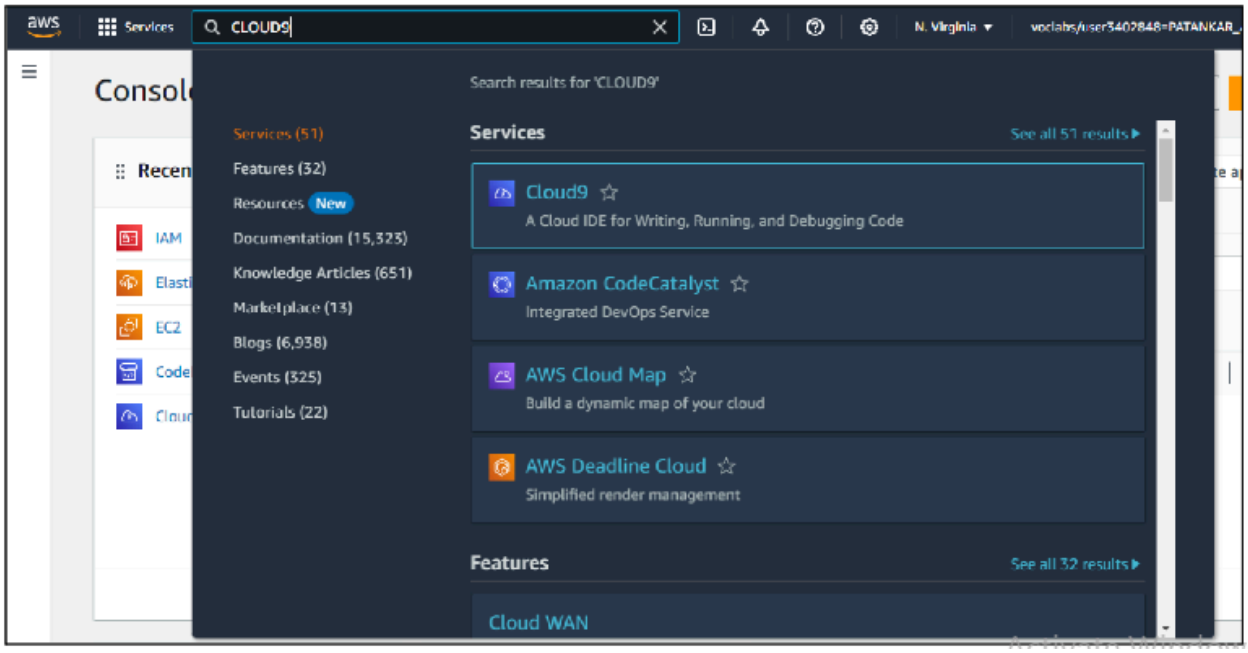
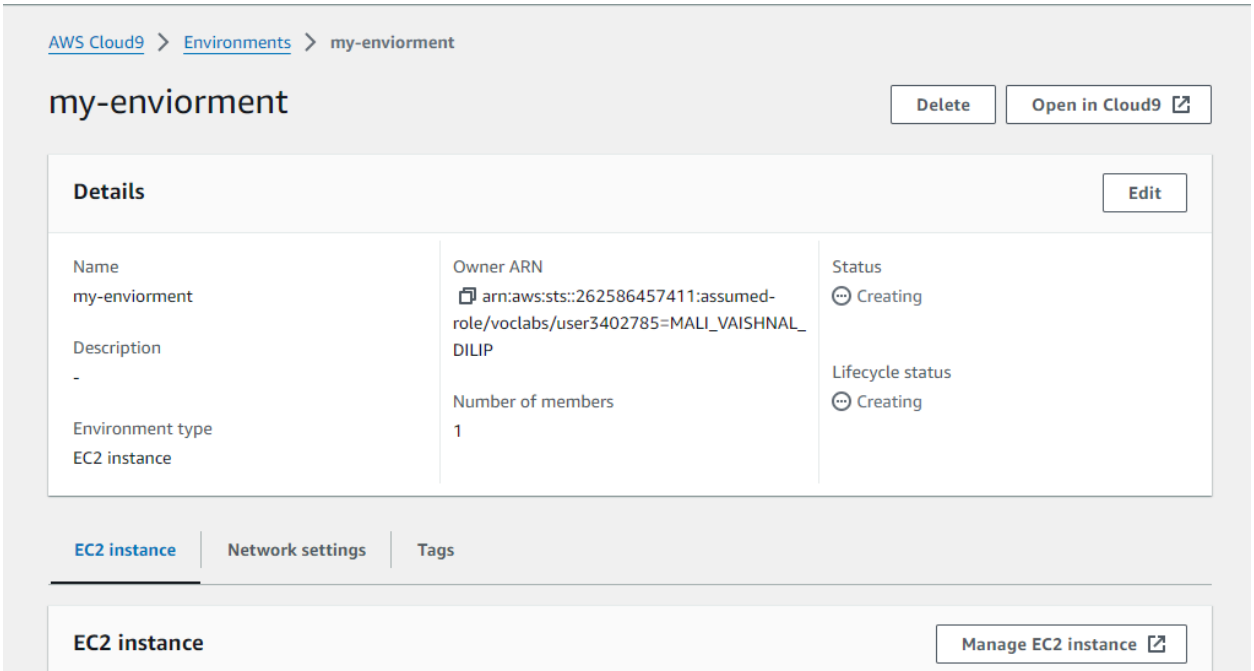
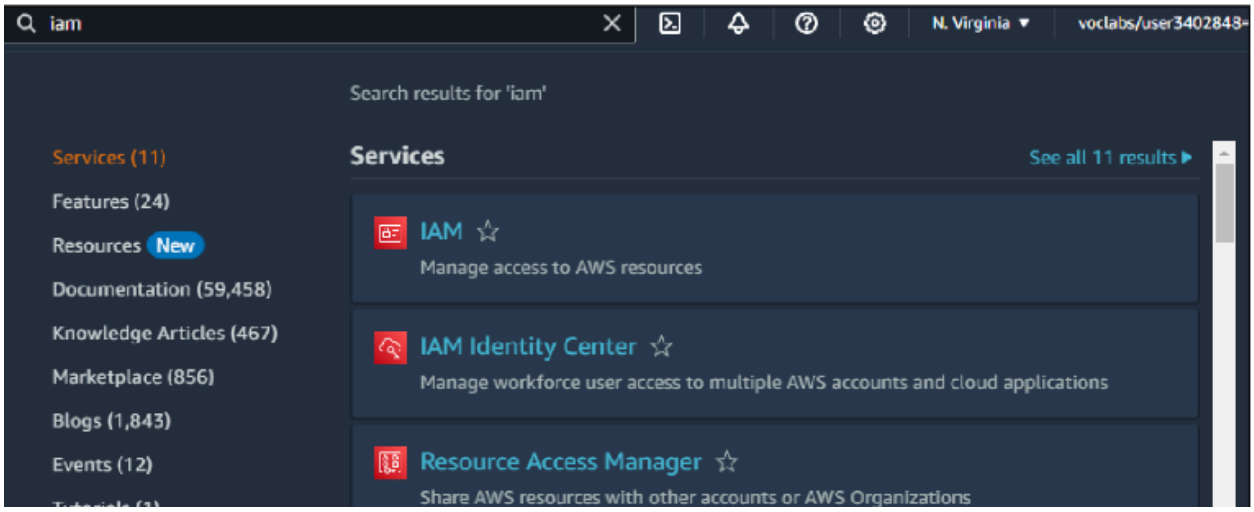
NAME:VAISHNAL MALI
DIV:D15A
ADVANCED DEV-OPS EXPERIMENT-01

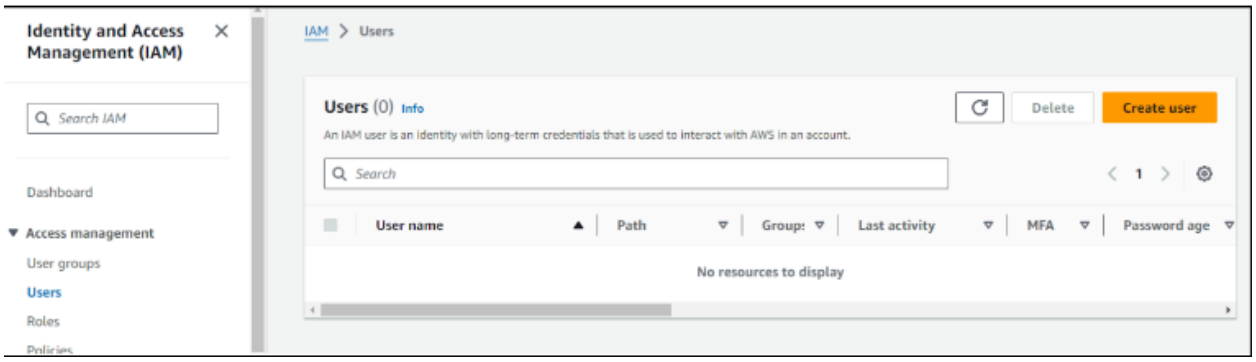
AIM: To understand the benefits of Cloud Infrastructure and Setup AWS Cloud9 IDE, Launch AWS Cloud9 IDE and Perform Collaboration Demonstration.

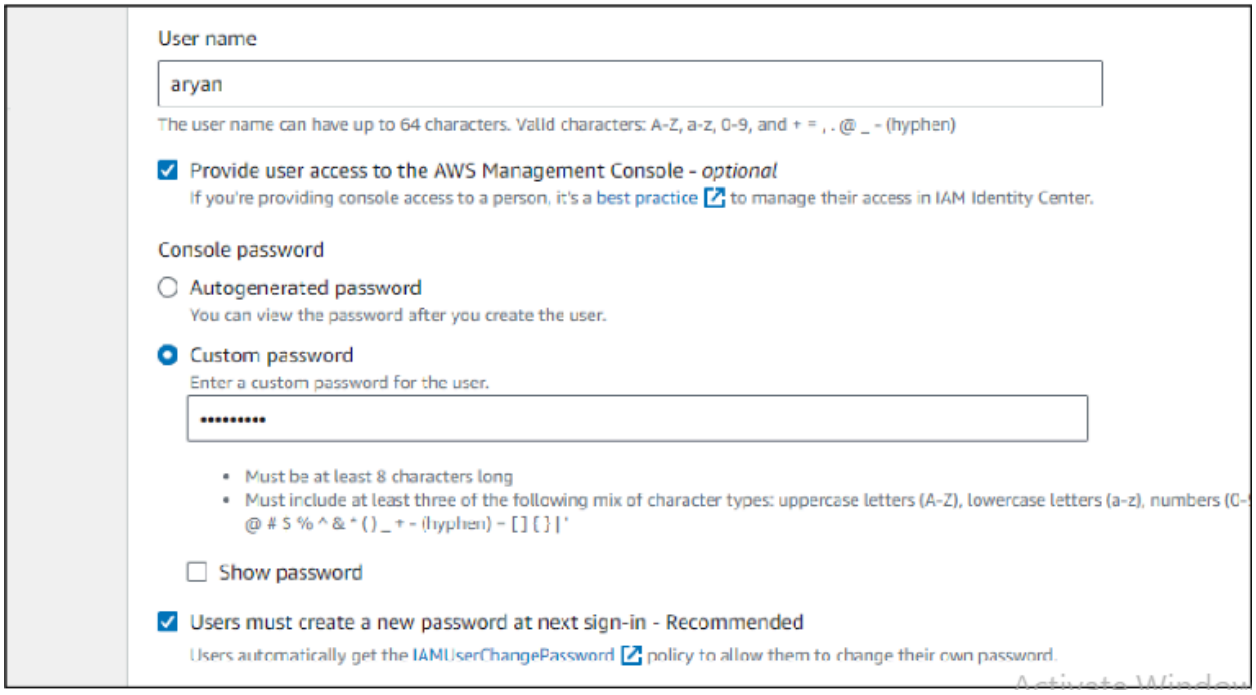
Create Environment on cloud 9:

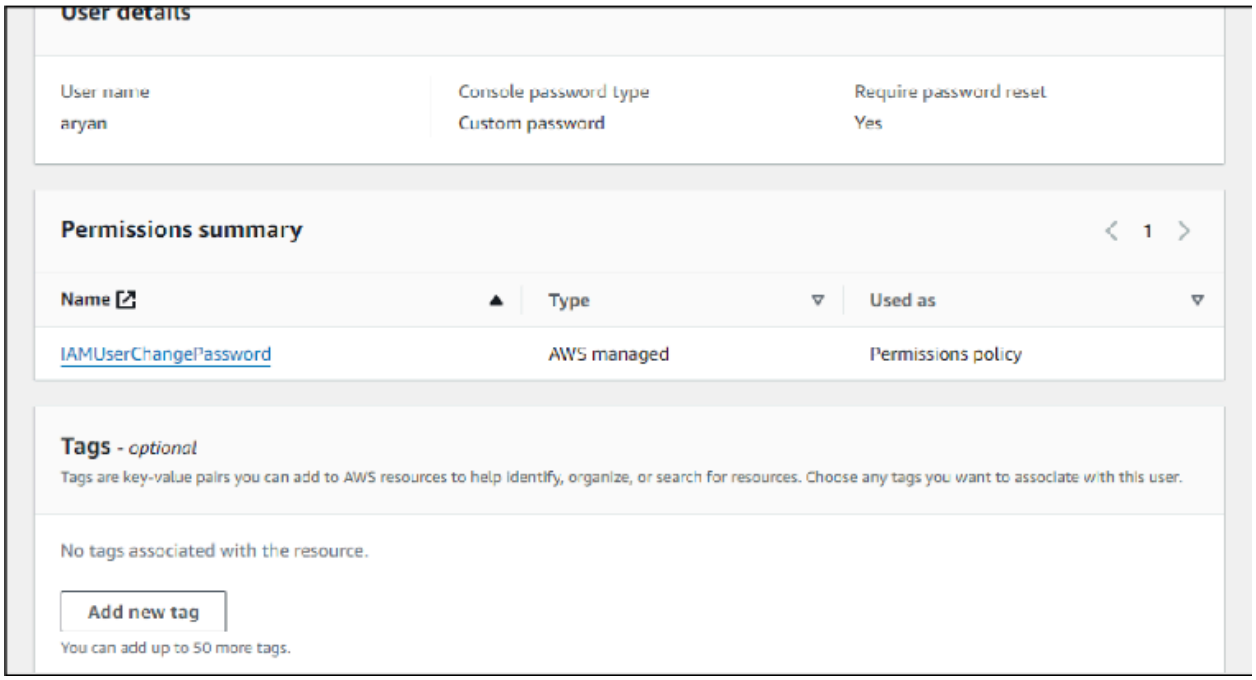


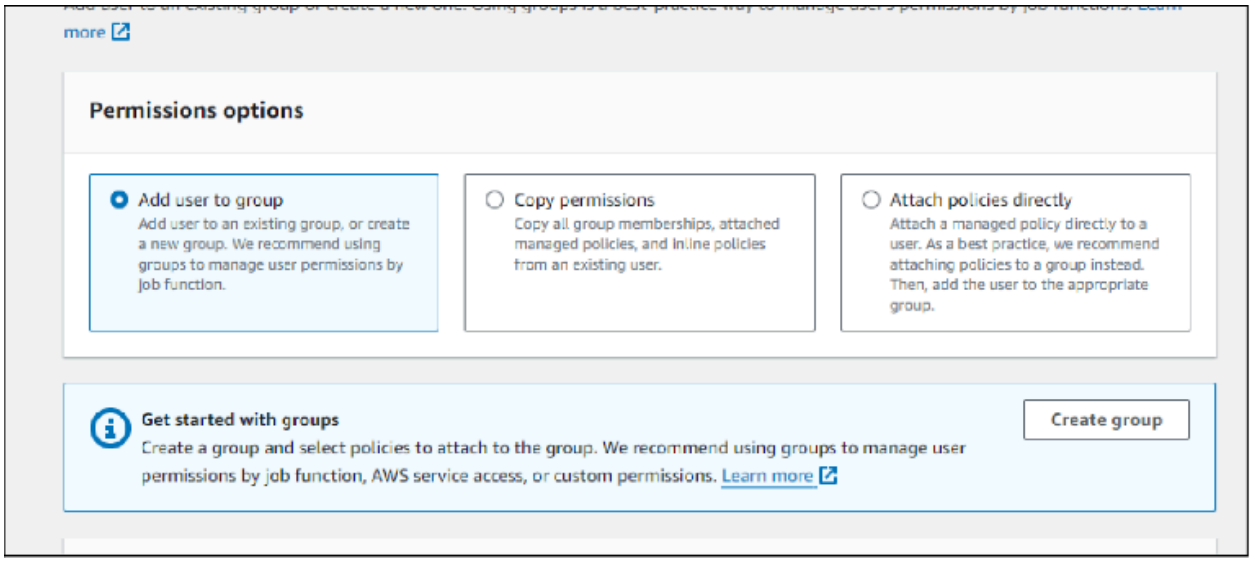


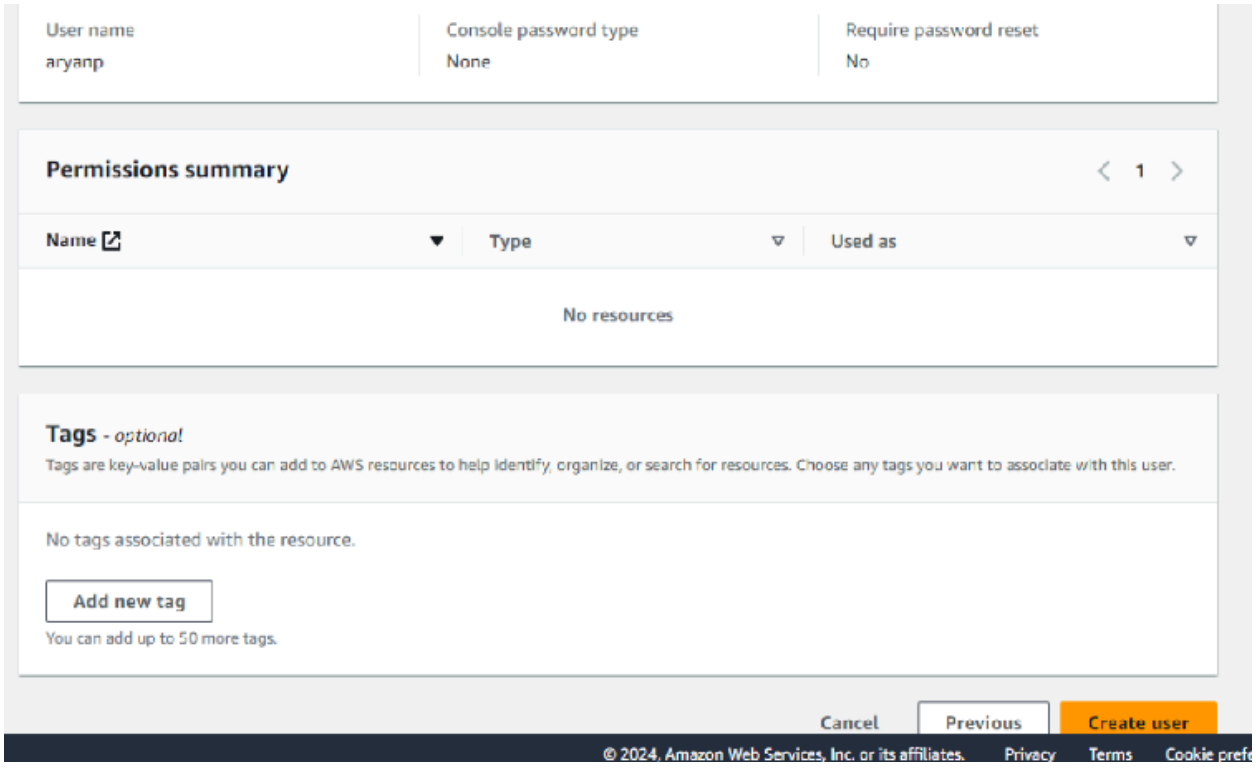

iam
N. Virginia
voclabs/user3402843
Search results for 'iam'
Services (11)
Features (24)
Resources New
Documentation (59,458)
Knowledge Articles (467)
Marketplace (856)
Blogs (1,843)
Events (12)
Services
See all 11 results
IAM
Manage access to AWS resources
IAM Identity Center
Manage workforce user access to multiple AWS accounts and cloud applications
Resource Access Manager
Share AWS resources with other accounts or AWS Organizations

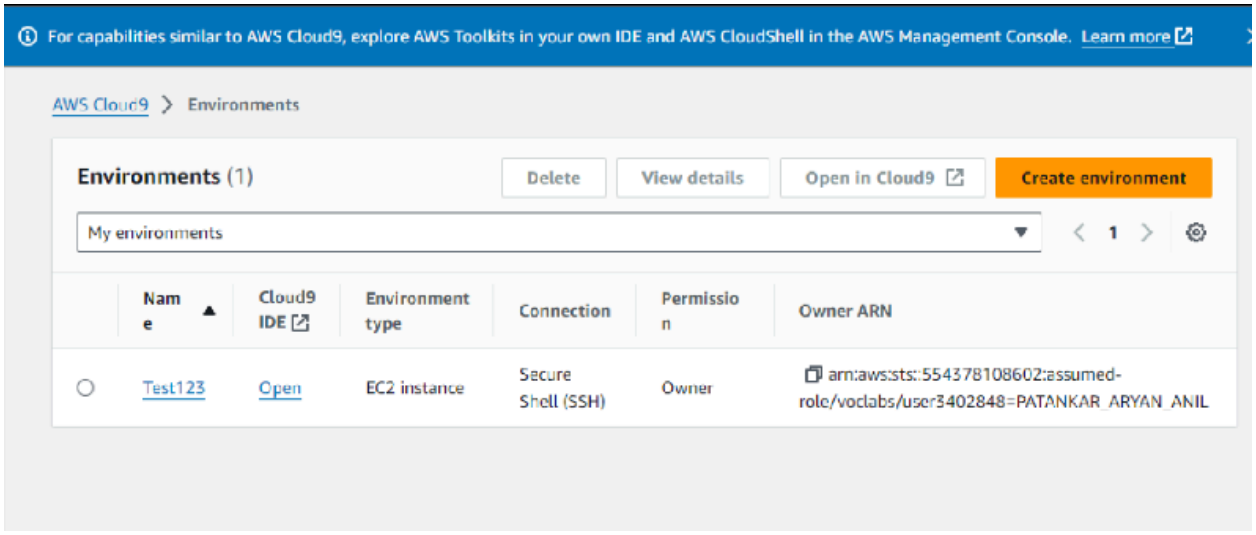

Identity and Access Management (IAM)
Search IAM
Dashboard
Access management
User groups
Users
Roles
IAM > Users
Users (0) Info
An IAM user is an identity with long-term credentials that is used to interact with AWS in an account.
Delete
Create user
Search
User name
Path
Group
Last activity
MFA
Password age
No resources to display


User name
aryan
The user name can have up to 64 characters. Valid characters: A-Z, a-z, 0-9, and + = , . @ _ - (hyphen)
Provide user access to the AWS Management Console - optional
If you're providing console access to a person, it's a best practice to manage their access in IAM Identity Center.
Console password
Autogenerated password
You can view the password after you create the user.
Custom password
Enter a custom password for the user.
Must be at least 8 characters long
Must include at least three of the following mix of character types: uppercase letters (A-Z), lowercase letters (a-z), numbers (0-9) and symbols ! @ # $ % ^ & * ( ) _ + - (hyphen) = [ ] { } |
Show password
Users must create a new password at next sign-in - Recommended
Users automatically get the IAMUserChangePassword policy to allow them to change their own password.

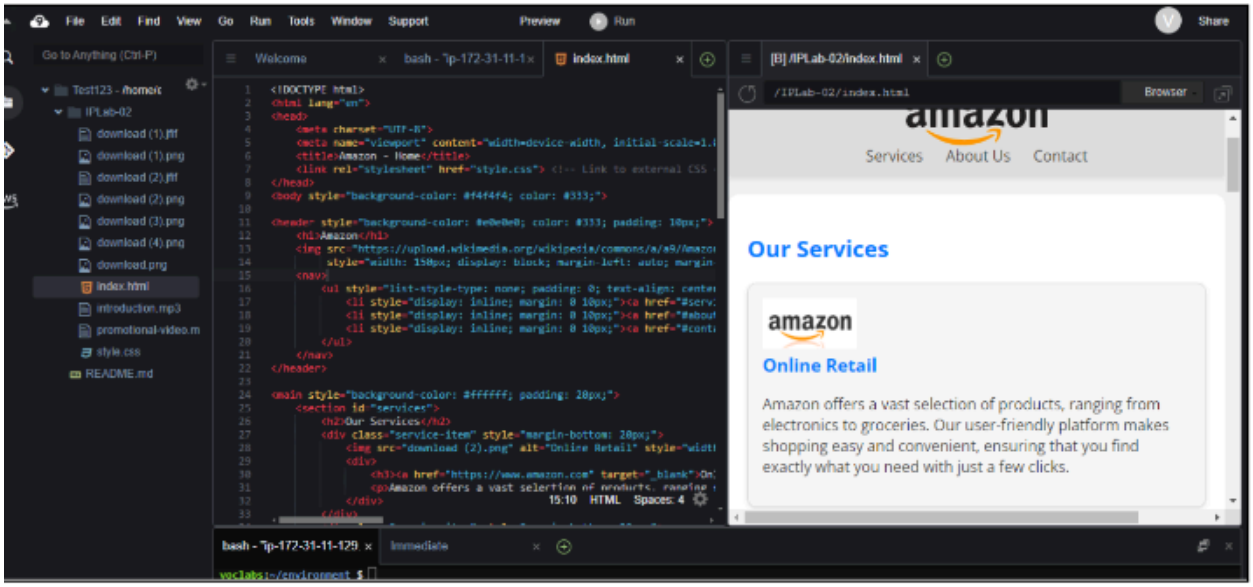

User details
User name
aryan
Console password type
Custom password
Require password reset
Yes
Permissions summary
1
Name
Type
Used as
IAMUserChangePassword
AWS managed
Permissions policy
Tags - optional
Tags are key-value pairs you can add to AWS resources to help identify, organize, or search for resources. Choose any tags you want to associate with this user.
No tags associated with the resource.
Add new tag
You can add up to 50 more tags.


more
Permissions options
Add user to group
Add user to an existing group, or create a new group. We recommend using groups to manage user permissions by job function.
Copy permissions
Copy all group memberships, attached managed policies, and inline policies from an existing user.
Attach policies directly
Attach a managed policy directly to a user. As a best practice, we recommend attaching policies to a group instead. Then, add the user to the appropriate group.
Get started with groups
Create a group and select policies to attach to the group. We recommend using groups to manage user permissions by job function, AWS service access, or custom permissions. Learn more
Create group

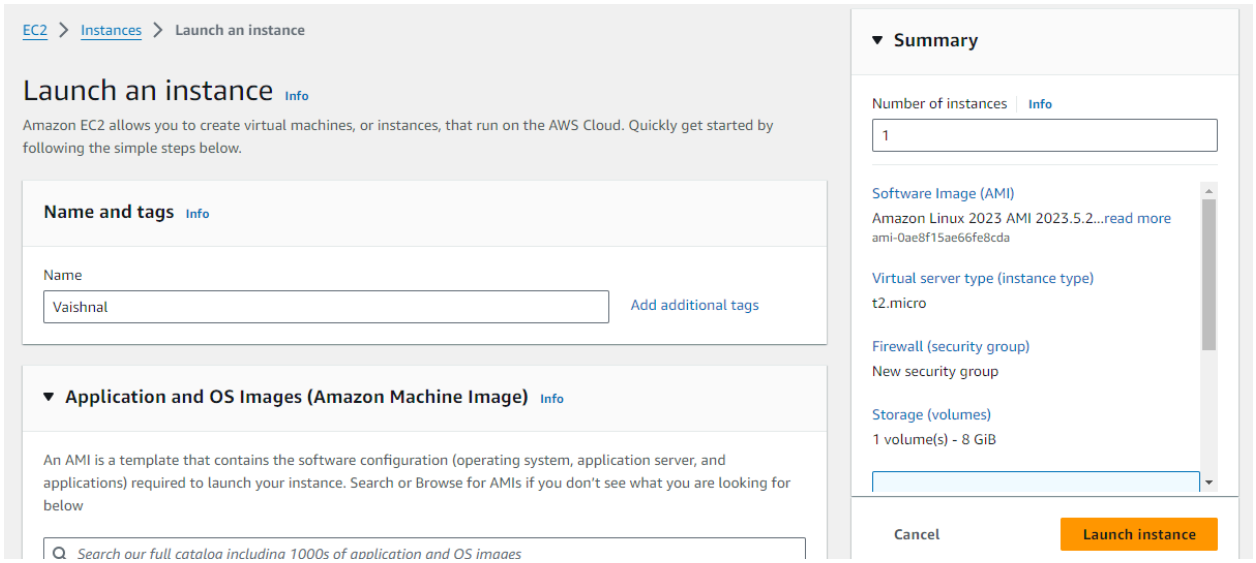

User name
aryanp
Console password type
None
Require password reset
No
Permissions summary
1
Name
Type
Used as
No resources
Tags - optional
Tags are key-value pairs you can add to AWS resources to help identify, organize, or search for resources. Choose any tags you want to associate with this user.
No tags associated with the resource.
Add new tag
You can add up to 50 more tags.
Cancel
Previous
Create user
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie pref

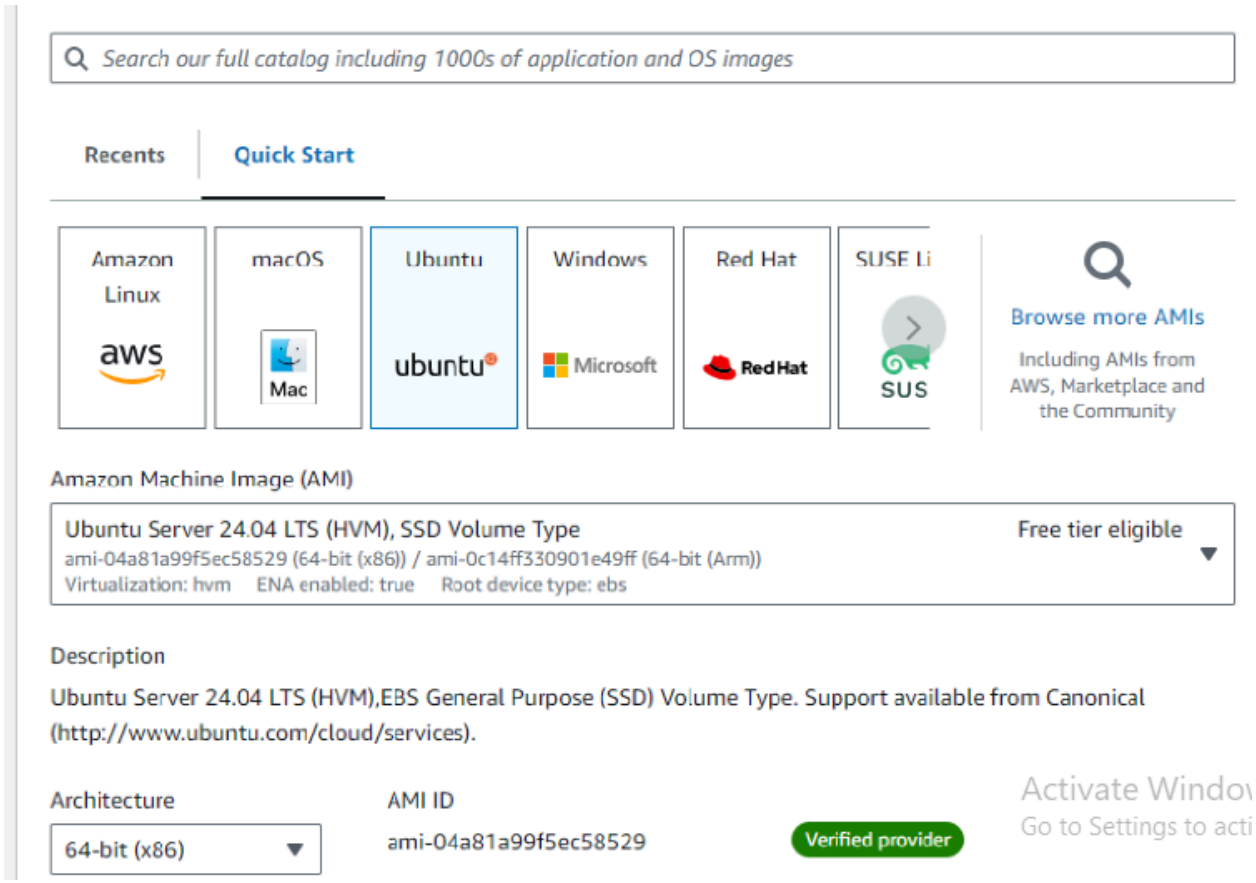

For capabilities similar to AWS Cloud9, explore AWS Toolkits in your own IDE and AWS CloudShell in the AWS Management Console. Learn more
AWS Cloud9
Environments
Environments (1)
Delete
View details
Open in Cloud9
Create environment
My environments
1
Name
Cloud9 IDE
Environment type
Connection
Permission
Owner ARN
Test123
Open
EC2 instance
Secure Shell (SSH)
Owner
arn:aws:sts::554378108602:assumed-role/voclabs/user3402848=PATANKAR_ARYAN_ANIL


File Edit Find View Go Run Tools Window Support
Preview
Run
Share
Go to Anything (Ctrl-P)
Welcome
README.md
Developer Tools
AWS Cloud9
Welcome to your development environment
AWS Cloud9 allows you to write, run, and debug your code with just a browser. You can tour the IDE , write code for AWS Lambda and Amazon API Gateway , share your IDE with others in real time, and much more.
Getting started
Create File
Upload Files...
Clone from GitHub
Toolkit for AWS Cloud9
The AWS Toolkit for Cloud9 is an IDE extension that simplifies accessing and interacting with resources from services such as AWS Lambda, AWS CloudFormation, and AWS API Gateway. With the toolkit, developers can also develop, debug, and deploy applications
bash - "ip-172-31-11-129.
Immediate


File Edit Find View Go Run Tools Window Support
Preview
Run
Share
Go to Anything (Ctrl-P)
Welcome
bash - "ip-172-31-11-1
index.html
[B] /IPLab-02/index.html
/IPLab-02/index.html
Browser
IPLab-02
download (1).jfif
download (1).png
download (2).jfif
download (2).png
download (3).png
download (4).png
download.png
index.html
introduction.mp3
promotional-video.m
style.css
README.md
Services
About Us
Contact
Our Services
Online Retail
Amazon offers a vast selection of products, ranging from electronics to groceries. Our user-friendly platform makes shopping easy and convenient, ensuring that you find exactly what you need with just a few clicks.
15:10 HTML Spaces: 4
bash - "ip-172-31-11-129
Immediate

EC2 INSTANCE :





Configure storage Info

Advanced

1x 8 GiB gp3 Root volume (Not encrypted)

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage

Add new volume

The selected AMI contains more instance store volumes than the instance allows. Only the first 0 instance store volumes from the AMI will be accessible from the instance

Click refresh to view backup information

The tags that you assign determine whether the instance will be backed up by any Data Lifecycle Manager policies.

0 x File systems Edit

Key pair (login) Info

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

Key pair name - *required*

vockey Create new key pair

Instance type Info | Get advice

Instance type

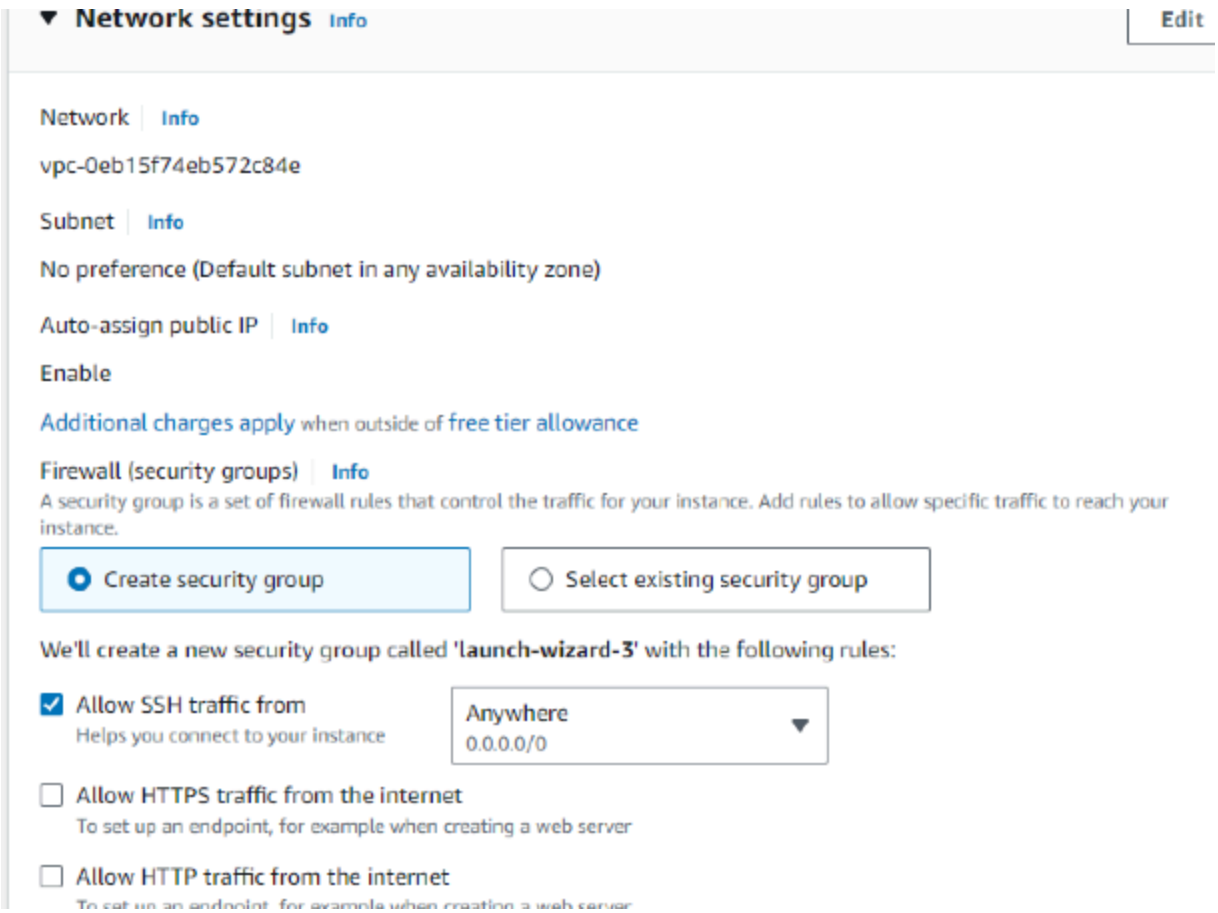
t2.micro Free tier eligible

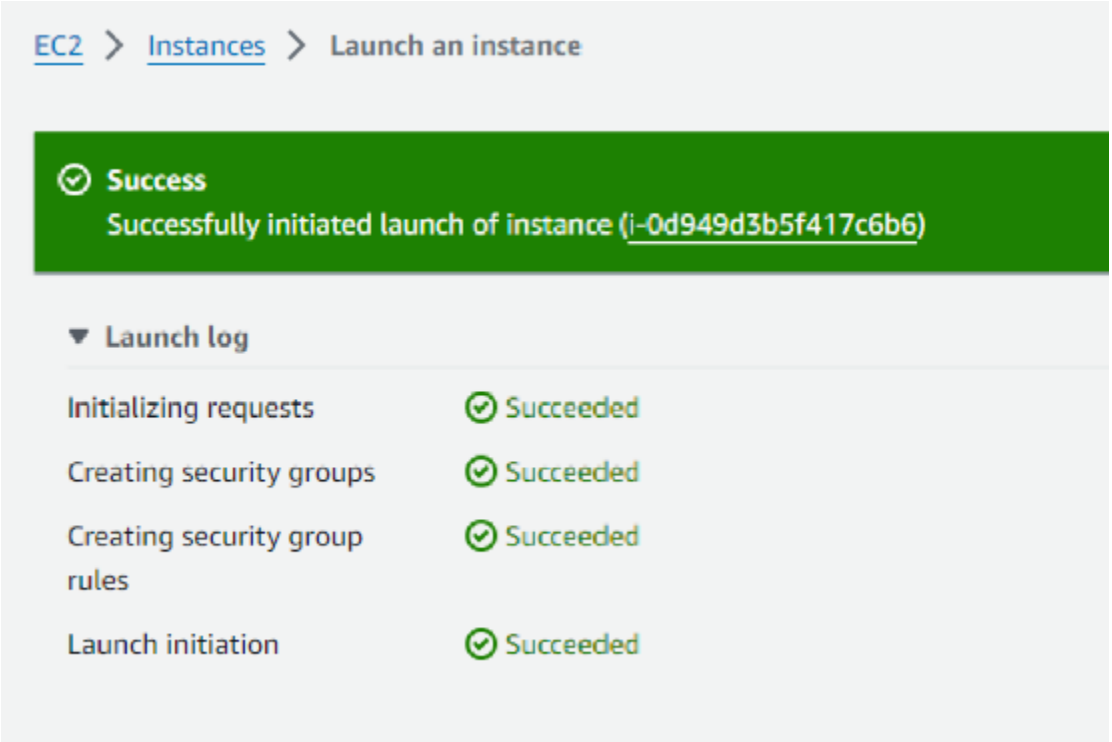
Family: t2 1 vCPU 1 GiB Memory Current generation: true
On-Demand Windows base pricing: 0.0162 USD per Hour
On-Demand SUSE base pricing: 0.0116 USD per Hour
On-Demand RHEL base pricing: 0.026 USD per Hour
On-Demand Linux base pricing: 0.0116 USD per Hour

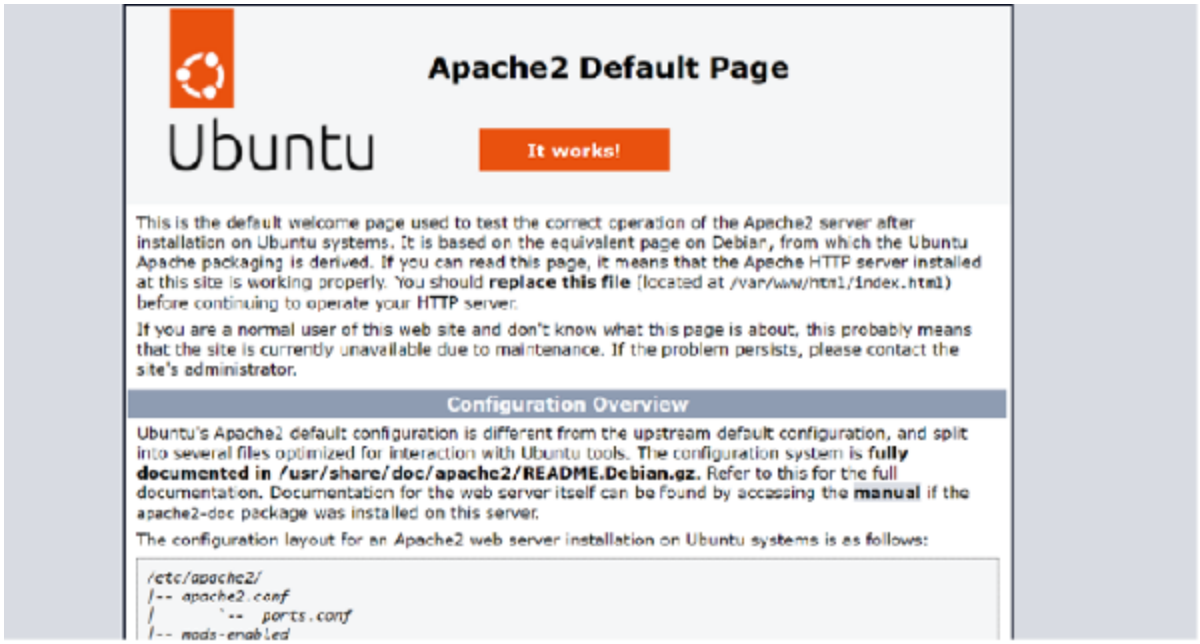
All generations

Compare instance types

Additional costs apply for AMIs with pre-installed software


Network settings Info
Edit
Network Info
vpc-0eb15f74eb572c84e
Subnet Info
No preference (Default subnet in any availability zone)
Auto-assign public IP Info
Enable
Additional charges apply when outside of free tier allowance
Firewall (security groups) Info
A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.
Create security group
Select existing security group
We'll create a new security group called 'launch-wizard-3' with the following rules:
Allow SSH traffic from
Helps you connect to your instance
Anywhere
0.0.0.0/0
Allow HTTPS traffic from the internet
To set up an endpoint, for example when creating a web server
Allow HTTP traffic from the internet


EC2 > Instances > Launch an instance
Success
Successfully initiated launch of instance (i-0d949d3b5f417c6b6)
Launch log
Initializing requests
Succeeded
Creating security groups
Succeeded
Creating security group rules
Succeeded
Launch initiation
Succeeded


Apache2 Default Page
Ubuntu
It works!
This is the default welcome page used to test the correct operation of the Apache2 server after installation on Ubuntu systems. It is based on the equivalent page on Debian, from which the Ubuntu Apache packaging is derived. If you can read this page, it means that the Apache HTTP server installed at this site is working properly. You should replace this file (located at /var/www/html/index.html) before continuing to operate your HTTP server.
If you are a normal user of this web site and don't know what this page is about, this probably means that the site is currently unavailable due to maintenance. If the problem persists, please contact the site's administrator.
Configuration Overview
Ubuntu's Apache2 default configuration is different from the upstream default configuration, and split into several files optimized for interaction with Ubuntu tools. The configuration system is fully documented in /usr/share/doc/apache2/README.Debian.gz. Refer to this for the full documentation. Documentation for the web server itself can be found by accessing the manual if the apache2-doc package was installed on this server.
The configuration layout for an Apache2 web server installation on Ubuntu systems is as follows:
/etc/apache2/
|-- apache2.conf
| `-- ports.conf
|-- mods-enabled

