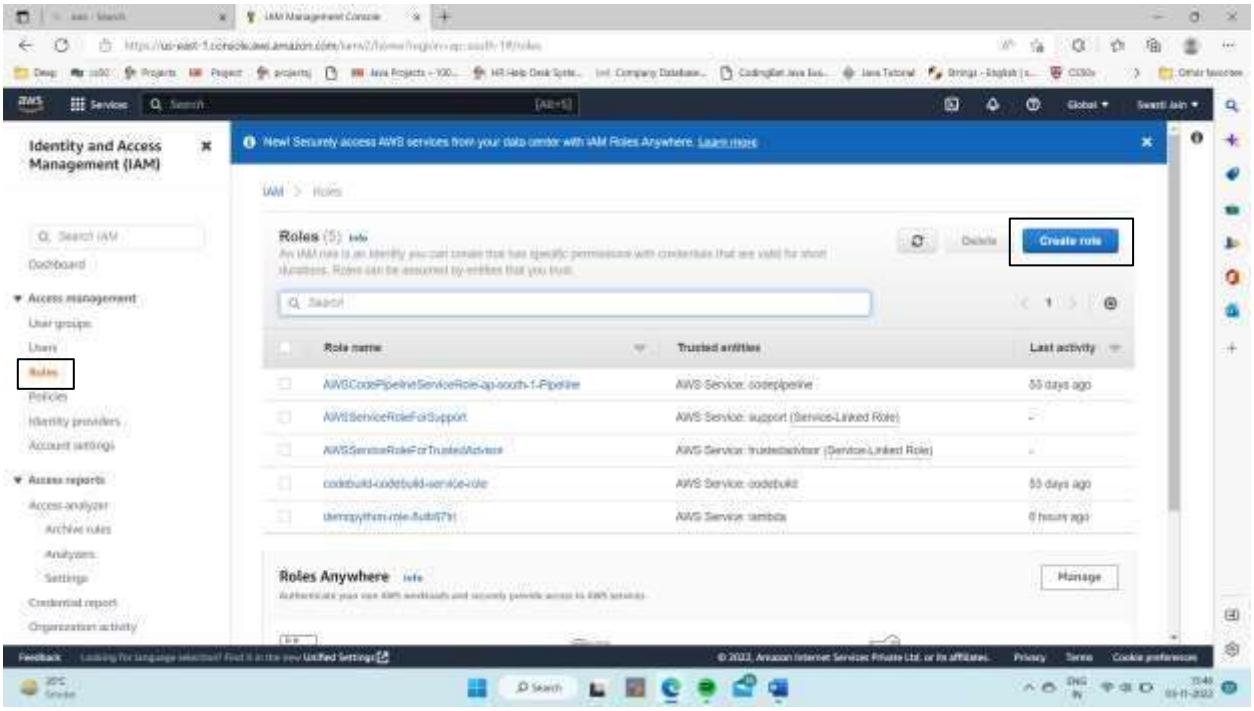
Step 1: Go to AWS services and select IAM as shown below –