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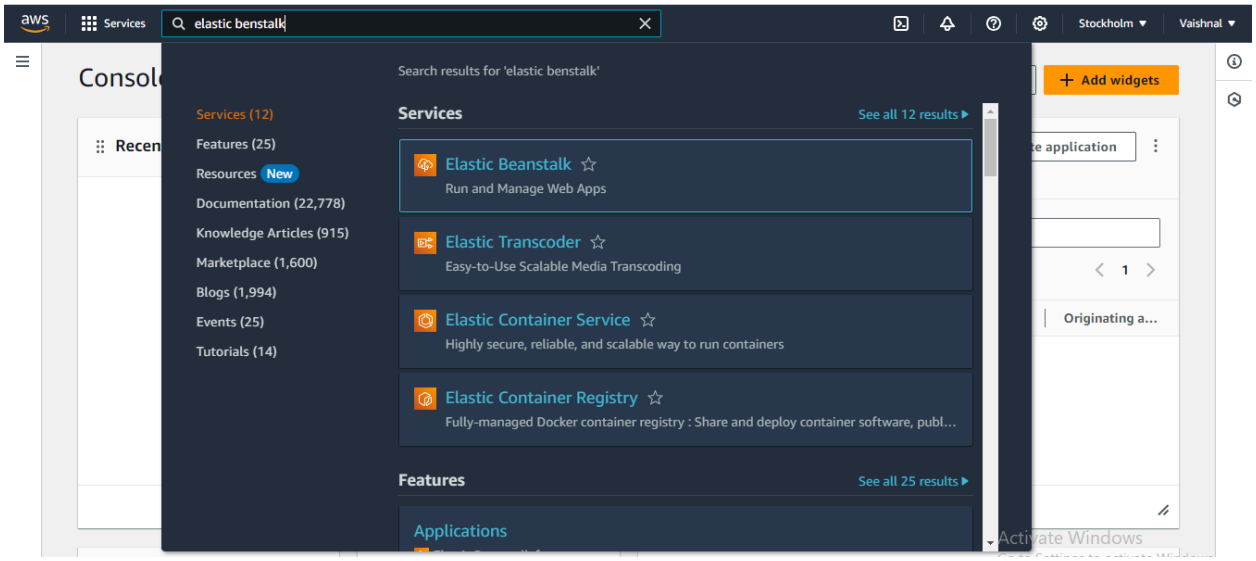
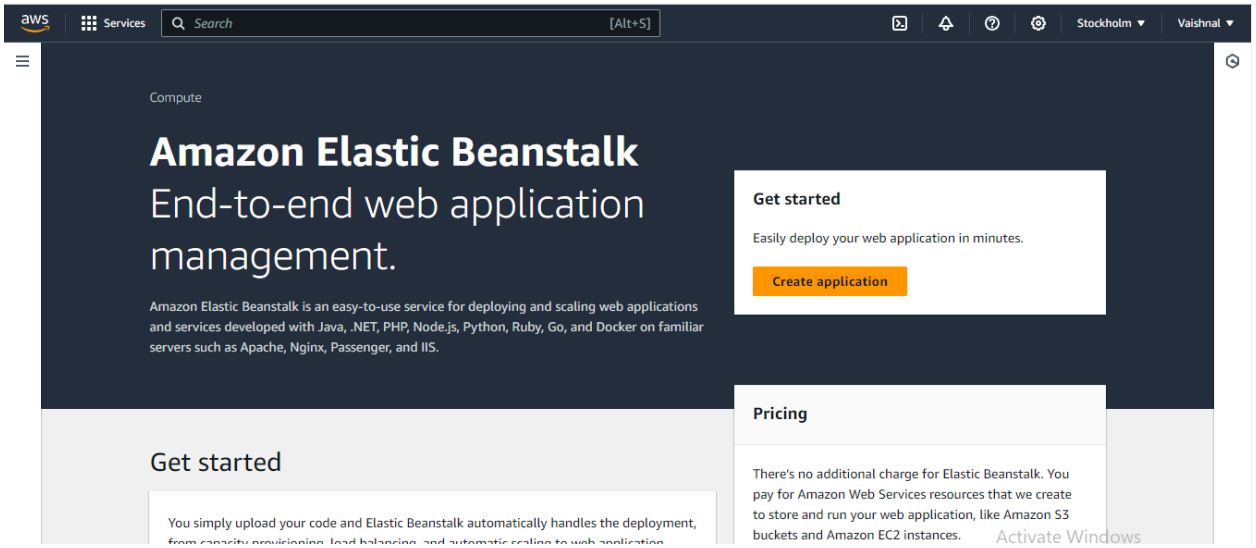
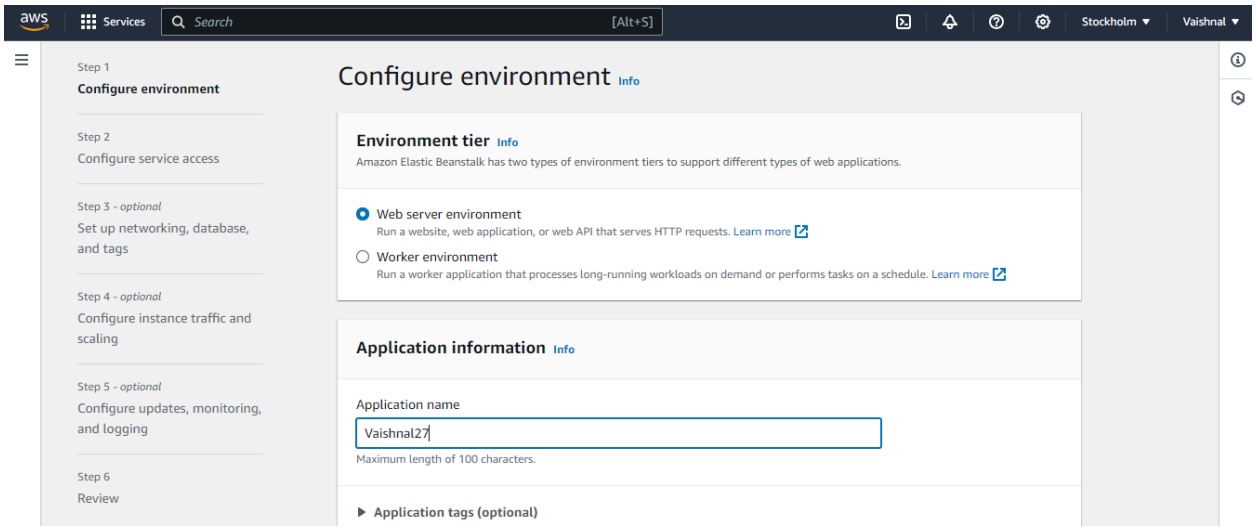
ADVANCED DEV-OPS EXPERIMENT-02

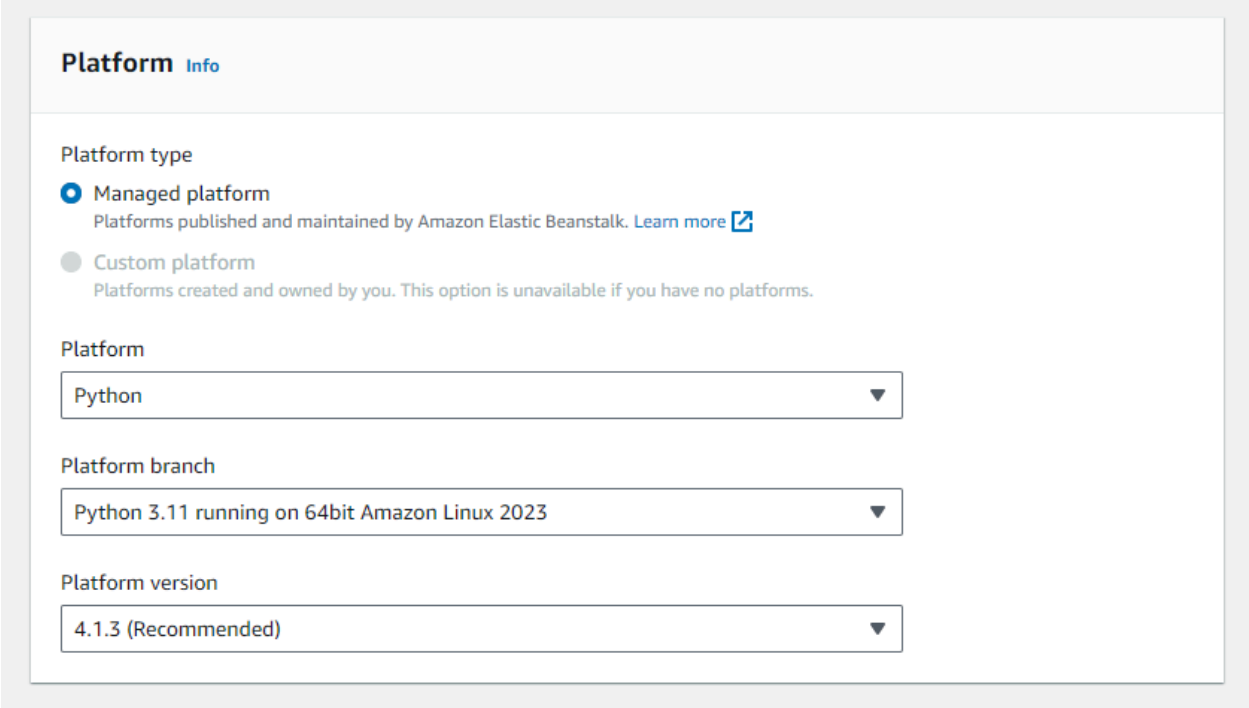
AIM: To Build Your Application using AWS CodeBuild and Deploy on S3 / SEBS using AWS CodePipeline, deploy Sample Application on EC2 instance using AWS CodeDeploy.

Elastic Beanstalk






aws
Services
Search
[Alt+S]
Stockholm
Vaishnal
Step 1
Configure environment
Step 2
Configure service access
Step 3 - optional
Set up networking, database, and tags
Step 4 - optional
Configure instance traffic and scaling
Step 5 - optional
Configure updates, monitoring, and logging
Step 6
Review
Configure environment Info
Environment tier Info
Amazon Elastic Beanstalk has two types of environment tiers to support different types of web applications.
Web server environment
Run a website, web application, or web API that serves HTTP requests. Learn more
Worker environment
Run a worker application that processes long-running workloads on demand or performs tasks on a schedule. Learn more
Application information Info
Application name
Vaishnal27
Maximum length of 100 characters.
Application tags (optional)


Platform Info
Platform type
Managed platform
Platforms published and maintained by Amazon Elastic Beanstalk. Learn more
Custom platform
Platforms created and owned by you. This option is unavailable if you have no platforms.
Platform
Python
Platform branch
Python 3.11 running on 64bit Amazon Linux 2023
Platform version
4.1.3 (Recommended)

Application code Info

- (•) Sample application
- ( ) Existing version
  Application versions that you have uploaded.
- ( ) Upload your code
  Upload a source bundle from your computer or copy one from Amazon S3.

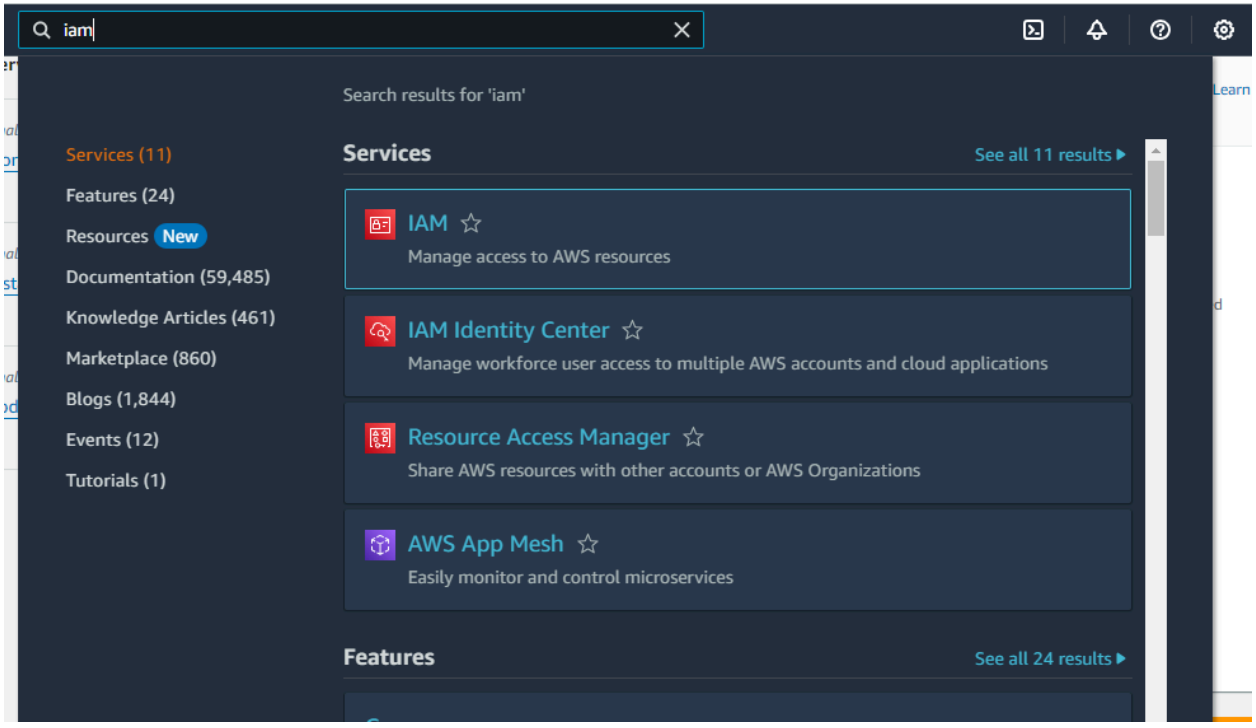
Presets Info

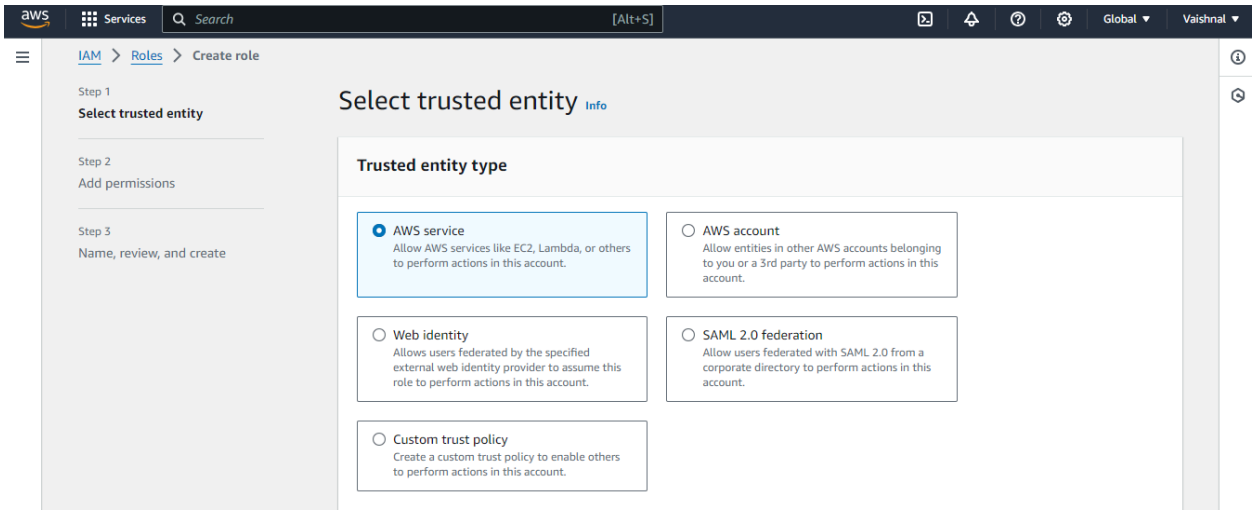
Start from a preset that matches your use case or choose custom configuration to unset recommended values and use the service's default values.

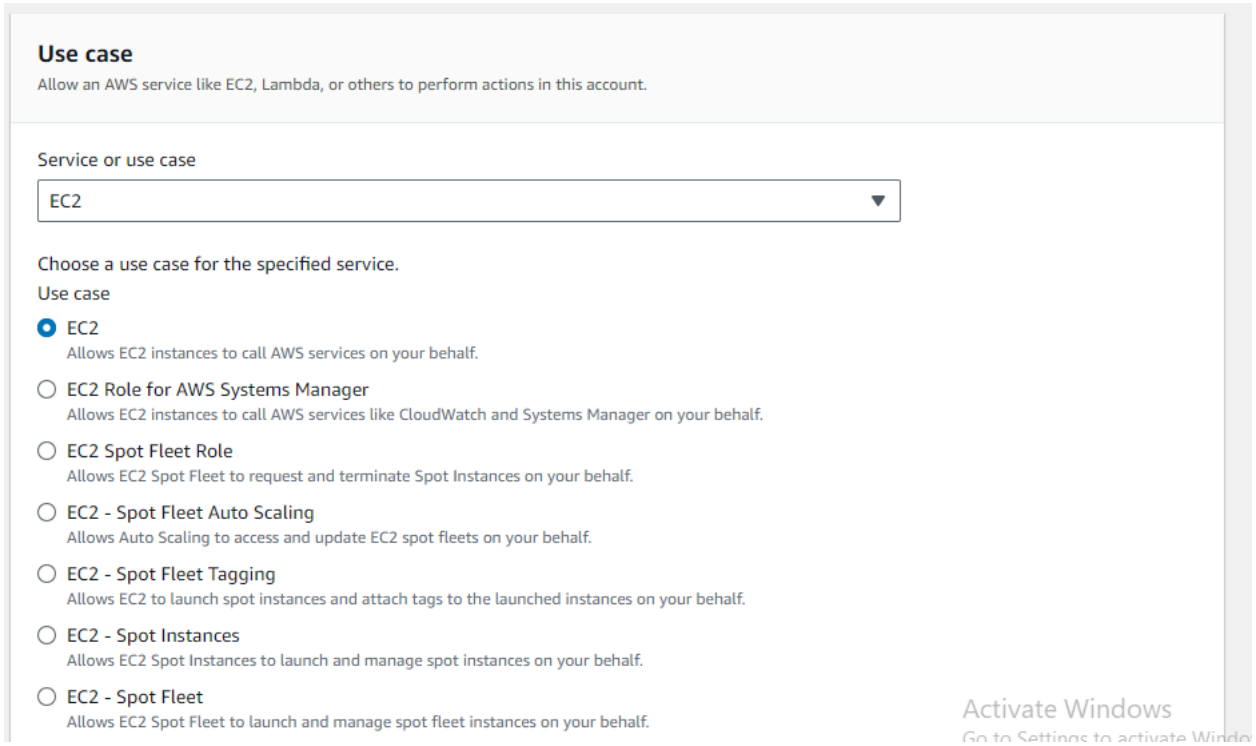
Configuration presets

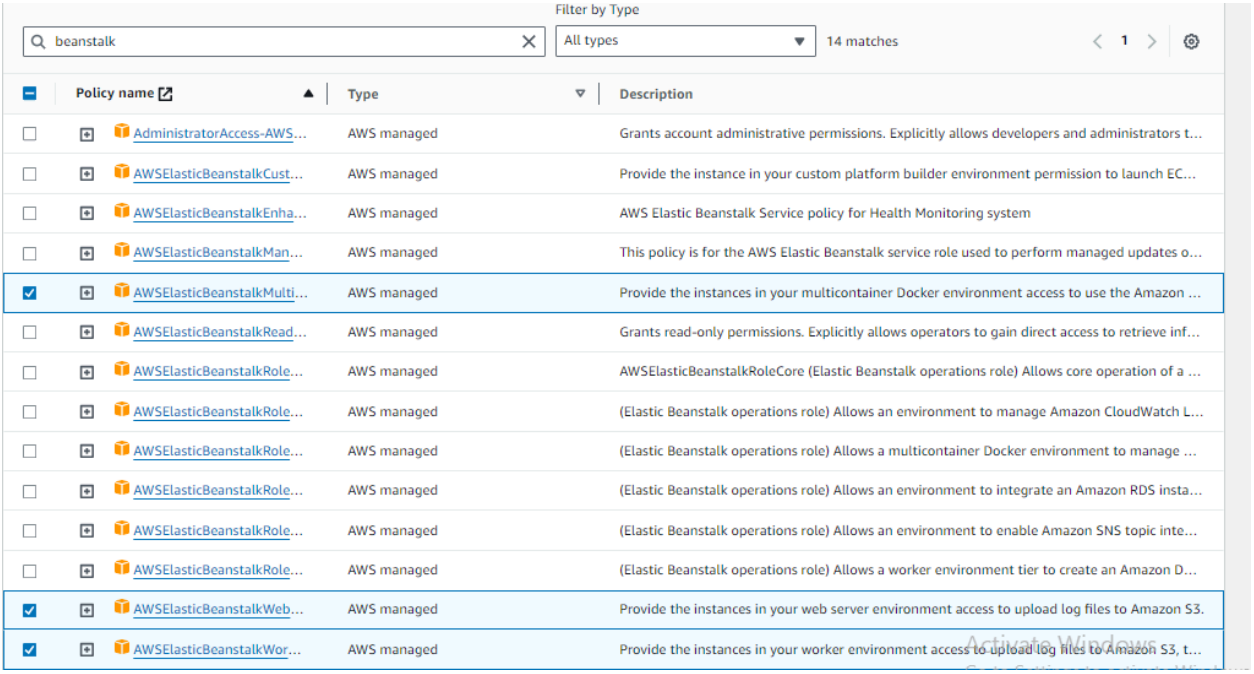
- (•) Single instance (free tier eligible)
- ( ) Single instance (using spot instance)
- ( ) High availability
- ( ) High availability (using spot and on-demand instances)
- ( ) Custom configuration

Cancel Next




aws
Services
Search
[Alt+S]
Global
Vaishnal
IAM
Roles
Create role
Step 1
Select trusted entity
Step 2
Add permissions
Step 3
Name, review, and create
Select trusted entity
Info
Trusted entity type
AWS service
Allow AWS services like EC2, Lambda, or others to perform actions in this account.
AWS account
Allow entities in other AWS accounts belonging to you or a 3rd party to perform actions in this account.
Web identity
Allows users federated by the specified external web identity provider to assume this role to perform actions in this account.
SAML 2.0 federation
Allow users federated with SAML 2.0 from a corporate directory to perform actions in this account.
Custom trust policy
Create a custom trust policy to enable others to perform actions in this account.


Use case
Allow an AWS service like EC2, Lambda, or others to perform actions in this account.
Service or use case
EC2
Choose a use case for the specified service.
Use case
EC2
Allows EC2 instances to call AWS services on your behalf.
EC2 Role for AWS Systems Manager
Allows EC2 instances to call AWS services like CloudWatch and Systems Manager on your behalf.
EC2 Spot Fleet Role
Allows EC2 Spot Fleet to request and terminate Spot Instances on your behalf.
EC2 - Spot Fleet Auto Scaling
Allows Auto Scaling to access and update EC2 spot fleets on your behalf.
EC2 - Spot Fleet Tagging
Allows EC2 to launch spot instances and attach tags to the launched instances on your behalf.
EC2 - Spot Instances
Allows EC2 Spot Instances to launch and manage spot instances on your behalf.
EC2 - Spot Fleet
Allows EC2 Spot Fleet to launch and manage spot fleet instances on your behalf.
Activate Windows



Name, review, and create

Role details

Role name
Enter a meaningful name to identify this role.

aws-elaticbeanstalk-role

Maximum 64 characters. Use alphanumeric and '+=,.@-_' characters.

Description
Add a short explanation for this role.

Allows EC2 instances to call AWS services on your behalf.

Maximum 1000 characters. Use letters (A-Z and a-z), numbers (0-9), tabs, new lines, or any of the following characters: _+=,. @-/\[{}]!#$%^*();:"'`

Service role

- ○ Create and use new service role
- ◉ Use an existing service role

Existing service roles

Choose an existing IAM role for Elastic Beanstalk to assume as a service role. The existing IAM role must have the required IAM managed policies.

EC2 key pair

Select an EC2 key pair to securely log in to your EC2 instances. Learn more

Choose a key pair

EC2 instance profile

Choose an IAM instance profile with managed policies that allow your EC2 instances to perform required operations.

aws-elaticbeanstalk-role

View permission details

Cancel **Skip to review** **Previous** **Next**

Elastic Beanstalk > Environments > Vaishnal27-env

Vaishnal27-env Info

Actions **Upload and deploy**

Environment overview

Health
Pending

Environment ID
e-5gujkvgkpa

Domain
–

Application name
Vaishnal27

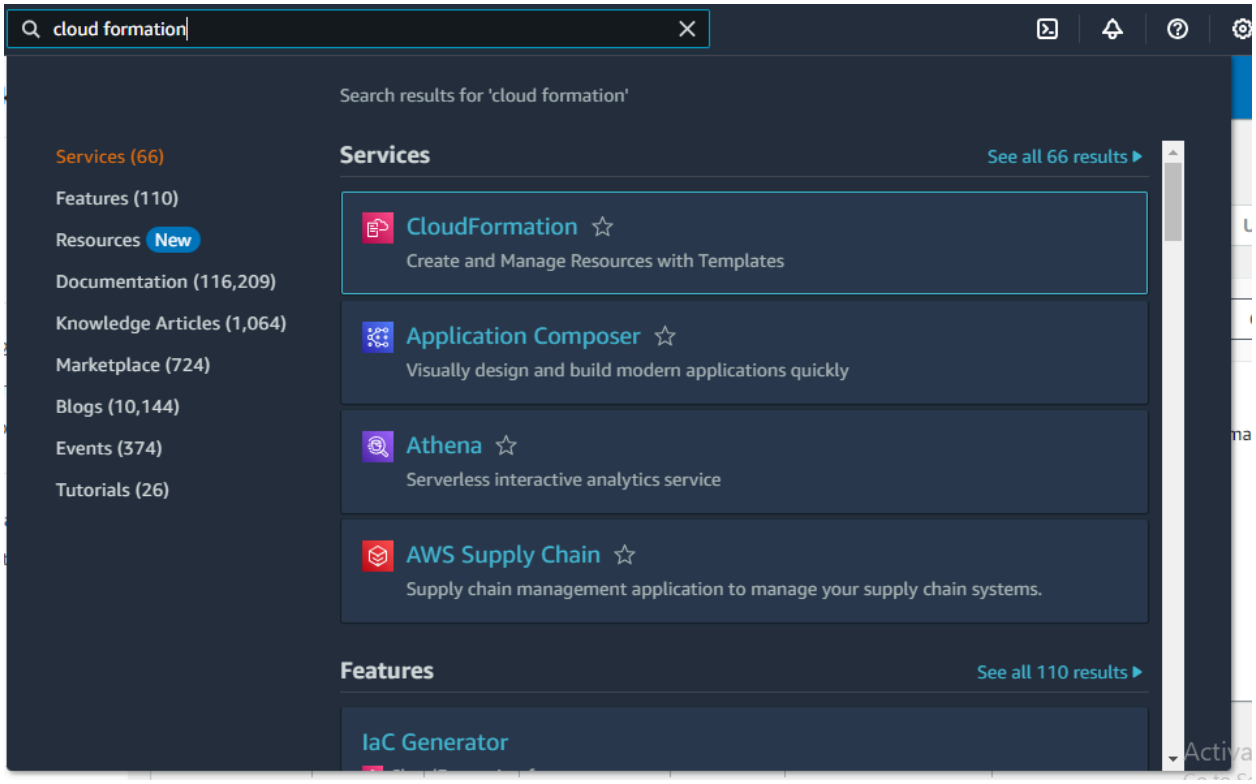
Platform

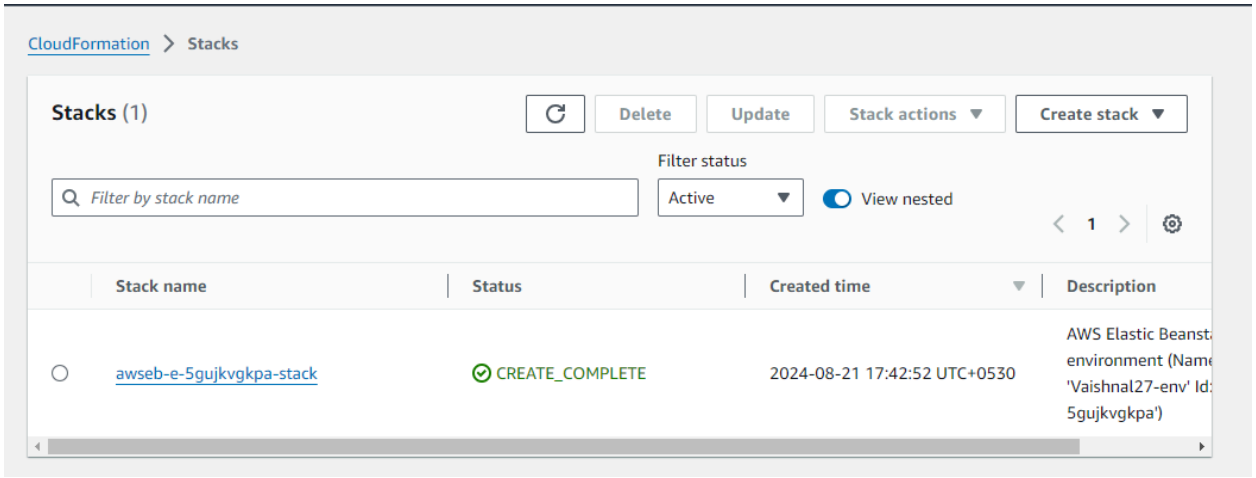
Change version

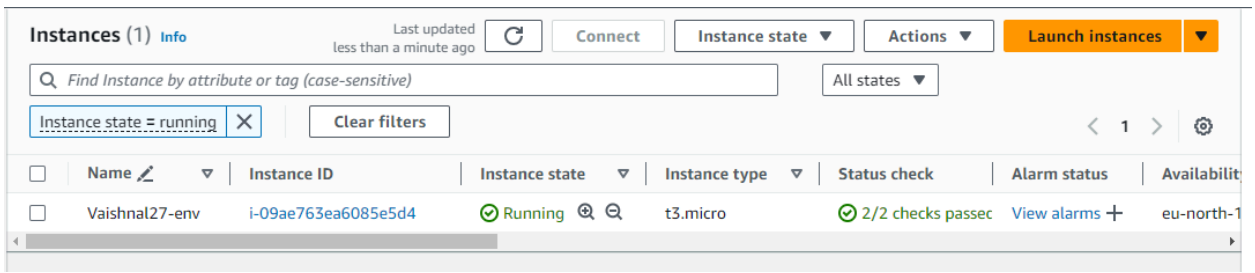
Platform
Python 3.11 running on 64bit Amazon Linux 2023/4.1.3

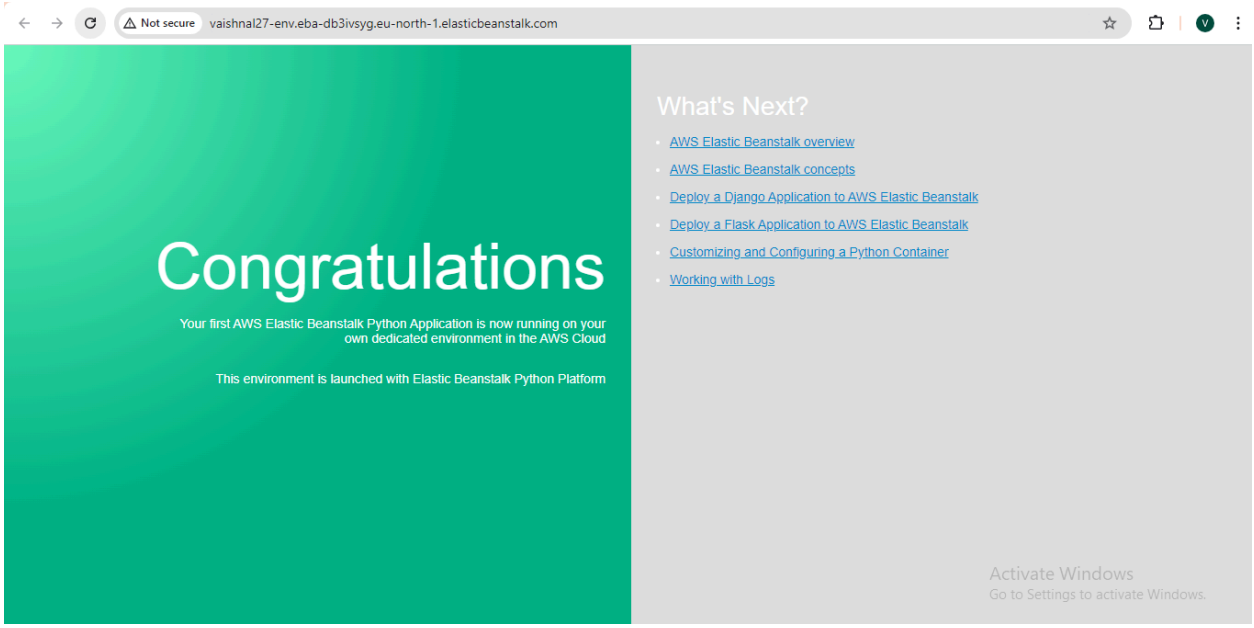
Running version
–

Platform state
Supported

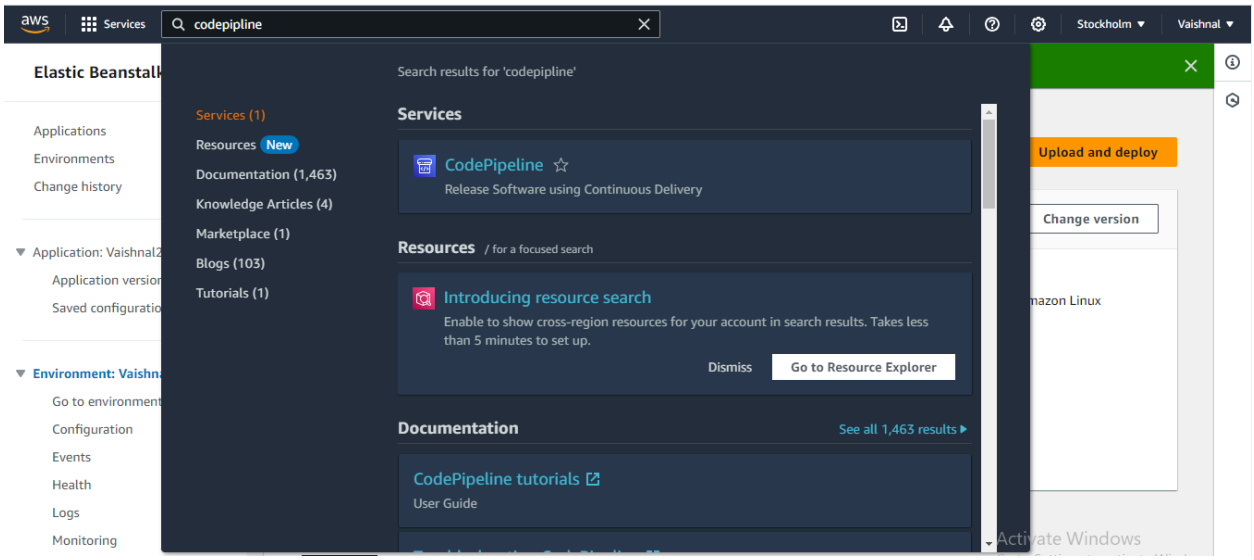

cloud formation
Search results for 'cloud formation'
Services (66)
Features (110)
Resources New
Documentation (116,209)
Knowledge Articles (1,064)
Marketplace (724)
Blogs (10,144)
Events (374)
Tutorials (26)
Services
See all 66 results
CloudFormation
Create and Manage Resources with Templates
Application Composer
Visually design and build modern applications quickly
Athena
Serverless interactive analytics service
AWS Supply Chain
Supply chain management application to manage your supply chain systems.
Features
See all 110 results
IaC Generator

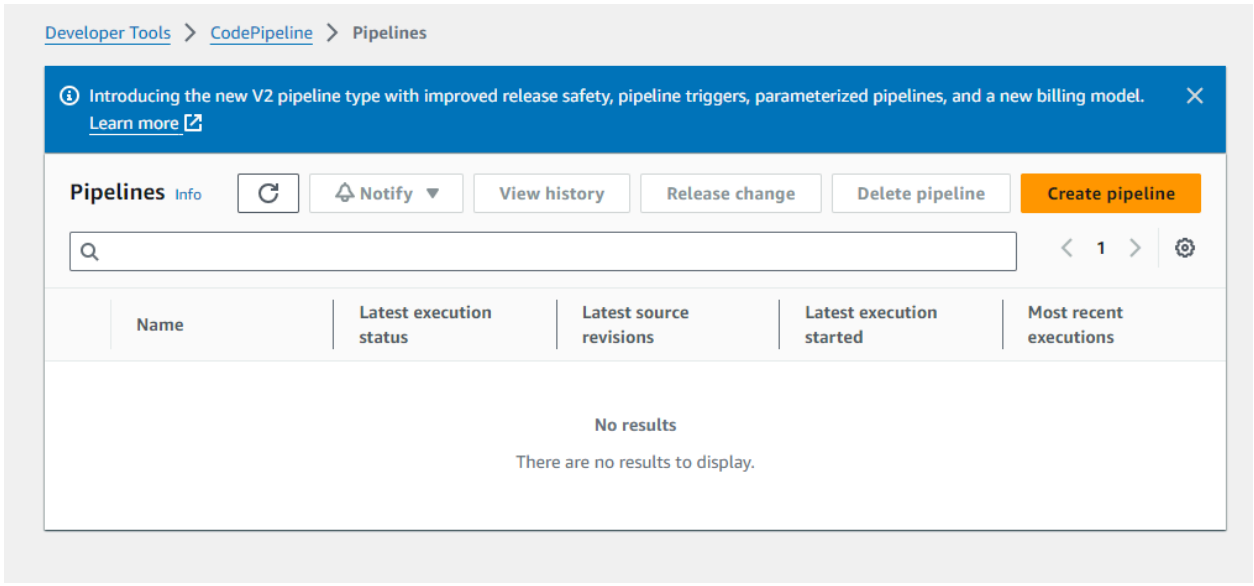

CloudFormation
Stacks
Stacks (1)
Delete
Update
Stack actions
Create stack
Filter status
Filter by stack name
Active
View nested
Stack name
Status
Created time
Description
awseb-e-5gujkvgkpa-stack
CREATE_COMPLETE
2024-08-21 17:42:52 UTC+0530

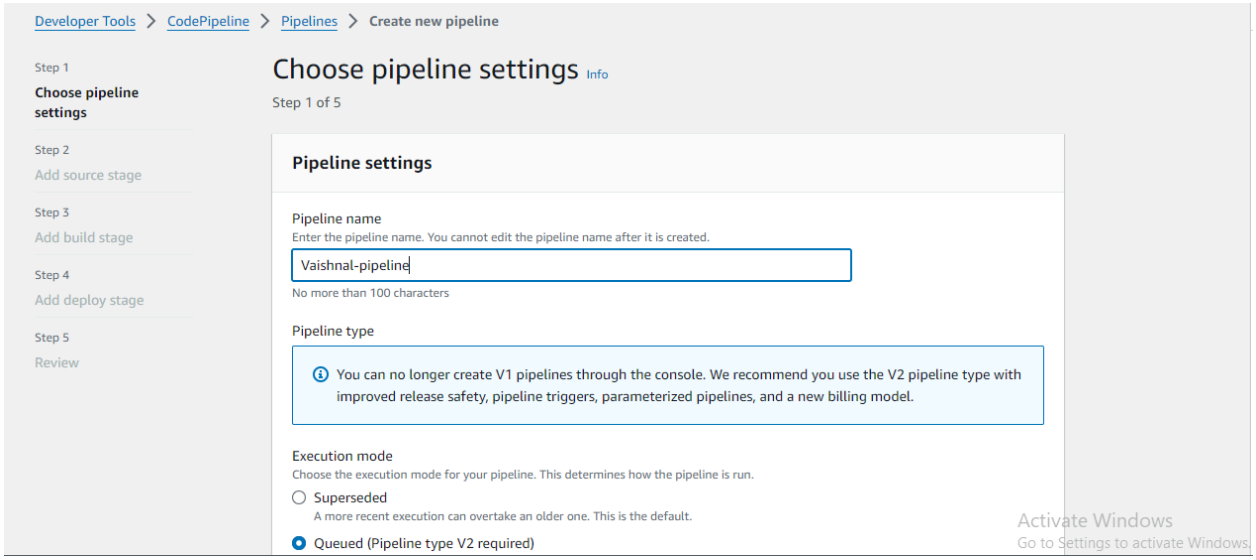

Instances (1) Info
Last updated
less than a minute ago
Connect
Instance state
Actions
Launch instances
Find Instance by attribute or tag (case-sensitive)
All states
Instance state = running
Clear filters
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Vaishnal27-env
i-09ae763ea6085e5d4
Running
t3.micro
2/2 checks passed
View alarms

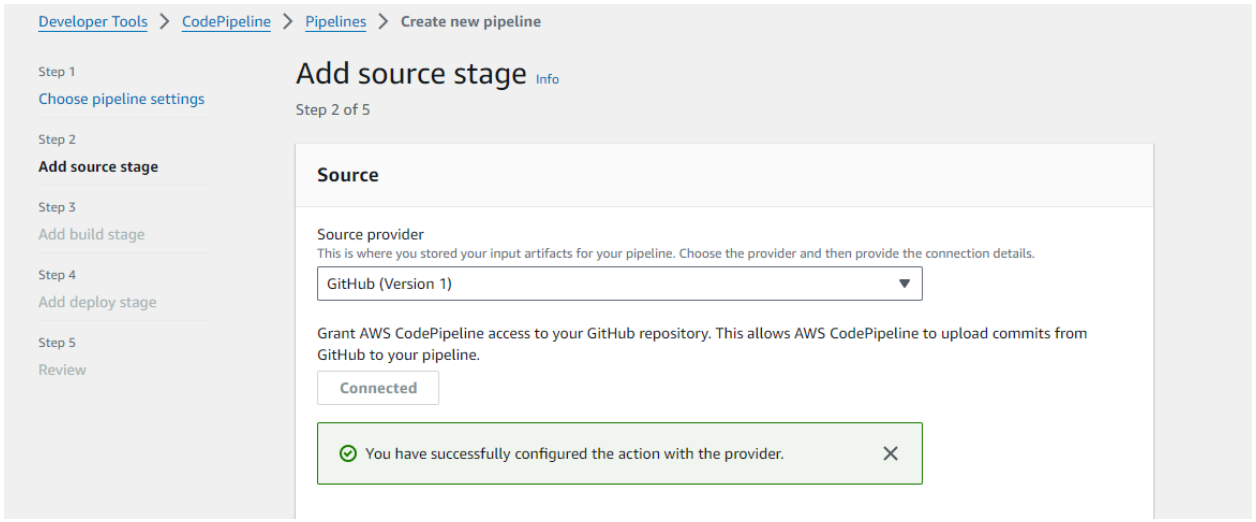

Not secure
vaishnal27-env.eba-db3ivsyg.eu-north-1.elasticbeanstalk.com
Congratulations
Your first AWS Elastic Beanstalk Python Application is now running on your own dedicated environment in the AWS Cloud
This environment is launched with Elastic Beanstalk Python Platform
What's Next?
AWS Elastic Beanstalk overview
AWS Elastic Beanstalk concepts
Deploy a Django Application to AWS Elastic Beanstalk
Deploy a Flask Application to AWS Elastic Beanstalk
Customizing and Configuring a Python Container
Working with Logs
Activate Windows
Go to Settings to activate Windows.

Code Deployment using Codepipeline






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
Choose pipeline settings Info
Step 1 of 5
Pipeline settings
Pipeline name
Enter the pipeline name. You cannot edit the pipeline name after it is created.
Vaishnal-pipeline
No more than 100 characters
Pipeline type
You can no longer create V1 pipelines through the console. We recommend you use the V2 pipeline type with improved release safety, pipeline triggers, parameterized pipelines, and a new billing model.
Execution mode
Choose the execution mode for your pipeline. This determines how the pipeline is run.
Superseded
A more recent execution can overtake an older one. This is the default.
Queued (Pipeline type V2 required)
Activate Windows
Go to Settings to activate Windows.


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 source stage Info
Step 2 of 5
Source
Source provider
This is where you stored your input artifacts for your pipeline. Choose the provider and then provide the connection details.
GitHub (Version 1)
Grant AWS CodePipeline access to your GitHub repository. This allows AWS CodePipeline to upload commits from GitHub to your pipeline.
Connected
You have successfully configured the action with the provider.

Repository

vaishnal16/IP-lab-Exp-2

Branch

main

main

Choose a detection mode to automatically start your pipeline when a change occurs in the source code.

GitHub webhooks (recommended)
Use webhooks in GitHub to automatically start my pipeline when a change occurs

AWS CodePipeline
Use AWS CodePipeline to check periodically for changes

Cancel | Previous | Next

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 build stage Info

Step 3 of 5

Build - *optional*

Build provider
This is the tool of your build project. Provide build artifact details like operating system, build spec file, and output file names.

Cancel | Previous | Skip build stage | Next

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

Step 4 of 5

You cannot skip this stage
Pipelines must have at least two stages. Your second stage must be either a build or deployment stage. Choose a provider for either the build stage or deployment stage.

Deploy

Deploy provider
Choose how you deploy to instances. Choose the provider, and then provide the configuration details for that provider.

AWS Elastic Beanstalk

Region

Europe (Stockholm)

Application name

Choose an application that you have already created in the AWS Elastic Beanstalk console. Or create an application in the AWS Elastic Beanstalk console and then return to this task.

Vaishnal27

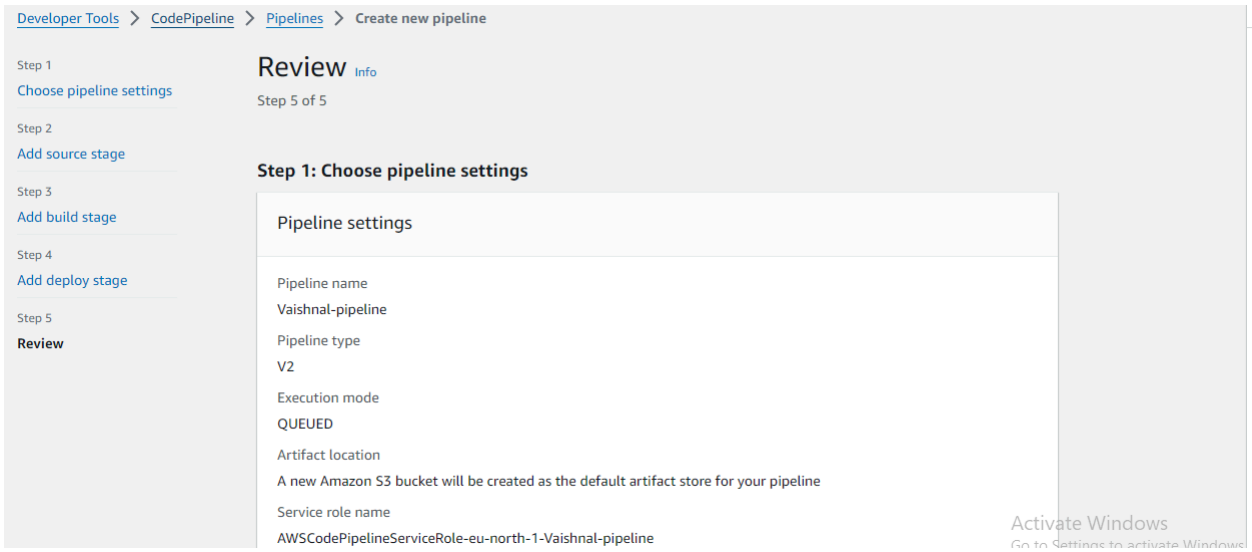
Environment name

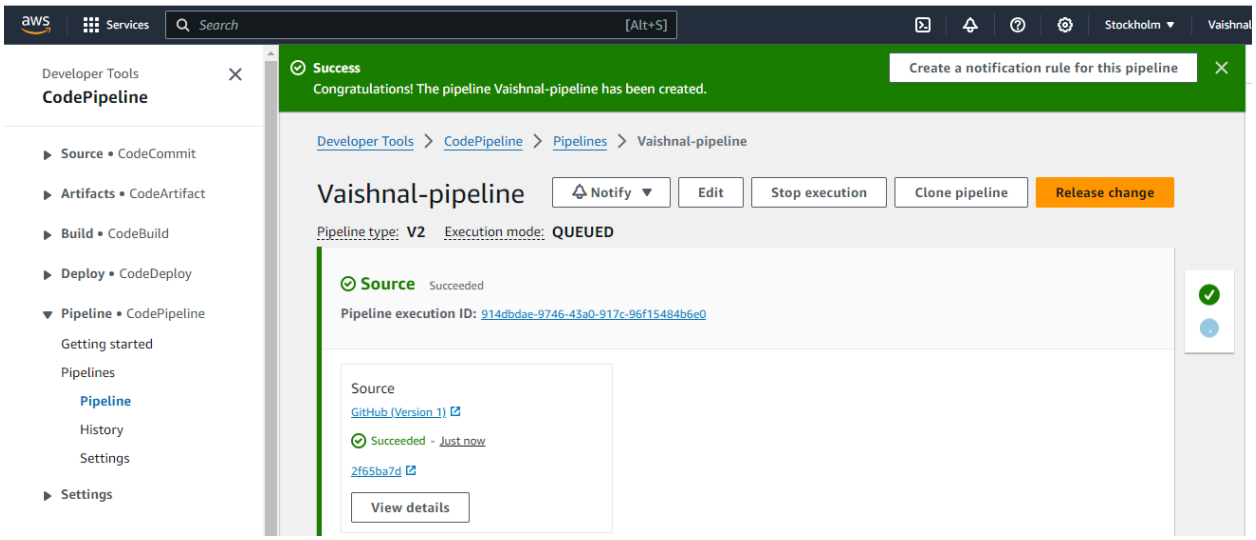
Choose an environment that you have already created in the AWS Elastic Beanstalk console. Or create an environment in the AWS Elastic Beanstalk console and then return to this task.

Vaishnal27-env

Vaishnal27-env

Cancel Previous Next




aws
Services
Search
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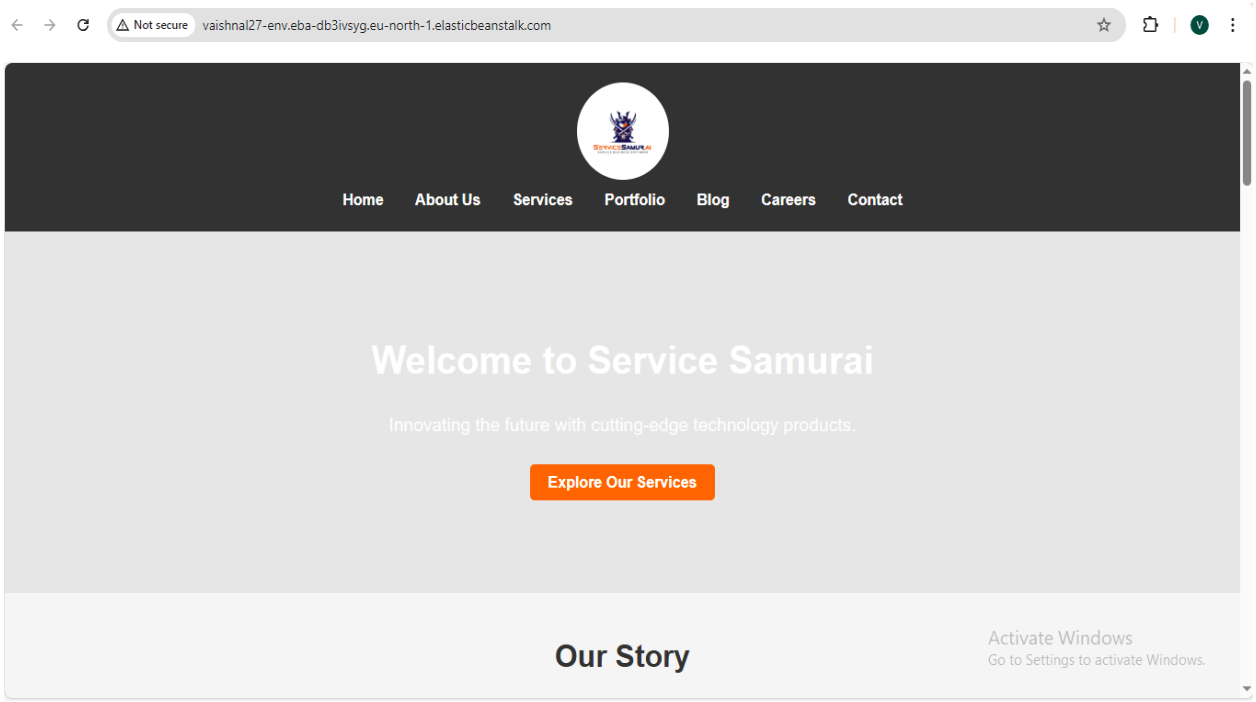
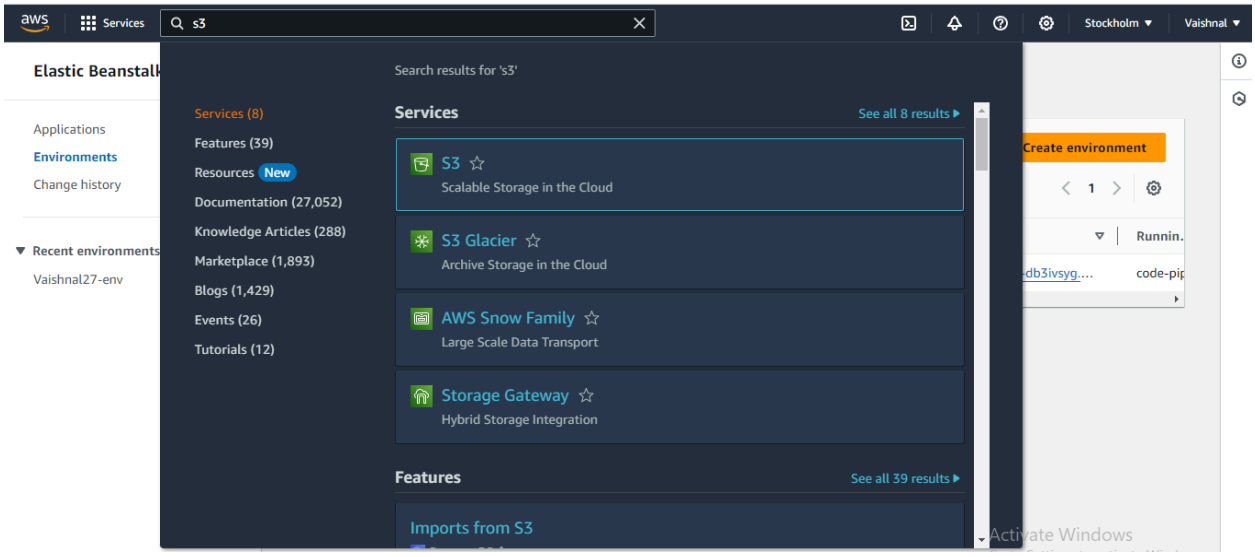
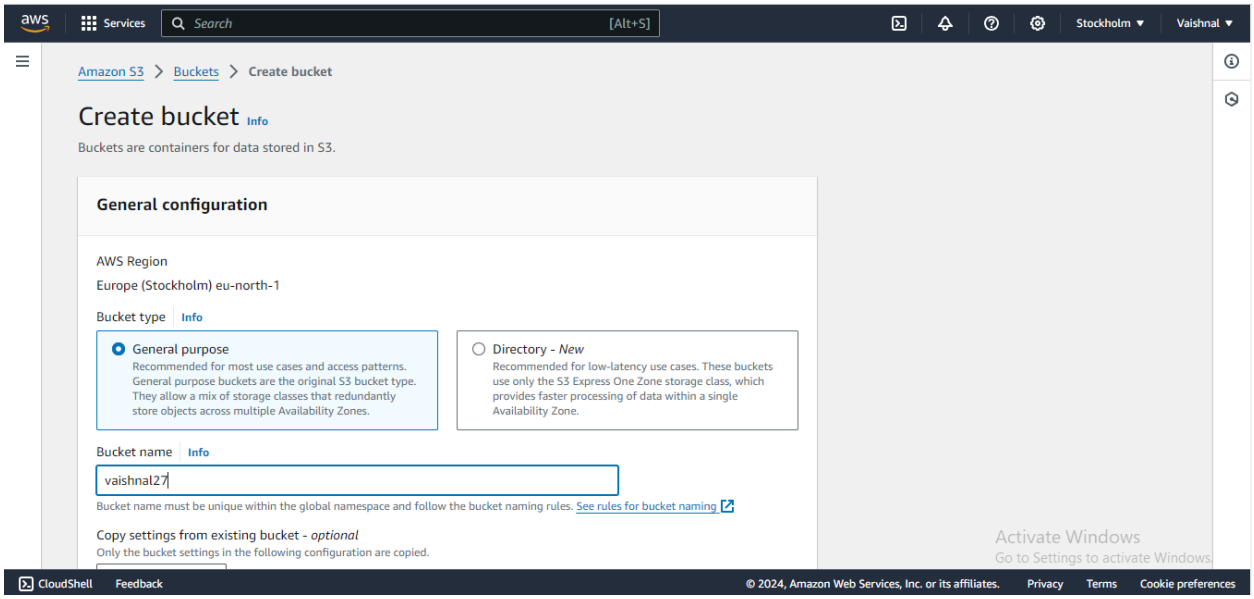
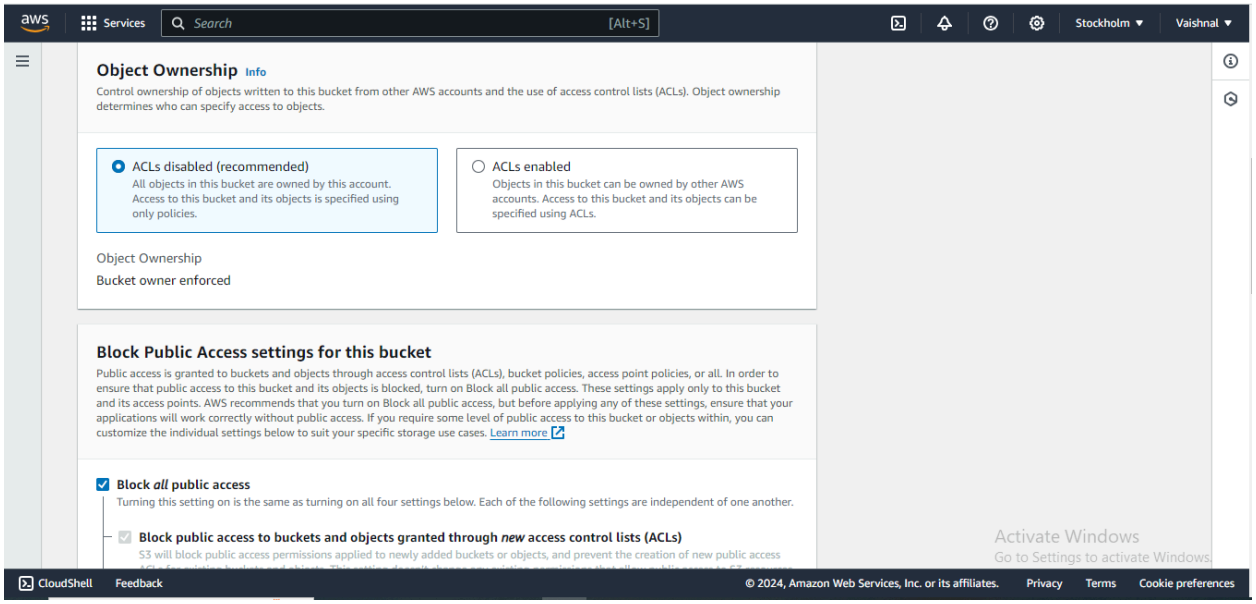
Stockholm
Developer Tools
CodePipeline
Source • CodeCommit
Artifacts • CodeArtifact
Build • CodeBuild
Deploy • CodeDeploy
Pipeline • CodePipeline
Getting started
Pipelines
Pipeline
History
Settings
Settings
Success
Congratulations! The pipeline Vaishnal-pipeline has been created.
Create a notification rule for this pipeline
Developer Tools > CodePipeline > Pipelines > Vaishnal-pipeline
Vaishnal-pipeline
Notify
Edit
Stop execution
Clone pipeline
Release change
Pipeline type: V2
Execution mode: QUEUED
Source
Succeeded
Pipeline execution ID: 914dbdae-9746-43a0-917c-96f15484b6e0
Source
GitHub (Version 1)
Succeeded - Just now
2f65ba7d
View details


Not secure
vaishnal27-env.eba-db3ivsyg.eu-north-1.elasticbeanstalk.com
Home
About Us
Services
Portfolio
Blog
Careers
Contact
Welcome to Service Samurai
Innovating the future with cutting-edge technology products.
Explore Our Services
Our Story
Activate Windows
Go to Settings to activate Windows.

Code Deployment Using S3 Bucket :






aws
Services
Search
[Alt+S]
Stockholm
Vaishnal
Object Ownership Info
Control ownership of objects written to this bucket from other AWS accounts and the use of access control lists (ACLs). Object ownership determines who can specify access to objects.
ACLs disabled (recommended)
All objects in this bucket are owned by this account. Access to this bucket and its objects is specified using only policies.
ACLs enabled
Objects in this bucket can be owned by other AWS accounts. Access to this bucket and its objects can be specified using ACLs.
Object Ownership
Bucket owner enforced
Block Public Access settings for this bucket
Public access is granted to buckets and objects through access control lists (ACLs), bucket policies, access point policies, or all. In order to ensure that public access to this bucket and its objects is blocked, turn on Block all public access. These settings apply only to this bucket and its access points. AWS recommends that you turn on Block all public access, but before applying any of these settings, ensure that your applications will work correctly without public access. If you require some level of public access to this bucket or objects within, you can customize the individual settings below to suit your specific storage use cases. Learn more
Block all public access
Turning this setting on is the same as turning on all four settings below. Each of the following settings are independent of one another.
Block public access to buckets and objects granted through new access control lists (ACLs)
S3 will block public access permissions applied to newly added buckets or objects, and prevent the creation of new public access
Activate Windows
Go to Settings to activate Windows.
CloudShell
Feedback
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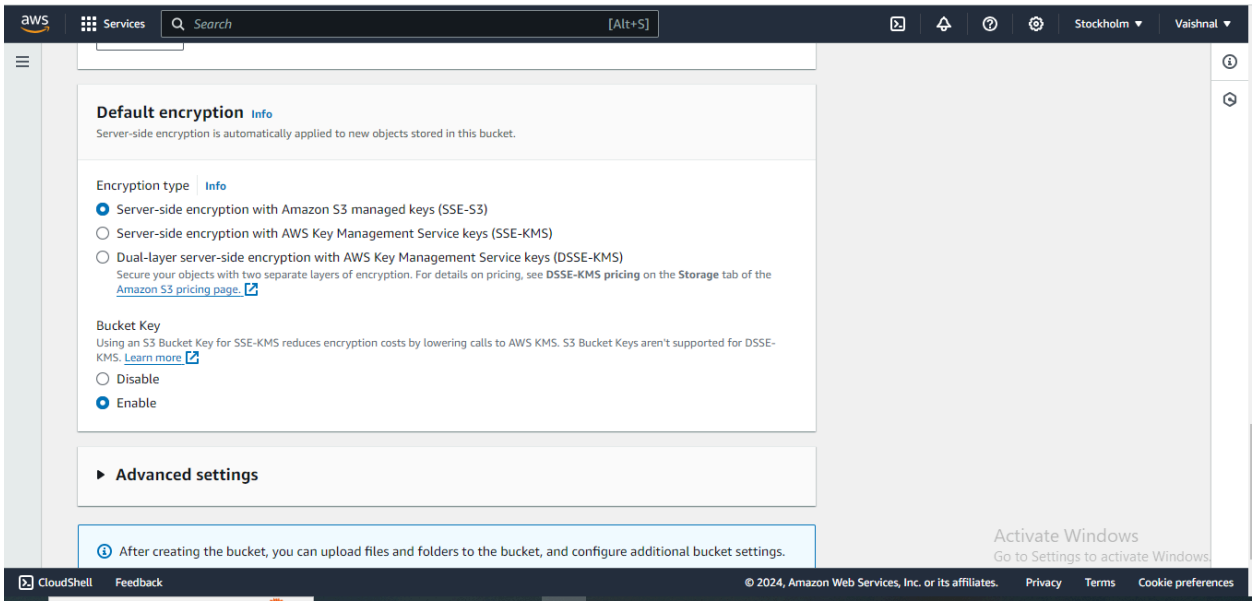
aws
Services
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Stockholm
Vaishnal
Default encryption Info
Server-side encryption is automatically applied to new objects stored in this bucket.
Encryption type Info
Server-side encryption with Amazon S3 managed keys (SSE-S3)
Server-side encryption with AWS Key Management Service keys (SSE-KMS)
Dual-layer server-side encryption with AWS Key Management Service keys (DSSE-KMS)
Secure your objects with two separate layers of encryption. For details on pricing, see DSSE-KMS pricing on the Storage tab of the Amazon S3 pricing page.
Bucket Key
Using an S3 Bucket Key for SSE-KMS reduces encryption costs by lowering calls to AWS KMS. S3 Bucket Keys aren't supported for DSSE-KMS. Learn more
Disable
Enable
Advanced settings
After creating the bucket, you can upload files and folders to the bucket, and configure additional bucket settings.
Activate Windows
Go to Settings to activate Windows.
CloudShell
Feedback
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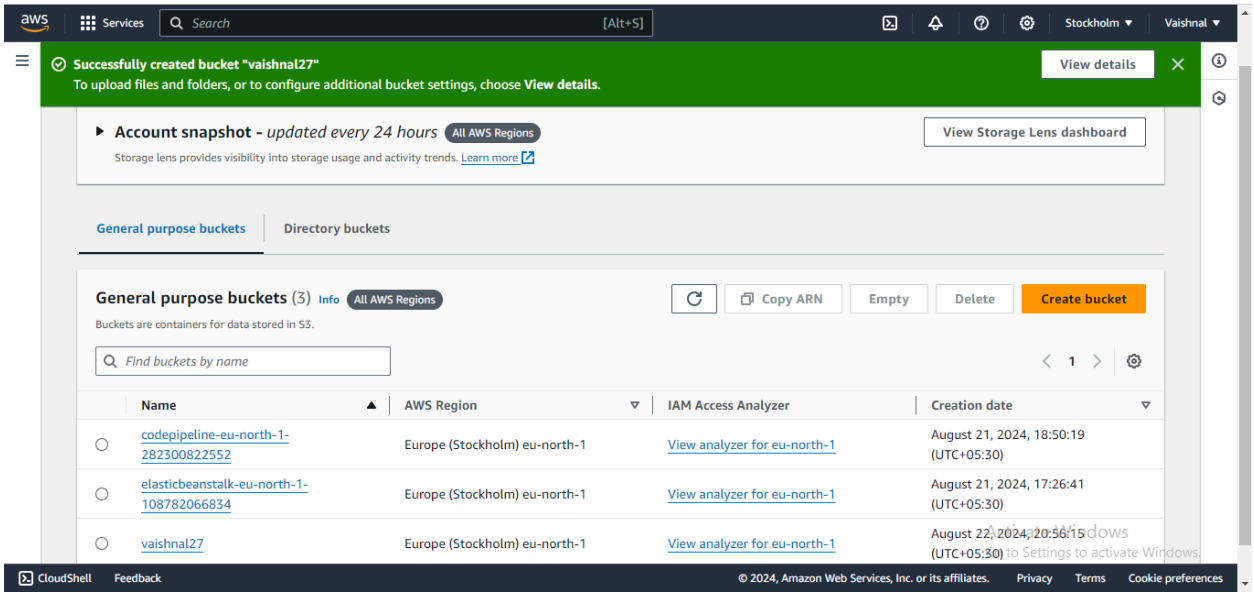
Cookie preferences


Services
Search
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Stockholm
Vaishnal
Successfully created bucket "vaishnal27"
To upload files and folders, or to configure additional bucket settings, choose View details.
View details
Account snapshot - updated every 24 hours
All AWS Regions
Storage lens provides visibility into storage usage and activity trends. Learn more
View Storage Lens dashboard
General purpose buckets
Directory buckets
General purpose buckets (3) Info
All AWS Regions
Buckets are containers for data stored in S3.
Copy ARN
Empty
Delete
Create bucket
Find buckets by name
Name
AWS Region
IAM Access Analyzer
Creation date
codepipeline-eu-north-1-282300822552
Europe (Stockholm) eu-north-1
View analyzer for eu-north-1
August 21, 2024, 18:50:19 (UTC+05:30)
elasticbeanstalk-eu-north-1-108782066834
Europe (Stockholm) eu-north-1
View analyzer for eu-north-1
August 21, 2024, 17:26:41 (UTC+05:30)
vaishnal27
Europe (Stockholm) eu-north-1
View analyzer for eu-north-1
August 22, 2024, 20:36:15 (UTC+05:30)
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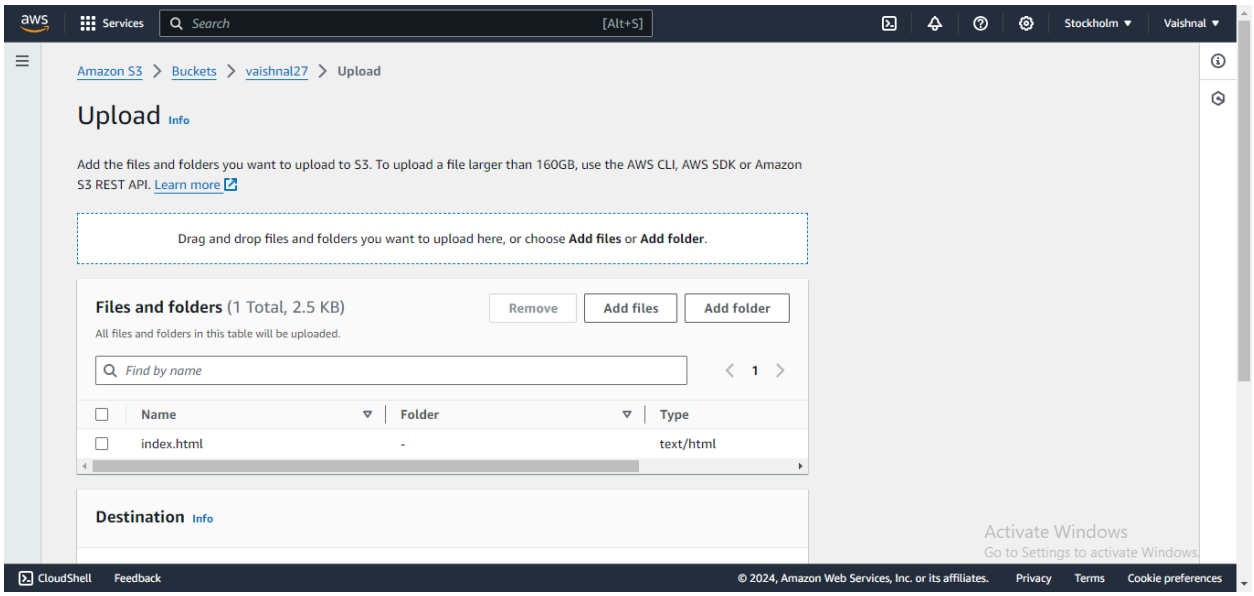
Services
Search
[Alt+S]
Stockholm
Vaishnal
Amazon S3 > Buckets > vaishnal27 > Upload
Upload Info
Add the files and folders you want to upload to S3. To upload a file larger than 160GB, use the AWS CLI, AWS SDK or Amazon S3 REST API. Learn more
Drag and drop files and folders you want to upload here, or choose Add files or Add folder.
Files and folders (1 Total, 2.5 KB)
Remove
Add files
Add folder
All files and folders in this table will be uploaded.
Find by name
Name
Folder
Type
index.html
-
text/html
Destination Info
CloudShell
Feedback
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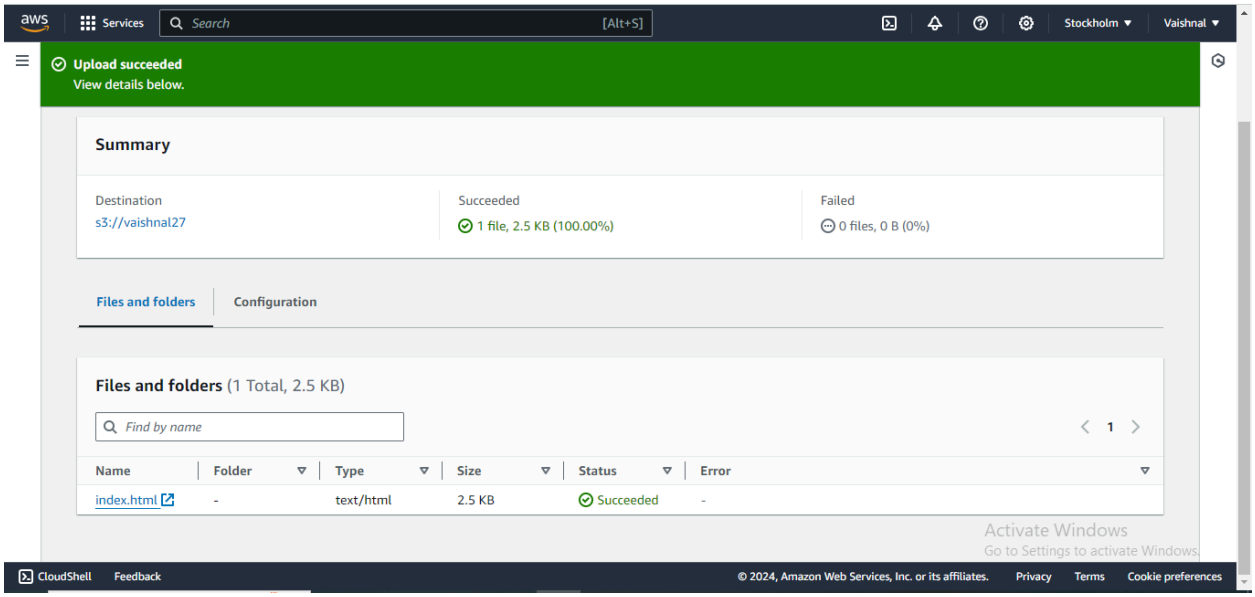
Services
Search
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Stockholm
Vaishnal
Upload succeeded
View details below.
Summary
Destination
s3://vaishnal27
Succeeded
1 file, 2.5 KB (100.00%)
Failed
0 files, 0 B (0%)
Files and folders
Configuration
Files and folders (1 Total, 2.5 KB)
Find by name
Name
Folder
Type
Size
Status
Error
index.html
-
text/html
2.5 KB
Succeeded
-
Activate Windows
Go to Settings to activate Windows.
CloudShell
Feedback
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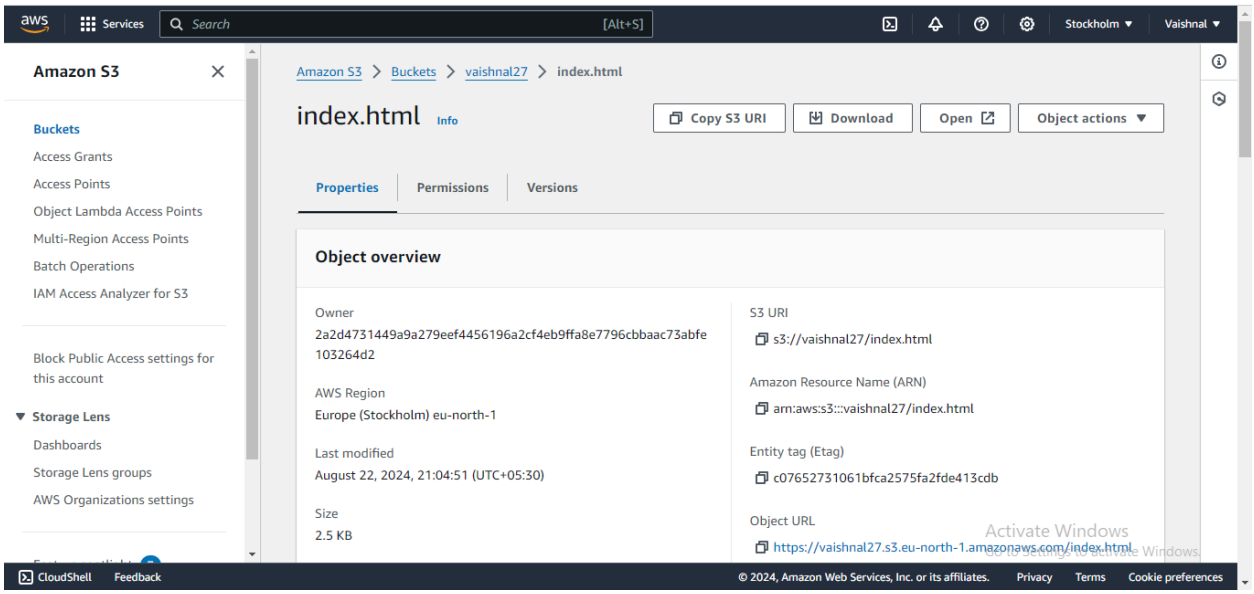
Services
Search
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Stockholm
Vaishnal
Amazon S3
Buckets
Access Grants
Access Points
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
IAM Access Analyzer for S3
Block Public Access settings for this account
Storage Lens
Dashboards
Storage Lens groups
AWS Organizations settings
Amazon S3 > Buckets > vaishnal27 > index.html
index.html
Info
Copy S3 URI
Download
Open
Object actions
Properties
Permissions
Versions
Object overview
Owner
2a2d4731449a9a279eef4456196a2cf4eb9ffa8e7796cbbaac73abfe103264d2
AWS Region
Europe (Stockholm) eu-north-1
Last modified
August 22, 2024, 21:04:51 (UTC+05:30)
Size
2.5 KB
S3 URI
s3://vaishnal27/index.html
Amazon Resource Name (ARN)
arn:aws:s3:::vaishnal27/index.html
Entity tag (Etag)
c07652731061bfca2575fa2fde413cdb
Object URL
https://vaishnal27.s3.eu-north-1.amazonaws.com/index.html
Activate Windows
CloudShell
Feedback
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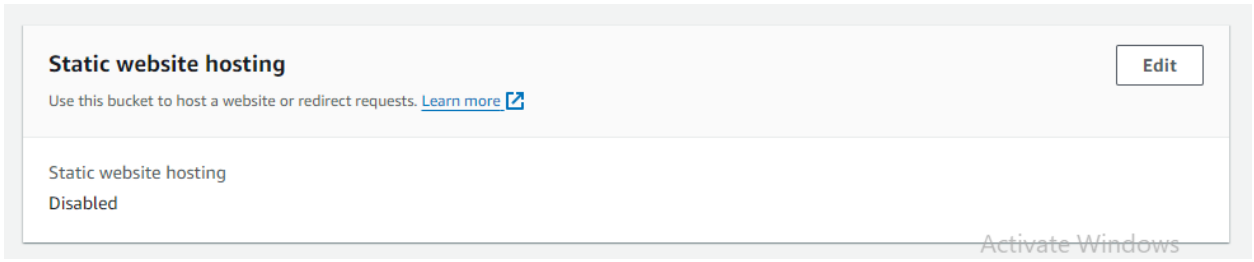
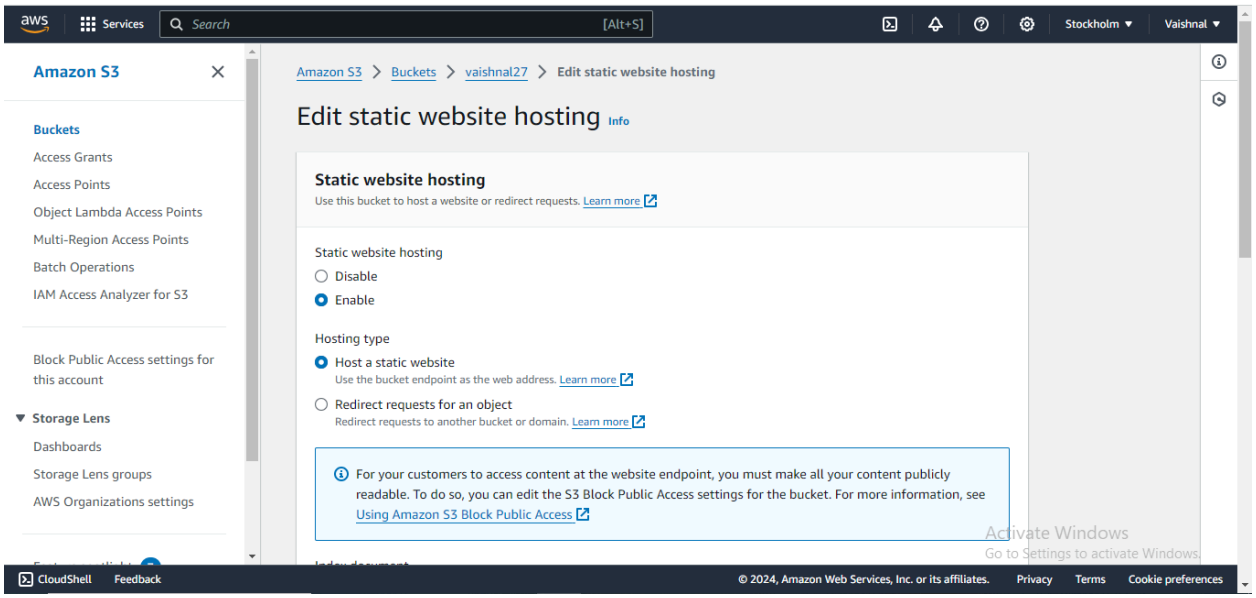

Static website hosting
Edit
Use this bucket to host a website or redirect requests. Learn more
Static website hosting
Disabled
Activate Windows



Index document

Specify the home or default page of the website.

index.html

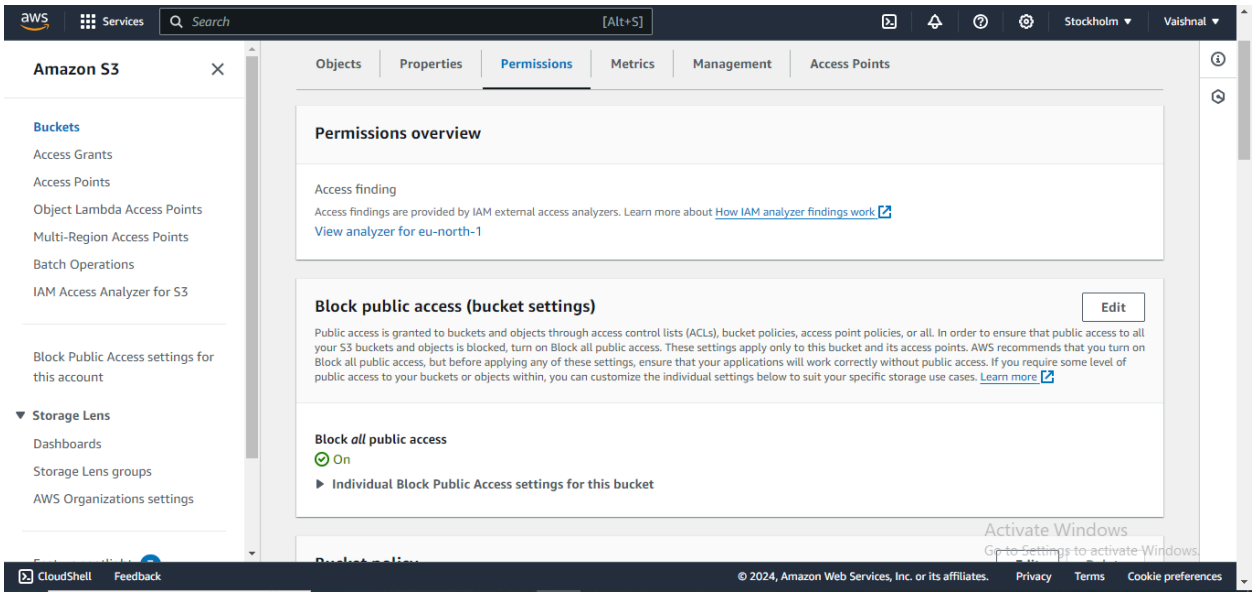
Error document - *optional*

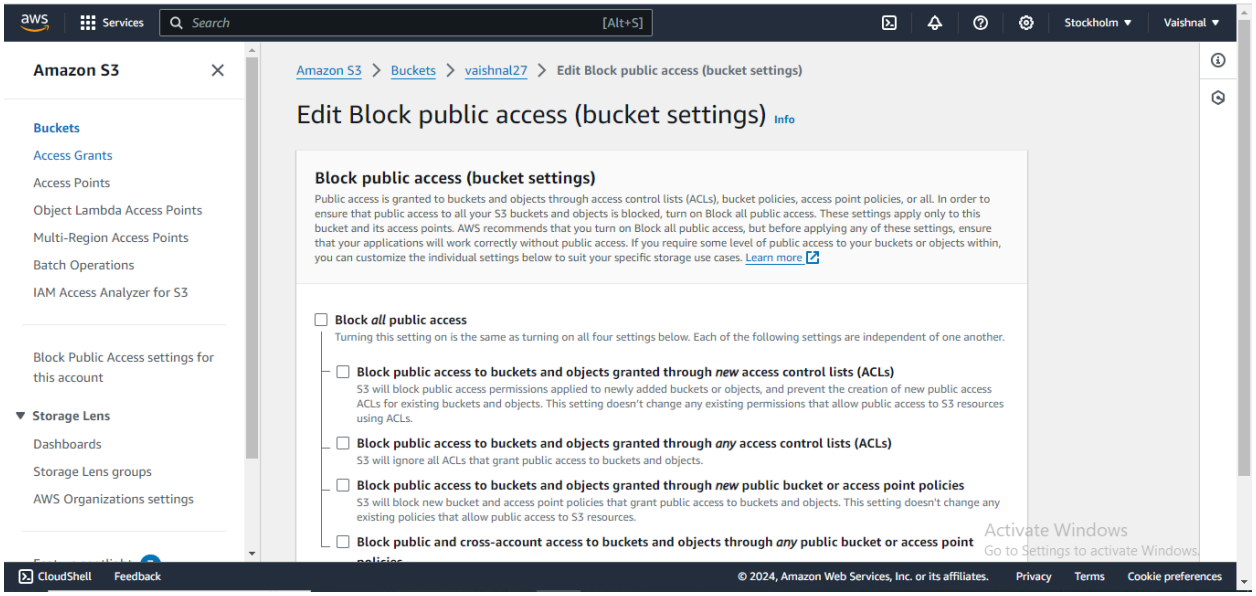
This is returned when an error occurs.

error.html

Redirection rules – *optional*

Redirection rules, written in JSON, automatically redirect webpage requests for specific content. Learn more




aws
Services
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Stockholm
Vaishnal
Amazon S3
Buckets
Access Grants
Access Points
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
IAM Access Analyzer for S3
Block Public Access settings for this account
Storage Lens
Dashboards
Storage Lens groups
AWS Organizations settings
Amazon S3 > Buckets > vaishnal27 > Edit Block public access (bucket settings)
Edit Block public access (bucket settings) Info
Block public access (bucket settings)
Public access is granted to buckets and objects through access control lists (ACLs), bucket policies, access point policies, or all. In order to ensure that public access to all your S3 buckets and objects is blocked, turn on Block all public access. These settings apply only to this bucket and its access points. AWS recommends that you turn on Block all public access, but before applying any of these settings, ensure that your applications will work correctly without public access. If you require some level of public access to your buckets or objects within, you can customize the individual settings below to suit your specific storage use cases. Learn more
Block all public access
Turning this setting on is the same as turning on all four settings below. Each of the following settings are independent of one another.
Block public access to buckets and objects granted through new access control lists (ACLs)
S3 will block public access permissions applied to newly added buckets or objects, and prevent the creation of new public access ACLs for existing buckets and objects. This setting doesn't change any existing permissions that allow public access to S3 resources using ACLs.
Block public access to buckets and objects granted through any access control lists (ACLs)
S3 will ignore all ACLs that grant public access to buckets and objects.
Block public access to buckets and objects granted through new public bucket or access point policies
S3 will block new bucket and access point policies that grant public access to buckets and objects. This setting doesn't change any existing policies that allow public access to S3 resources.
Block public and cross-account access to buckets and objects through any public bucket or access point
Activate Windows
Go to Settings to activate Windows.
CloudShell
Feedback
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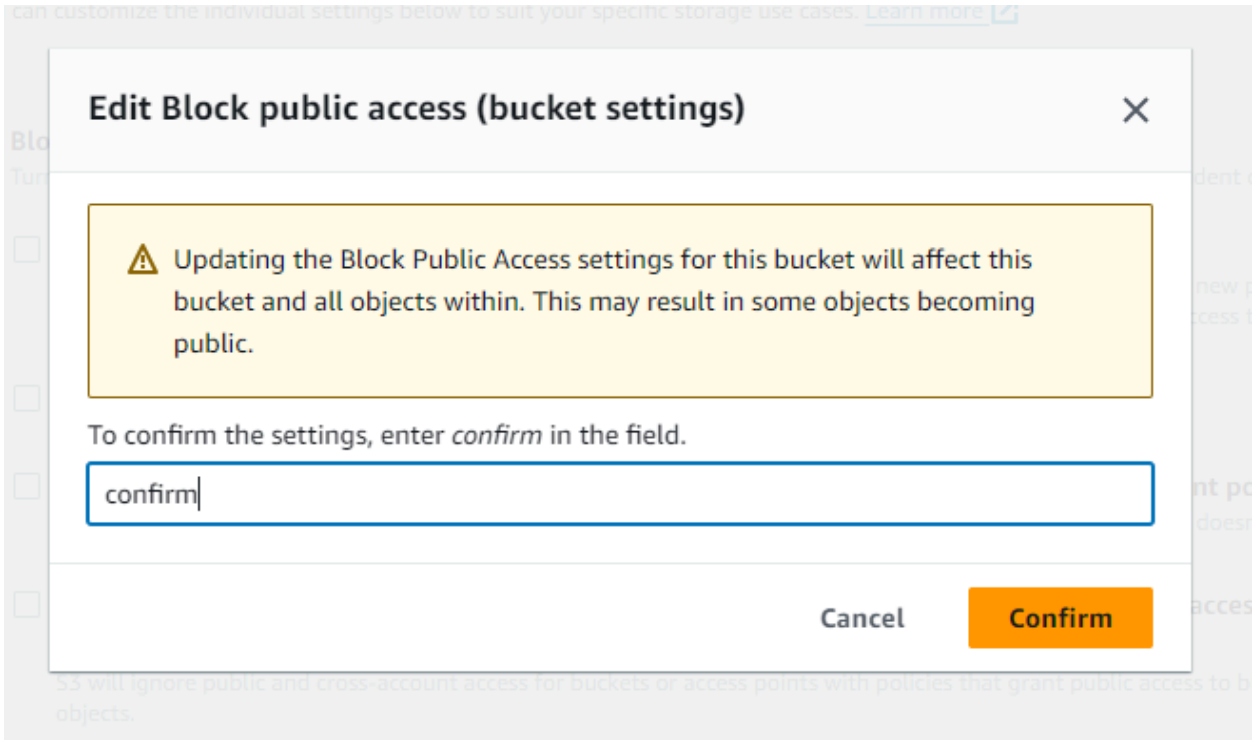
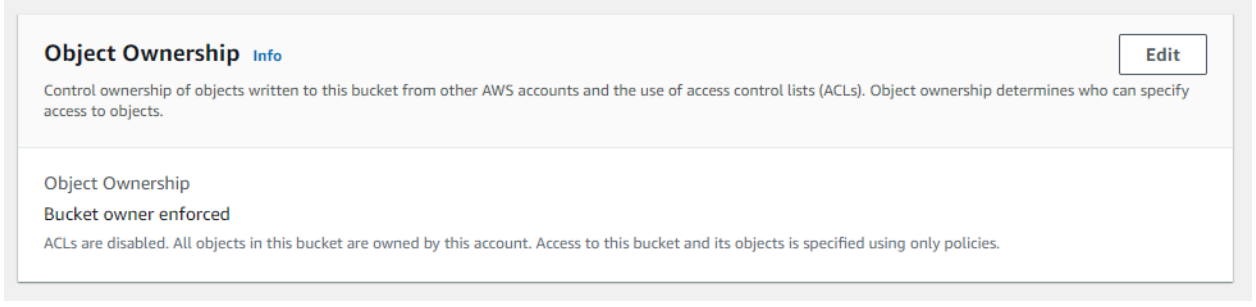
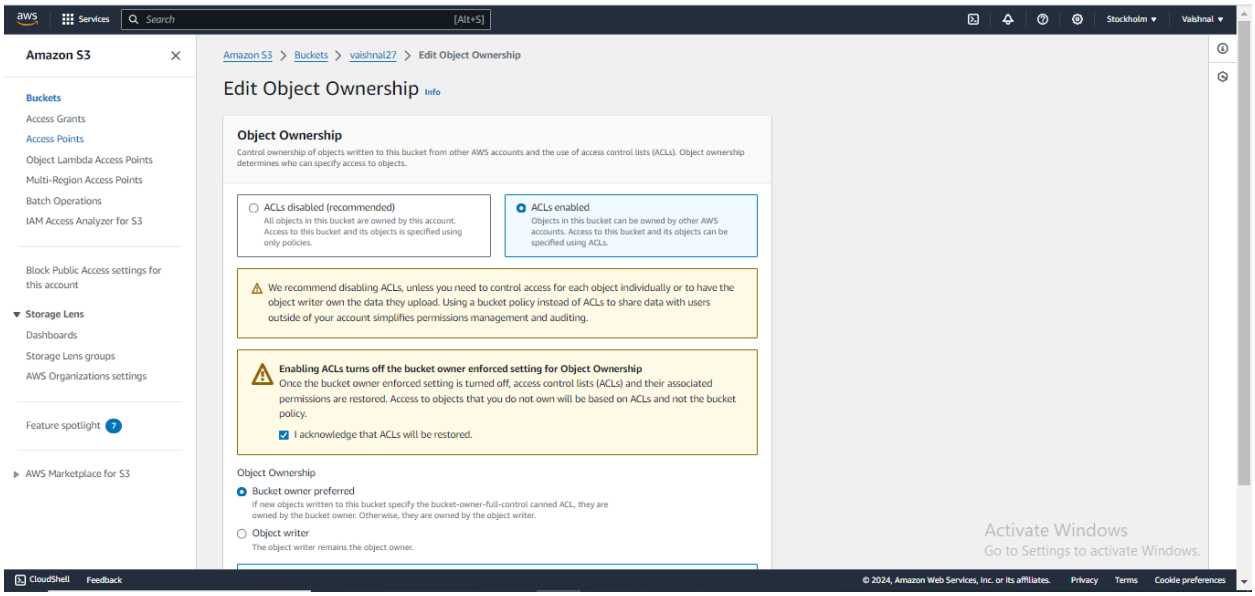

Edit Block public access (bucket settings)
Updating the Block Public Access settings for this bucket will affect this bucket and all objects within. This may result in some objects becoming public.
To confirm the settings, enter confirm in the field.
confirm
Cancel
Confirm


Object Ownership Info
Edit
Control ownership of objects written to this bucket from other AWS accounts and the use of access control lists (ACLs). Object ownership determines who can specify access to objects.
Object Ownership
Bucket owner enforced
ACLs are disabled. All objects in this bucket are owned by this account. Access to this bucket and its objects is specified using only policies.