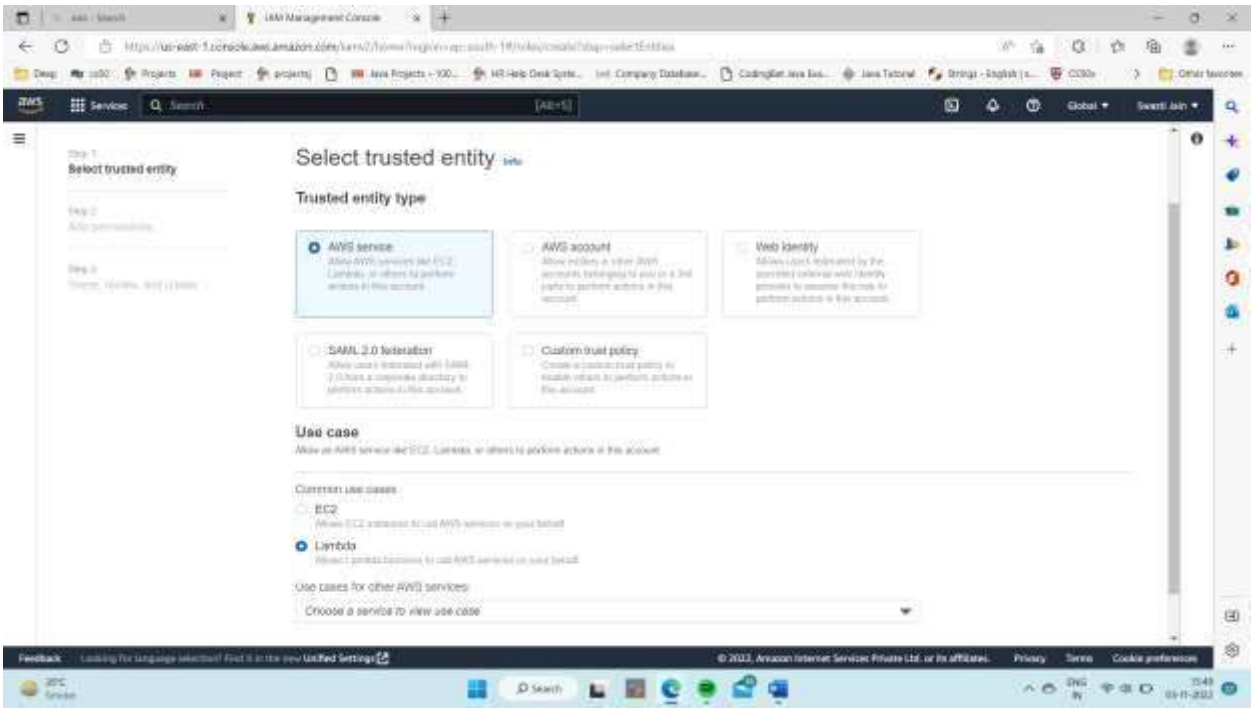




Step 2

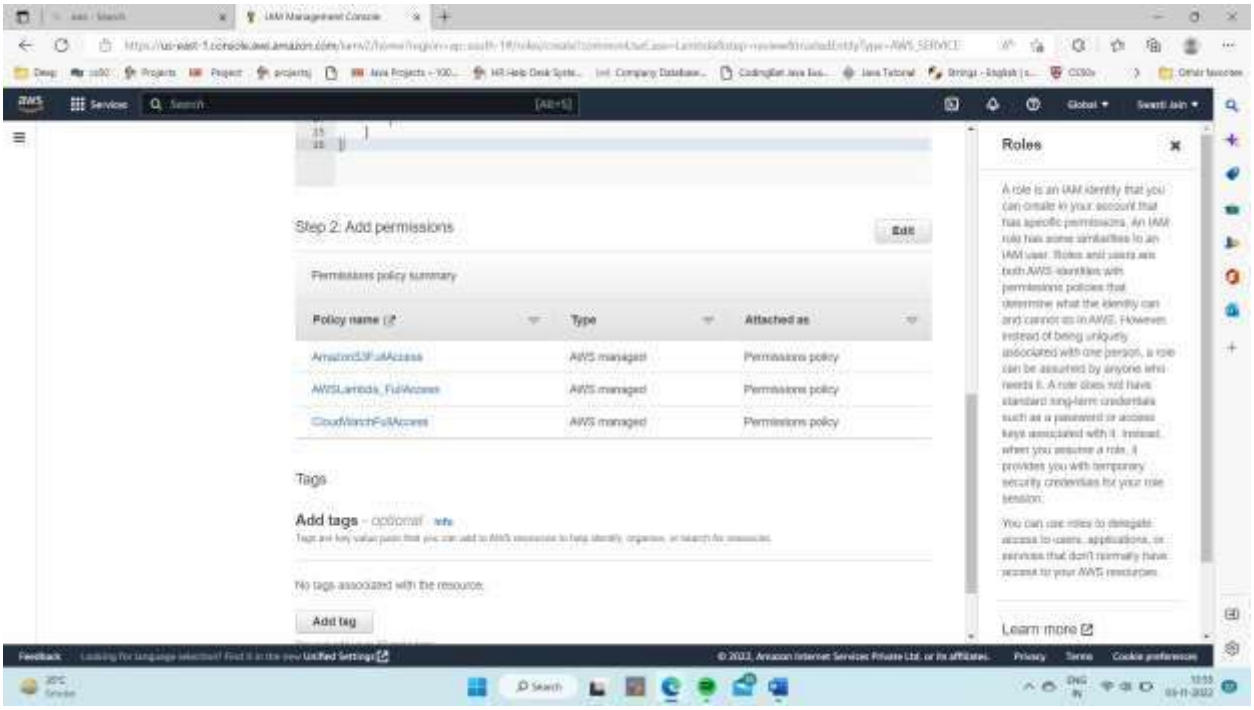
Now, click IAM -> Roles as shown below –