Amazon S3
Amazon S3 > Buckets > vaishnal27 > Edit Object Ownership
Edit Object Ownership Info
Object Ownership
Control ownership of objects written to this bucket from other AWS accounts and the use of access control lists (ACLs). Object ownership determines who can specify access to objects.
ACLs disabled (recommended)
All objects in this bucket are owned by this account. Access to this bucket and its objects is specified using only policies.
ACLs enabled
Objects in this bucket can be owned by other AWS accounts. Access to this bucket and its objects can be specified using ACLs.
We recommend disabling ACLs, unless you need to control access for each object individually or to have the object writer own the data they upload. Using a bucket policy instead of ACLs to share data with users outside of your account simplifies permissions management and auditing.
Enabling ACLs turns off the bucket owner enforced setting for Object Ownership
Once the bucket owner enforced setting is turned off, access control lists (ACLs) and their associated permissions are restored. Access to objects that you do not own will be based on ACLs and not the bucket policy.
I acknowledge that ACLs will be restored.
Object Ownership
Bucket owner preferred
If new objects written to this bucket specify the bucket-owner-full-control canned ACL, they are owned by the bucket owner. Otherwise, they are owned by the object writer.
Object writer
The object writer remains the object owner.
Activate Windows
Go to Settings to activate Windows.
CloudShell
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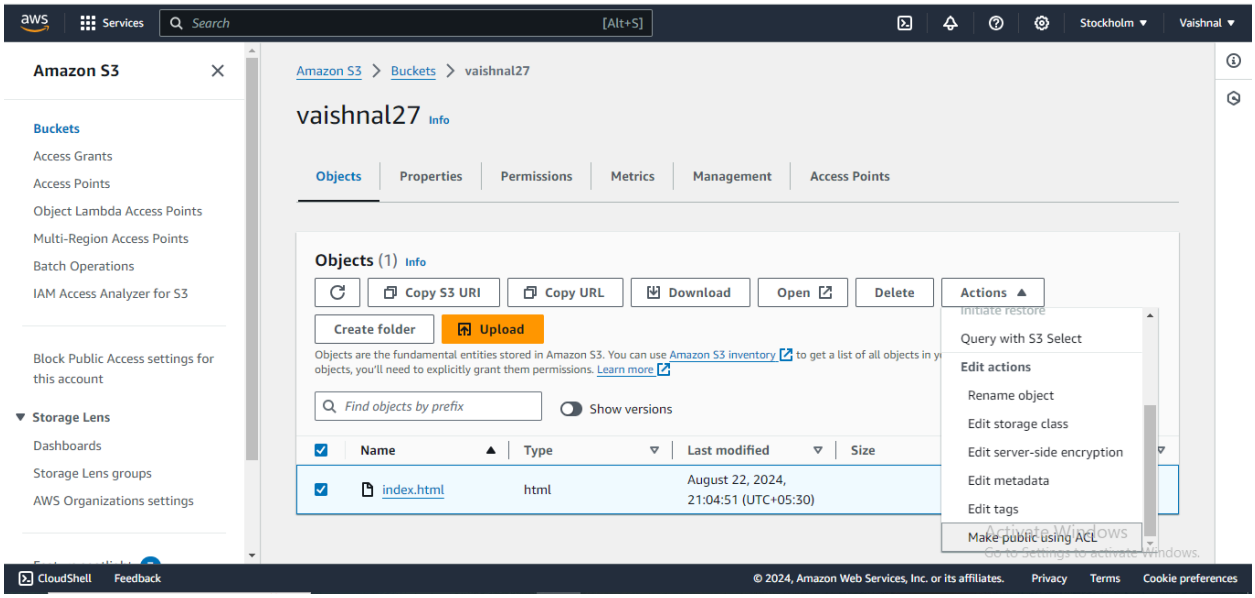
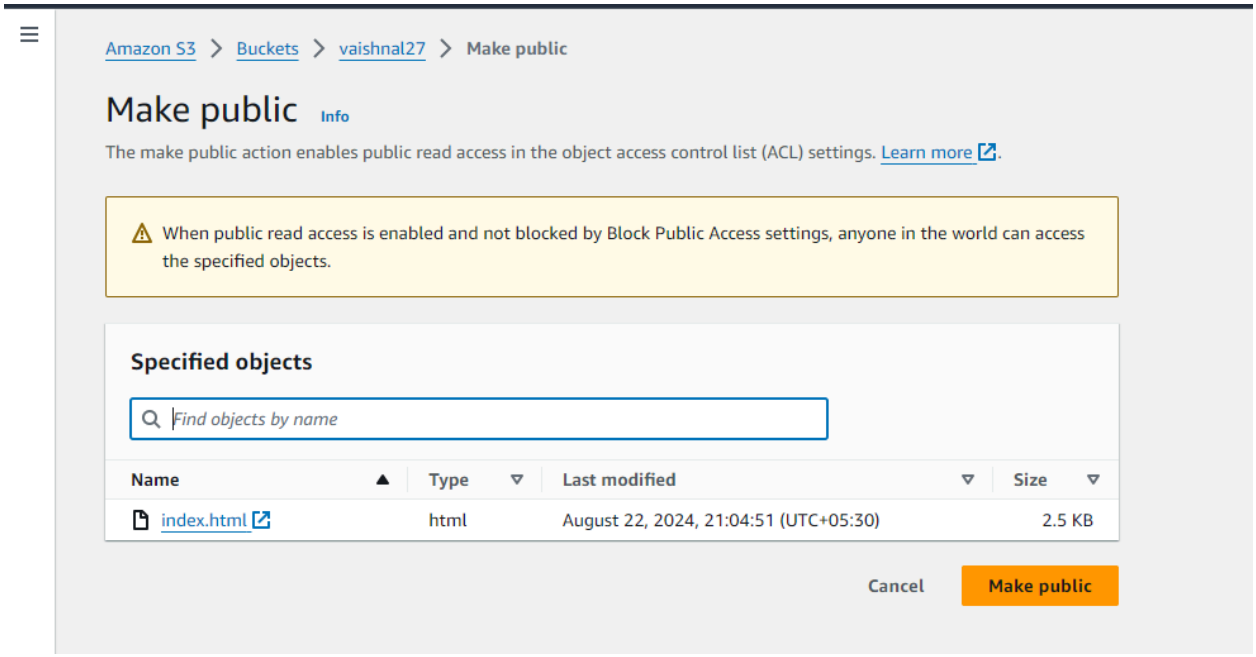
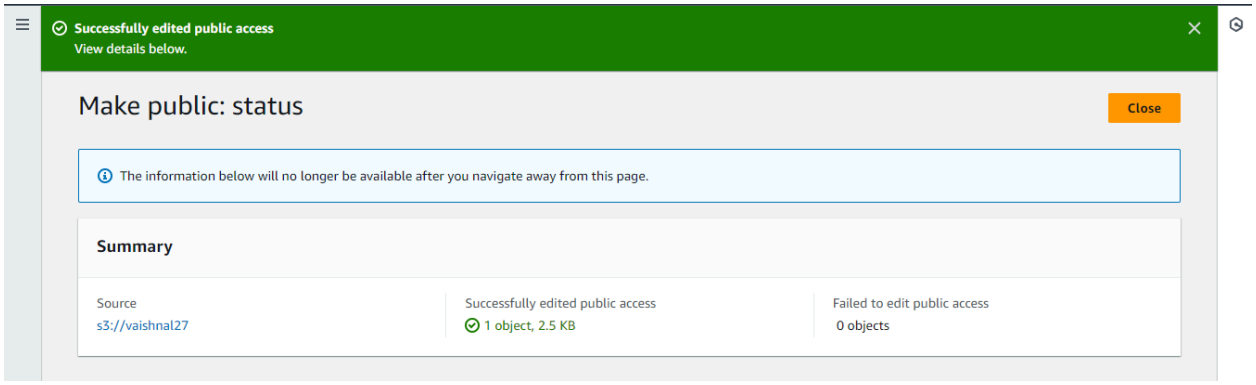
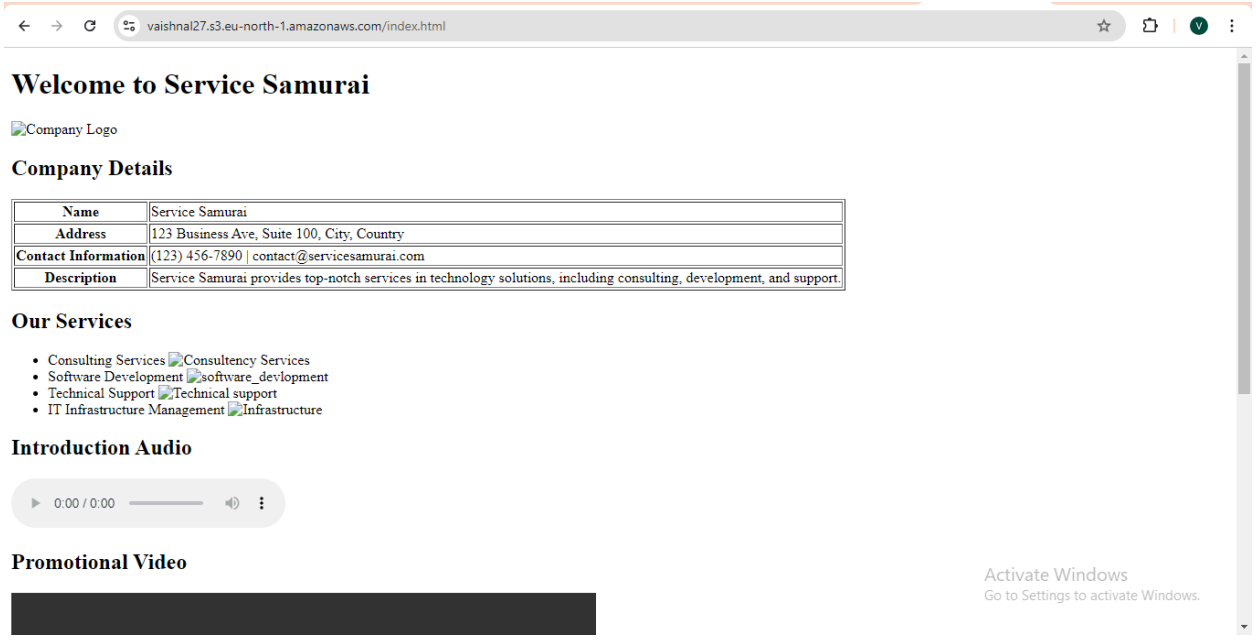

Amazon S3
Buckets
Access Grants
Access Points
Object Lambda Access Points
Multi-Region Access Points
Batch Operations
IAM Access Analyzer for S3
Block Public Access settings for this account
Storage Lens
Dashboards
Storage Lens groups
AWS Organizations settings
Amazon S3 > Buckets > vaishnal27
vaishnal27 Info
Objects
Properties
Permissions
Metrics
Management
Access Points
Objects (1) Info
Copy S3 URI
Copy URL
Download
Open
Delete
Actions
Create folder
Upload
Objects are the fundamental entities stored in Amazon S3. You can use Amazon S3 inventory to get a list of all objects in y
objects, you'll need to explicitly grant them permissions. Learn more
Find objects by prefix
Show versions
Name
Type
Last modified
Size
index.html
html
August 22, 2024, 21:04:51 (UTC+05:30)
Query with S3 Select
Edit actions
Rename object
Edit storage class
Edit server-side encryption
Edit metadata
Edit tags
Make public using ACL
Activate Windows
Go to Settings to activate Windows.
CloudShell
Feedback
© 2024, Amazon Web Services, Inc. or its affiliates.
Privacy
Terms
Cookie preferences


Amazon S3 > Buckets > vaishnal27 > Make public
Make public Info
The make public action enables public read access in the object access control list (ACL) settings. Learn more.
When public read access is enabled and not blocked by Block Public Access settings, anyone in the world can access the specified objects.
Specified objects
Find objects by name
Name
Type
Last modified
Size
index.html
html
August 22, 2024, 21:04:51 (UTC+05:30)
2.5 KB
Cancel
Make public

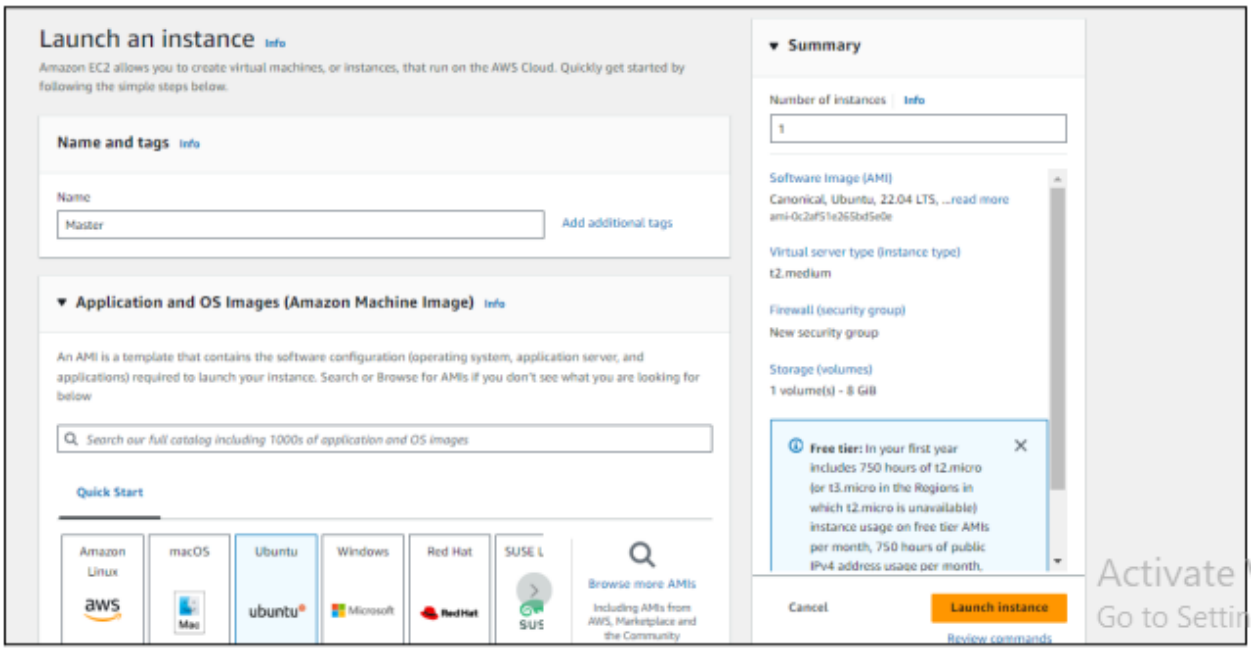

Successfully edited public access
View details below.
Make public: status
Close
The information below will no longer be available after you navigate away from this page.
Summary
Source
s3://vaishnal27
Successfully edited public access
1 object, 2.5 KB
Failed to edit public access
0 objects


vaishnal27.s3.eu-north-1.amazonaws.com/index.html
Welcome to Service Samurai
Company Logo
Company Details
Name
Service Samurai
Address
123 Business Ave, Suite 100, City, Country
Contact Information
(123) 456-7890 | contact@servicesamurai.com
Description
Service Samurai provides top-notch services in technology solutions, including consulting, development, and support.
Our Services
Consulting Services Consultency Services
Software Development software_devlopment
Technical Support Technical support
IT Infrastructure Management Infrastructure
Introduction Audio
0:00 / 0:00
Promotional Video
Activate Windows
Go to Settings to activate Windows.

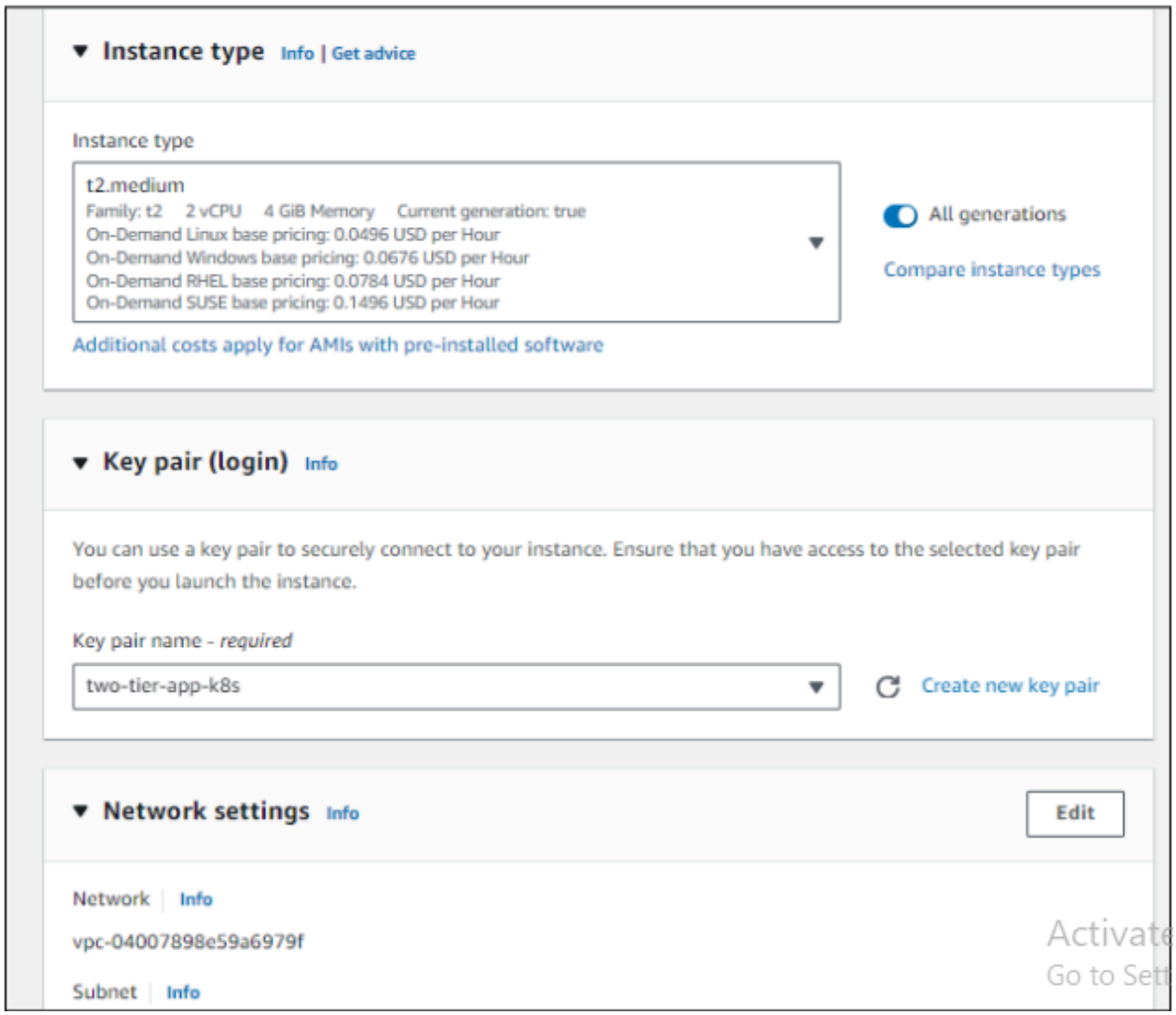
NAME:VAISHNAL MALI
DIV:D15A
ROLL NO. :27
ADVANCED DEV-OPS EXPERIMENT-03

AIM:To understand the Kubernetes Cluster Architecture, install and Spin Up a Kubernetes Cluster on Linux Machines/Cloud Platforms.

Step 1:Prerequisites
1.1 Create 3 EC2 instances,one for the master node and two for the worker nodes.



1.2 Proceed with the following settings and create a new key pair as follows(use the same key pair for all the three nodes)



Create key pair

Key pair name

Key pairs allow you to connect to your instance securely.

two-tier-app-k8s

The name can include up to 255 ASCII characters. It can't include leading or trailing spaces.

Key pair type

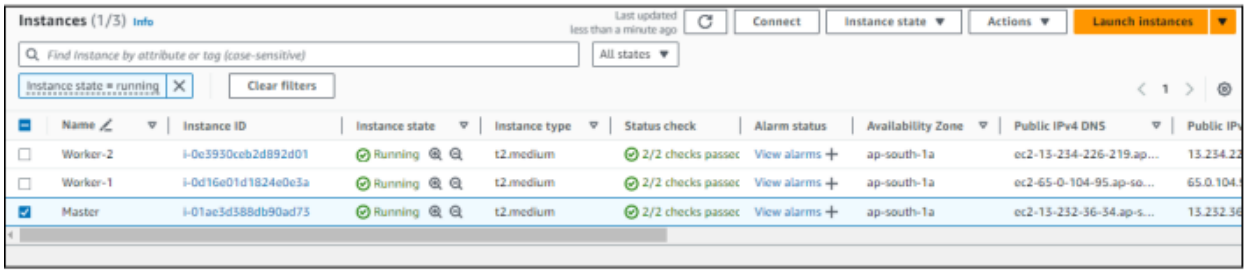
- (•) RSA — RSA encrypted private and public key pair
- ( ) ED25519 — ED25519 encrypted private and public key pair

Private key file format

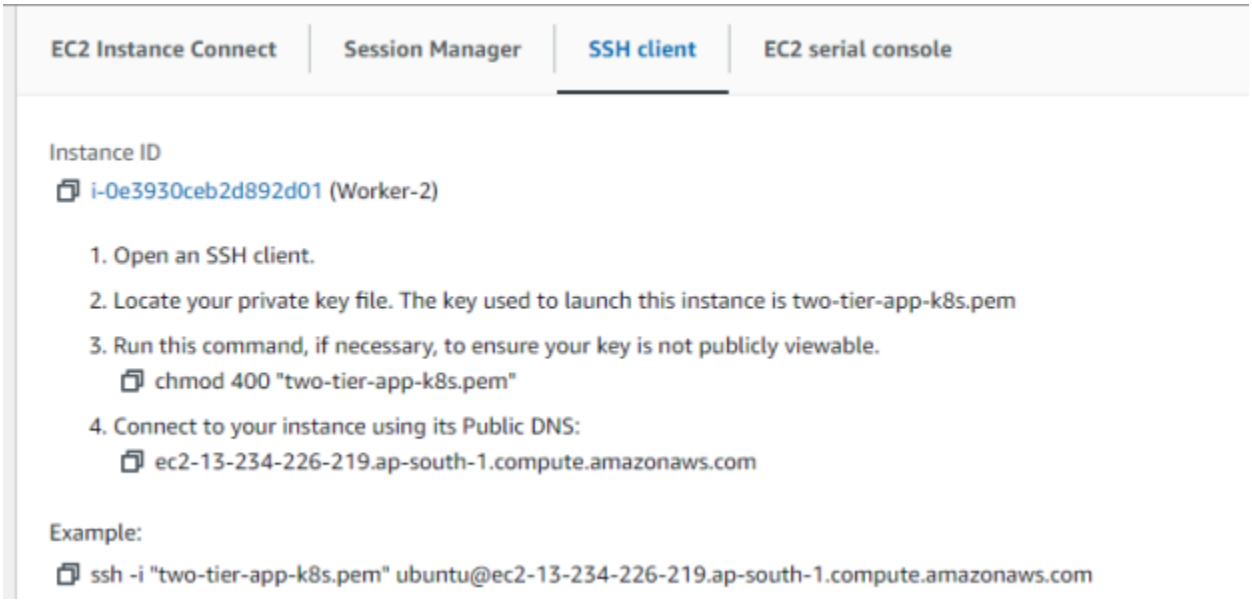
- (•) .pem — For use with OpenSSH
- ( ) .ppk — For use with PuTTY

⚠ When prompted, store the private key in a secure and accessible location on

Cancel | Create key pair



1.3 After the instances have been created,copy the text given in the example part of each of the three instances into git bash.




```
acer@TMP214-53 MINGW64 ~/Downloads
$ ssh -i "two-tier-app-k8s.pem" ubuntu@ec2-13-232-36-34.ap-south-1.compute.amazo
naws.com
The authenticity of host 'ec2-13-232-36-34.ap-south-1.compute.amazonaws.com (13.
232.36.34)' can't be established.
ED25519 key fingerprint is SHA256:uVGEO+FWYefj6OjOft7OSralv8NrzEi/IwxAtBY+EPE.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-13-232-36-34.ap-south-1.compute.amazonaws.com' (
ED25519) to the list of known hosts.
Welcome to Ubuntu 22.04.4 LTS (GNU/Linux 6.5.0-1022-aws x86_64)

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

 System information as of Wed Sep 11 14:07:10 UTC 2024

  System load:  0.0               Processes:             106
  Usage of /:   20.7% of 7.57GB   Users logged in:       0
  Memory usage: 5%                IPv4 address for eth0: 172.31.45.227
  Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status
```

Step 2:Prepare Nodes

2.1. Update the package manager on all nodes: sudo apt-get update && sudo apt-get upgrade -y


```
Get:4 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 Packag
es [14.1 MB]
Get:5 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Get:6 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe Translation-
en [5652 kB]
Get:7 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/universe amd64 c-n-f
Metadata [286 kB]
Get:8 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 Pack
ages [217 kB]
Get:9 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse Translatio
n-en [112 kB]
Get:10 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy/multiverse amd64 c-n
-f Metadata [8372 B]
Get:11 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 P
ackages [2023 kB]
Get:12 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main Transla
tion-en [352 kB]
Get:13 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/main amd64 c
-n-f Metadata [17.8 kB]
Get:14 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted a
md64 Packages [2437 kB]
Get:15 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted T
ranslation-en [419 kB]
Get:16 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates/restricted a
```

2.2. Disable Swap (Kubernetes requires swap to be off):

```
ubuntu@ip-172-31-22-29:~$ sudo swapoff -a
sudo sed -i '/ swap / s/^/#/' /etc/fstab
```

2.3. Load necessary kernel modules for networking and iptables:

```
ubuntu@ip-172-31-22-29:~$ cat <<EOF | sudo tee /etc/modules-load.d/k8s.conf
overlay
br_netfilter
EOF
sudo modprobe overlay
sudo modprobe br_netfilter
overlay
br_netfilter
```

2.4. Configure sysctl settings for Kubernetes networking:

```
ubuntu@ip-172-31-22-29:~$ cat <<EOF | sudo tee /etc/modules-load.d/k8s.conf
overlay
br_netfilter
EOF
sudo modprobe overlay
sudo modprobe br_netfilter
overlay
br_netfilter
ubuntu@ip-172-31-22-29:~$ cat <<EOF | sudo tee /etc/sysctl.d/k8s.conf
net.bridge.bridge-nf-call-ip6tables = 1
net.bridge.bridge-nf-call-iptables = 1
EOF
sudo sysctl --system
net.bridge.bridge-nf-call-ip6tables = 1
net.bridge.bridge-nf-call-iptables = 1
* Applying /etc/sysctl.d/10-console-messages.conf ...
kernel.printk = 4 4 1 7
* Applying /etc/sysctl.d/10-ipv6-privacy.conf ...
net.ipv6.conf.all.use_tempaddr = 2
net.ipv6.conf.default.use_tempaddr = 2
* Applying /etc/sysctl.d/10-kernel-hardening.conf ...
kernel.kptr_restrict = 1
```

Step 3: Install Docker-Kubernetes uses container runtimes like Docker.
Install Docker on all nodes.

Run following commands
sudo apt-get update sudo apt-get install -y apt-transport-https ca-certificates curl software-properties-common curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add - sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu $(lsb_release -cs) stable" sudo apt-get update sudo apt-get install -y docker-ce docker-ce-cli containerd.io

```
ubuntu@ip-172-31-22-29:~$ sudo apt-get update
sudo apt-get install -y apt-transport-https ca-certificates curl software-proper
ties-common
curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -
sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubun
tu $(lsb_release -cs) stable"
sudo apt-get update
sudo apt-get install -y docker-ce docker-ce-cli containerd.io
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease
Get:4 http://security.ubuntu.com/ubuntu jammy-security InRelease [129 kB]
Fetched 129 kB in 1s (241 kB/s)
Reading package lists... Done
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
ca-certificates is already the newest version (20230311ubuntu0.22.04.1).
ca-certificates set to manually installed.
curl is already the newest version (7.81.0-1ubuntu1.17).
curl set to manually installed.
software-properties-common is already the newest version (0.99.22.9).
software-properties-common set to manually installed.
```

Configure Docker for Kubernetes:

```
ubuntu@ip-172-31-22-29:~$ cat <<EOF | sudo tee /etc/docker/daemon.json
{
  "exec-opts": ["native.cgroupdriver=systemd"],
  "log-driver": "json-file",
  "log-opts": {
    "max-size": "100m"
  },
  "storage-driver": "overlay2"
}
EOF
sudo systemctl restart docker
{
  "exec-opts": ["native.cgroupdriver=systemd"],
  "log-driver": "json-file",
  "log-opts": {
    "max-size": "100m"
  },
  "storage-driver": "overlay2"
}
```

Step 4: Install kubeadm, kubelet, kubectl

Install Kubernetes tools on all nodes.

4.1. Add Kubernetes APT repository:

```
ubuntu@ip-172-31-22-29:~$ sudo curl -fsSLo /usr/share/keyrings/kubernetes-archiv
e-keyring.gpg https://packages.cloud.google.com/apt/doc/apt-key.gpg
echo "deb [signed-by=/usr/share/keyrings/kubernetes-archive-keyring.gpg] https:/
/apt.kubernetes.io/ kubernetes-xenial main" | sudo tee /etc/apt/sources.list.d/k
ubernetes.list
deb [signed-by=/usr/share/keyrings/kubernetes-archive-keyring.gpg] https://apt.k
ubernetes.io/ kubernetes-xenial main
```

4.2. Install kubeadm, kubelet, and kubectl:

```
ubuntu@ip-172-31-22-29:~$ sudo apt-get update
sudo apt-get install -y kubelet kubeadm kubectl
sudo apt-mark hold kubelet kubeadm kubectl
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Hit:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:5 https://download.docker.com/linux/ubuntu jammy InRelease
```

Step 5: Initialize the Kubernetes Cluster on Master Node

On the master node: sudo kubeadm init --pod-network-cidr=10.244.0.0/16

```
ubuntu@ip-172-31-22-29:~$ sudo kubeadm init --pod-network-cidr=10.244.0.0/16 --v
=5
Found multiple CRI endpoints on the host. Please define which one do you wish to
 use by setting the 'criSocket' field in the kubeadm configuration file: unix://
/var/run/containerd/containerd.sock, unix:///var/run/crio/crio.sock
k8s.io/kubernetes/cmd/kubeadm/app/util/runtime.detectCRISocketImpl
        cmd/kubeadm/app/util/runtime/runtime.go:167
k8s.io/kubernetes/cmd/kubeadm/app/util/runtime.DetectCRISocket
        cmd/kubeadm/app/util/runtime/runtime.go:175
k8s.io/kubernetes/cmd/kubeadm/app/util/config.SetNodeRegistrationDynamicDefaults
        cmd/kubeadm/app/util/config/initconfiguration.go:118
k8s.io/kubernetes/cmd/kubeadm/app/util/config.SetInitDynamicDefaults
        cmd/kubeadm/app/util/config/initconfiguration.go:64
k8s.io/kubernetes/cmd/kubeadm/app/util/config.DefaultedInitConfiguration
        cmd/kubeadm/app/util/config/initconfiguration.go:248
k8s.io/kubernetes/cmd/kubeadm/app/util/config.LoadOrDefaultInitConfiguration
        cmd/kubeadm/app/util/config/initconfiguration.go:282
k8s.io/kubernetes/cmd/kubeadm/app/cmd.newInitData
        cmd/kubeadm/app/cmd/init.go:319
k8s.io/kubernetes/cmd/kubeadm/app/cmd.newCmdInit.func3
        cmd/kubeadm/app/cmd/init.go:170
k8s.io/kubernetes/cmd/kubeadm/app/cmd/phases/workflow.(*Runner).InitData
        cmd/kubeadm/app/cmd/phases/workflow/runner.go:183
k8s.io/kubernetes/cmd/kubeadm/app/cmd.newCmdInit.func1
```

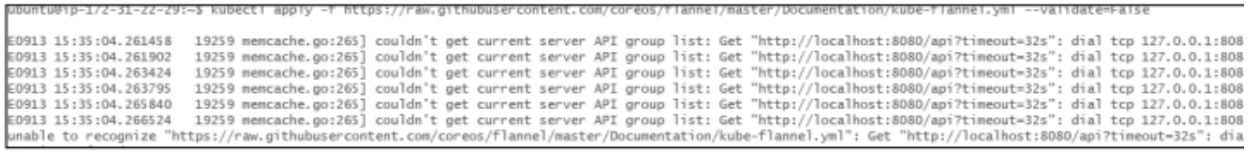
5.1. Set up kubectl on the master node:

mkdir -p $HOME/.kube sudo cp -i /etc/kubernetes/admin.conf $HOME/.kube/config sudo chown $(id -u):$(id -g) $HOME/.kube/config

Step 6: Install a Pod Network

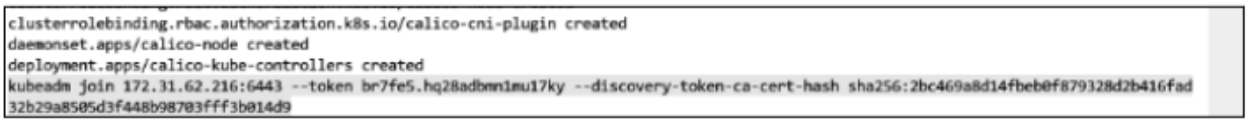
Add-on To enable communication between pods, install a pod network plugin like Flannel or Calico.

Install Flannel: kubectl apply -f



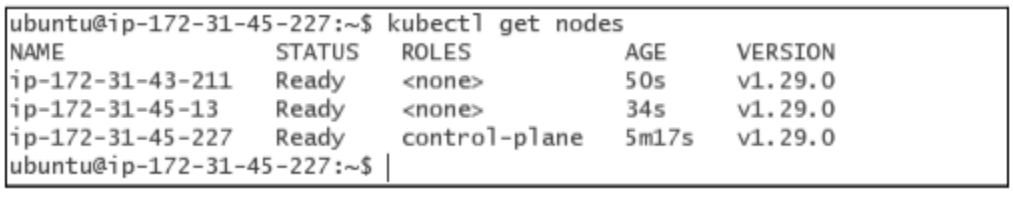
Step 7: Join Worker Nodes to the Cluster On the worker nodes run :

sudo kubeadm join :6443 --token --discovery-token-ca-cert-hash sha256:



Step 8: Verify the Cluster

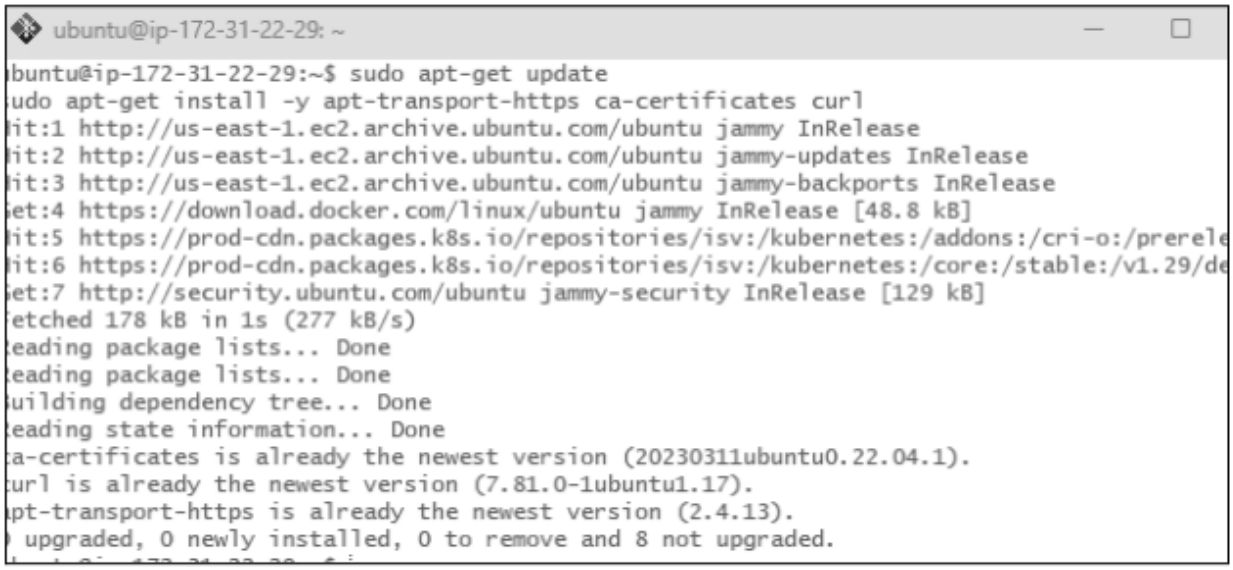
Once the worker node joins, check the status on the master node



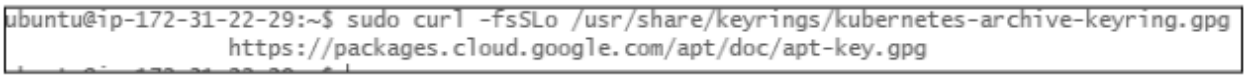
NAME:VAISHNAL MALI
DIV:D15A
ROLL NO. :27
ADVANCED DEV-OPS EXPERIMENT-04

AIM :To install Kubectl and execute Kubectl commands to manage the Kubernetes cluster and deploy Your First Kubernetes Application.

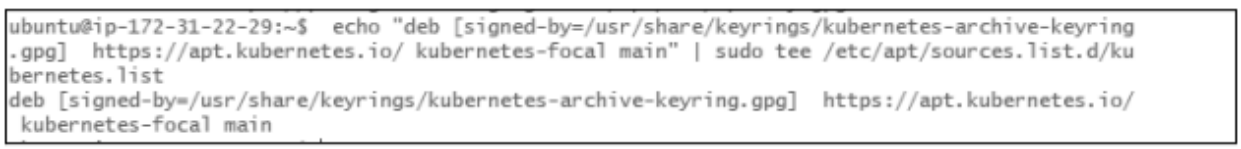
Step 1: Install Kubectl on Ubuntu
1.1 Add Kubernetes APT repository
Install prerequisites:
sudo apt-get update
sudo apt-get install -y apt-transport-https ca-certificates curl



2. Add the GPG key for Kubernetes:
sudo curl -fsSLo /usr/share/keyrings/kubernetes-archive-keyring.gpg



3. Add the Kubernetes repository:



1.2 Install kubectl Now install kubectl:

sudo apt-get update

sudo apt-get install -y kubectl

```
ubuntu@ip-172-31-22-29:~$ sudo apt-get update
sudo apt-get install -y kubectl
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy InRelease
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://security.ubuntu.com/ubuntu jammy-security InRelease
Hit:5 https://download.docker.com/linux/ubuntu jammy InRelease
Hit:6 https://prod-cdn.packages.k8s.io/repositories/isv:/kubernetes:/addons:/cri-o:/prerelease:/main/deb  InRelease
Ign:7 https://packages.cloud.google.com/apt kubernetes-focal InRelease
Err:8 https://packages.cloud.google.com/apt kubernetes-focal Release
  404  Not Found [IP: 172.253.62.138 443]
Reading package lists... Done
E: The repository 'https://apt.kubernetes.io kubernetes-focal Release' does not have a Release file.
N: Updating from such a repository can't be done securely, and is therefore disabled by default.
N: See apt-secure(8) manpage for repository creation and user configuration details.
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
kubectl is already the newest version (1.29.0-1.1).
0 upgraded, 0 newly installed, 0 to remove and 5 not upgraded.
```

Step 2: Deploying Your Application on Kubernetes

2.1 Set up Kubernetes Cluster

Once your cluster is ready, verify the nodes:

kubectl get nodes

```
ubuntu@ip-172-31-45-227:~$ kubectl get nodes
NAME               STATUS   ROLES           AGE     VERSION
ip-172-31-43-211   Ready    <none>          50s     v1.29.0
ip-172-31-45-13    Ready    <none>          34s     v1.29.0
ip-172-31-45-227   Ready    control-plane   5m17s   v1.29.0
ubuntu@ip-172-31-45-227:~$
```

Step 3:Create the Deployment YAML file

a)Create the YAML file:

Use a text editor to create a file named nginx-deployment.yaml

```
ubuntu@ip-172-31-45-227:~$ nano nginx-deployment.yaml
```

b)Add the Deployment Configuration:

```
ubuntu@ip-172-31-45-227: ~
  GNU nano 6.2                          nginx-deployment.yaml
apiVersion: apps/v1
kind: Deployment
metadata:
  name: nginx-deployment
  labels:
    app: nginx
spec:
  replicas: 2
  selector:
    matchLabels:
      app: nginx
  template:
    metadata:
      labels:
        app: nginx
    spec:
      containers:
      - name: nginx
        image: nginx:1.21.3
        ports:
        - containerPort: 80
```

Step 4:Create the Service YAML File

a)Create the YAML File:

Create another file named nginx-service.yaml

```
ubuntu@ip-172-31-45-227:~$ nano nginx-service.yaml
```

b)Add the Service Configuration:

```
ubuntu@ip-172-31-45-227: ~
  GNU nano 6.2                          nginx-service.yaml *
apiVersion: v1
kind: Service
metadata:
  name: nginx-service
spec:
  selector:
    app: nginx
  ports:
    - protocol: TCP
      port: 80
      targetPort: 80
  type: LoadBalancer
```

Step 5:Apply the YAML Files

a)Deploy the Application: Use kubectl to create the Deployment and Service from the YAML files.

```
ubuntu@ip-172-31-45-227:~$ kubectl apply -f nginx-deployment.yaml
kubectl apply -f nginx-service.yaml
deployment.apps/nginx-deployment created
service/nginx-service created
```

b)Verify the Deployment: Check the status of your Deployment,Pods and Services.

```
ubuntu@ip-172-31-45-227:~$ kubectl get deployments
kubectl get pods
kubectl get services
NAME               READY   UP-TO-DATE   AVAILABLE   AGE
nginx-deployment   2/2     2            2           40s
NAME                                READY   STATUS    RESTARTS   AGE
nginx-deployment-6b4d6fdbf-6k84m    1/1     Running   0          40s
nginx-deployment-6b4d6fdbf-9d8j6    1/1     Running   0          40s
NAME            TYPE           CLUSTER-IP       EXTERNAL-IP   PORT(S)        AGE
kubernetes      ClusterIP      10.96.0.1        <none>        443/TCP        40m
nginx-service   LoadBalancer   10.106.182.152   <pending>     80:32317/TCP   40s
```

Step 6:Ensure Service is Running

6.1 Verify Service: Run the following command to check the services running in your cluster:

kubectl get service

```
ubuntu@ip-172-31-45-227:~$ kubectl get service
NAME            TYPE        CLUSTER-IP       EXTERNAL-IP   PORT(S)        AGE
kubernetes      ClusterIP   10.96.0.1        <none>        443/TCP        16h
nginx           NodePort    10.106.0.176     <none>        80:32618/TCP   76m
nginx-service   NodePort    10.106.182.152   <none>        80:30007/TCP   15h
nginx2          NodePort    10.99.32.156     <none>        80:31421/TCP   8s
```

Step 7:Forward the Service Port to Your Local Machine

kubectl port-forward allows you to forward a port from your local machine to a port on a service running in the Kubernetes cluster.

1. Forward the Service Port: Use the following command to forward a local port to the service's target port.

kubectl port-forward service/ :

```
ubuntu@ip-172-31-45-227:~$ kubectl port-forward service/nginx-service 8080:80
Forwarding from 127.0.0.1:8080 -> 80
Forwarding from [::1]:8080 -> 80
```

This command will forward local port 8080 on your machine to port 80 of the service nginx-service running inside the cluster.

2. This means port forwarding is now active, and any traffic to localhost:8080 will be routed to the nginx-service on port 80.

```
ubuntu@ip-172-31-45-227:~$ kubectl port-forward service/nginx-service 8080:80
Forwarding from 127.0.0.1:8080 -> 80
Forwarding from [::1]:8080 -> 80
^Cubuntu@ip-172-31-45-227:~kubectl port-forward service/nginx-service 8081:8080
Forwarding from 127.0.0.1:8081 -> 80
Forwarding from [::1]:8081 -> 80
^Cubuntu@ip-172-31-45-227:~$ kubectl get pods
NAME                                READY   STATUS    RESTARTS   AGE
nginx-deployment-776b8fd845-k9cx4   1/1     Running   0          113m
ubuntu@ip-172-31-45-227:~$ kubectl logs nginx-deployment-776b8fd845-k9cx4
/docker-entrypoint.sh: /docker-entrypoint.d/ is not empty, will attempt to perform configuration
/docker-entrypoint.sh: Looking for shell scripts in /docker-entrypoint.d/
/docker-entrypoint.sh: Launching /docker-entrypoint.d/10-listen-on-ipv6-by-default.sh
10-listen-on-ipv6-by-default.sh: info: Getting the checksum of /etc/nginx/conf.d/default.conf
10-listen-on-ipv6-by-default.sh: info: Enabled listen on IPv6 in /etc/nginx/conf.d/default.conf
/docker-entrypoint.sh: Sourcing /docker-entrypoint.d/15-local-resolvers.envsh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/20-envsubst-on-templates.sh
/docker-entrypoint.sh: Launching /docker-entrypoint.d/30-tune-worker-processes.sh
/docker-entrypoint.sh: Configuration complete; ready for start up
2024/09/12 06:35:51 [notice] 1#1: using the "epoll" event method
2024/09/12 06:35:51 [notice] 1#1: nginx/1.27.1
2024/09/12 06:35:51 [notice] 1#1: built by gcc 12.2.0 (Debian 12.2.0-14)
2024/09/12 06:35:51 [notice] 1#1: OS: Linux 6.5.0-1022-aws
2024/09/12 06:35:51 [notice] 1#1: getrlimit(RLIMIT_NOFILE): 1048576:1048576
2024/09/12 06:35:51 [notice] 1#1: start worker processes
2024/09/12 06:35:51 [notice] 1#1: start worker process 24
2024/09/12 06:35:51 [notice] 1#1: start worker process 25
```

Step 8: Access the Application Locally 1.
Open a Web Browser: Now open your web browser and go to the following URL: http://localhost:8080

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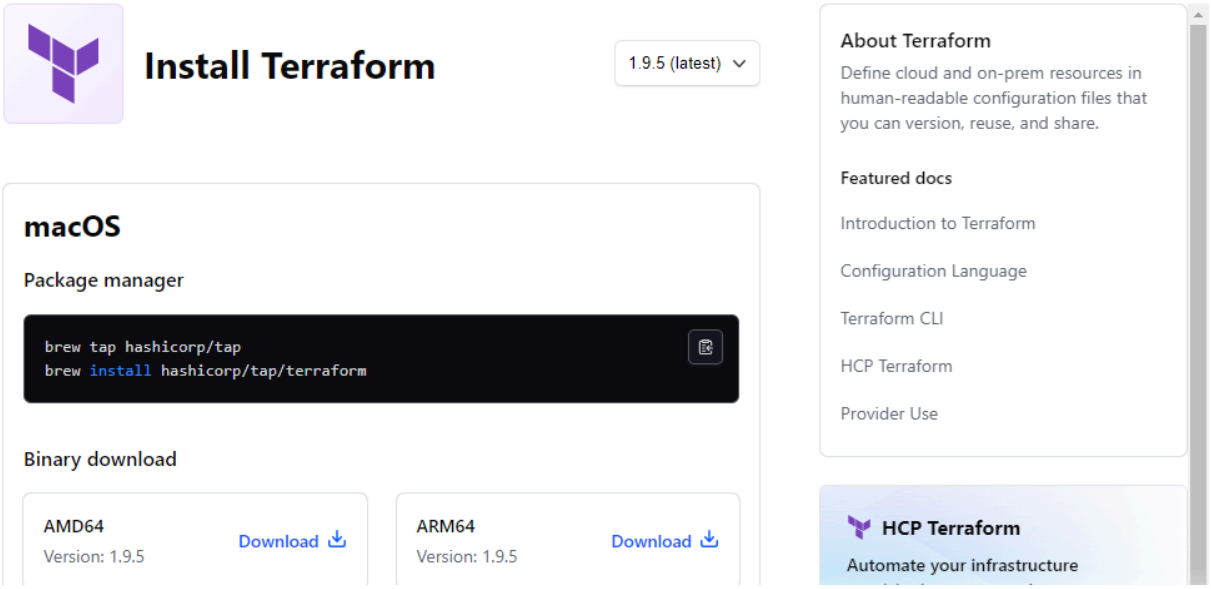
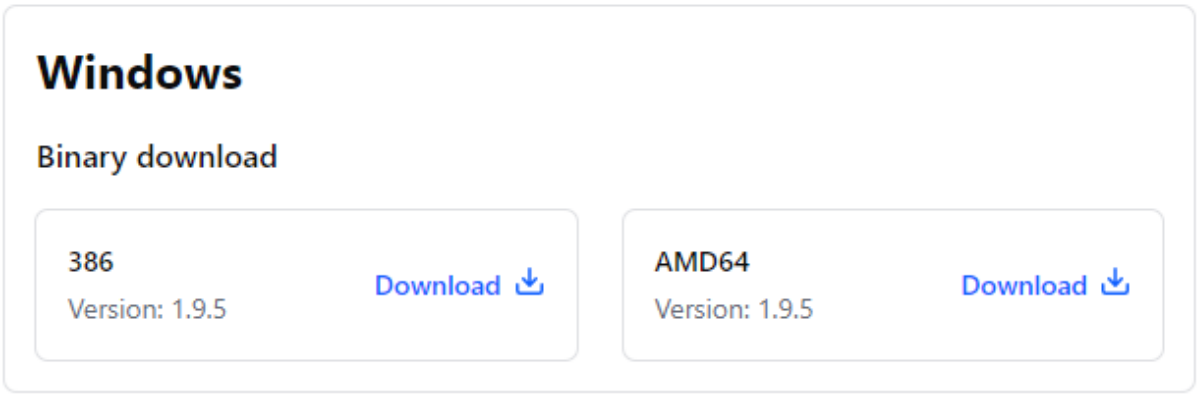
ADVANCED DEV-OPS EXPERIMENT-05

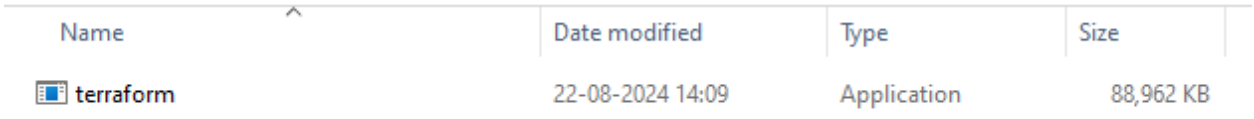
AIM:To understand terraform lifecycle, core concepts/terminologies and install it on a Linux Machine and Windows.