Step 3

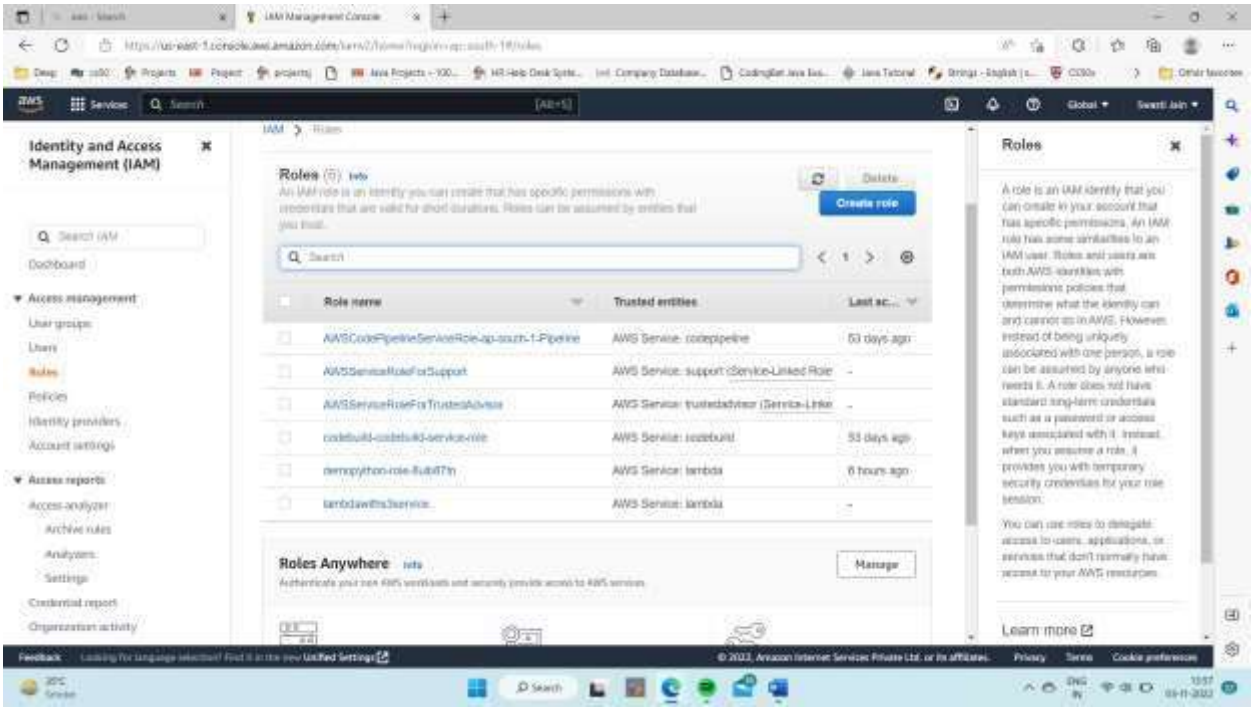
Add the permission from below :



Observe that we have chosen the following permissions − we have selected are

AmazonS3FullAccess, AWSLambdaFullAccess and CloudWatchFullAccess.

Step 4

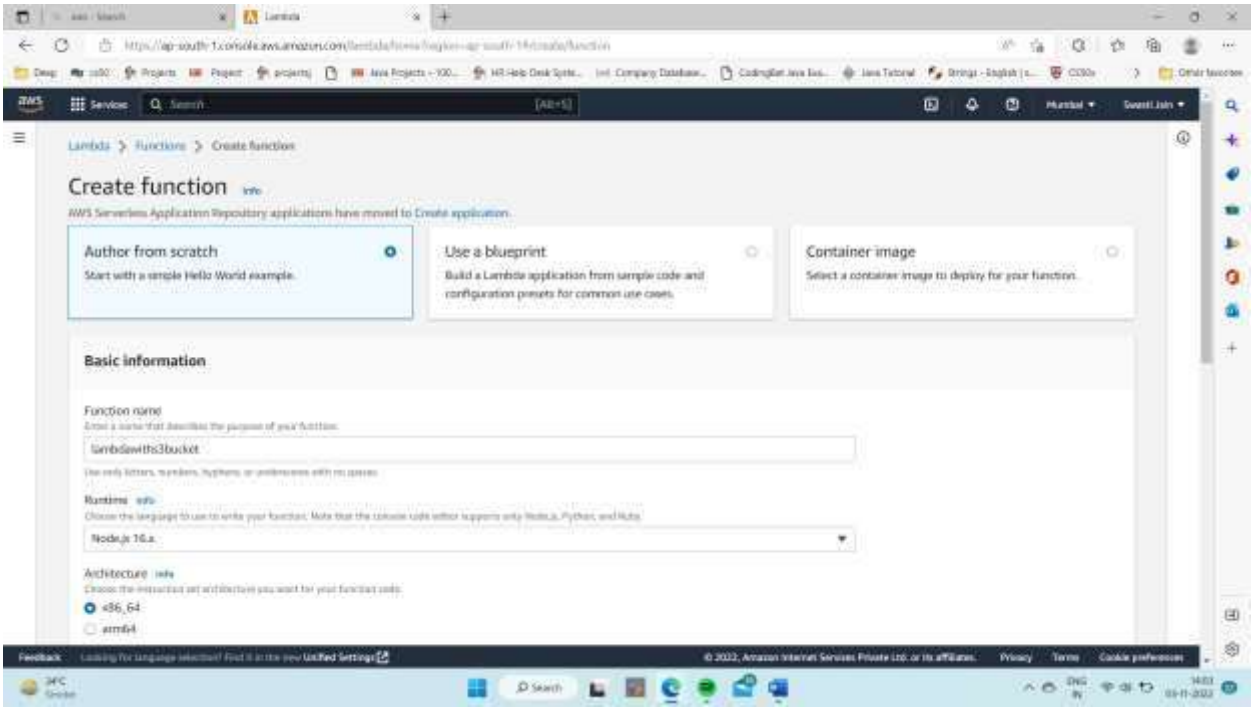


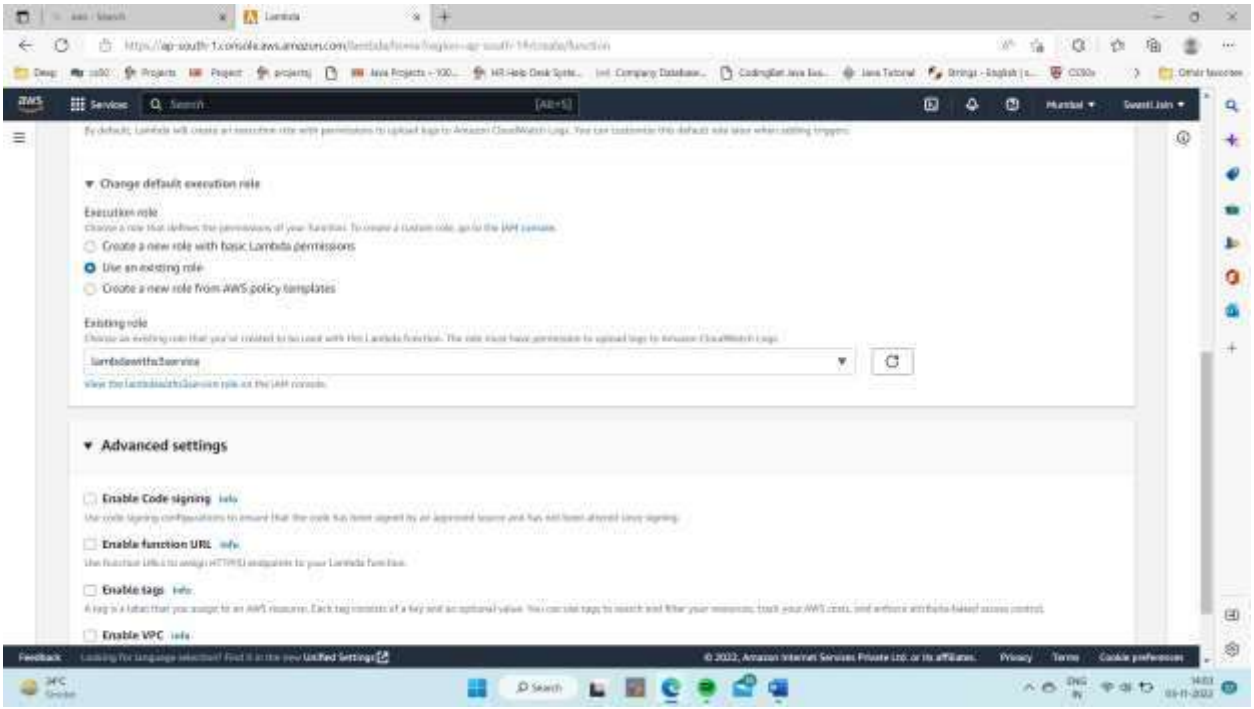
Create Lambda function and Add S3 Trigger

In this section, let us see how to create a Lambda function