Step 1: Go to the website Terraform.io and install terraform from there.Select the AMD64 option for windows.

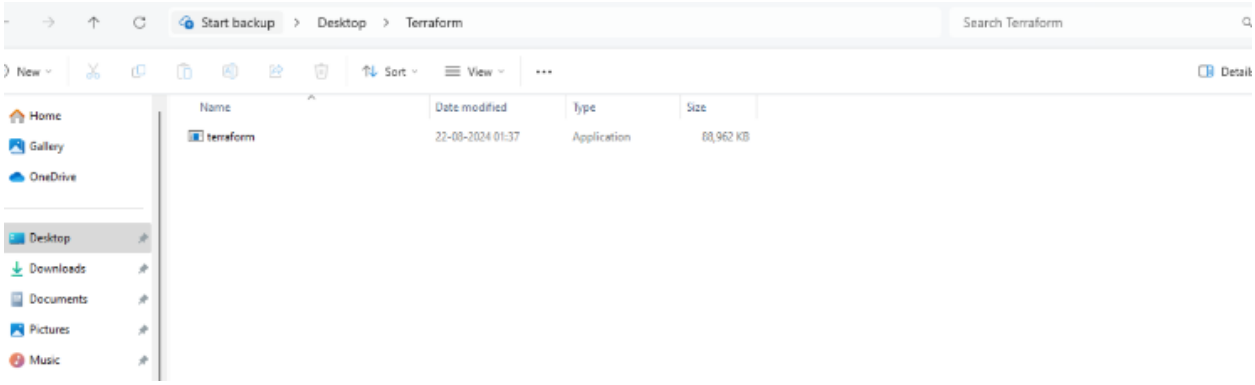




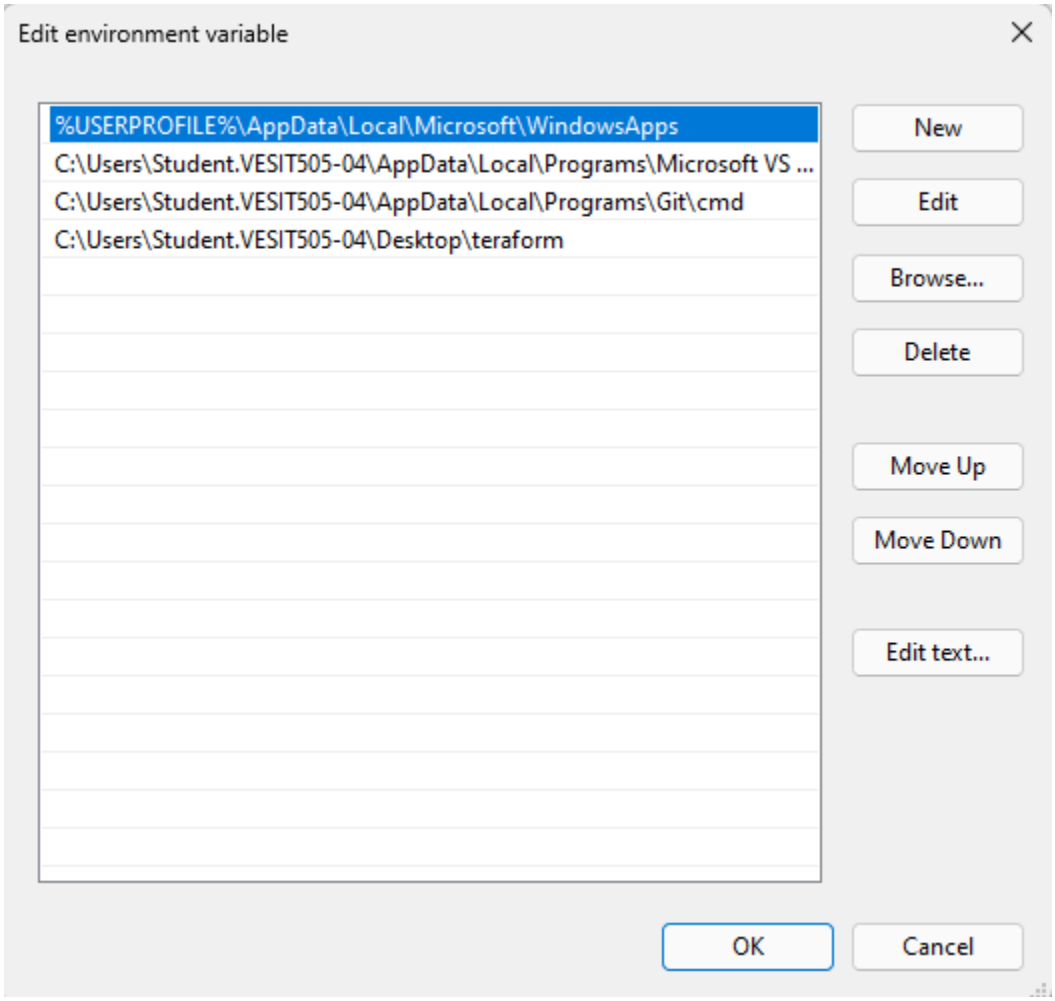
Step 2: Go to the zip file where terraform is installed.



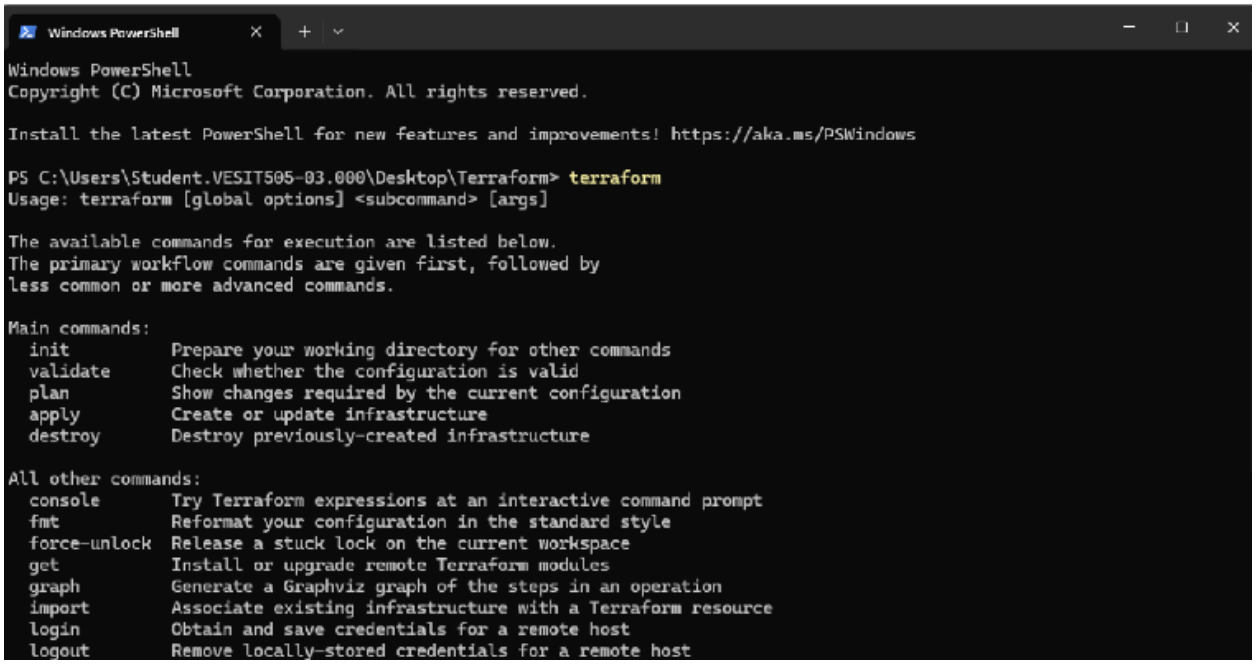
Step 3: Since the entire file is zip create the folder on desktop copy the terraform file there.



Step 4: Now go to search bar and edit environmental variable copy the folder path and paste it in enviormrntal variable.



Step 5: Now go to folder where we install terraform and open it in powershell.type command terraform and hit enter after that check the version of terraform.



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ADVANCED DEV-OPS EXPERIMENT-06

AIM:To Build, change, and destroy AWS / GCP /Microsoft Azure/ DigitalOcean infrastructure Using Terraform.(S3 bucket or Docker) fdp"

Implementation:
A. Creating docker image using terraform

Prerequisite:
1) Download and Install Docker Desktop from https://www.docker.com/

Step 1: Check the docker functionality

```
Microsoft Windows [Version 10.0.22631.4037]
(c) Microsoft Corporation. All rights reserved.

C:\Users\Admin>docker

Usage:  docker [OPTIONS] COMMAND

A self-sufficient runtime for containers

Common Commands:
  run         Create and run a new container from an image
  exec        Execute a command in a running container
  ps          List containers
  build       Build an image from a Dockerfile
  pull        Download an image from a registry
  push        Upload an image to a registry
  images      List images
  login       Log in to a registry
  logout      Log out from a registry
  search      Search Docker Hub for images
  version     Show the Docker version information
  info        Display system-wide information

Management Commands:
  builder     Manage builds
  buildx*     Docker Buildx (Docker Inc., v0.11.2-desktop.5)
  compose*    Docker Compose (Docker Inc., v2.22.0-desktop.2)
  container   Manage containers
  context     Manage contexts
  dev*        Docker Dev Environments (Docker Inc., v0.1.0)
```

Now, create a folder named ‘Terraform Scripts’ in which we save our different types of scripts which will be further used in this experiment.

Step 2: Firstly create a new folder named ‘Docker’ in the ‘TerraformScripts’ folder. Then create a new docker.tf file using Atom editor and write the followingcontents into it to create a Ubuntu Linux container

Welcome terraform.tf

Docker > terraform.tf

```
terraform {
  required_providers {
    docker = {
      source  = "kreuzwerker/docker"
      version = "2.21.0"
    }
  }
}

provider "docker" {
  host = "npipe:////./pipe/docker_engine"
}

# Pull the image
resource "docker_image" "ubuntu" {
  name = "ubuntu:latest"
}

# Create a container
resource "docker_container" "foo" {
  image = docker_image.ubuntu.image_id
  name  = "foo"
  command = ["sleep", "3600"]
}
```

Step 3: Execute Terraform Init command to initialize the resource

```
PS C:\Users\Admin\Desktop\Terraform Scripts>
PS C:\Users\Admin\Desktop\Terraform Scripts> cd docker
PS C:\Users\Admin\Desktop\Terraform Scripts\docker> terraform init
Initializing the backend...
Initializing provider plugins...
- Finding kreuzwerker/docker versions matching "2.21.0"...
- Installing kreuzwerker/docker v2.21.0...
- Installed kreuzwerker/docker v2.21.0 (self-signed, key ID BD080C4571C6104C)
Partner and community providers are signed by their developers.
Partner and community providers are signed by their developers.
If you'd like to know more about provider signing, you can read about it here:
https://www.terraform.io/docs/cli/plugins/signing.html
Terraform has created a lock file .terraform.lock.hcl to record the provider
selections it made above. Include this file in your version control repository
so that Terraform can guarantee to make the same selections by default when
you run "terraform init" in the future.

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\Admin\Desktop\Terraform Scripts\docker>
```

Step 4: Execute Terraform plan to see the available resources

```
PS C:\Users\Admin\Desktop\Terraform Scripts\docker> terraform plan

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:

  # docker_container.foo will be created
  + resource "docker_container" "foo" {
      + attach           = false
      + bridge           = (known after apply)
      + command          = [
          + "sleep",
          + "3600",
        ]
      + container_logs   = (known after apply)
      + entrypoint       = (known after apply)
      + env              = (known after apply)
      + exit_code        = (known after apply)
      + gateway          = (known after apply)
      + hostname         = (known after apply)
      + id               = (known after apply)
      + image            = (known after apply)
      + init             = (known after apply)
      + ip_address       = (known after apply)
      + ip_prefix_length = (known after apply)
      + ipc_mode         = (known after apply)
      + log_driver       = (known after apply)
      + logs             = false
      + must_run         = true
      + name             = "foo"
      + network_data     = (known after apply)
      + read_only        = false
      + remove_volumes   = true
      + restart          = "no"
      + rm               = false
```

```
      + network_data     = (known after apply)
      + read_only        = false
      + remove_volumes   = true
      + restart          = "no"
      + rm               = false
      + runtime          = (known after apply)
      + security_opts    = (known after apply)
      + shm_size         = (known after apply)
      + start            = true
      + stdin_open       = false
      + stop_signal      = (known after apply)
      + stop_timeout     = (known after apply)
      + tty              = false

      + healthcheck (known after apply)

      + labels (known after apply)
    }

  # docker_image.ubuntu will be created
  + resource "docker_image" "ubuntu" {
      + id          = (known after apply)
      + image_id    = (known after apply)
      + latest      = (known after apply)
      + name        = "ubuntu:latest"
      + output      = (known after apply)
      + repo_digest = (known after apply)
    }

Plan: 2 to add, 0 to change, 0 to destroy.
```

Step 5: Execute Terraform apply to apply the configuration, which will automatically create and run the Ubuntu Linux container based on our configuration. Using command : “terraform apply”

```
PS C:\Users\Admin\Desktop\Terraform Scripts\docker> 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:

  # docker_container.foo will be created
  + resource "docker_container" "foo" {
      + attach           = false
      + bridge           = (known after apply)
      + command          = [
          + "sleep",
          + "3600",
        ]
      + container_logs   = (known after apply)
      + entrypoint       = (known after apply)
      + env              = (known after apply)
      + exit_code        = (known after apply)
      + gateway          = (known after apply)
      + hostname         = (known after apply)
      + id               = (known after apply)
      + image            = (known after apply)
      + init             = (known after apply)
      + ip_address       = (known after apply)
      + ip_prefix_length = (known after apply)
      + ipc_mode         = (known after apply)
      + log_driver       = (known after apply)
      + logs             = false
```

```
      + healthcheck (known after apply)

      + labels (known after apply)
    }

  # docker_image.ubuntu will be created
  + resource "docker_image" "ubuntu" {
      + id          = (known after apply)
      + image_id    = (known after apply)
      + latest      = (known after apply)
      + name        = "ubuntu:latest"
      + output      = (known after apply)
      + repo_digest = (known after apply)
    }

Plan: 2 to add, 0 to change, 0 to destroy.

Do you want to perform these actions?
  Terraform will perform the actions described above.
  Only 'yes' will be accepted to approve.

  Enter a value: yes

docker_image.ubuntu: Creating...
docker_image.ubuntu: Still creating... [10s elapsed]
docker_image.ubuntu: Creation complete after 12s [id=sha256:edbfe74c41f8a3501ce542e137cf28ea04dd03e6df8c9d66519b6ad761c2598aubuntu:latest]
docker_container.foo: Creating...
docker_container.foo: Creation complete after 3s [id=9dcd9e799109022c4cfa1545e449894948a72460b66ca2e468f933bc2b650255]

Apply complete! Resources: 2 added, 0 changed, 0 destroyed.
```

Docker images, Before Executing Apply step:

```
PS C:\Users\Admin\Desktop\Terraform Scripts\docker> docker images
REPOSITORY                                          TAG                 IMAGE ID       CREATED         SIZE
```

Docker images, After Executing Apply step:

```
PS C:\Users\Admin\Desktop\Terraform Scripts\docker> docker images
REPOSITORY                                          TAG                 IMAGE ID       CREATED         SIZE
ubuntu                                              latest              edbfe74c41f8   3 weeks ago     78.1MB
```

Step 6: Execute Terraform destroy to delete the configuration, which will automatically delete the Ubuntu Container.

```
PS C:\Users\Admin\Desktop\Terraform Scripts\docker> terraform destroy
docker_image.ubuntu: Refreshing state... [id=sha256:edbfe74c41f8a3501ce542e137cf28ea04dd03e6df8c9d66519b6ad761c2598aubuntu:latest]
docker_container.foo: Refreshing state... [id=9dcd9e799109022c4cfa1545e449894948a72460b66ca2e468f933bc2b650255]

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:

  # docker_container.foo will be destroyed
  - resource "docker_container" "foo" {
      - attach            = false -> null
      - command           = [
          - "sleep",
          - "3600",
        ] -> null
      - cpu_shares        = 0 -> null
      - dns               = [] -> null
      - dns_opts          = [] -> null
      - dns_search        = [] -> null
      - entrypoint        = [] -> null
      - env               = [] -> null
      - gateway           = "172.17.0.1" -> null
      - group_add         = [] -> null
      - hostname          = "9dcd9e799109" -> null
      - id                = "9dcd9e799109022c4cfa1545e449894948a72460b66ca2e468f933bc2b650255" -> null
      - image             = "sha256:edbfe74c41f8a3501ce542e137cf28ea04dd03e6df8c9d66519b6ad761c2598a" -> null
      - init              = false -> null
      - ip_address        = "172.17.0.2" -> null
      - ip_prefix_length  = 16 -> null
      - ipc_mode          = "private" -> null
      - links             = [] -> null
      - log_driver        = "json-file" -> null
      - log_opts          = {} -> null
      - logs              = false -> null
```

```
            - ip_address                = "172.17.0.2"
            - ip_prefix_length          = 16
            - network_name              = "bridge"
              # (2 unchanged attributes hidden)
          },
      ] -> null
      - network_mode      = "default" -> null
      - privileged        = false -> null
      - publish_all_ports = false -> null
      - read_only         = false -> null
      - remove_volumes    = true -> null
      - restart           = "no" -> null
      - rm                = false -> null
      - runtime           = "runc" -> null
      - security_opts     = [] -> null
      - shm_size          = 64 -> null
      - start             = true -> null
      - stdin_open        = false -> null
      - stop_timeout      = 0 -> null
      - storage_opts      = {} -> null
      - sysctls           = {} -> null
      - tmpfs             = {} -> null
      - tty               = false -> null
        # (8 unchanged attributes hidden)
    }

  # docker_image.ubuntu will be destroyed
  - resource "docker_image" "ubuntu" {
      - id          = "sha256:edbfe74c41f8a3501ce542e137cf28ea04dd03e6df8c9d66519b6ad761c2598aubuntu:latest" -> null
      - image_id    = "sha256:edbfe74c41f8a3501ce542e137cf28ea04dd03e6df8c9d66519b6ad761c2598a" -> null
      - latest      = "sha256:edbfe74c41f8a3501ce542e137cf28ea04dd03e6df8c9d66519b6ad761c2598a" -> null
      - name        = "ubuntu:latest" -> null
      - repo_digest = "ubuntu@sha256:8a37d68f4f73ebf3d4efafbcf66379bf3728902a8038616808f04e34a9ab63ee" -> null
    }
```

```
Plan: 0 to add, 0 to change, 2 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

docker_container.foo: Destroying... [id=9dcd9e799109022c4cfa1545e449894948a72460b66ca2e468f933bc2b650255]
docker_container.foo: Destruction complete after 0s
docker_image.ubuntu: Destroying... [id=sha256:edbfe74c41f8a3501ce542e137cf28ea04dd03e6df8c9d66519b6ad761c2598aubuntu:latest]
docker_image.ubuntu: Destruction complete after 1s

Destroy complete! Resources: 2 destroyed.
PS C:\Users\Admin\Desktop\Terraform Scripts\docker>
```

Docker images After Executing Destroy step

```
PS C:\Users\Admin\Desktop\Terraform Scripts\docker> docker images
REPOSITORY                                                  TAG                                       IMAGE ID       CREATED         SIZE
```

ADVANCE DEVOPS EXP 7

Name:VAISHNAL MALI
Class:D15A
Roll No:27

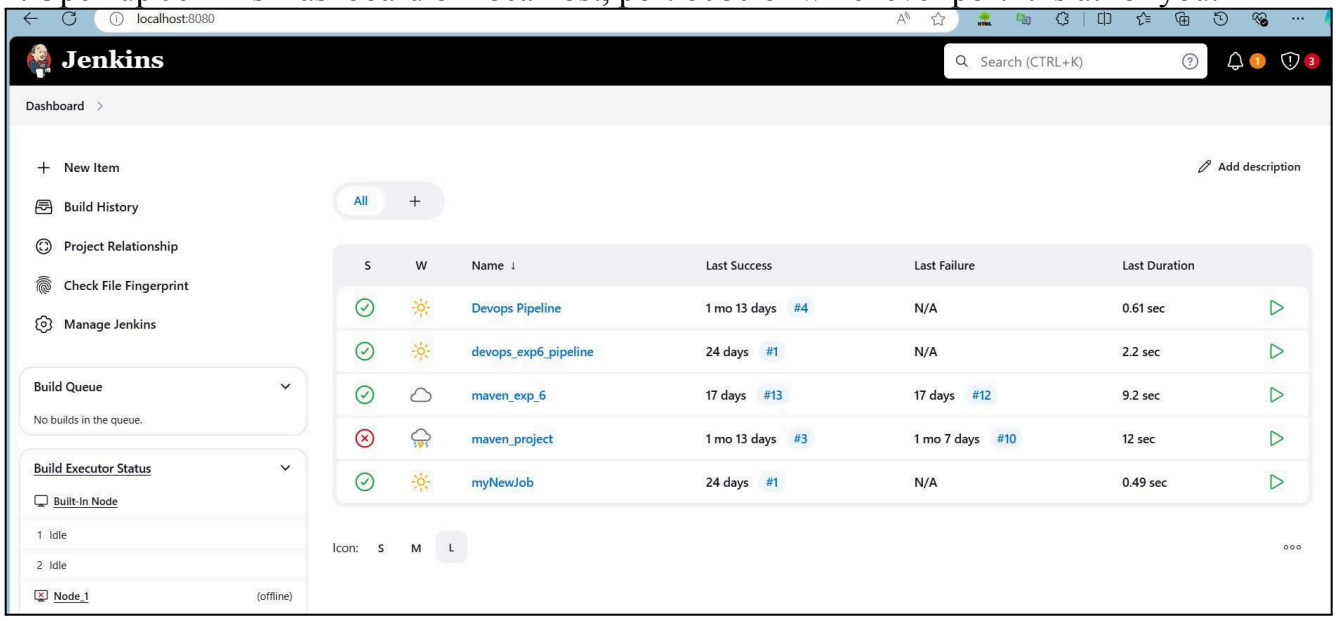
Aim: To understand Static Analysis SAST process and learn to integrate Jenkins SAST to SonarQube/GitLab.

Integrating Jenkins with SonarQube:

- Jenkins installed
- Docker Installed (for SonarQube)
- SonarQube Docker Image

Steps to integrate Jenkins with SonarQube

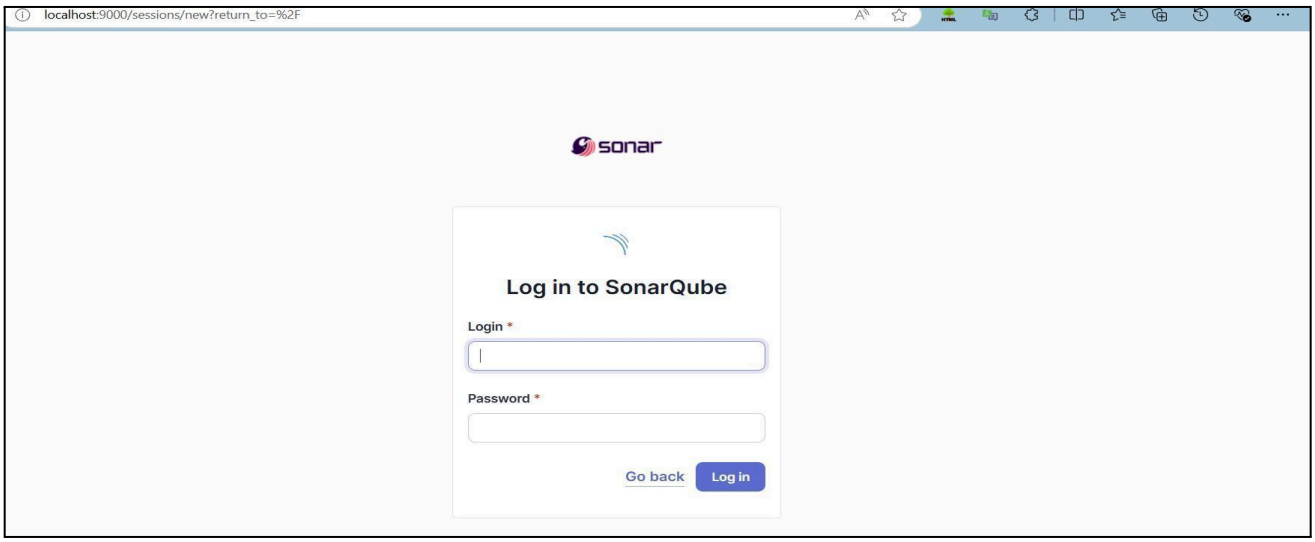
1. Open up Jenkins Dashboard on localhost, port 8080 or whichever port it is at for you.



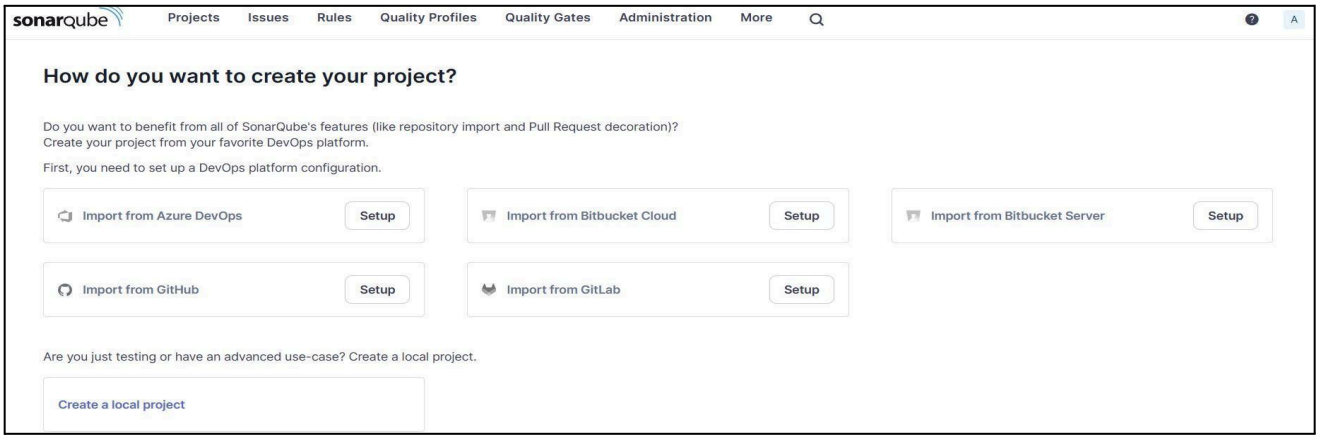
2. Run SonarQube in a Docker container using this command -
docker run -d --name sonarqube -e SONAR_ES_BOOTSTRAP_CHECKS_DISABLE=true -p 9000:9000 sonarqube:latest

```
Microsoft Windows [Version 10.0.22631.4169]
(c) Microsoft Corporation. All rights reserved.

C:\Windows\System32>docker run -d --name sonarqube -e SONAR_ES_BOOTSTRAP_CHECKS_DISABLE=true -p 9000:9000 sonarqube:late
st
Unable to find image 'sonarqube:latest' locally
latest: Pulling from library/sonarqube
7478e0ac0f23: Pull complete
90a925ab929a: Pull complete
7d9a34308537: Pull complete
80338217a4ab: Pull complete
1a5fd5c7e184: Pull complete
7b87d6fa783d: Pull complete
bd819c9b5ead: Pull complete
4f4fb700ef54: Pull complete
Digest: sha256:72e9feec71242af83faf65f95a40d5e3bb2822a6c3b2cda8568790f3d31aecde
Status: Downloaded newer image for sonarqube:latest
e54bd5b0b0df29bd00176c14e08bdc56d7fac6b45ba606f0a30c522fc3fe93da

C:\Windows\System32>
```

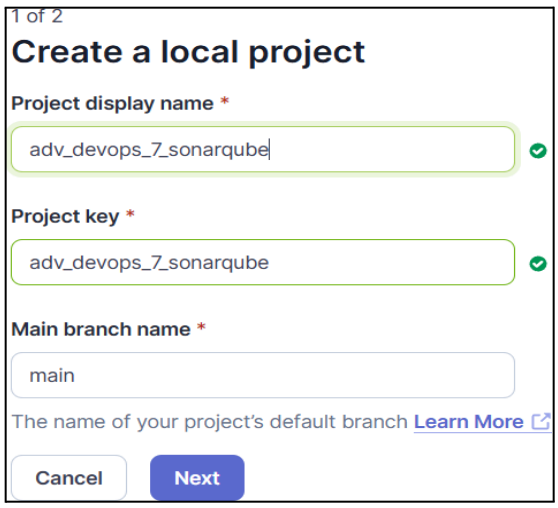
3. Once the container is up and running, you can check the status of SonarQube at localhost port 9000.

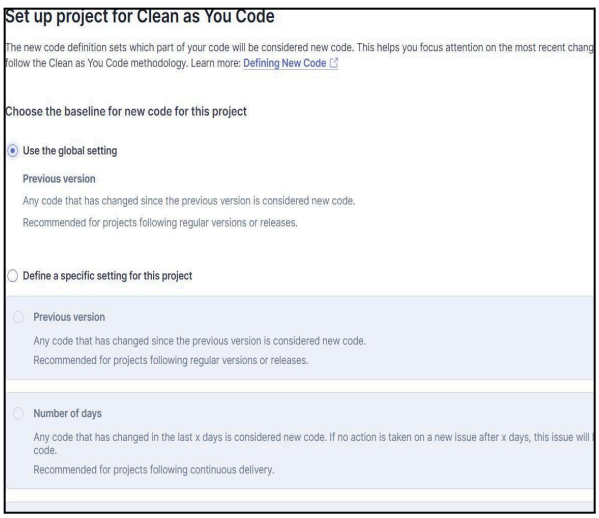


4. Login to SonarQube using username admin and password admin.

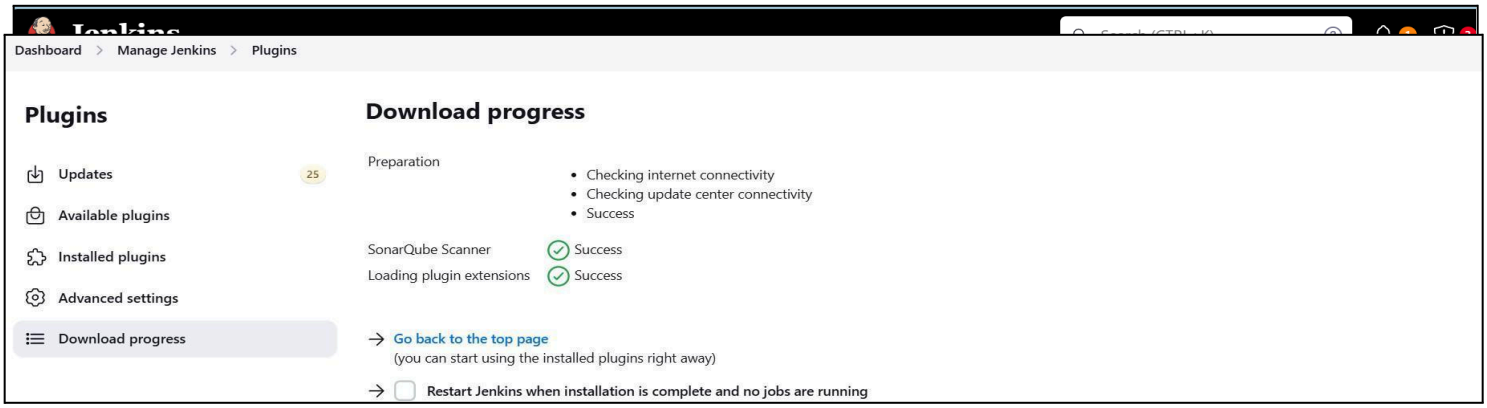


5. Create a manual project in SonarQube with the name sonarqube





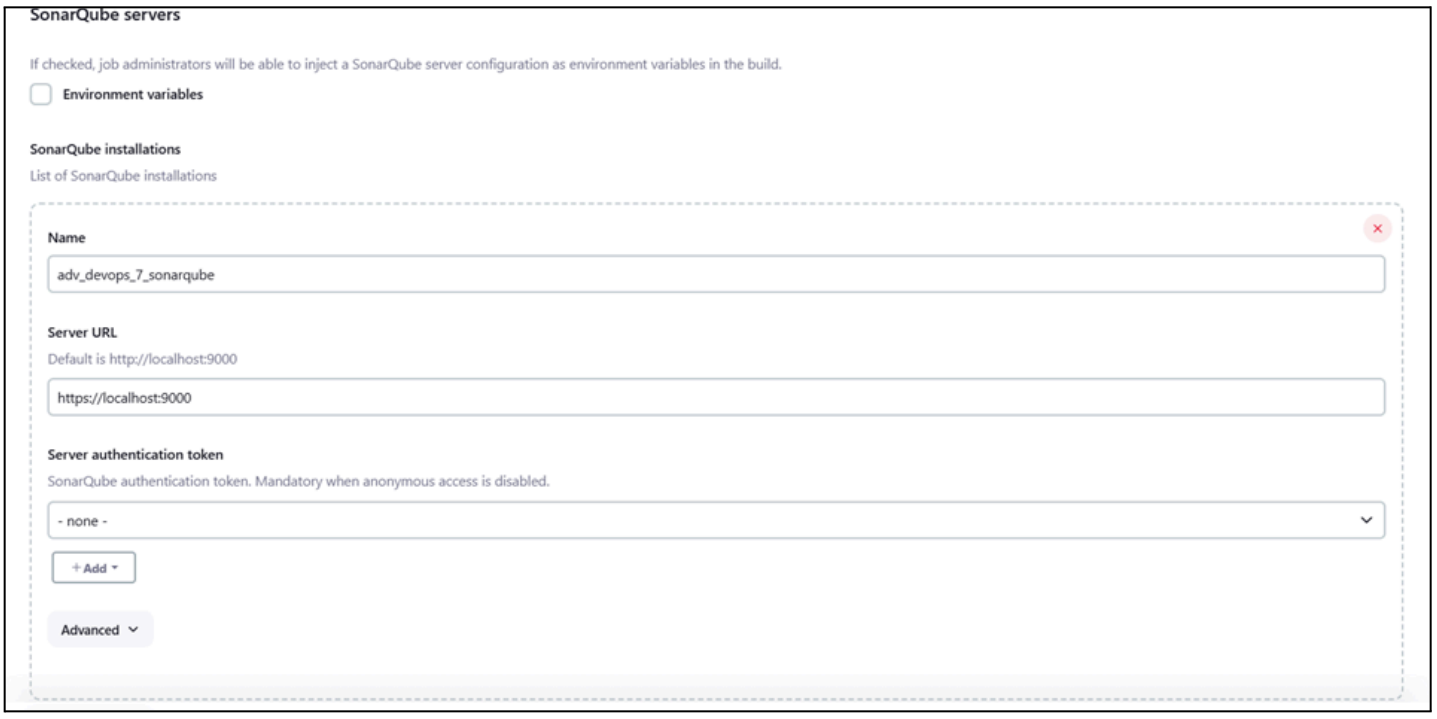
Setup the project and come back to Jenkins Dashboard.
Go to Manage Jenkins and search for SonarQube Scanner for Jenkins and install it.



6. Under Jenkins ‘Manage Jenkins’ then go to ‘system’, scroll and look for **SonarQube Servers**

and enter the details.
Enter the Server Authentication token if needed.

In SonarQube installations: Under **Name** add <project name of sonarqube>,here we have named it as **adv_devops_7_sonarqube**
In **Server URL** Default is **http://localhost:9000**



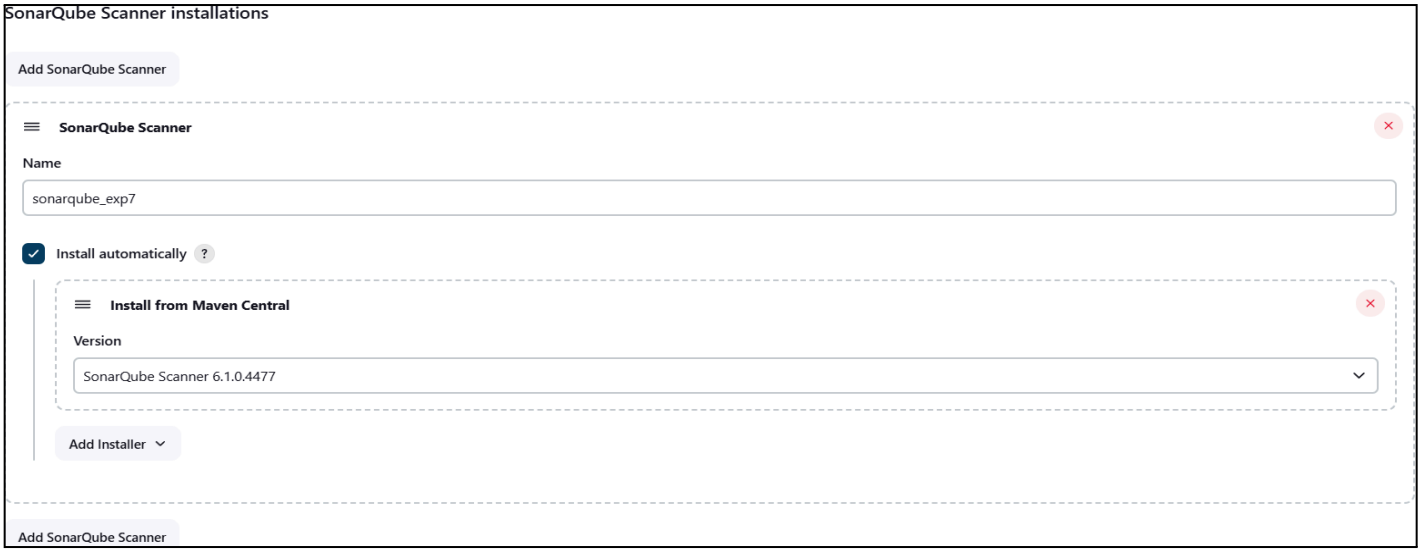
7. Search for SonarQube Scanner under Global Tool Configuration.

Choose the latest configuration and choose Install automatically.

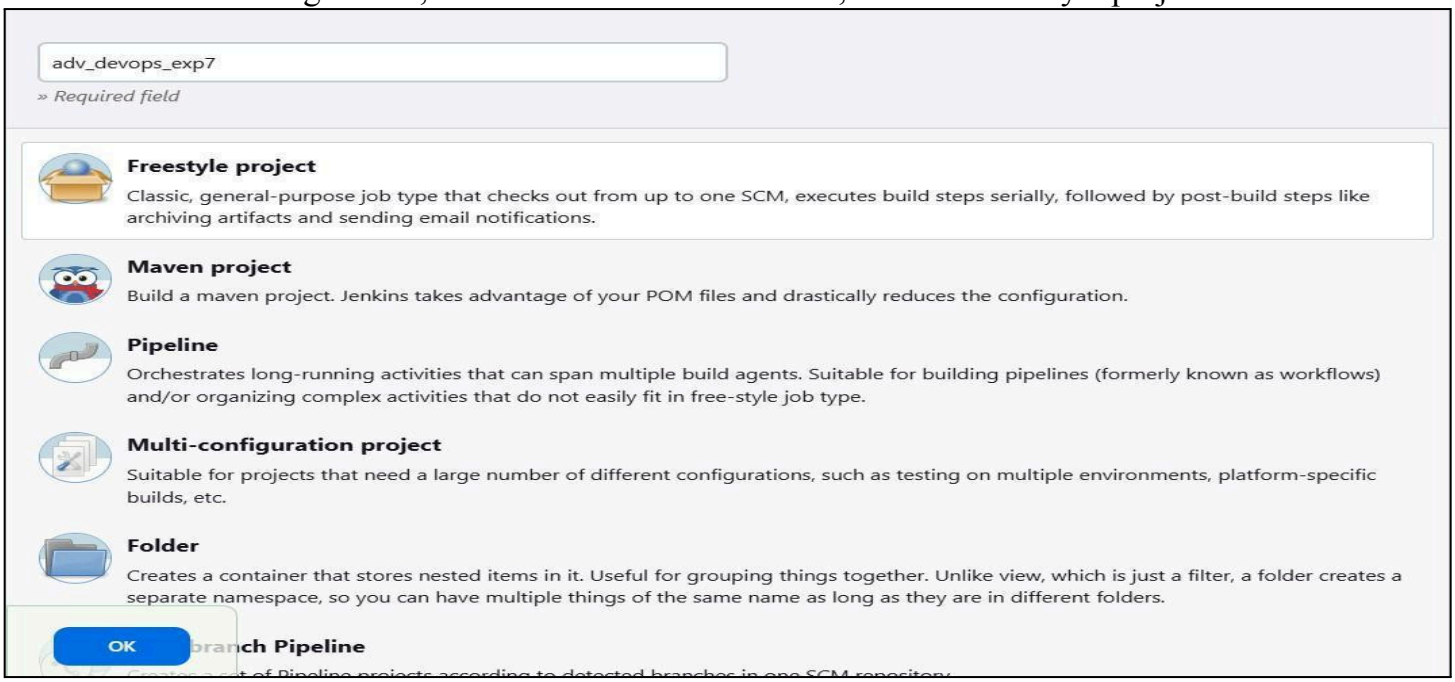
Dashboard > Manage Jenkins > Tools

Check the “Install automatically” option. → Under name any name as identifier →

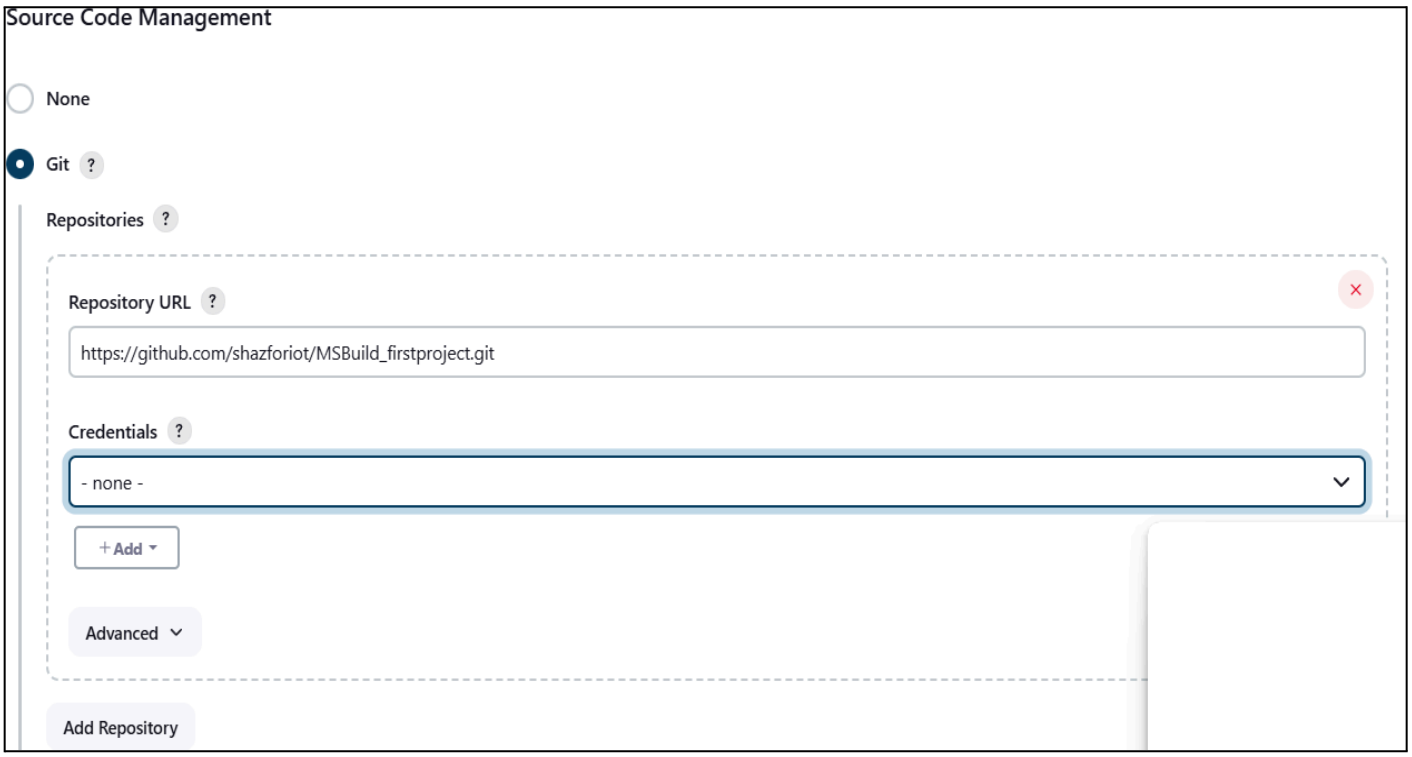
Check the “Install automatically” option.