and add a S3 trigger to it. For this purpose, you will have to follow the Steps given below –

Step 1

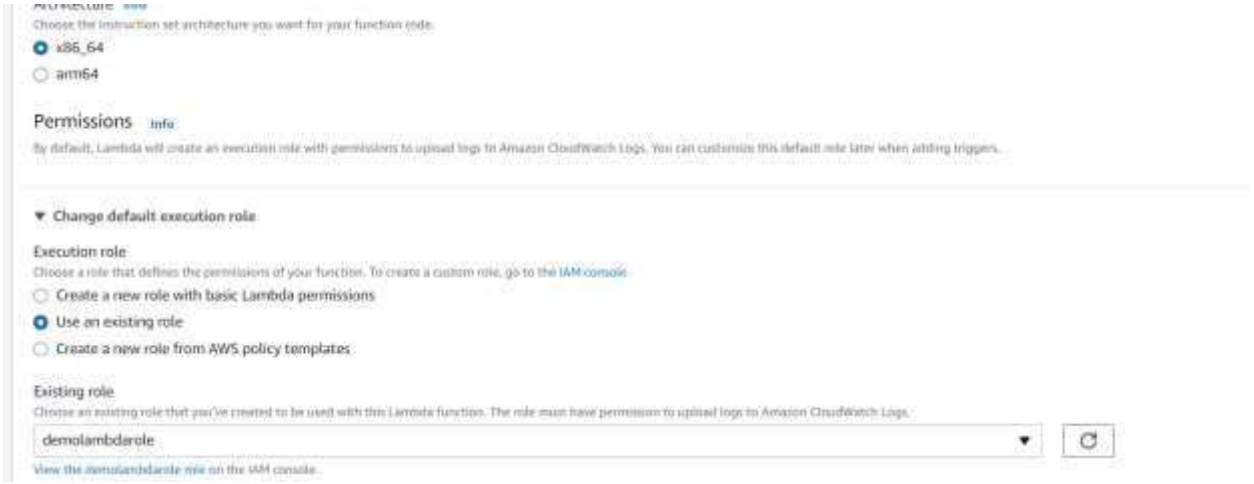
Go to AWS Services and select Lambda as shown below –