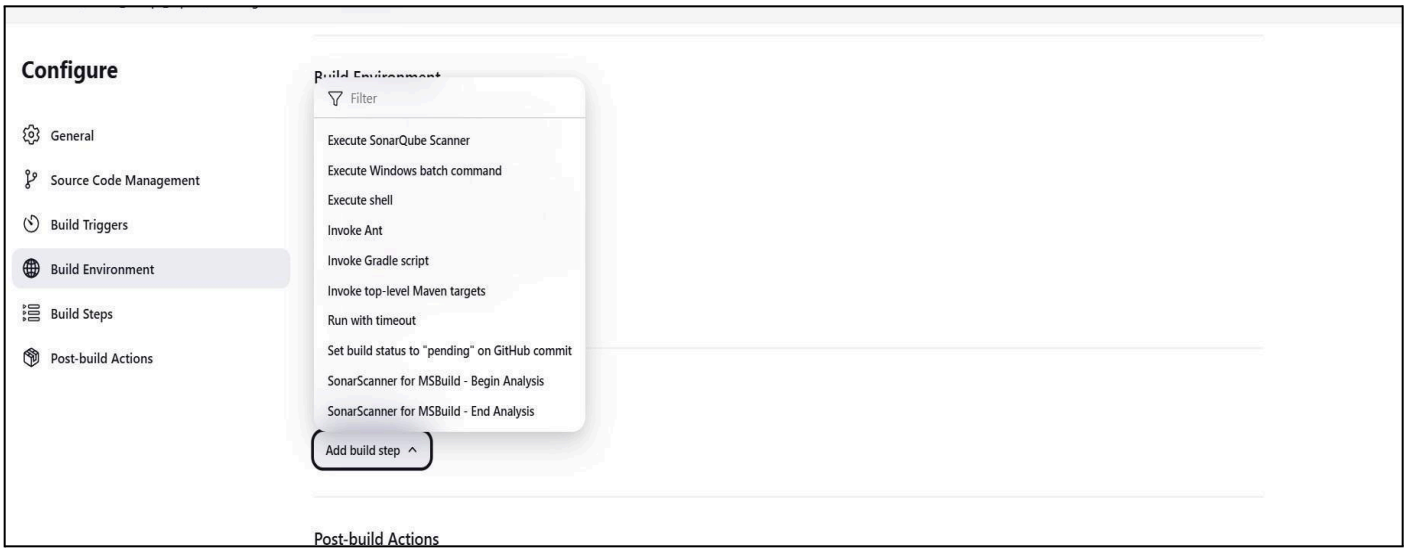
8. After the configuration, create a New Item in Jenkins, choose a freestyle project.



9. Choose this GitHub repository in Source Code Management.
https://github.com/shazforiot/MSBuild_firstproject.git
It is a sample hello-world project with no vulnerabilities and issues, just to test the integration.

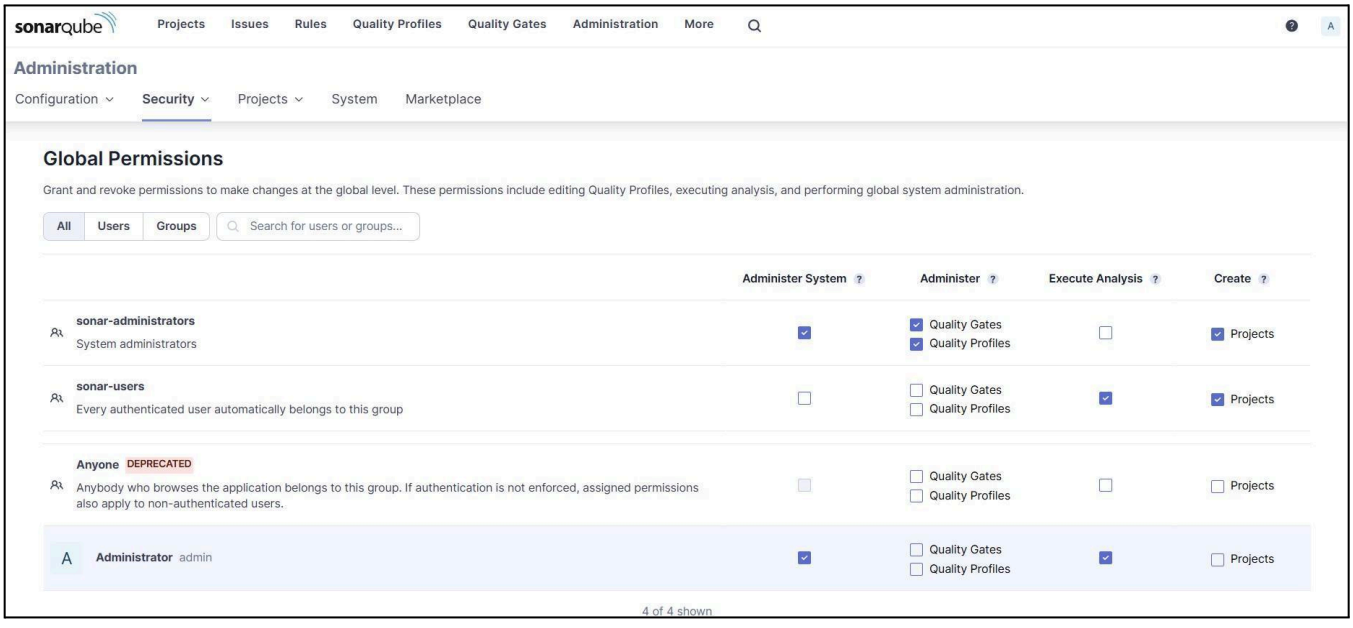


10. Under **Select project → Configuration → Build steps → Execute SonarQube Scanner**, enter these Analysis properties. Mention the SonarQube Project Key, Login, Password, Source path and Host URL.


Configure
General
Source Code Management
Build Triggers
Build Environment
Build Steps
Post-build Actions
Filter
Execute SonarQube Scanner
Execute Windows batch command
Execute shell
Invoke Ant
Invoke Gradle script
Invoke top-level Maven targets
Run with timeout
Set build status to "pending" on GitHub commit
SonarScanner for MSBuild - Begin Analysis
SonarScanner for MSBuild - End Analysis
Add build step
Post-build Actions

Then save

11. Go to http://localhost:9000/<user_name>/permissions and allow Execute Permissions to the Admin user



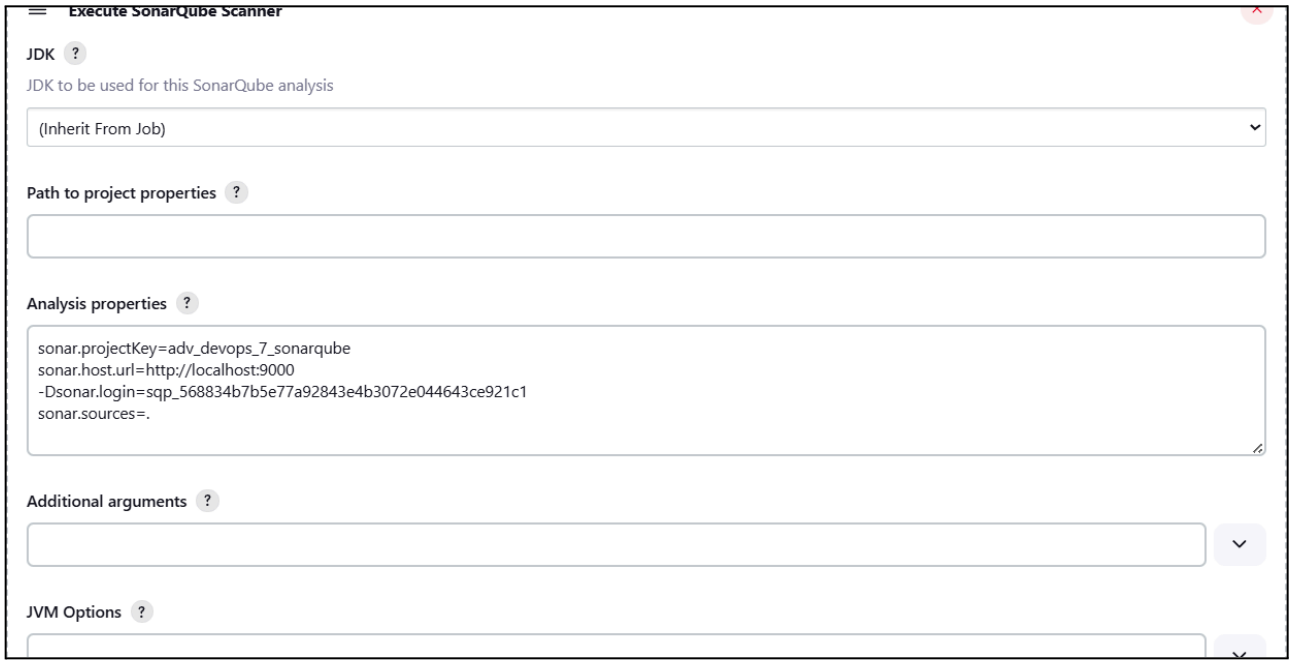
IF CONSOLE OUTPUT FAILED:

Step 1: Generate a New Authentication Token in SonarQube

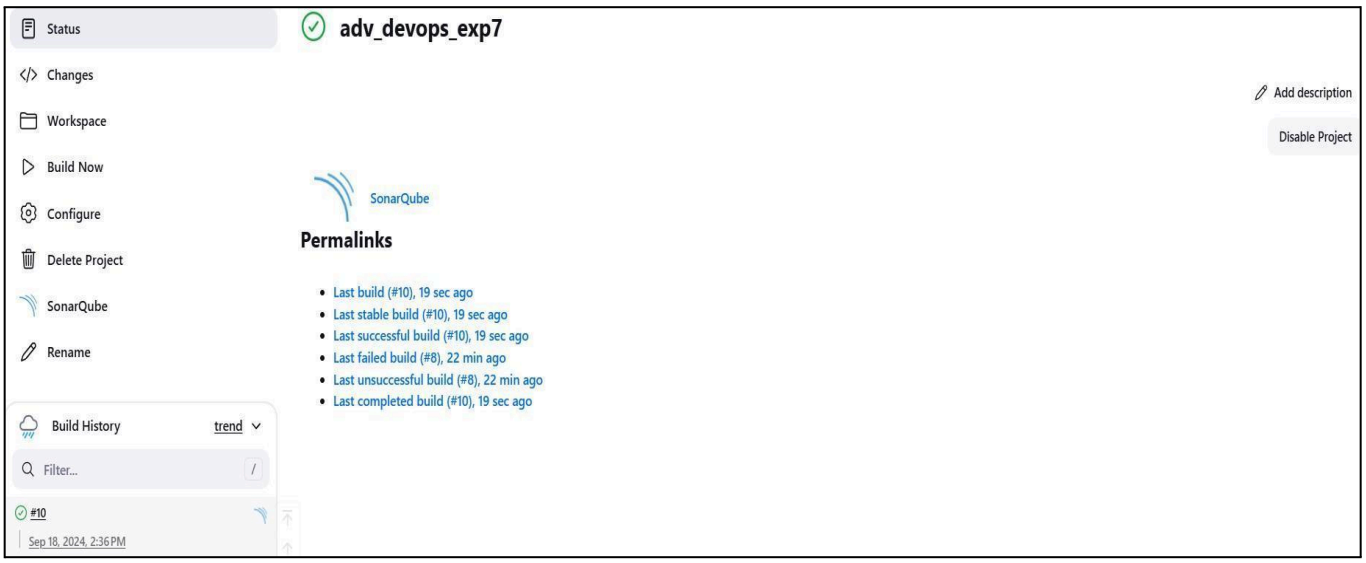
1. **Login to SonarQube:**
   - Open your browser and go to **http://localhost:9000**.
   - Log in with your admin credentials (default username is **admin**, and the password is either **admin** or your custom password if it was changed).
2. **Generate a New Token:**
   - Click on your **username** in the top-right corner of the SonarQube dashboard.
   - Select **My Account** from the dropdown menu.
   - Go to the **Security** tab.
   - Under **Generate Tokens**, type a name for the token (e.g., "Jenkins-SonarQube").
   - Click **Generate**.
   - Copy the token and save it securely. You will need it in Jenkins.

Step 2: Update the Token in Jenkins

1. **Go to Jenkins Dashboard:**
   - Open Jenkins and log in with your credentials.
2. **Configure the Jenkins Job:**
   - Go to the job that is running the SonarQube scanner (adv_devops_exp7).
   - Click **Configure**.
3. **Update the SonarQube Token:**
   - In the SonarQube analysis configuration (either in the pipeline script or under "Build" section, depending on your job type), update the sonar.login parameter with the new token.

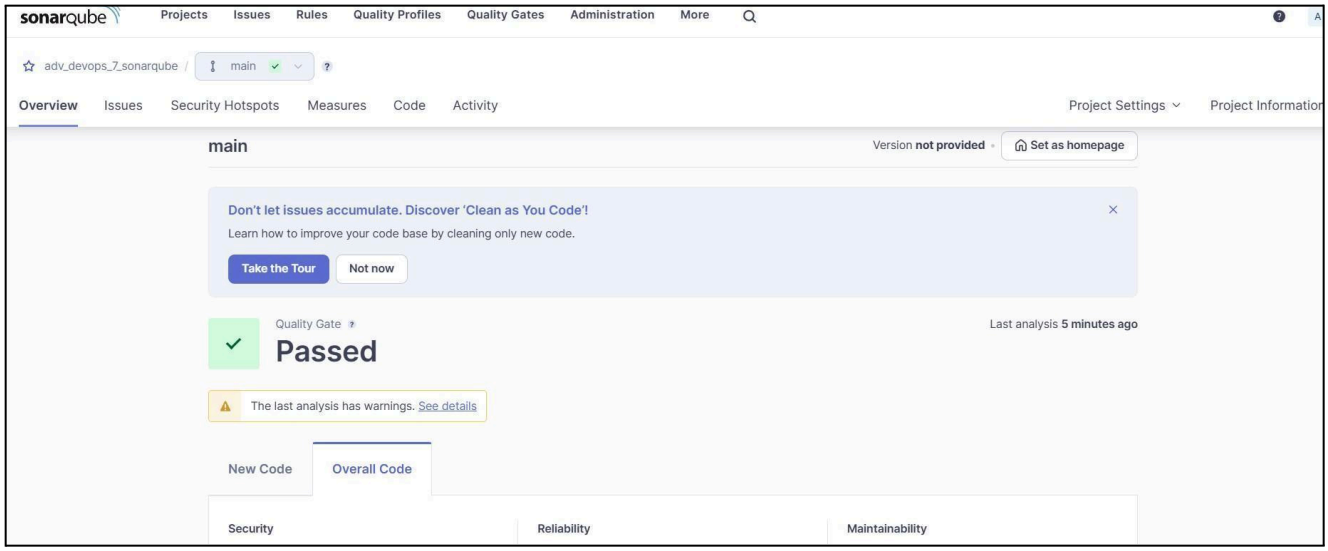


12.Run the Jenkins build.



Check the console Output

13.Once the build is complete, check project on SonarQube



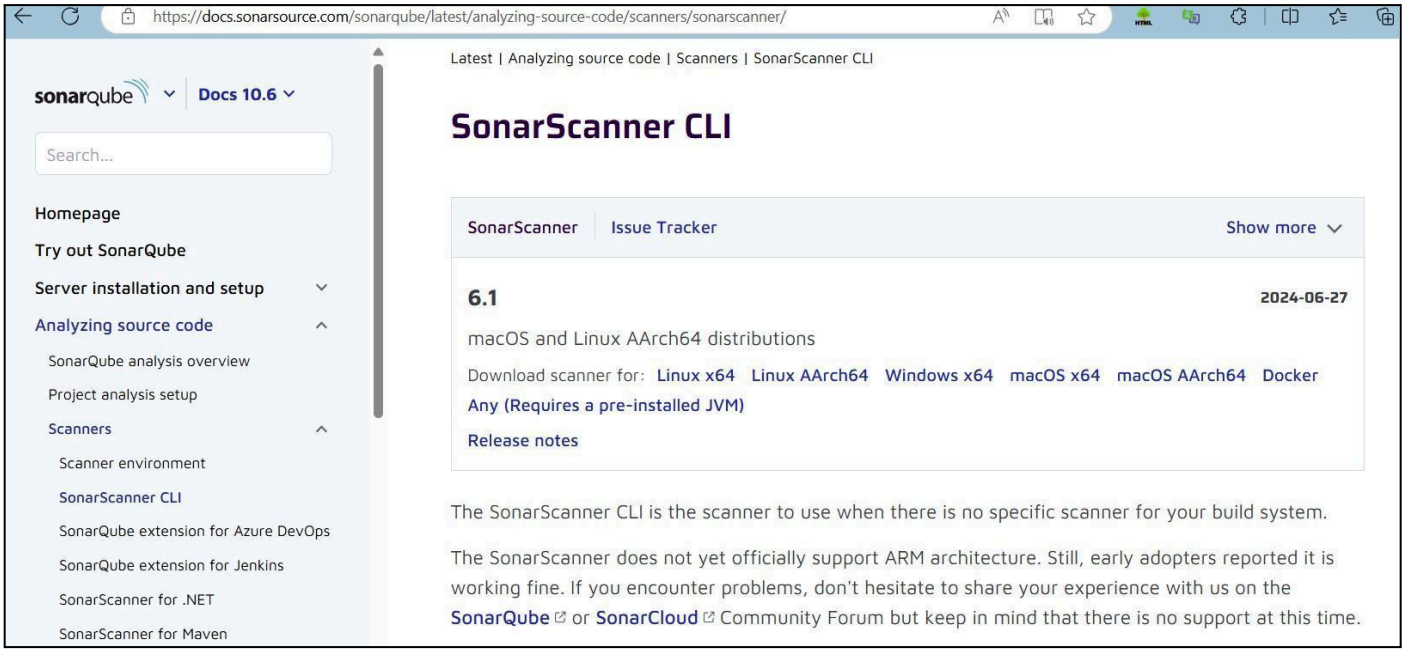
ADVANCE DEVOPS EXP 8

Name:Vaishnal Dilip Mali
Class:D15A
Roll No:27

Aim: Create a Jenkins CICD Pipeline with SonarQube / GitLab Integration to perform a static analysis of the code to detect bugs, code smells, and security vulnerabilities on a sample Web / Java / Python application.

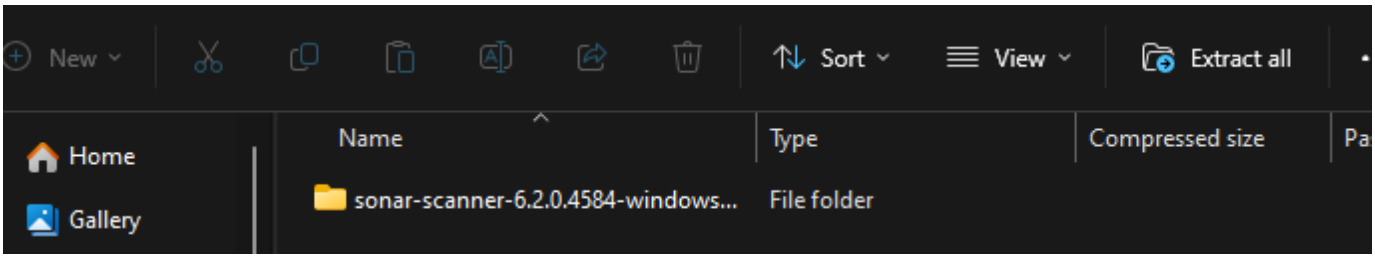
Step 1: Download sonar scanner

https://docs.sonarsource.com/sonarqube/latest/analyzing-source-code/scanners/sonarscanner/



ner/ Visit this link and download the sonarqube scanner CLI.

Extract the downloaded zip file in a folder.

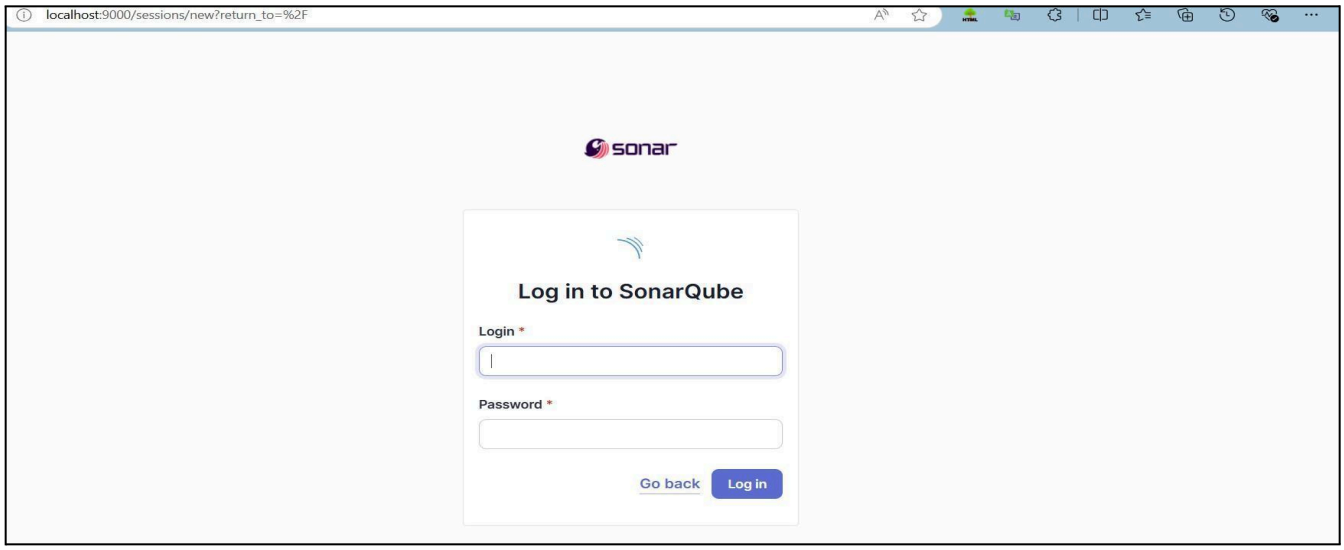


1. Install sonarqube image

Command: **docker pull sonarqube**

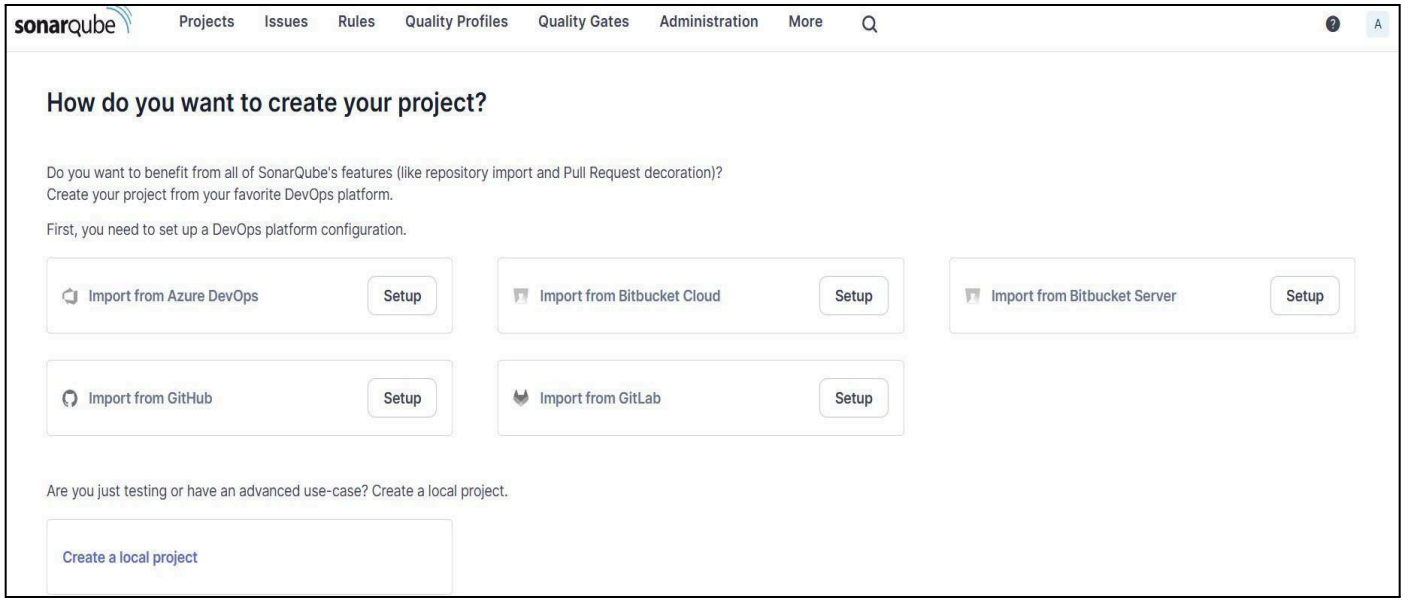
```
C:\Windows\System32>docker pull sonarqube
Using default tag: latest
latest: Pulling from library/sonarqube
Digest: sha256:72e9feec71242af83faf65f95a40d5e3bb2822a6c3b2cda8568790f3d31aecde
Status: Image is up to date for sonarqube:latest
docker.io/library/sonarqube:latest
```

2. Once the container is up and running, you can check the status of

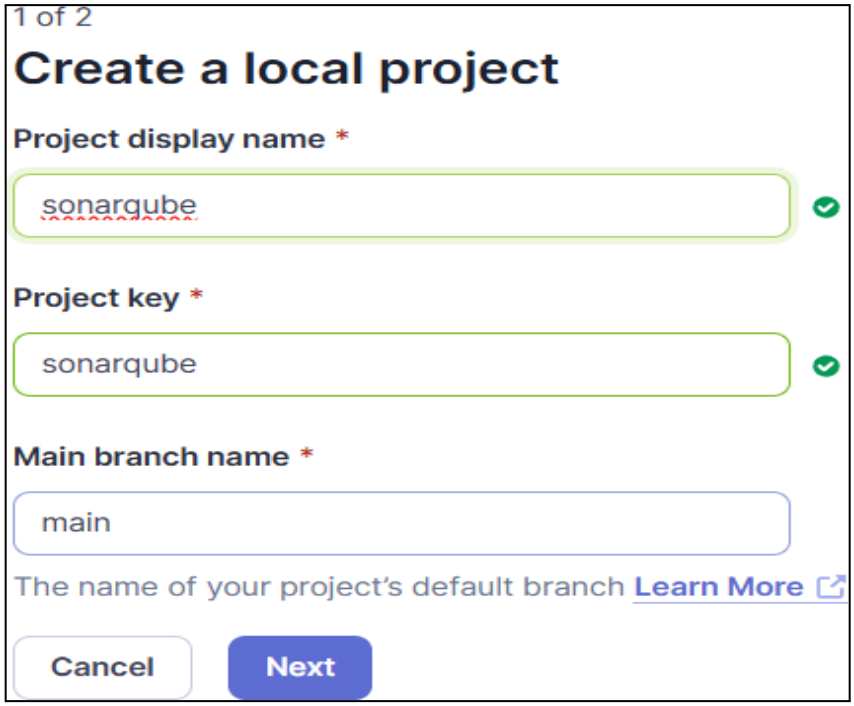


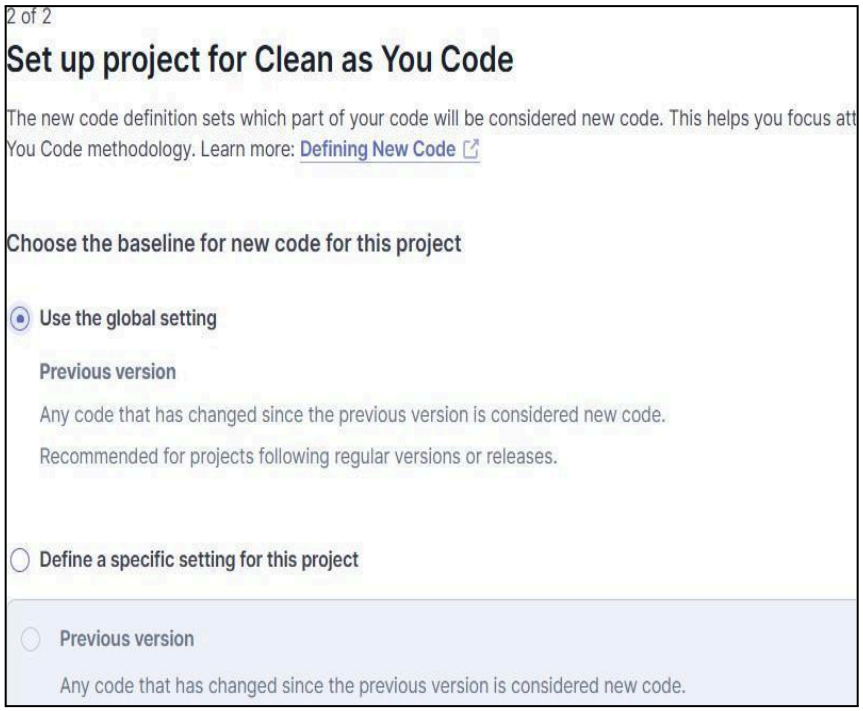
SonarQube at localhost port 9000.

3. Login to SonarQube using username admin and password admin.

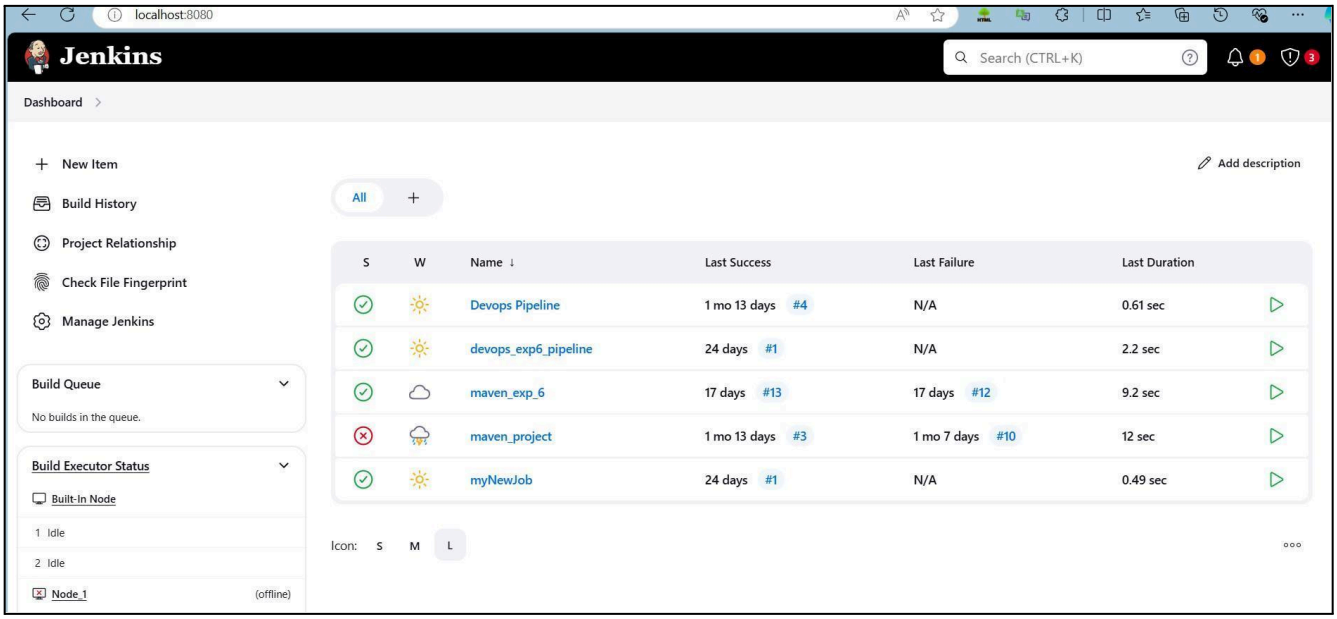


4. Create a manual project in SonarQube with the name sonarqube

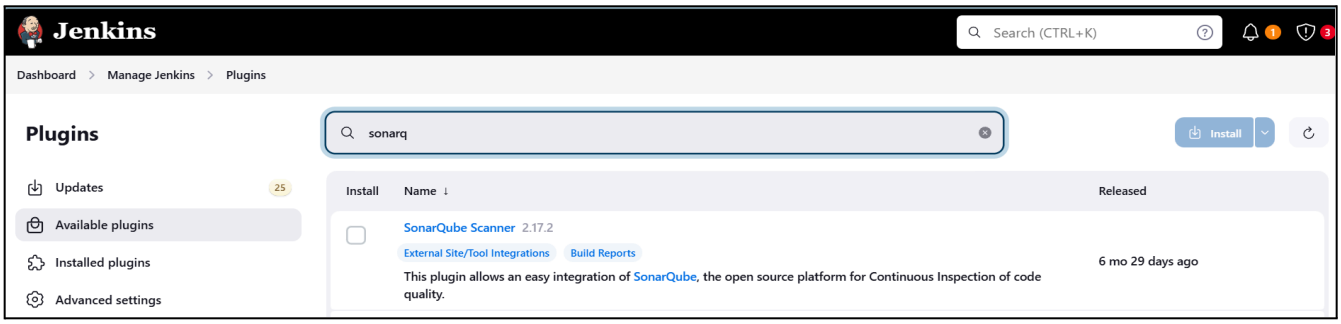


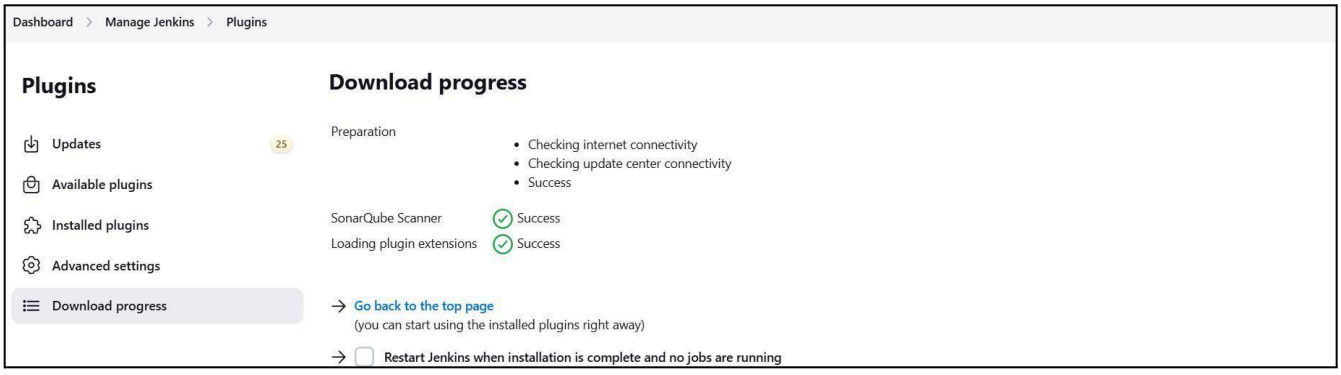


5. Open up Jenkins Dashboard on localhost, port 8080 or whichever port it is at for you.



6. Go to Manage Jenkins and search for SonarQube Scanner for Jenkins and install it.





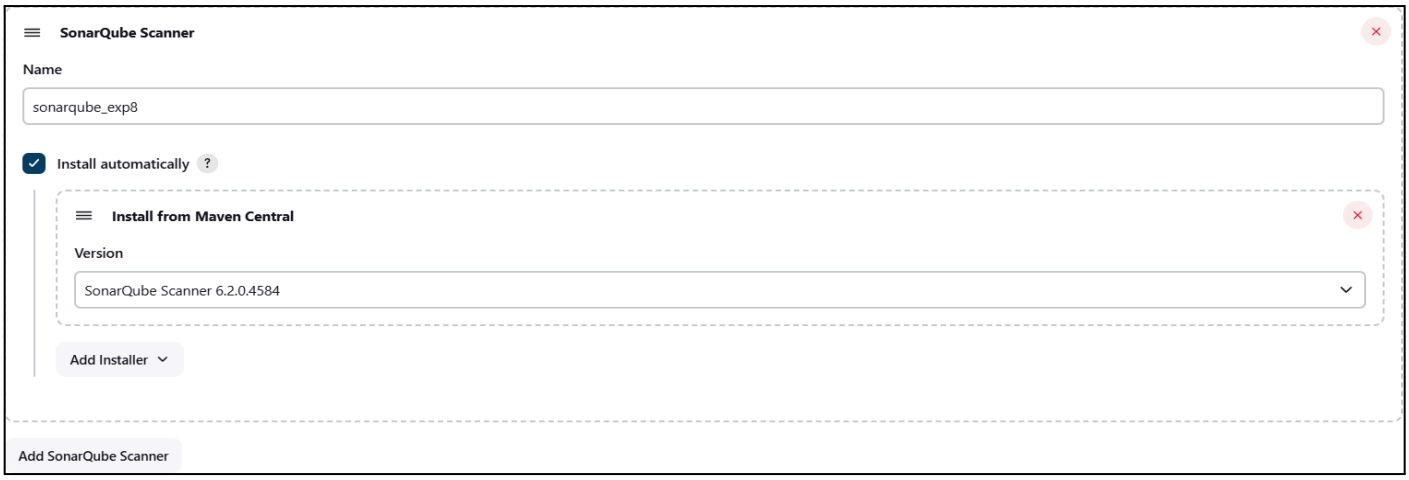
7. Under Jenkins ‘Manage Jenkins’ then go to ‘system’, scroll and look for **SonarQube Servers**
and enter the details.
Enter the Server Authentication token if needed.

In SonarQube installations: Under **Name** add <project name of sonarqube> for me **adv_devops_7_sonarqube**
In **Server URL** Default is **http://localhost:9000**

8. Search for SonarQube Scanner under Global Tool Configuration.
Choose the latest configuration and choose Install automatically.

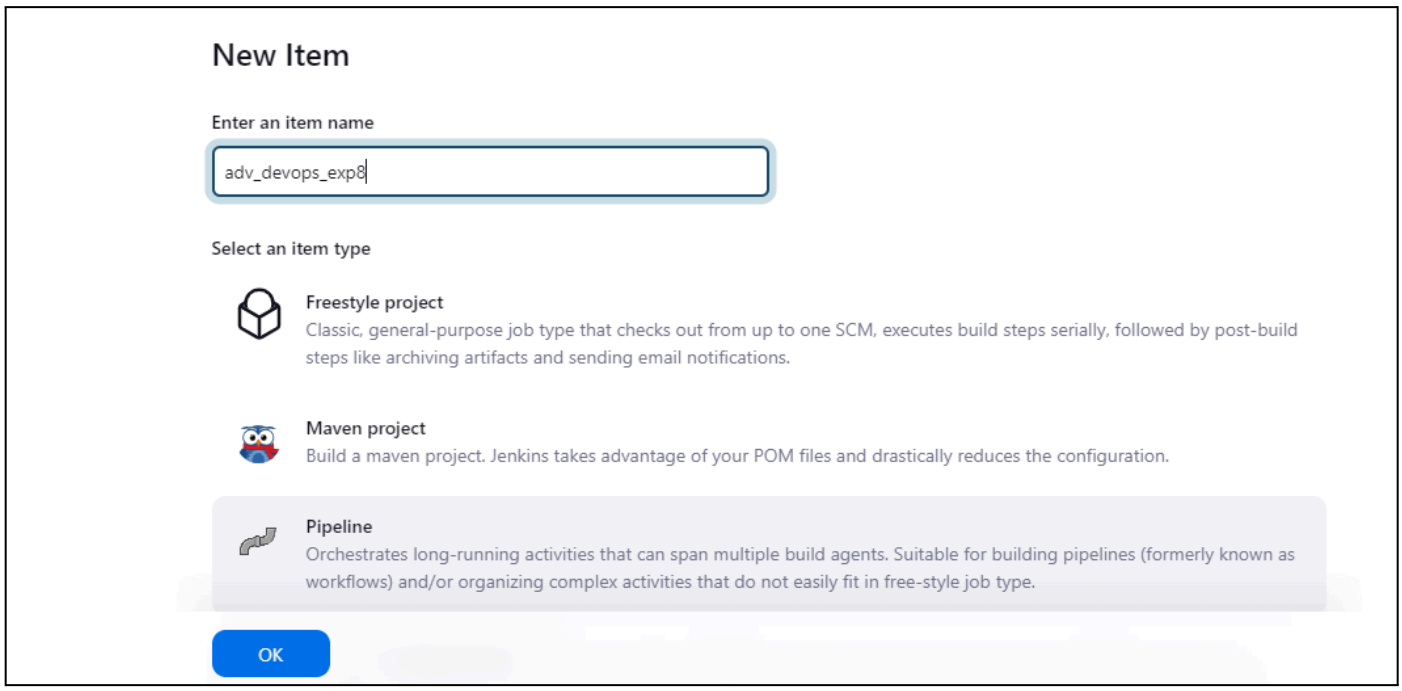
Dashboard > Manage Jenkins > Tools

Check the “Install automatically” option. → Under name any name as identifier →



Check the “Install automatically” option.

9. After configuration, create a New Item → choose a pipeline project.

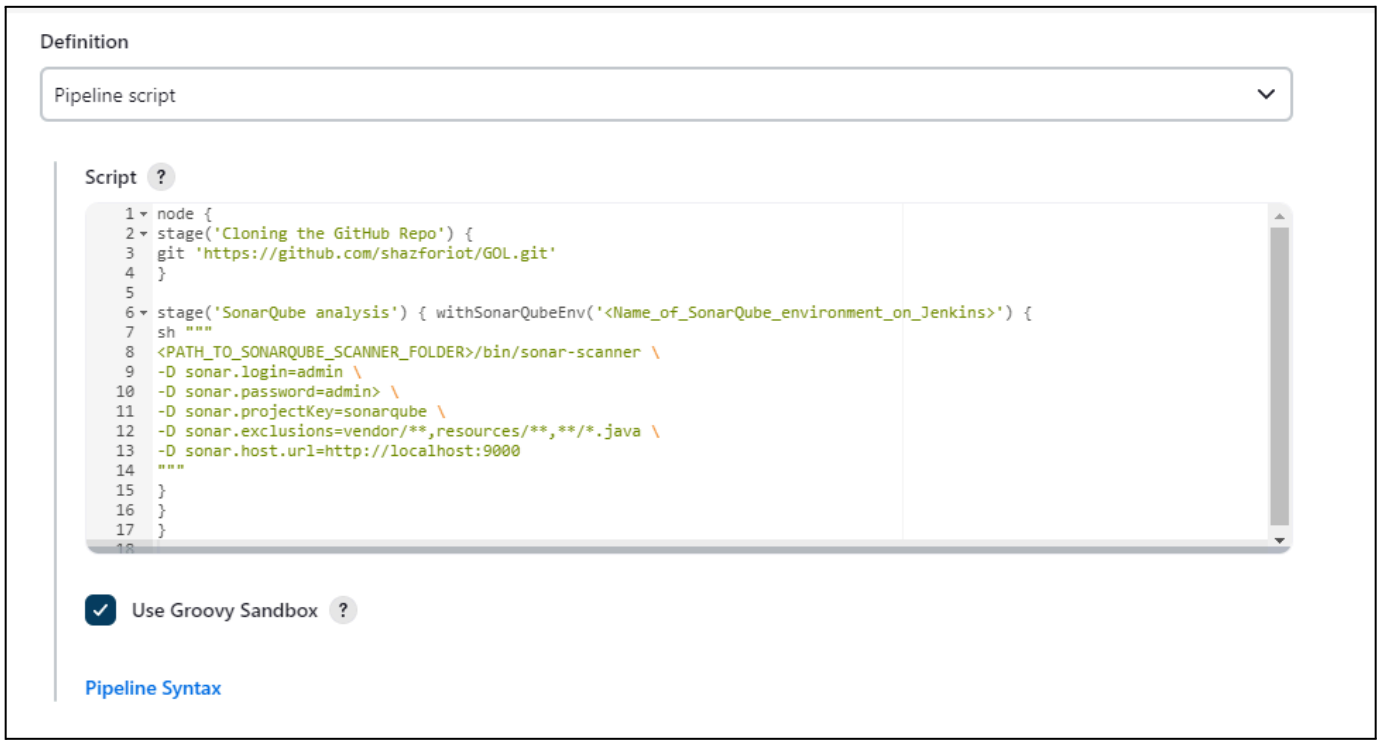


10. Under Pipeline script, enter the following:

```
    node {
stage('Cloning the GitHub Repo') {
  git 'https://github.com/shazforiot/GOL.git'
}

stage('SonarQube analysis') {
  withSonarQubeEnv('<Name_of_SonarQube_environment_on_Jenki
  ns>') {
    sh """
      <PATH_TO_SONARQUBE_SCANNER_FOLDER>/bin/sonar-scanner \
      -D sonar.login=<SonarQube_USERNAME> \
      -D sonar.password=<SonarQube_PASSWORD> \
      -D sonar.projectKey=<Project_KEY> \
      -D sonar.exclusions=vendor/**,resources/**,**/*.java \
      -D sonar.host.url=<SonarQube_URL>(default: http://localhost:9000/)
    """
  }
}
```

}

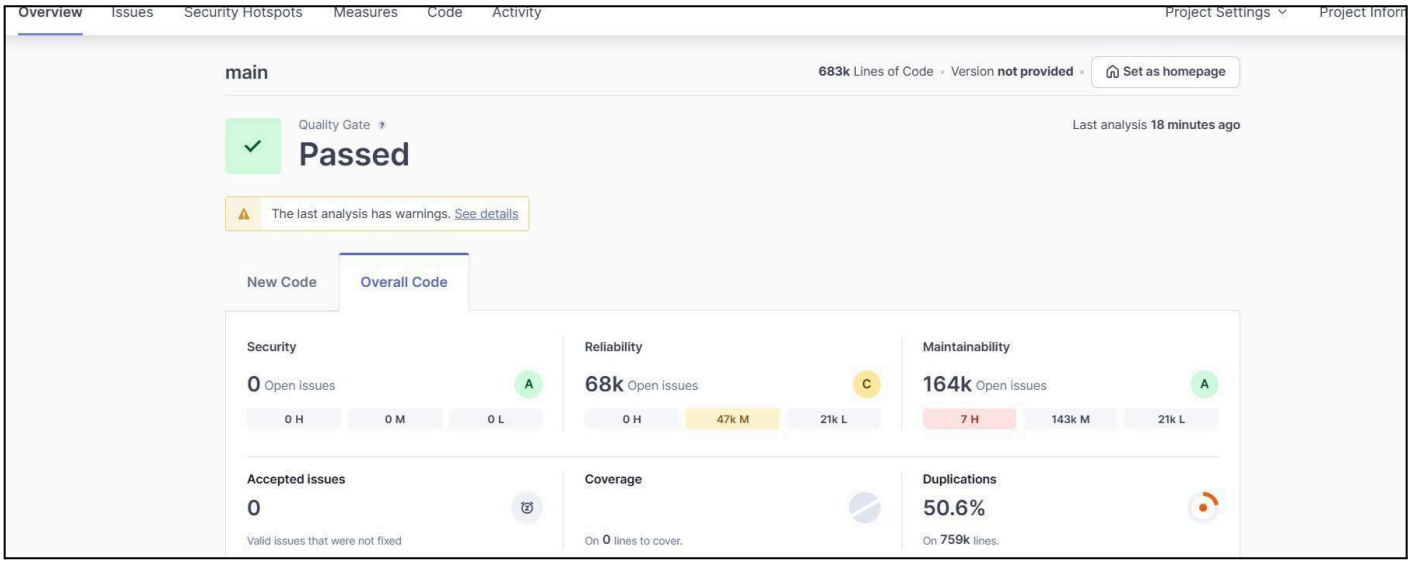
It is a java sample project which has a lot of repetitions and issues that will be detected by SonarQube.



11. Build project

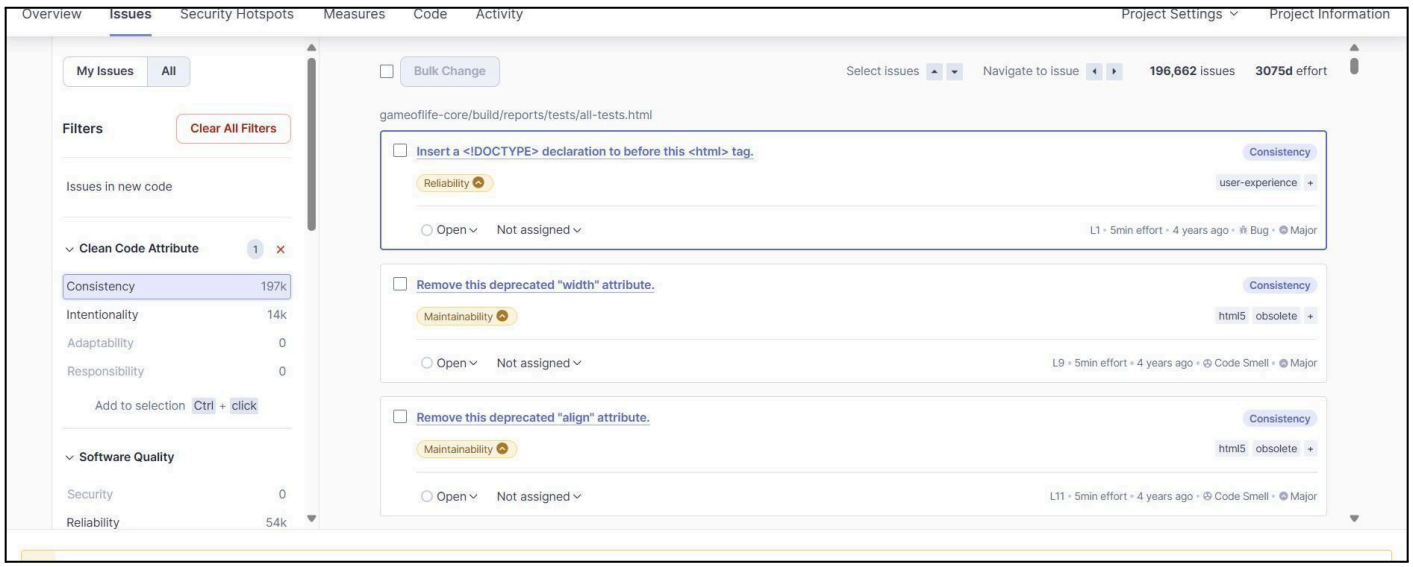
12. Check console

13. Now, check the project in SonarQube

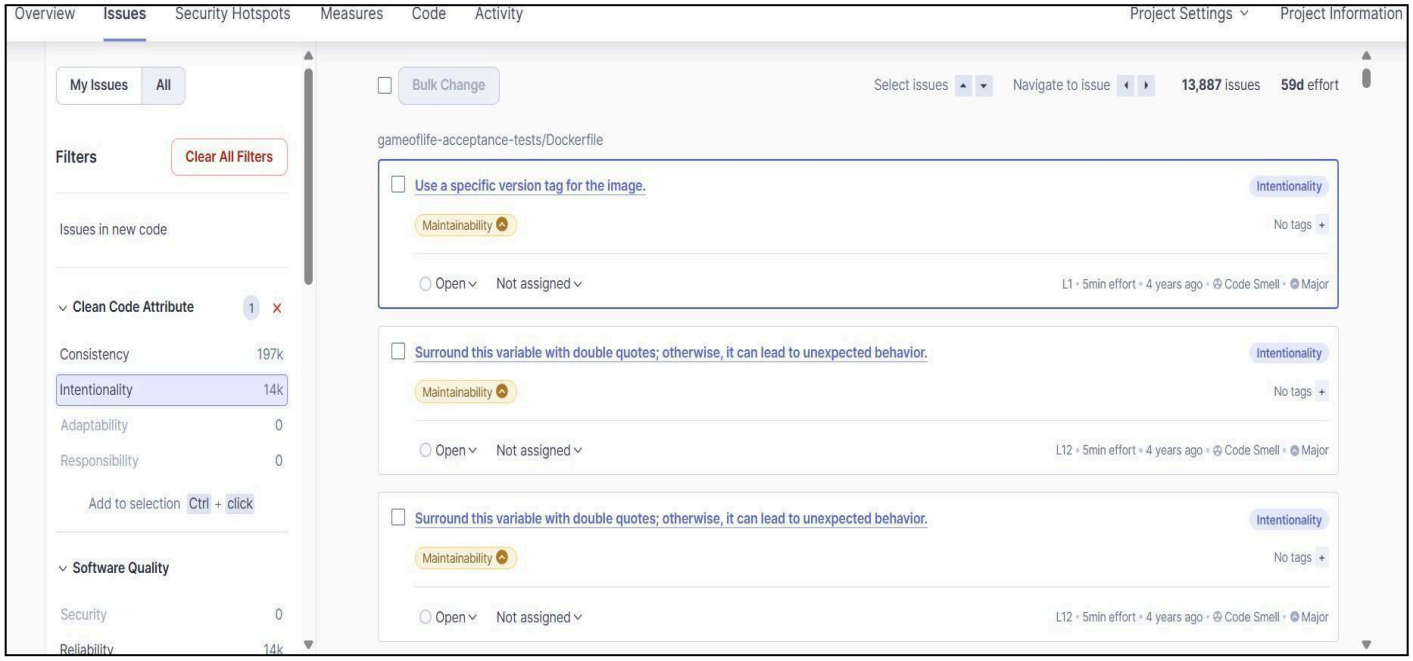


14. Code Problems

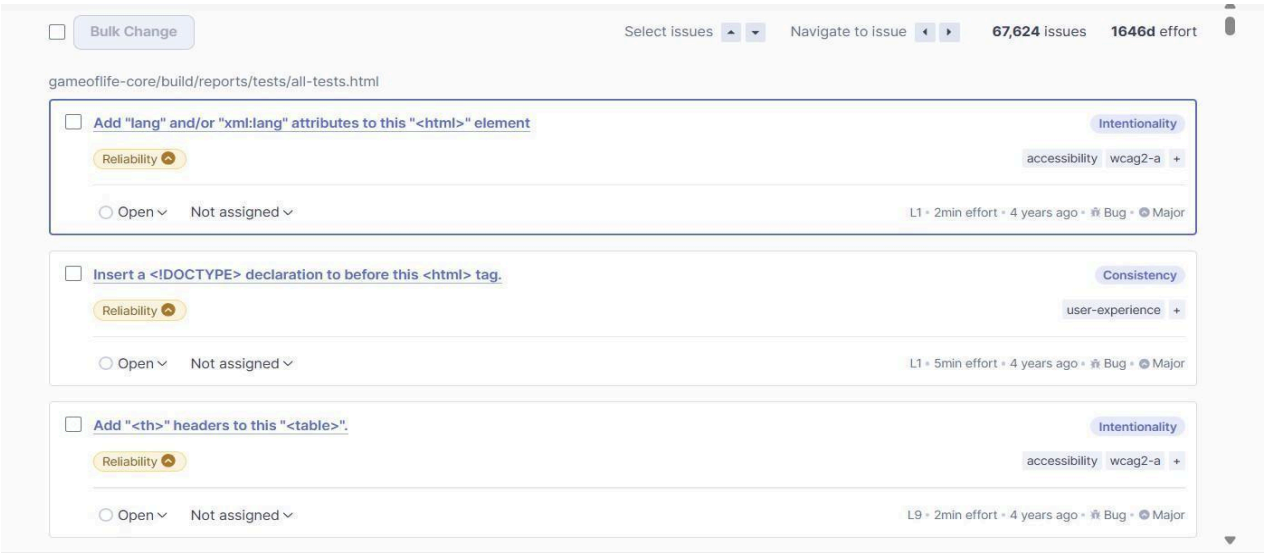
- Consistency



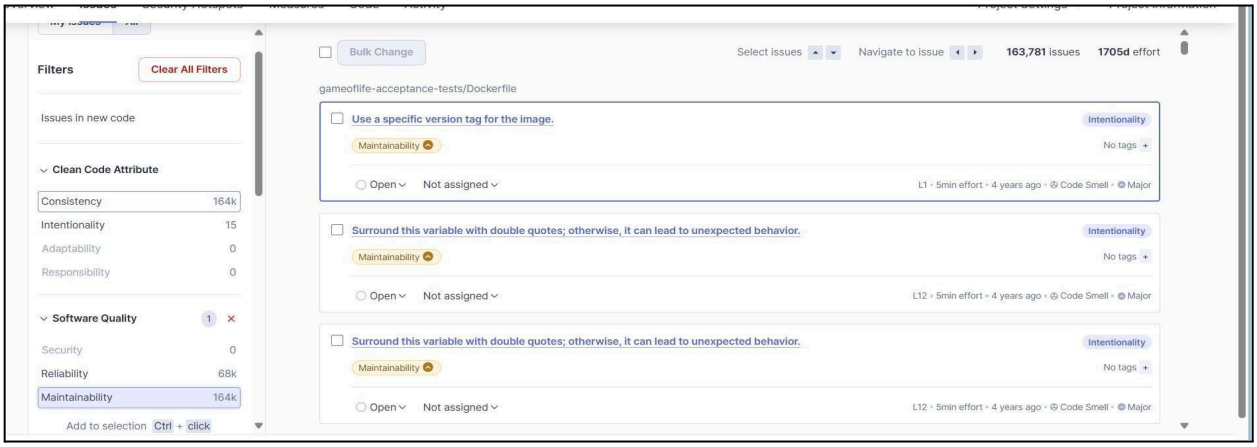
- Intentionality



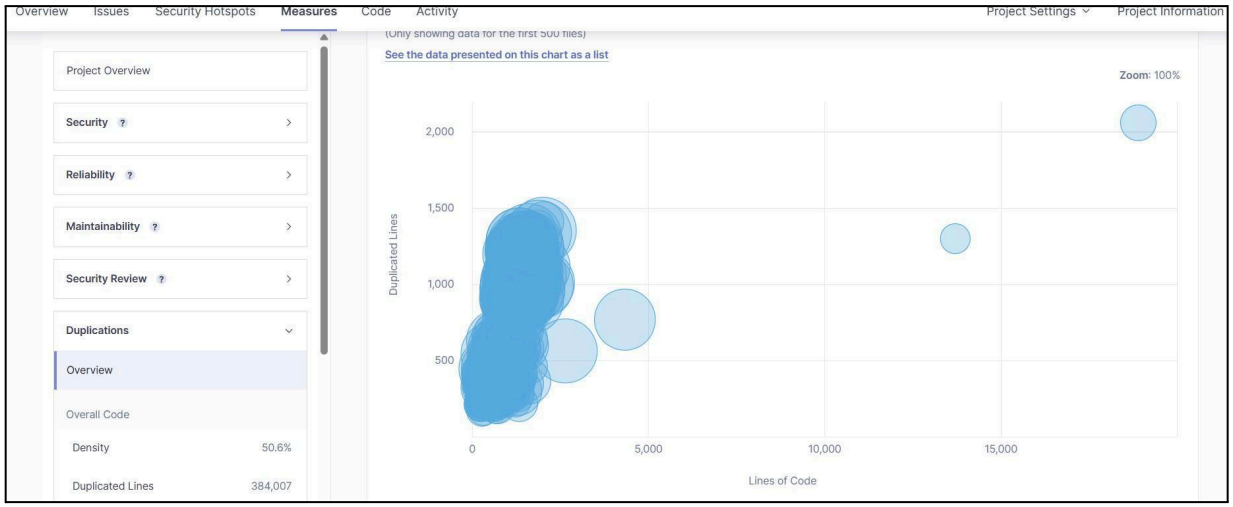
- Bugs



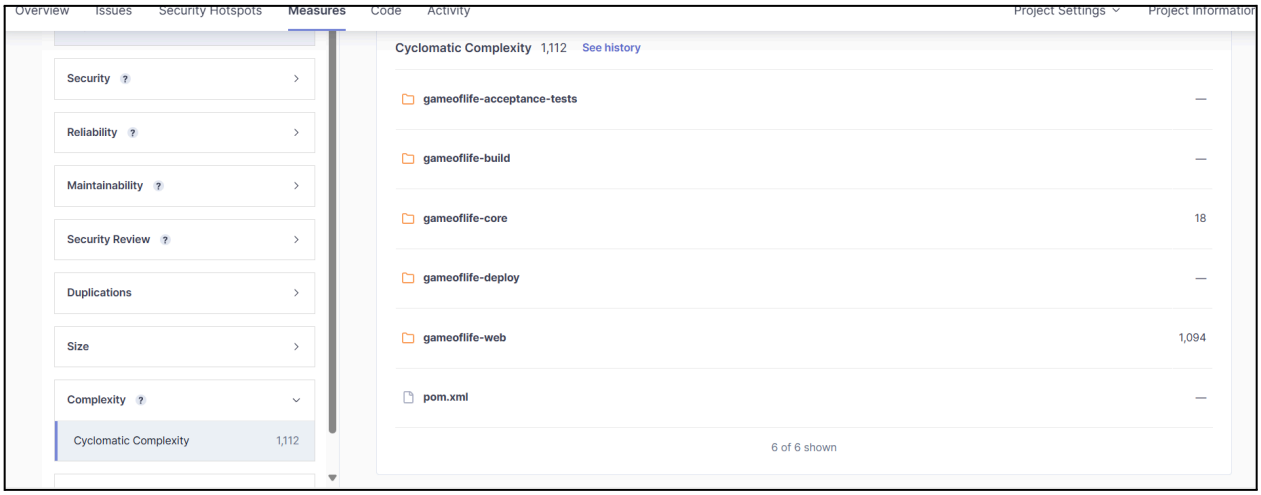
- Code Smells



- Duplications



- Cyclomatic Complexities



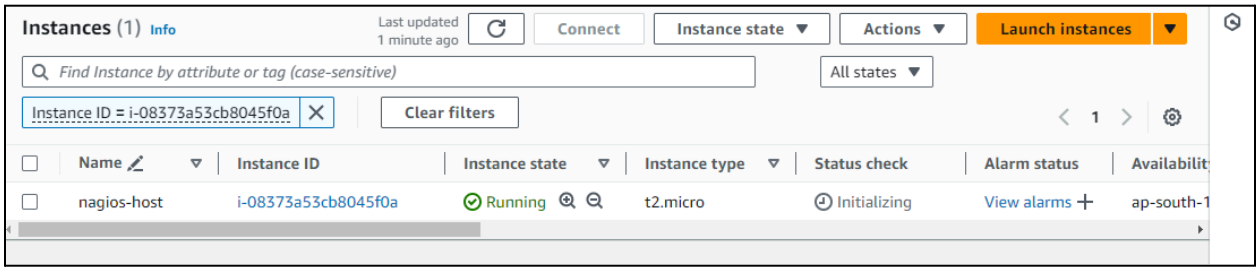
In this way, we have integrated Jenkins with SonarQube for SAST.

ADVANCE DEVOPS EXPERIMENT 9

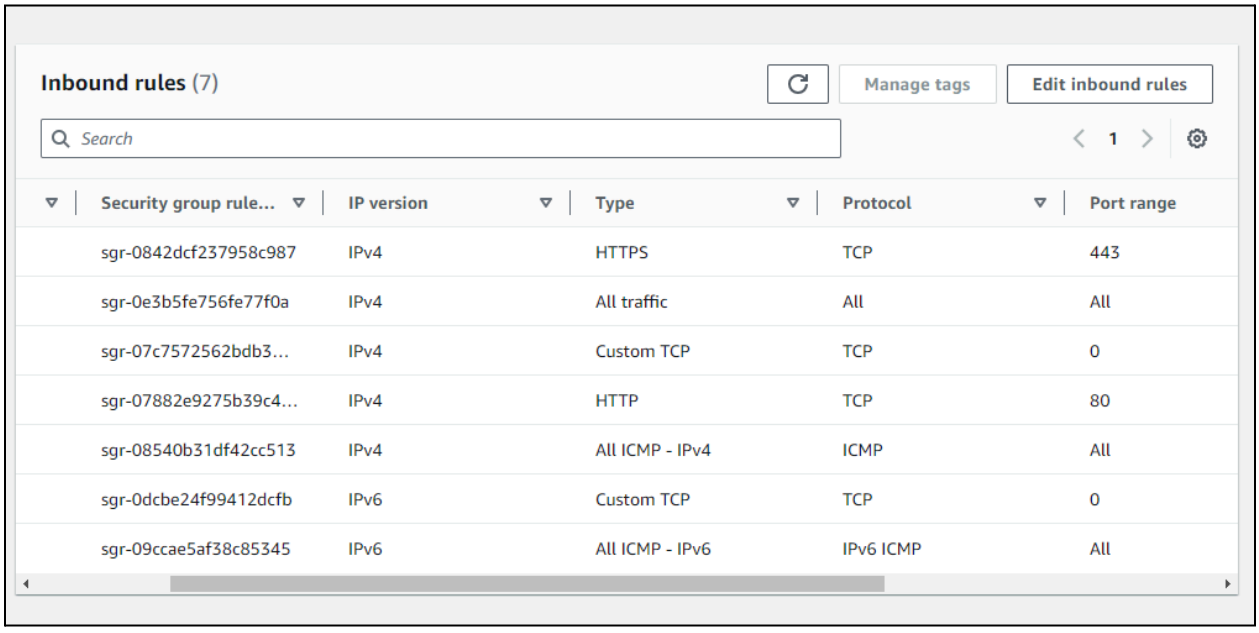
Name:Vaishnal Dilip Mali
Class:D15A
Roll No:27

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

Step 1: Create an Amazon Linux EC2 instance and name it as nagios-host



Step 2: Edit the following inbound rules of the specified security groups and ensure HTTP.HTTPS,SSH,ICMP are accessible from anywhere



Step 3:Connect to your EC2 instance via the connect option available in EC2 instances menu

```
[ec2-user@ip-172-31-33-14 ~]$ sudo yum install httpd php
Last metadata expiration check: 0:19:23 ago on Thu Sep 26 08:42:17 2024.
Dependencies resolved.
```

Package	Architecture	Version	Repository	Size
Installing:				
httpd	x86_64	2.4.62-1.amzn2023	amazonlinux	48 k
php8.3	x86_64	8.3.10-1.amzn2023.0.1	amazonlinux	10 k
Installing dependencies:				
apr	x86_64	1.7.2-2.amzn2023.0.2	amazonlinux	129 k
apr-util	x86_64	1.6.3-1.amzn2023.0.1	amazonlinux	98 k
generic-logos-httpd	noarch	18.0.0-12.amzn2023.0.3	amazonlinux	19 k
httpd-core	x86_64	2.4.62-1.amzn2023	amazonlinux	1.4 M
httpd-filesystem	noarch	2.4.62-1.amzn2023	amazonlinux	14 k
httpd-tools	x86_64	2.4.62-1.amzn2023	amazonlinux	81 k
libbrotli	x86_64	1.0.9-4.amzn2023.0.2	amazonlinux	315 k
libsodium	x86_64	1.0.19-4.amzn2023	amazonlinux	176 k
libxslt	x86_64	1.1.34-5.amzn2023.0.2	amazonlinux	241 k
mailcap	noarch	2.1.49-3.amzn2023.0.3	amazonlinux	33 k

Step 4: Update and install the required packages

Use the following commands:

sudo yum update

sudo yum install httpd php

sudo yum install gcc glibc glibc-common

sudo yum install gd gd-devel

```
[ec2-user@ip-172-31-33-14 ~]$ sudo yum install gcc glibc glibc-common
Last metadata expiration check: 0:20:32 ago on Thu Sep 26 08:42:17 2024.
Package glibc-2.34-52.amzn2023.0.11.x86_64 is already installed.
Package glibc-common-2.34-52.amzn2023.0.11.x86_64 is already installed.
Dependencies resolved.
```

Package	Architecture	Version	Repository	Size
Installing:				
gcc	x86_64	11.4.1-2.amzn2023.0.2	amazonlinux	32 M
Installing dependencies:				
annobin-docs	noarch	10.93-1.amzn2023.0.1	amazonlinux	92 k
annobin-plugin-gcc	x86_64	10.93-1.amzn2023.0.1	amazonlinux	887 k
cpp	x86_64	11.4.1-2.amzn2023.0.2	amazonlinux	10 M
gc	x86_64	8.0.4-5.amzn2023.0.2	amazonlinux	105 k
glibc-devel	x86_64	2.34-52.amzn2023.0.11	amazonlinux	27 k
glibc-headers-x86	noarch	2.34-52.amzn2023.0.11	amazonlinux	427 k
guile22	x86_64	2.2.7-2.amzn2023.0.3	amazonlinux	6.4 M
kernel-headers	x86_64	6.1.109-118.189.amzn2023	amazonlinux	1.4 M
libmpc	x86_64	1.2.1-2.amzn2023.0.2	amazonlinux	62 k
libtool-ltdl	x86_64	2.4.7-1.amzn2023.0.3	amazonlinux	38 k
libxcrypt-devel	x86_64	4.4.33-7.amzn2023	amazonlinux	32 k

```
[ec2-user@ip-172-31-33-14 ~]$ sudo yum install gd gd-devel
Last metadata expiration check: 0:21:27 ago on Thu Sep 26 08:42:17 2024.
Dependencies resolved.
```

Package	Architecture	Version	Repository	Size
Installing:				
gd	x86_64	2.3.3-5.amzn2023.0.3	amazonlinux	139 k
gd-devel	x86_64	2.3.3-5.amzn2023.0.3	amazonlinux	38 k
Installing dependencies:				
brotli	x86_64	1.0.9-4.amzn2023.0.2	amazonlinux	314 k
brotli-devel	x86_64	1.0.9-4.amzn2023.0.2	amazonlinux	31 k
bzip2-devel	x86_64	1.0.8-6.amzn2023.0.2	amazonlinux	214 k
cairo	x86_64	1.17.6-2.amzn2023.0.1	amazonlinux	684 k
cmake-filesystem	x86_64	3.22.2-1.amzn2023.0.4	amazonlinux	16 k
fontconfig	x86_64	2.13.94-2.amzn2023.0.2	amazonlinux	273 k
fontconfig-devel	x86_64	2.13.94-2.amzn2023.0.2	amazonlinux	128 k
fonts-filesystem	noarch	1:2.0.5-12.amzn2023.0.2	amazonlinux	9.5 k
freetype	x86_64	2.13.2-5.amzn2023.0.1	amazonlinux	423 k

Step 5:Create a new nagios user by writing the following commands
sudo adduser -m nagios
sudo passwd nagios

```
Complete!
[ec2-user@ip-172-31-33-14 ~]$ sudo adduser -m nagios
[ec2-user@ip-172-31-33-14 ~]$ sudo passwd nagios
Changing password for user nagios.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
[ec2-user@ip-172-31-33-14 ~]$
```

Step 6: Create a new user group using **sudo groupadd nagcmd** and
Add users to the group using the following commands:
sudo usermod -a -G nagcmd nagios
sudo usermod -a -G nagcmd apache

```
Complete!
[ec2-user@ip-172-31-33-14 ~]$ sudo adduser -m nagios
[ec2-user@ip-172-31-33-14 ~]$ sudo passwd nagios
Changing password for user nagios.
New password:
Retype new password:
passwd: all authentication tokens updated successfully.
[ec2-user@ip-172-31-33-14 ~]$ sudo groupadd nagcmd
[ec2-user@ip-172-31-33-14 ~]$ sudo usermod -a -G nagcmd nagios
[ec2-user@ip-172-31-33-14 ~]$ sudo usermod -a -G nagcmd apache
[ec2-user@ip-172-31-33-14 ~]$ mkdir downloads
[ec2-user@ip-172-31-33-14 ~]$ cd downloads
[ec2-user@ip-172-31-33-14 downloads]$ wget https://sourceforge.net/projects/nagios/files/nagios-4.x/nagios-4.0.8/nagios-4.0.8.tar.gz/download?use
_mirror=excellmedia
--2024-09-26 09:15:54--  https://sourceforge.net/projects/nagios/files/nagios-4.x/nagios-4.0.8/nagios-4.0.8.tar.gz/download?use_mirror=excellmedi
a
Resolving sourceforge.net (sourceforge.net)... 172.64.150.145, 104.18.37.111, 2606:4700:4400::6812:256f, ...
Connecting to sourceforge.net (sourceforge.net)|172.64.150.145|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://downloads.sourceforge.net/project/nagios/nagios-4.x/nagios-4.0.8/nagios-4.0.8.tar.gz?ts=gAAAAABm9SZKLFW7LwD1QAJ2jNzqmSJwAPA1mQ-
eAJYK8z5NmrV_ifVkhbsV-qOfPsLUyICC6yvdHu6UeeIyvNZsVGUtir9BeQ%3D%3D&use_mirror=excellmedia&r= [following]
```

Step 7: Create a directory for Nagios downloads using the following commands-
Commands -
mkdir ~/downloads
cd ~/downloads

Also download Nagios and plugin source files
Commands -
wget
https://assets.nagios.com/downloads/nagioscore/releases/nagios-4.4.6.tar.gz
wget https://nagios-plugins.org/download/nagios-plugins-2.3.3.tar.gz

```
Connecting to prdownloads.sourceforge.net (prdownloads.sourceforge.net)|204.68.111.105|:443... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://downloads.sourceforge.net/project/nagios/nagios-4.x/nagios-4.0.8/nagios-4.0.8.tar.gz [following]
--2024-09-26 09:38:43--  https://downloads.sourceforge.net/project/nagios/nagios-4.x/nagios-4.0.8/nagios-4.0.8.tar.gz
Resolving downloads.sourceforge.net (downloads.sourceforge.net)... 204.68.111.105
Connecting to downloads.sourceforge.net (downloads.sourceforge.net)|204.68.111.105|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://excellmedia.dl.sourceforge.net/project/nagios/nagios-4.x/nagios-4.0.8/nagios-4.0.8.tar.gz?viasf=1 [following]
--2024-09-26 09:38:45--  https://excellmedia.dl.sourceforge.net/project/nagios/nagios-4.x/nagios-4.0.8/nagios-4.0.8.tar.gz?viasf=1
Resolving excellmedia.dl.sourceforge.net (excellmedia.dl.sourceforge.net)... 202.153.32.19, 2401:fb00:0:1fe:8000::5
Connecting to excellmedia.dl.sourceforge.net (excellmedia.dl.sourceforge.net)|202.153.32.19|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 1805059 (1.7M) [application/x-gzip]
Saving to: 'nagios-4.0.8.tar.gz'

nagios-4.0.8.tar.gz                 100%[=====================================================================>]   1.72M  8.14MB/s    in 0.2s

2024-09-26 09:38:45 (8.14 MB/s) - 'nagios-4.0.8.tar.gz' saved [1805059/1805059]

[ec2-user@ip-172-31-33-14 downloads]$ ls
'download?use_mirror=excellmedia'   nagios-4.0.8.tar.gz
[ec2-user@ip-172-31-33-14 downloads]$ tar -xzf nagios-4.0.8.tar.gz
[ec2-user@ip-172-31-33-14 downloads]$
```

Step 8-Extract the nagios source file with the following commands
tar zxvf nagios-4.4.6.tar.gz
cd nagios-4.4.6

Then run the configuration script with the following command
/configure --with-command-group=nagcmd

```
        Nagios user/group:  nagios,nagios
       Command user/group:  nagios,nagcmd
             Event Broker:  yes
        Install ${prefix}:  /usr/local/nagios
    Install ${includedir}:  /usr/local/nagios/include/nagios
                Lock file:  ${prefix}/var/nagios.lock
   Check result directory:  ${prefix}/var/spool/checkresults
           Init directory:  /etc/rc.d/init.d
  Apache conf.d directory:  /etc/httpd/conf.d
             Mail program:  /bin/mail
                  Host OS:  linux-gnu
          IOBroker Method:  epoll

 Web Interface Options:
 ------------------------
                 HTML URL:  http://localhost/nagios/
                  CGI URL:  http://localhost/nagios/cgi-bin/
 Traceroute (used by WAP):  /usr/bin/traceroute


Review the options above for accuracy.  If they look okay,
type 'make all' to compile the main program and CGIs.

[ec2-user@ip-172-31-33-14 nagios-4.0.8]$
```

Step 9-Compile the source code with the following commands

make all

```
[ec2-user@ip-172-31-33-14 nagios-4.0.8]$ make all
cd ./base && make
make[1]: Entering directory '/home/ec2-user/downloads/nagios-4.0.8/base'
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE -c -o nagios.o nagios.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE   -c -o broker.o broker.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE   -c -o nebmods.o nebmods.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE -c -o ../common/shared.o ../common/shared.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE   -c -o nerd.o nerd.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE   -c -o query-handler.o query-handler.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE -c -o workers.o workers.c
In function ‘get_wproc_list’,
    inlined from ‘get_worker’ at workers.c:224:12:
workers.c:209:17: warning: ‘%s’ directive argument is null [-Wformat-overflow=]
  209 |                 log_debug_info(DEBUGL_CHECKS, 1, "Found specialized worker(s) for '%s'", (slash && *slash != '/') ? slash : cmd_name);
      |                 ^~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE   -c -o checks.o checks.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE   -c -o config.o config.c
gcc -Wall -I.. -g -O2 -DHAVE_CONFIG_H -DNSCORE   -c -o commands.o commands.c
commands.c: In function ‘process_passive_service_check’:
commands.c:2247:19: warning: assignment discards ‘const’ qualifier from pointer target type [-Wdiscarded-qualifiers]
```

Step 10-Install binaries,init script and sample config files

Commands -

./sudo make install

sudo make install-init

sudo make install-config

sudo make install-commandmode

```
*** Config files installed ***

Remember, these are *SAMPLE* config files.  You'll need to read
the documentation for more information on how to actually define
services, hosts, etc. to fit your particular needs.

/usr/bin/install -c -m 775 -o nagios -g nagcmd -d /usr/local/nagios/var/rw
chmod g+s /usr/local/nagios/var/rw

*** External command directory configured ***

[ec2-user@ip-172-31-33-14 nagios-4.0.8]$ 
```

Step 11-Edit the Config File to Change the Email Address

Commands -

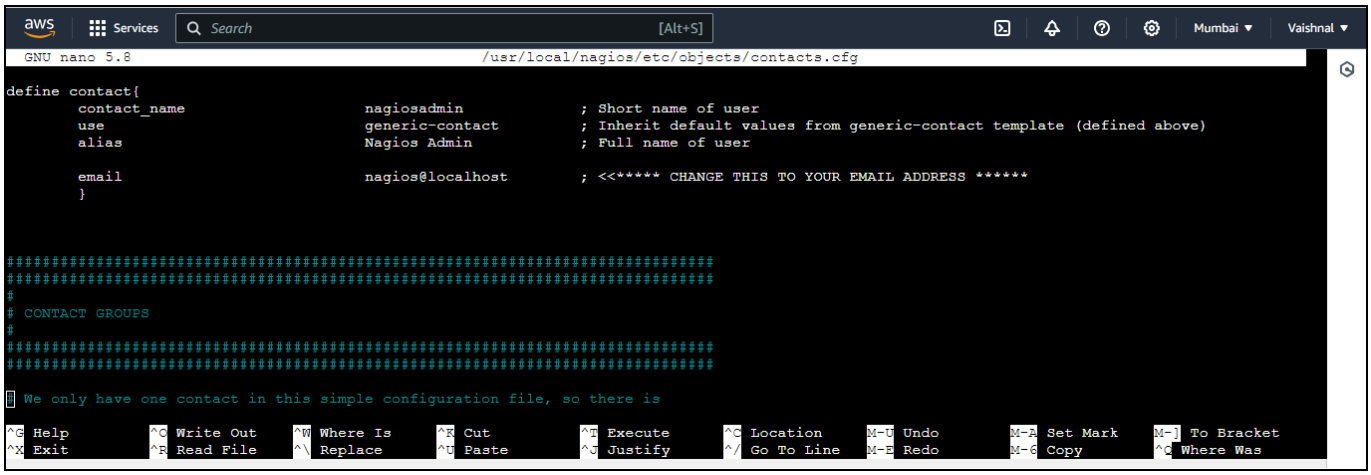
sudo nano /usr/local/nagios/etc/objects/contacts.cfg

● Change the email address in the contacts.cfg file to your preferred email

Step 12-Configure the Web Interface

Commands -

sudo make install-webconf

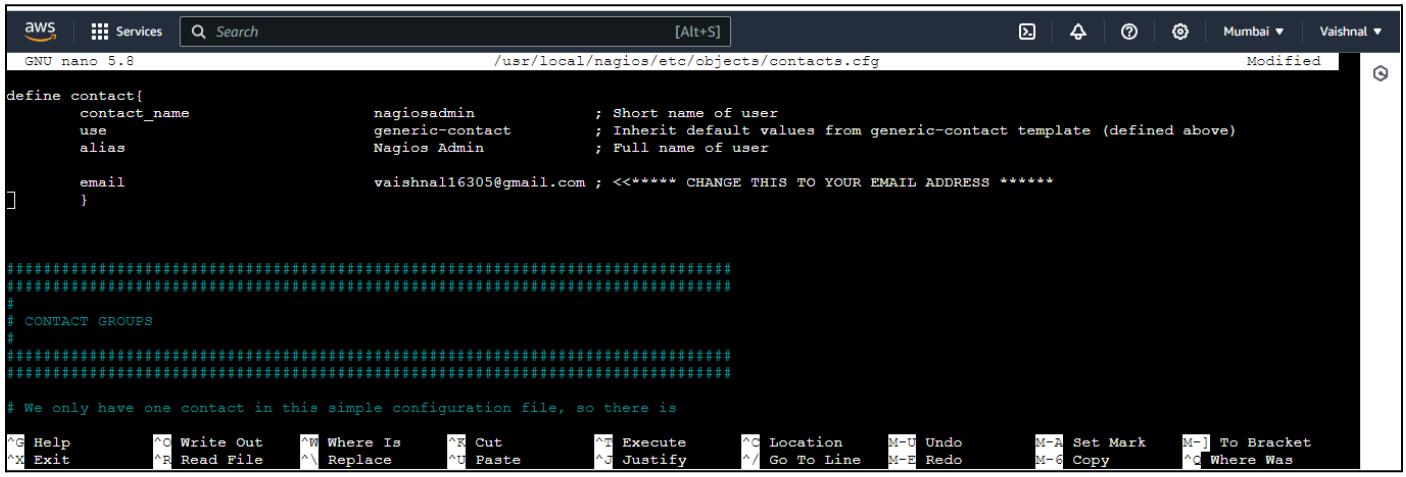


Step 13-Create a Nagios Admin Account

Commands -

sudo htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin

● You will be prompted to enter and confirm the password for the nagiosadmin user



Step 14-. Extract the Plugins Source File

Commands -

cd ~/downloads

tar zxvf nagios-plugins-2.3.3.tar.gz

cd nagios-plugins-2.3.3

```
*** External command directory configured ***

[ec2-user@ip-172-31-33-14 nagios-4.0.8]$ sudo nano /usr/local/nagios/etc/objects/contacts.cfg
[ec2-user@ip-172-31-33-14 nagios-4.0.8]$ sudo make install-webconf
/usr/bin/install -c -m 644 sample-config/httpd.conf /etc/httpd/conf.d/nagios.conf

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

Step 15-19. Compile and Install Plugins

Commands -

./configure --with-nagios-user=nagios --with-nagios-group=nagios

make

sudo make install

```
[ec2-user@ip-172-31-33-14 nagios-4.0.8]$ sudo htpasswd -c /usr/local/nagios/etc/htpasswd.users nagiosadmin
New password:
Re-type new password:
Adding password for user nagiosadmin
```

Step 16-Start Nagios

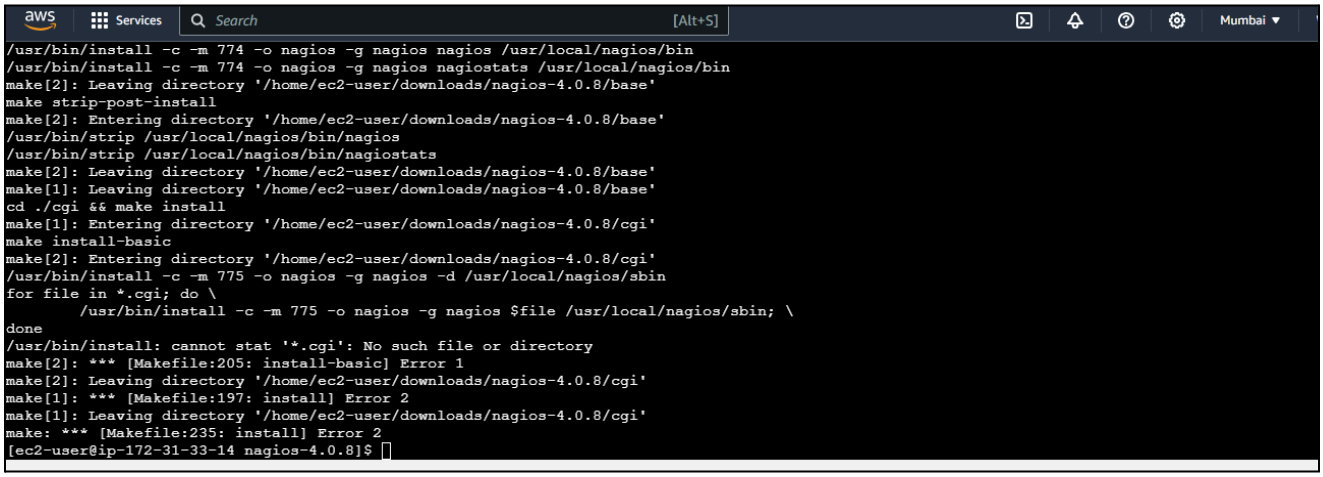
Commands -

sudo chkconfig --add nagios

sudo chkconfig nagios on

sudo /usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg

sudo systemctl start nagios



Step 17-Access Nagios Web Interface

- Copy the Public IP address of your EC2 instance.
- Open your browser and navigate to http:///nagios.
- Enter the username nagiosadmin and the password you set in Step 16.


Nagios
General
Home
Documentation
Current Status
Tactical Overview
Map (Legacy)
Hosts
Services
Host Groups
Summary
Grid
Service Groups
Summary
Grid
Problems
Services (Unhandled)
Hosts (Unhandled)
Network Outages
Quick Search:
Reports
Availability
Trends (Legacy)
Alerts
History
Summary
Histogram (Legacy)
Nagios Core
Unable to get process status
Nagios® Core™
Version 4.4.6
April 28, 2020
Check for updates
A new version of Nagios Core is available!
Visit nagios.org to download Nagios 4.5.5.
Get Started
Start monitoring your infrastructure
Change the look and feel of Nagios
Extend Nagios with hundreds of addons
Get support
Get training
Get certified
Quick Links
Nagios Library (tutorials and docs)
Nagios Labs (development blog)
Nagios Exchange (plugins and addons)
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Nagios.com (company)
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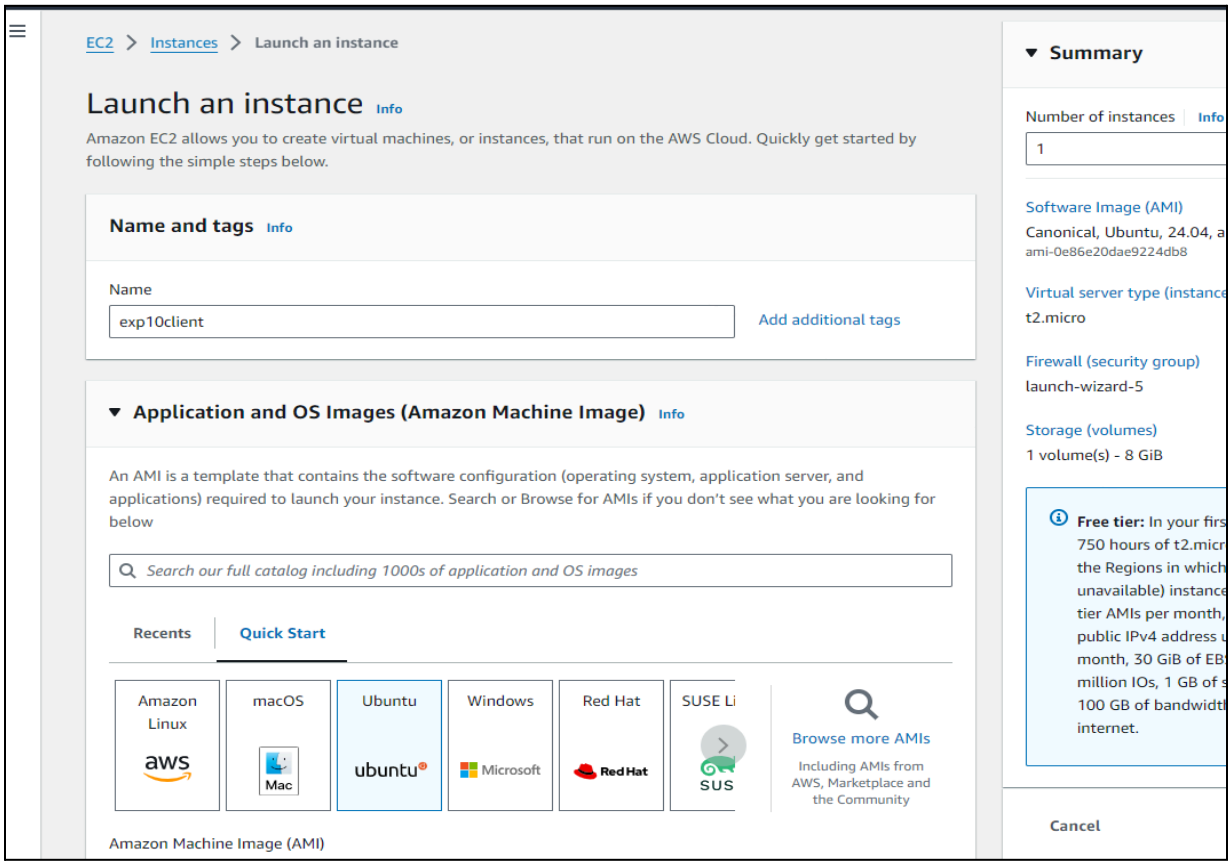
ADVANCE DEVOPS EXPERIMENT 10

Name:Vaishnal Dilip Mali
Class:D15A
Roll No:27

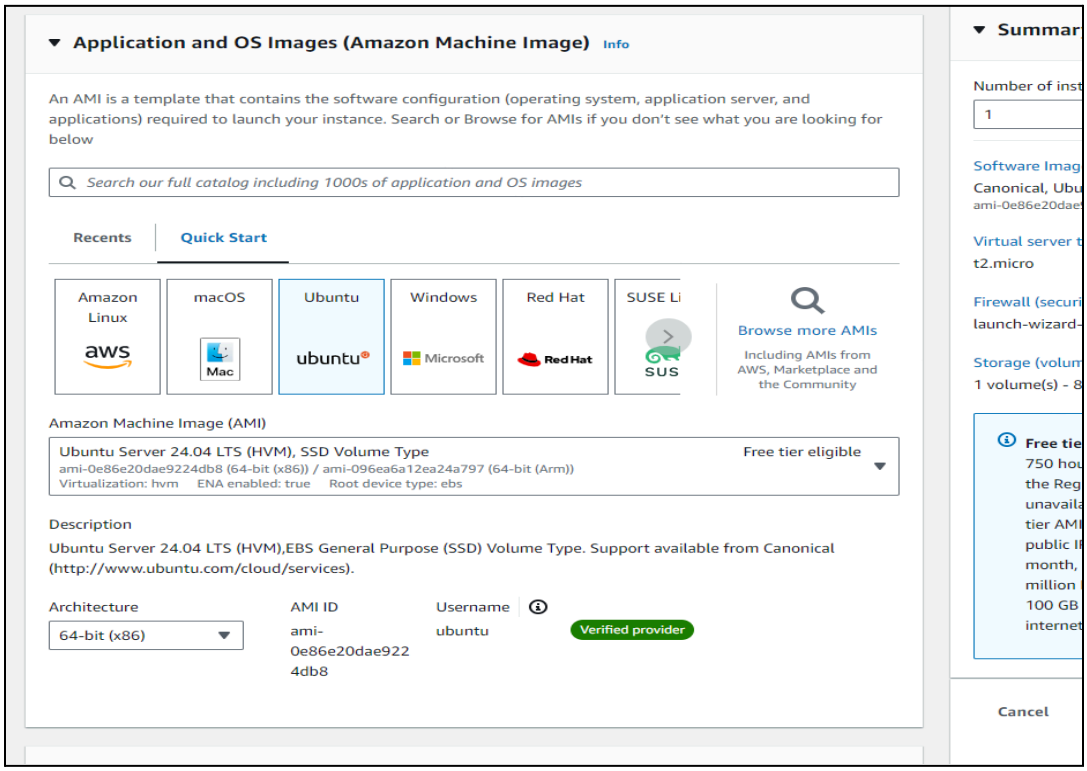
Aim: To perform Port, Service monitoring, Windows/Linux server monitoring using Nagios.

1) Launch an instance

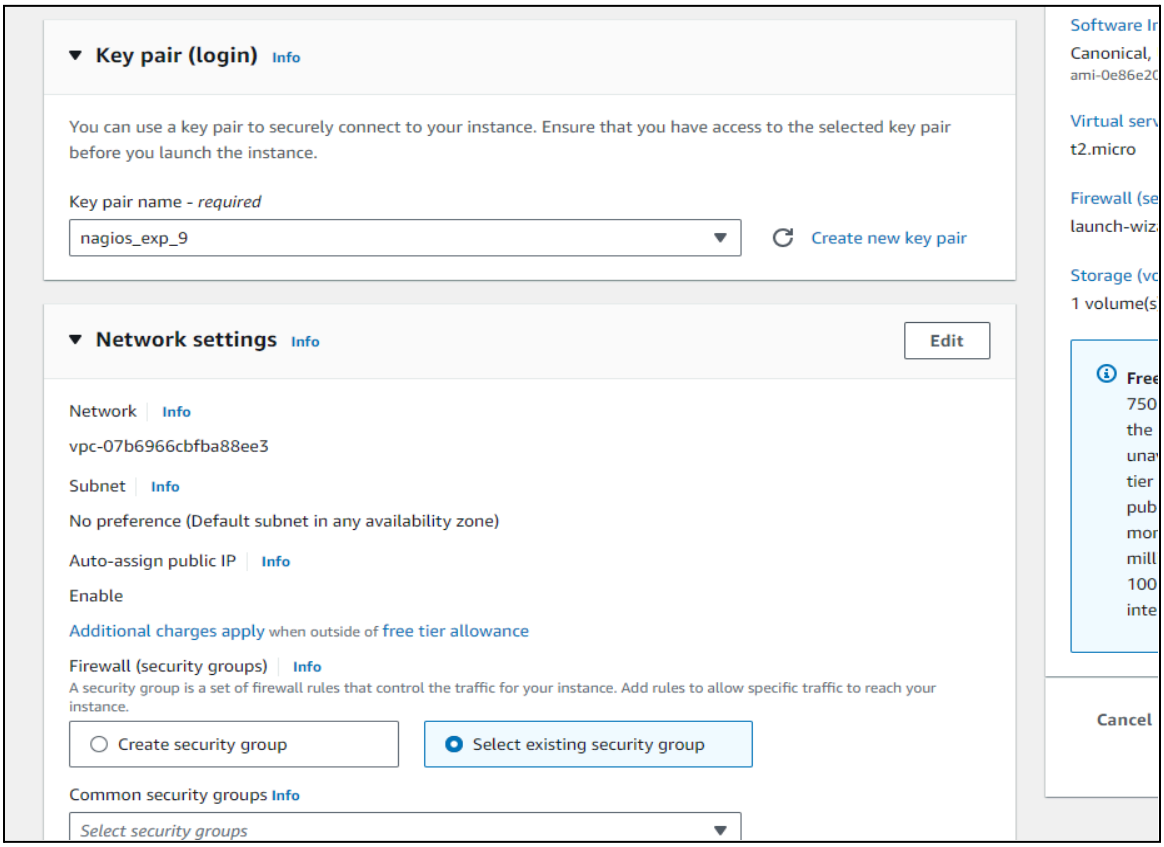
Launch an ec2 instance.
Select Ubuntu as the os give a meaningful name of the instance.



Select the same security group as given in exp9.

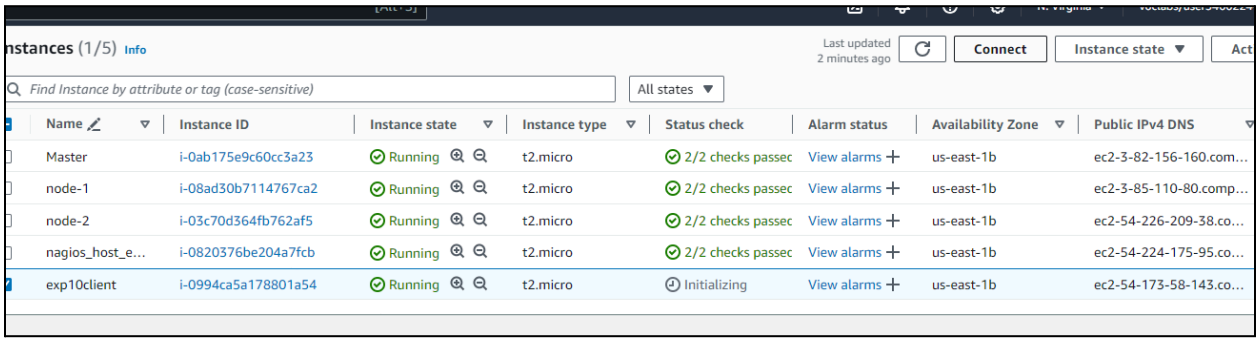


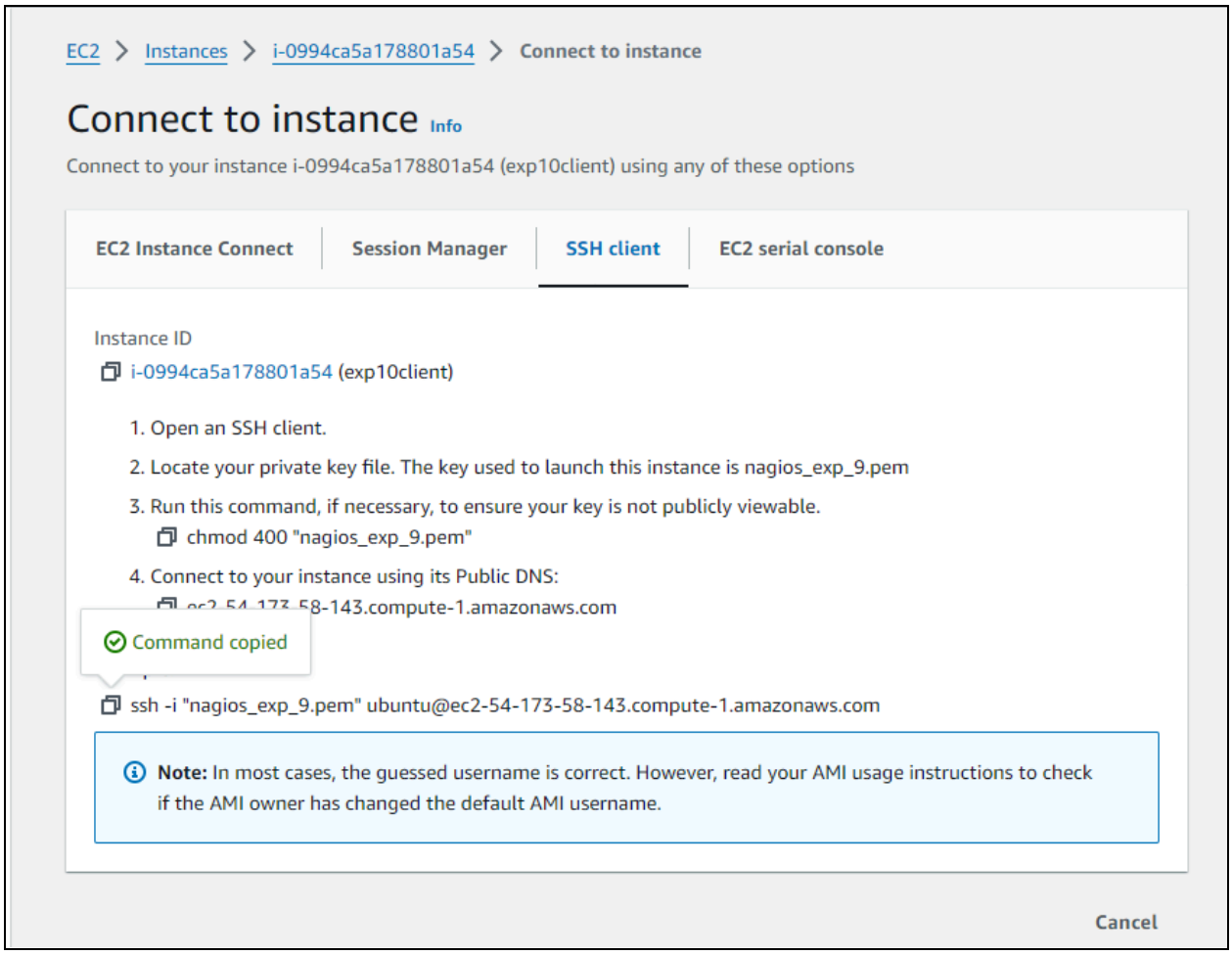
Make sure to select the same key-pair login used in the exp9 machine.



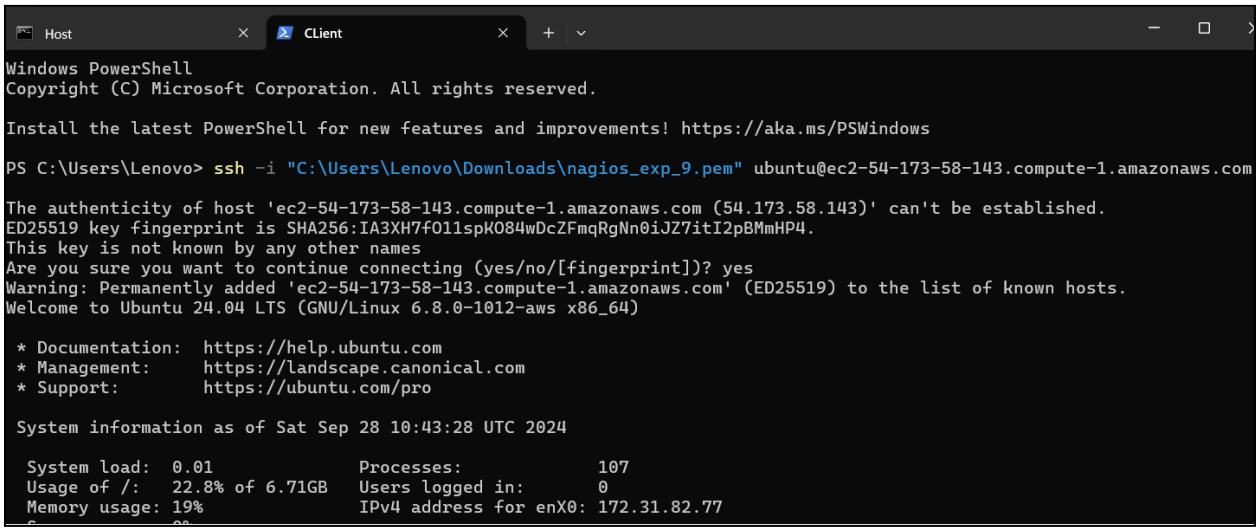
click on launch instance.

Now connect with this client machine using the ssh through your terminal(open a new terminal in your local machine and we will need both of the terminals open)





Note to change the path of the .pem file.



2) Go to nagios host machine (Host machine)

Perform the following commands

ps -ef | grep nagios