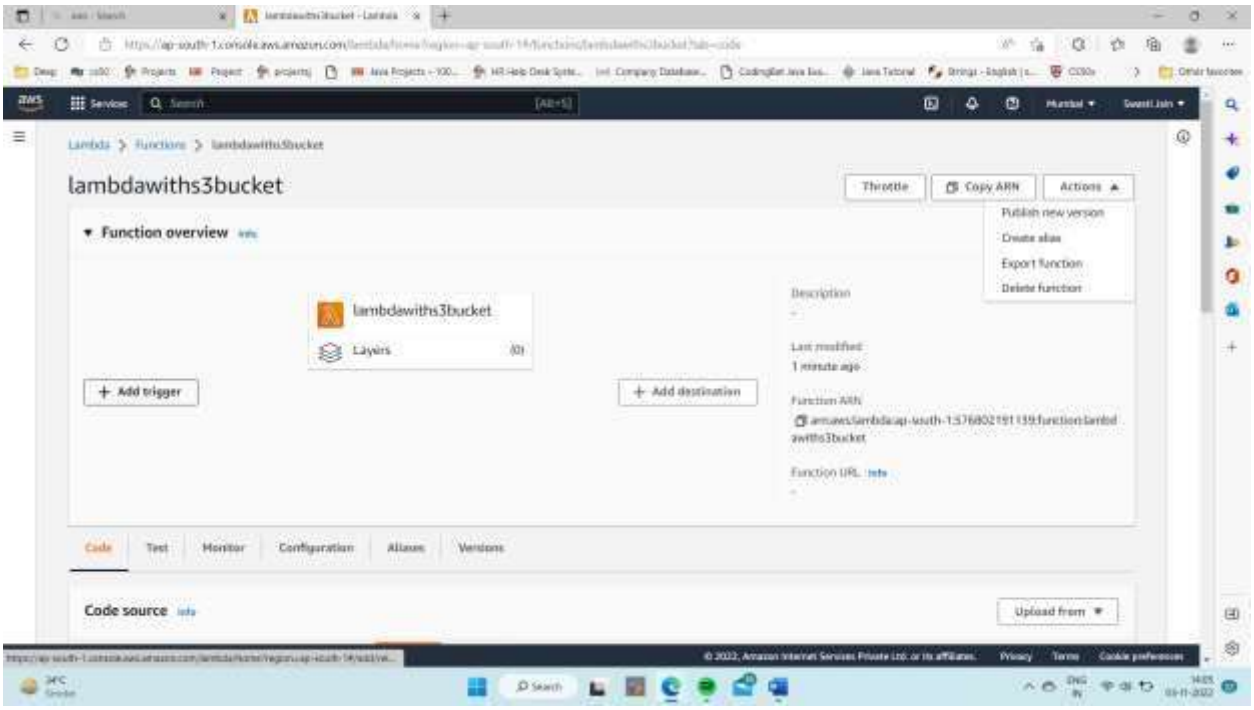




Step 2

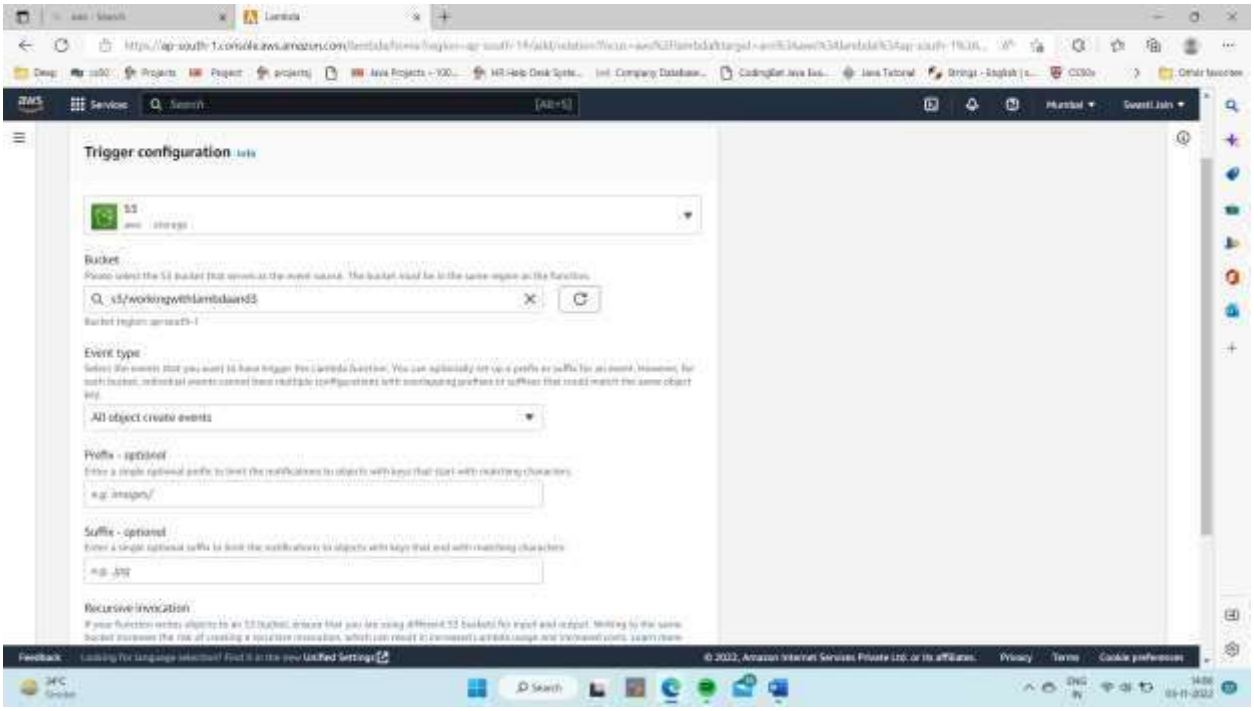
Click Lambda and follow the process for adding Name. Choose the Runtime, Role etc. and create the function. The Lambda function that we have created is shown in the screenshot below –



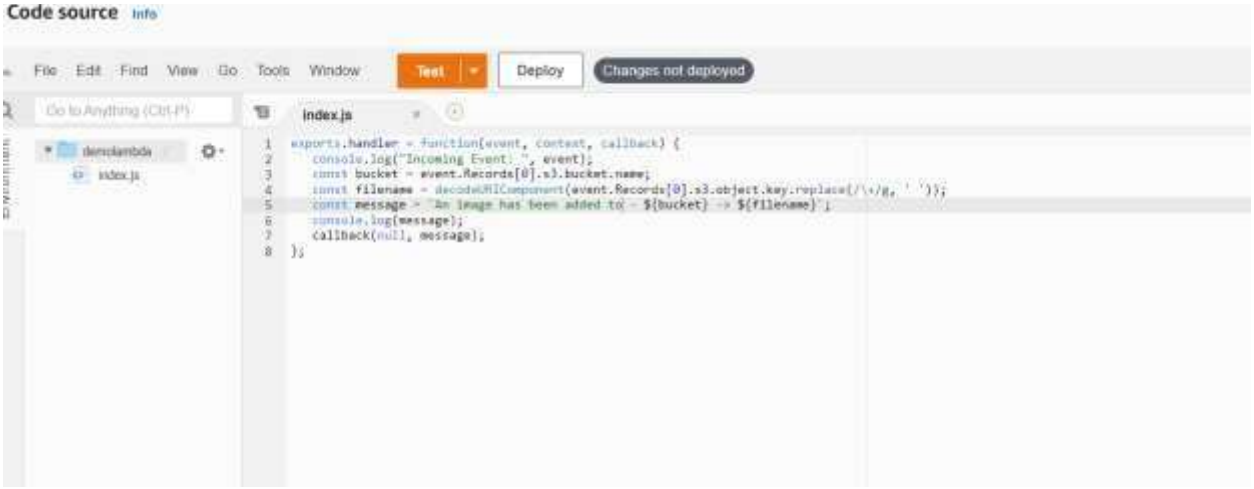


Hence a lambda function is created

NOw Lets Create a trigger

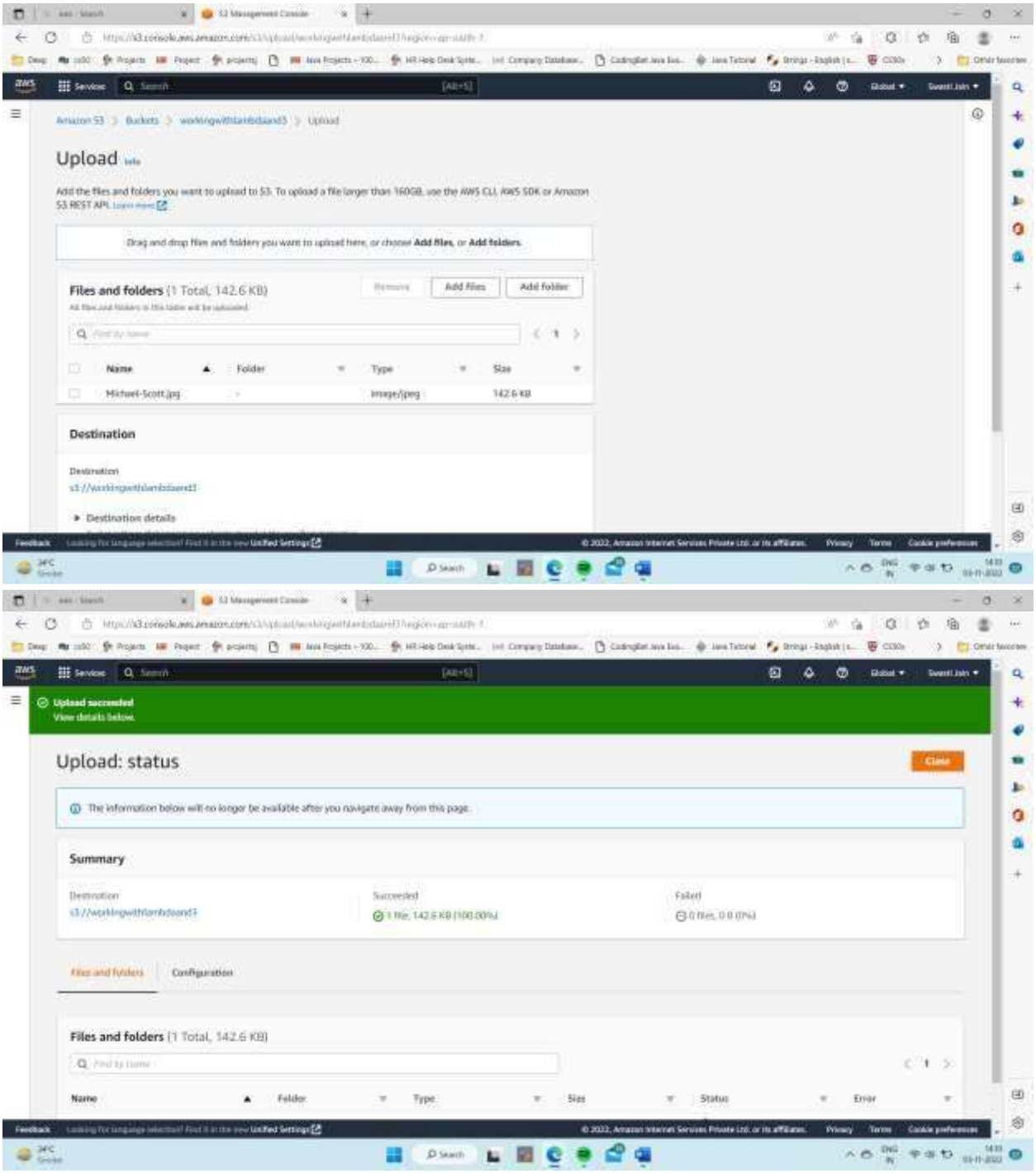


Below is the code written in node.js to pinned a log about an object that has been added to s3.



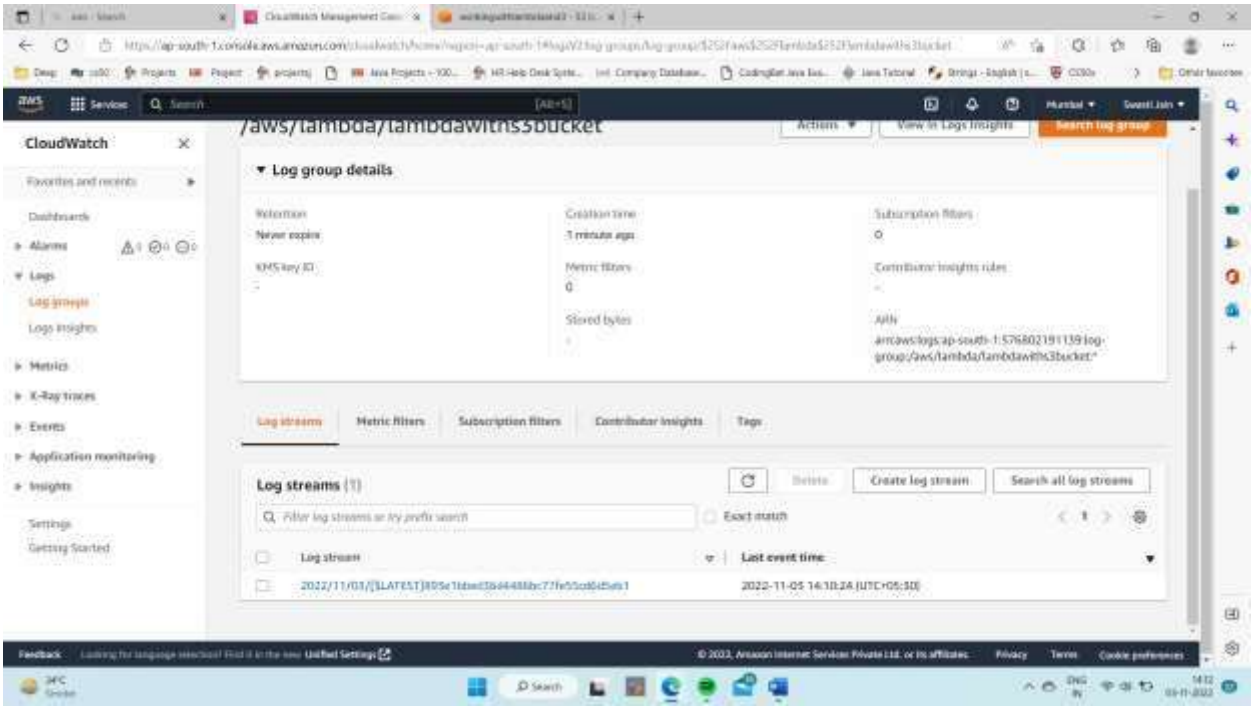
Now to test our lambda function with s3 trigger.

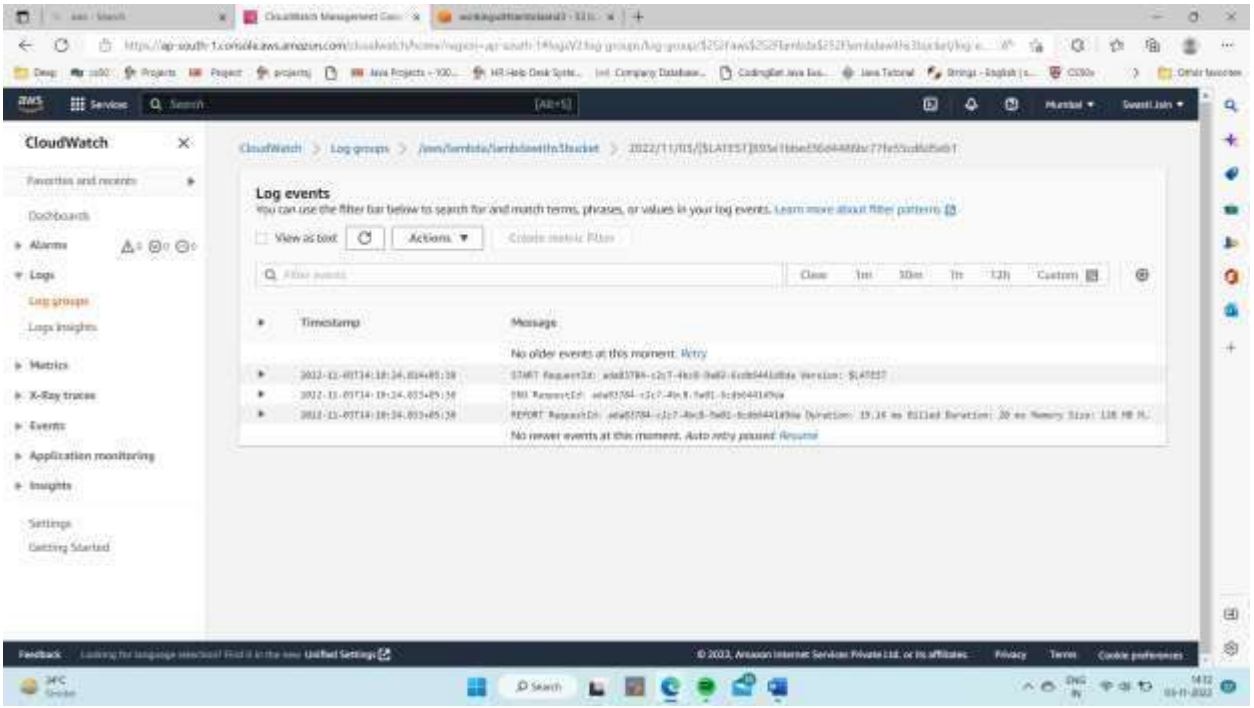
Step 1.add a image to s3 bucket



Step 2.

Now go to cloudwatch you will see the logs of newly happened activity in s3.





Conclusion: Successfully created a Lambda function that will log “An Image has been added” once add you an object to a specific bucket in S3.