```
[ec2-user@ip-172-31-80-137 ~]$ ps -ef | grep nagios
nagios      3152       1  0 08:36 ?        00:00:00 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg
nagios      3153    3152  0 08:36 ?        00:00:00 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
nagios      3154    3152  0 08:36 ?        00:00:00 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
nagios      3155    3152  0 08:36 ?        00:00:00 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
nagios      3156    3152  0 08:36 ?        00:00:00 /usr/local/nagios/bin/nagios --worker /usr/local/nagios/var/rw/nagios.qh
nagios      3160    3152  0 08:36 ?        00:00:00 /usr/local/nagios/bin/nagios -d /usr/local/nagios/etc/nagios.cfg
ec2-user   11528    2972  0 10:44 pts/0    00:00:00 grep --color=auto nagios
[ec2-user@ip-172-31-80-137 ~]$
```

sudo su

mkdir -p /usr/local/nagios/etc/objects/monitorhosts/linuxhosts

```
[root@ip-172-31-80-137 ec2-user]# mkdir -p /usr/local/nagios/etc/objects/monitorhosts/linuxhosts
[root@ip-172-31-80-137 ec2-user]# ls
```

cp /usr/local/nagios/etc/objects/localhost.cfg /usr/local/nagios/etc/objects/monitorhosts/linuxhosts/linuxserver.cfg

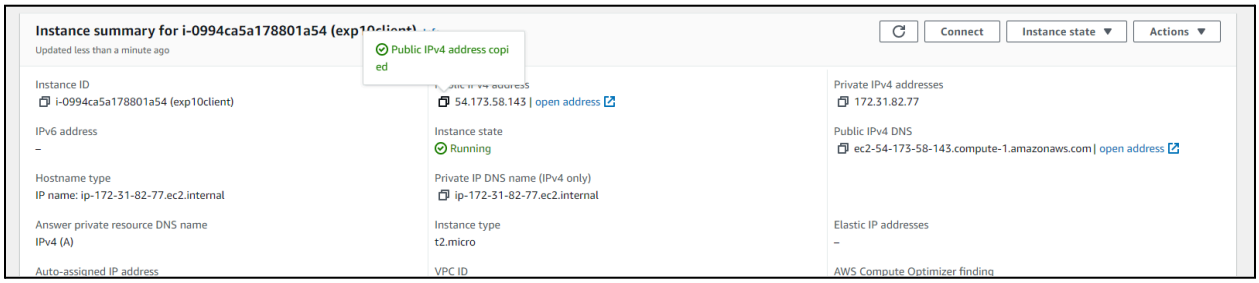
```
[root@ip-172-31-80-137 ec2-user]# cp /usr/local/nagios/etc/objects/localhost.cfg /usr/local/nagios/etc/objects/monitorhosts/linuxho
sts/linuxserver.cfg
```

nano /usr/local/nagios/etc/objects/monitorhosts/linuxhosts/linuxserver.cfg

```
[root@ip-172-31-80-137 ec2-user]# nano /usr/local/nagios/etc/objects/monitorhosts/linuxhosts/linuxserver.cfg
```

Change hostname and alias to linuxserver

Change address to public ip address of client instance (Ubuntu instance) you can get the ip address by clicking on the instance id on the instances section there you will get the public ipv4 address



```
#
# HOST DEFINITION
#
###############################################################################

# Define a host for the local machine

define host {

    use                     linux-server            ; Name of host template to use
                                                    ; This host definition will in>
                                                    ; in (or inherited by) the lin>
    host_name               linuxserver
    alias                   linuxserver
    address                 54.173.58.143
}
```

Change hostgroup_name to linux-servers1

```
# Define an optional hostgroup for Linux machines

define hostgroup {

    hostgroup_name          linux-servers1          ; The name of the hostgroup
    alias                   Linux Servers           ; Long name of the group
    members                 localhost               ; Comma separated list of host>
}
```

Change the occurrences of hostname further in the document from localhost to linuxserver
example like:

```
    host_name                       localhost
```

changed to

```
define service {

    use                     local-service           ; Name of service templat
    host_name               linuxserver
    service_description     PING
    check_command           check_ping!100.0,20%!500.0,60%
}
```

This is the last one

```
define service {

    use                     local-service           ; Name of service template to >
    host_name               linuxserver
    service_description     HTTP
    check_command           check_http
    notifications_enabled   0
```

now ctrl+O and enter to save and then ctrl+X for exiting.
Open nagios configuration file and add the line shown below
nano /usr/local/nagios/etc/nagios.cfg

```
[root@ip-172-31-80-137 ec2-user]# nano /usr/local/nagios/etc/nagios.cfg
```

##Add this line below the opened nano interface where similar lines are commented.
cfg_dir=/usr/local/nagios/etc/objects/monitorhosts/

```
 GNU nano 5.8                                                    /usr/local/nagios/etc/nagios.cfg
# These are the object configuration files in which you define hosts,
# host groups, contacts, contact groups, services, etc.
# You can split your object definitions across several config files
# if you wish (as shown below), or keep them all in a single config file.

# You can specify individual object config files as shown below:
cfg_file=/usr/local/nagios/etc/objects/commands.cfg
cfg_file=/usr/local/nagios/etc/objects/contacts.cfg
cfg_file=/usr/local/nagios/etc/objects/timeperiods.cfg
cfg_file=/usr/local/nagios/etc/objects/templates.cfg

# Definitions for monitoring the local (Linux) host
cfg_file=/usr/local/nagios/etc/objects/localhost.cfg

# 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
cfg_dir=/usr/local/nagios/etc/objects/monitorhosts/



# OBJECT CACHE FILE
# This option determines where object definitions are cached when
# Nagios starts/restarts.  The CGIs read object definitions from
```

ctrl+o and enter for saving and ctrl+x to exit nano editor.

Verify configuration files
/usr/local/nagios/bin/nagios -v /usr/local/nagios/etc/nagios.cfg

```
[root@ip-172-31-80-137 ec2-user]# /usr/local/nagios/bin/nagios -v /usr/local/nagios
/etc/nagios.cfg

Nagios Core 4.5.5
Copyright (c) 2009-present Nagios Core Development Team and Community Contributors
Copyright (c) 1999-2009 Ethan Galstad
Last Modified: 2024-09-17
License: GPL

Website: https://www.nagios.org
Reading configuration data...
   Read main config file okay...
   Read object config files okay...

Running pre-flight check on configuration data...

Checking objects...
        Checked 0 service dependencies
        Checked 0 host dependencies
        Checked 5 timeperiods
 Checking global event handlers...
 Checking obsessive compulsive processor commands...
 Checking misc settings...

 Total Warnings: 0
 Total Errors:   0

 Things look okay - No serious problems were detected during the pre-flight check
 [root@ip-172-31-80-137 ec2-user]#
```

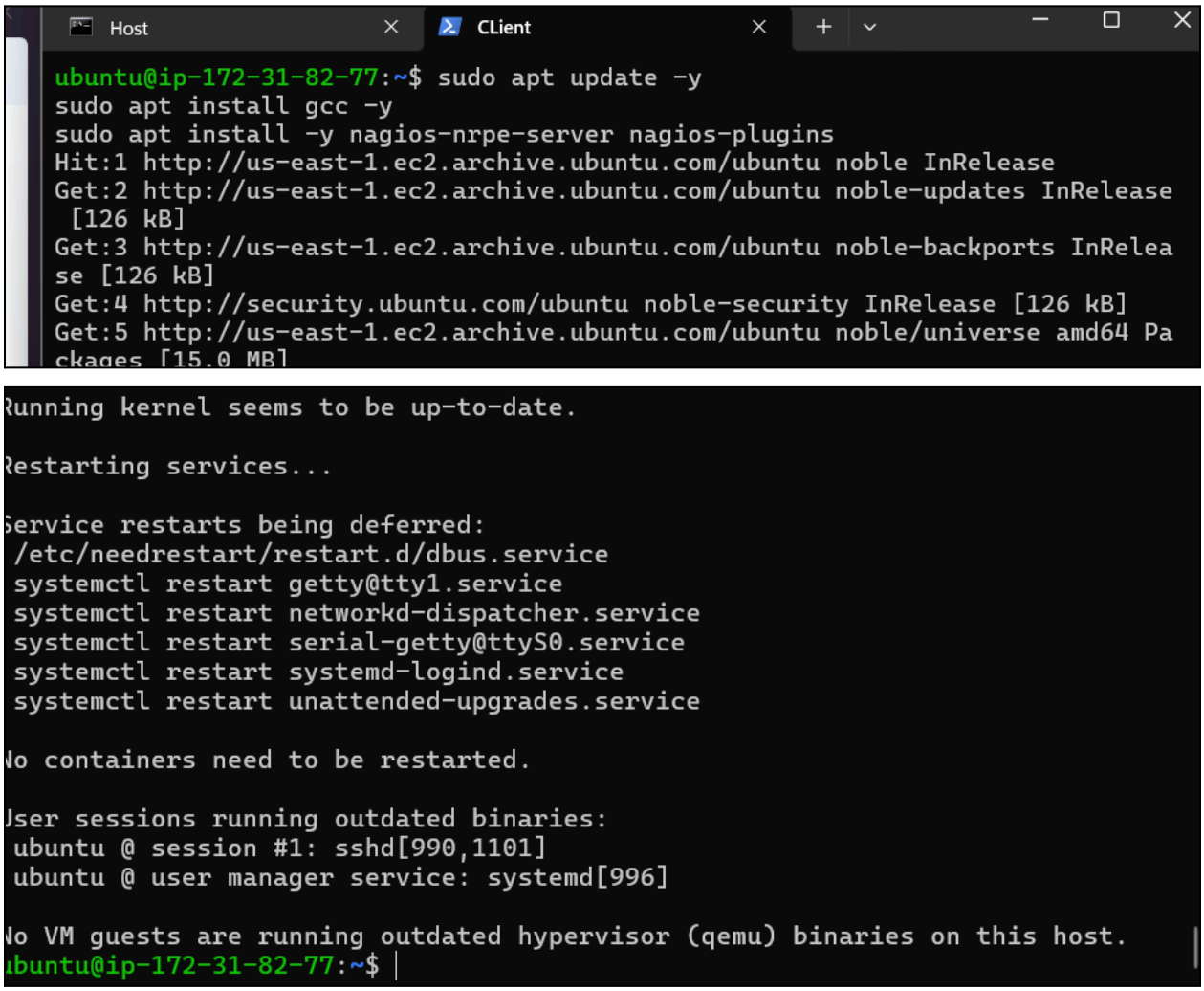
Restart nagios service.
service nagios restart

```
Things look okay - No serious problems were detected during the pre-flight check
[root@ip-172-31-80-137 ec2-user]# service nagios restart
Redirecting to /bin/systemctl restart nagios.service
[root@ip-172-31-80-137 ec2-user]#
```

3) Go to client machine (ubuntu machine)

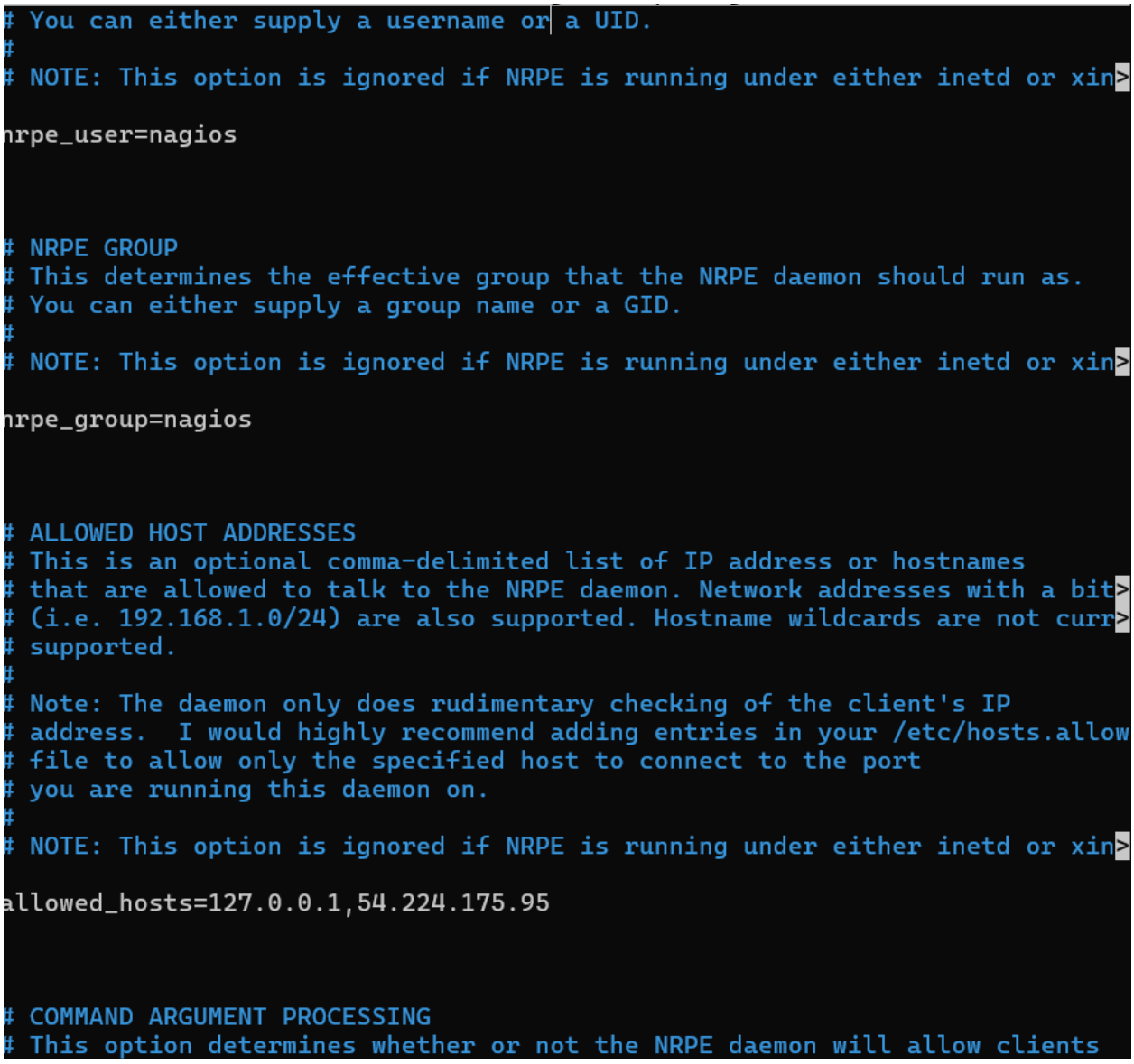
Perform the following commands
sudo apt update -y
sudo apt install gcc -y

sudo apt install -y nagios-nrpe-server nagios-plugins



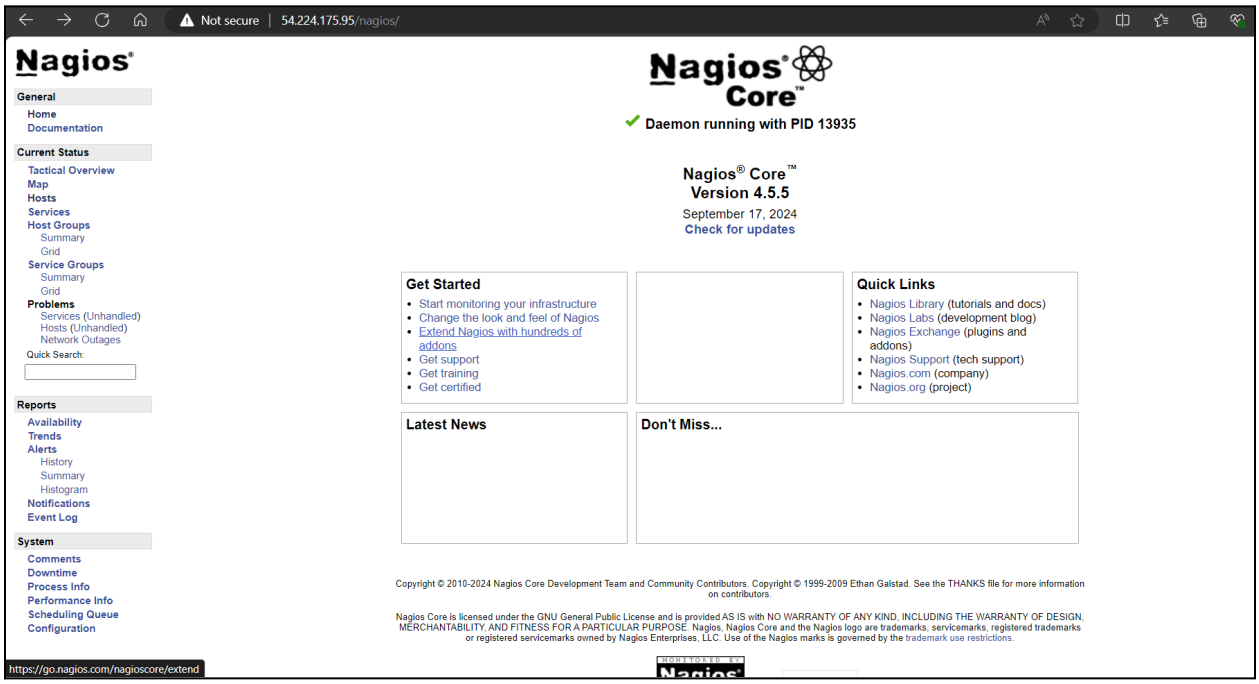
Open the nrpe.cfg file in nano editor
sudo nano /etc/nagios/nrpe.cfg

Under allowed_hosts, add the nagios host ip address (public)

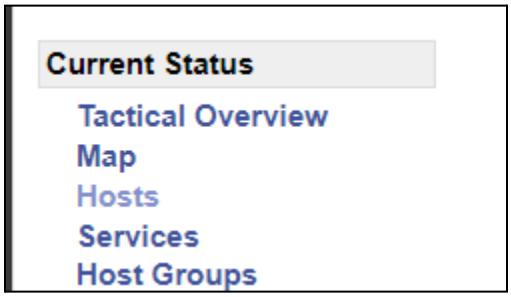


again save and exit the nano editor.

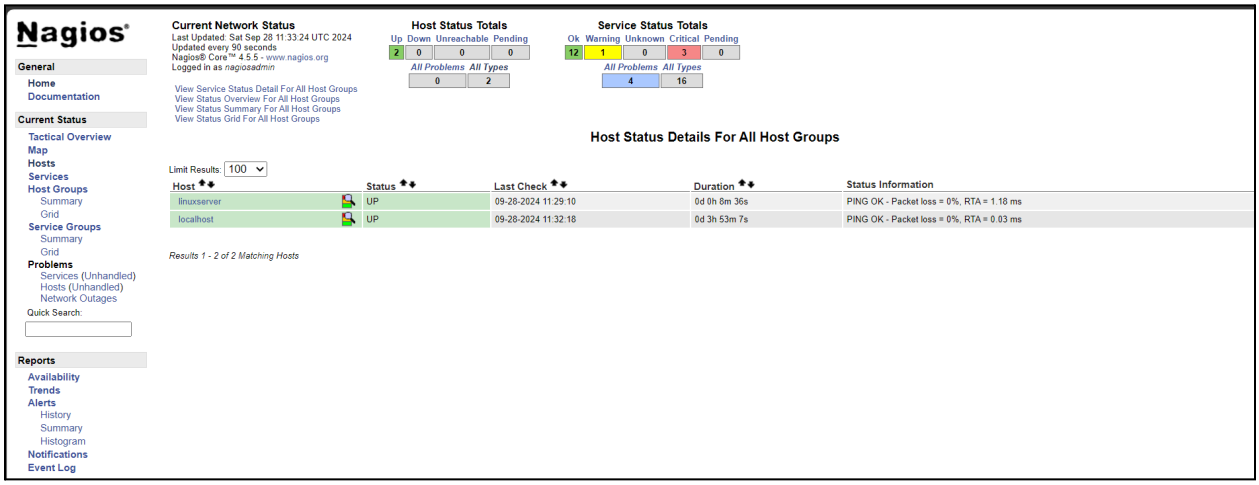
4) Go to nagios dashboard and click on hosts

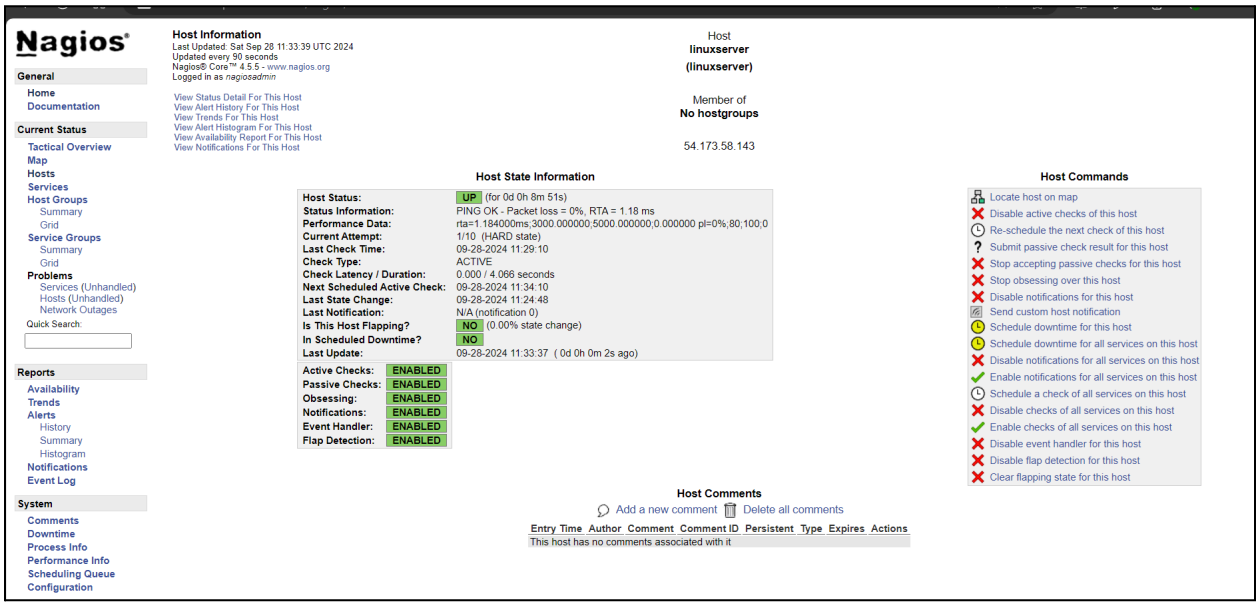


Click on hosts

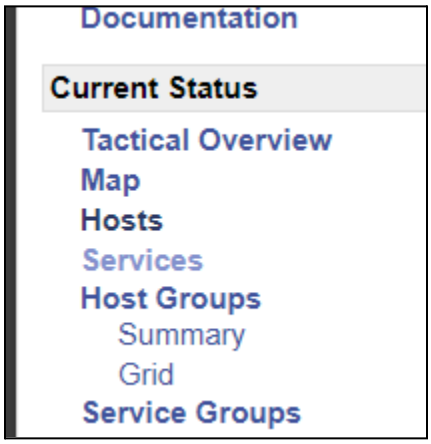


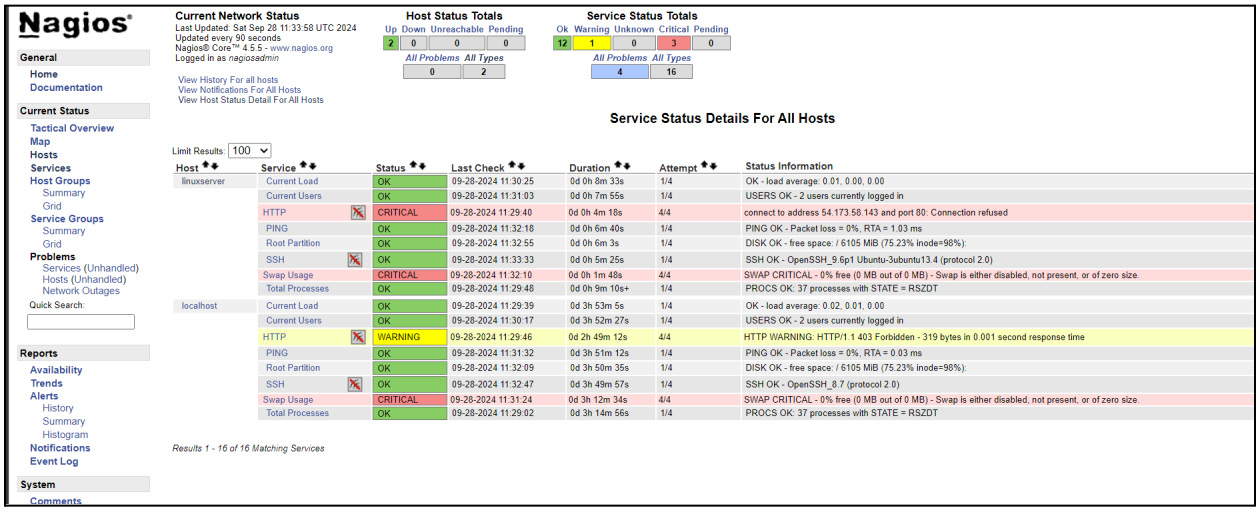
5) Click on linux server





6) Click on nagios services





Adv. DevOps Exp. 11

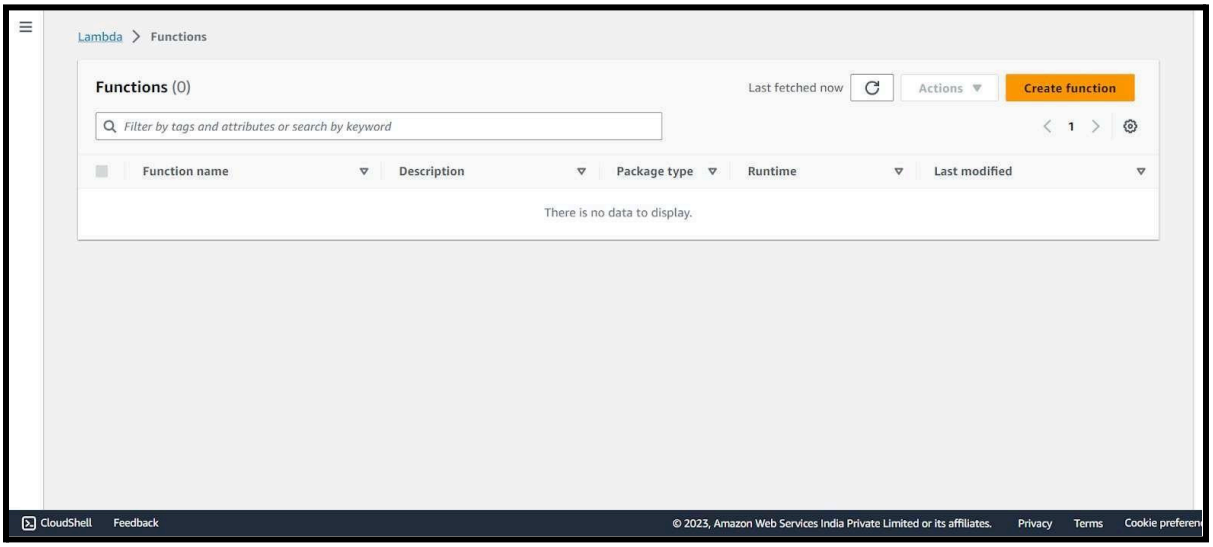
Vaishnal Mali

D15A - 27

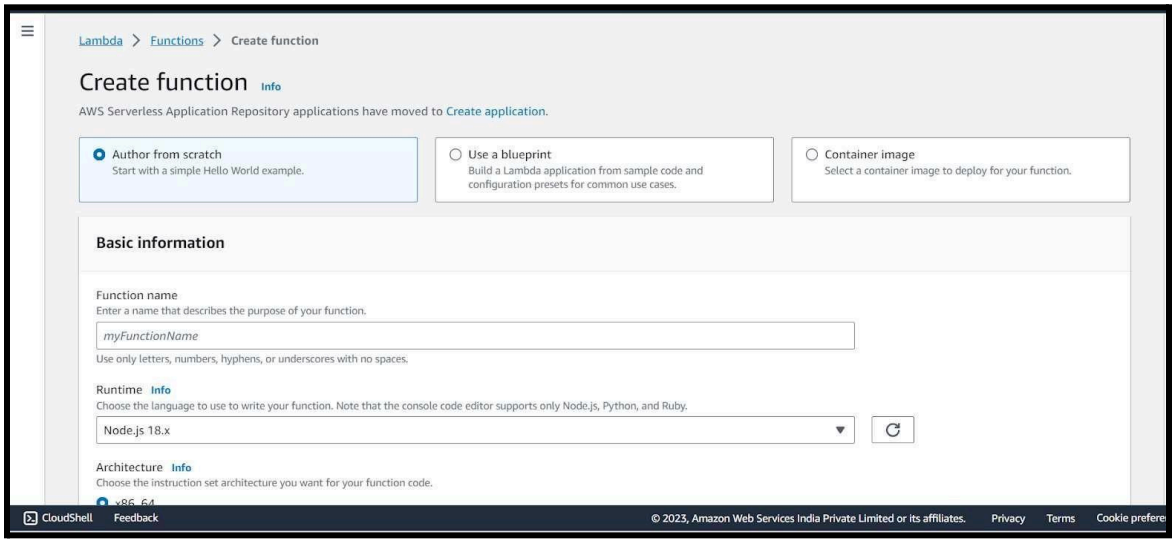
AIM: To understand AWS Lambda, its workflow, various functions and create your first Lambda functions using Python / Java / Nodejs.

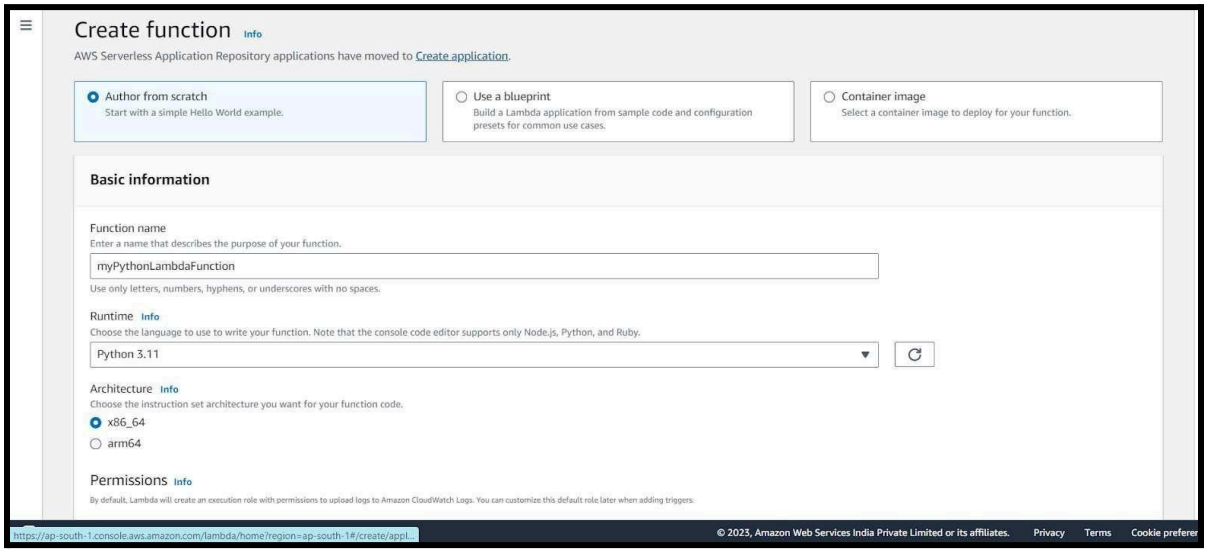
Steps to create an AWS Lambda function

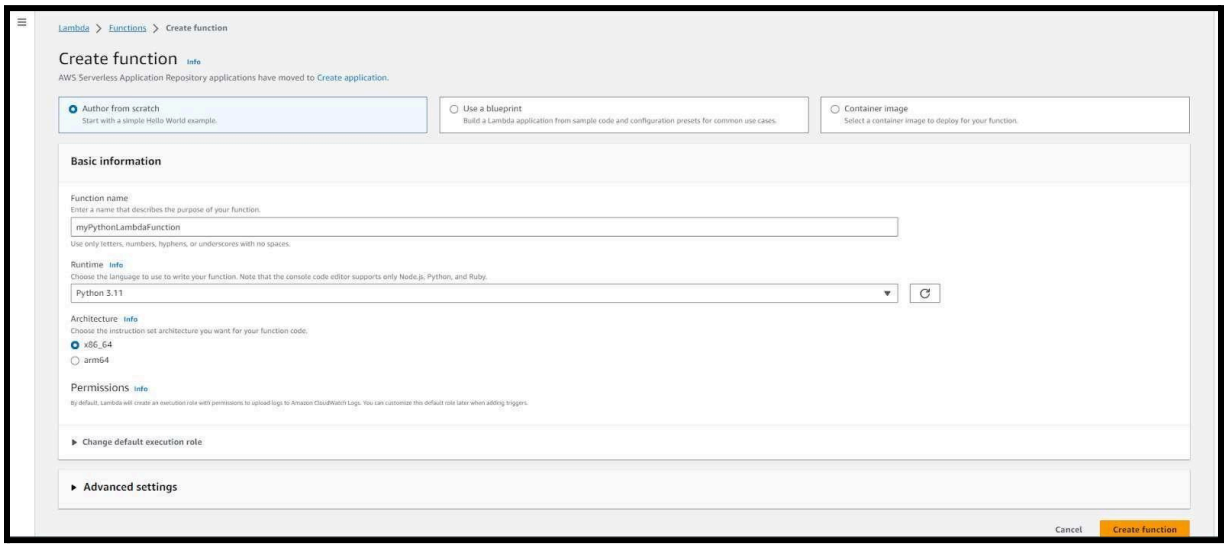
Step 1:Open up the Lambda Console and click on the Create button.
Be mindful of where you create your functions since Lambda is region-dependent.



2. Choose to create a function from scratch or use a blueprint, i.e templates defined by AWS for you with all configuration presets required for the most common use cases. Then, choose a runtime env for your function, under the dropdown, you can see all the options AWS supports, Python, Nodejs, .NET and Java being the most popular ones. After that, choose to create a new role with basic Lambda permissions if you don't have an existing one.

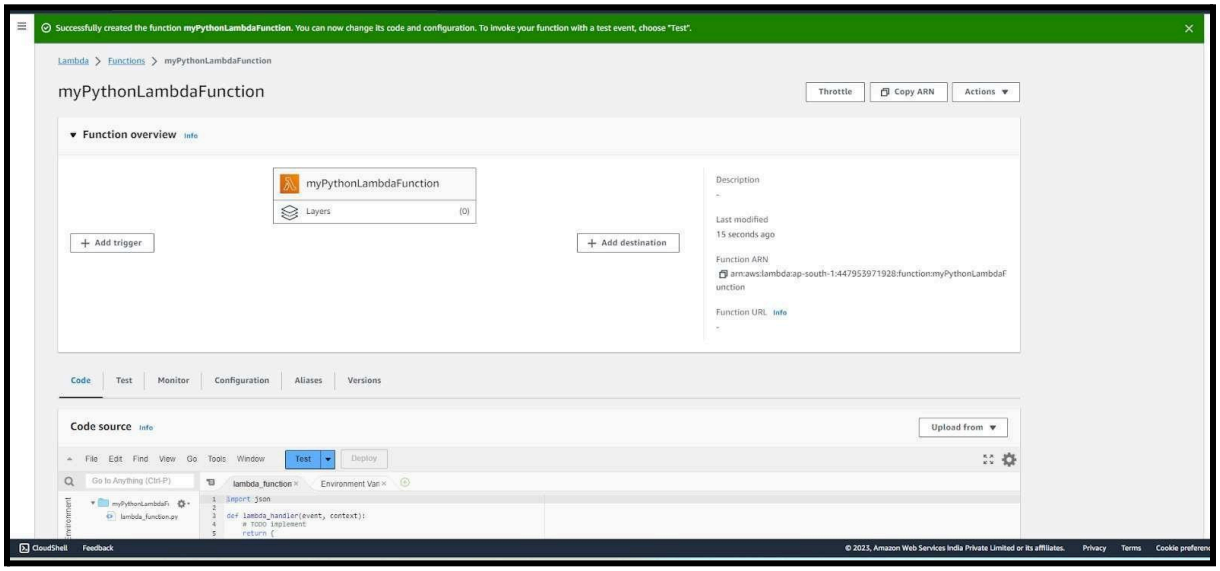


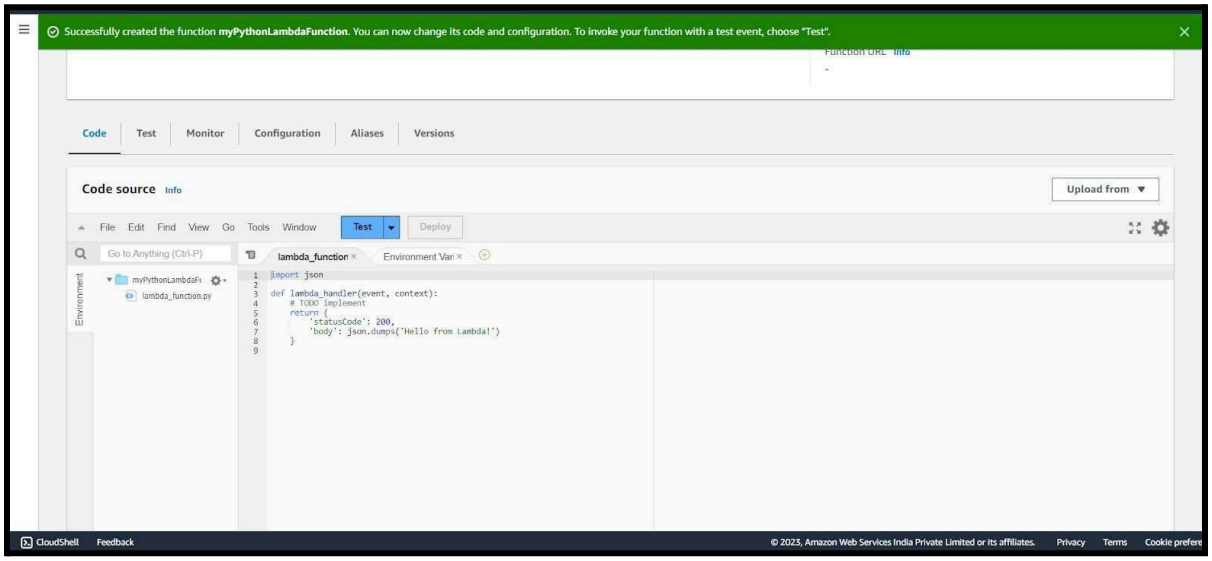




Click on the Create button.

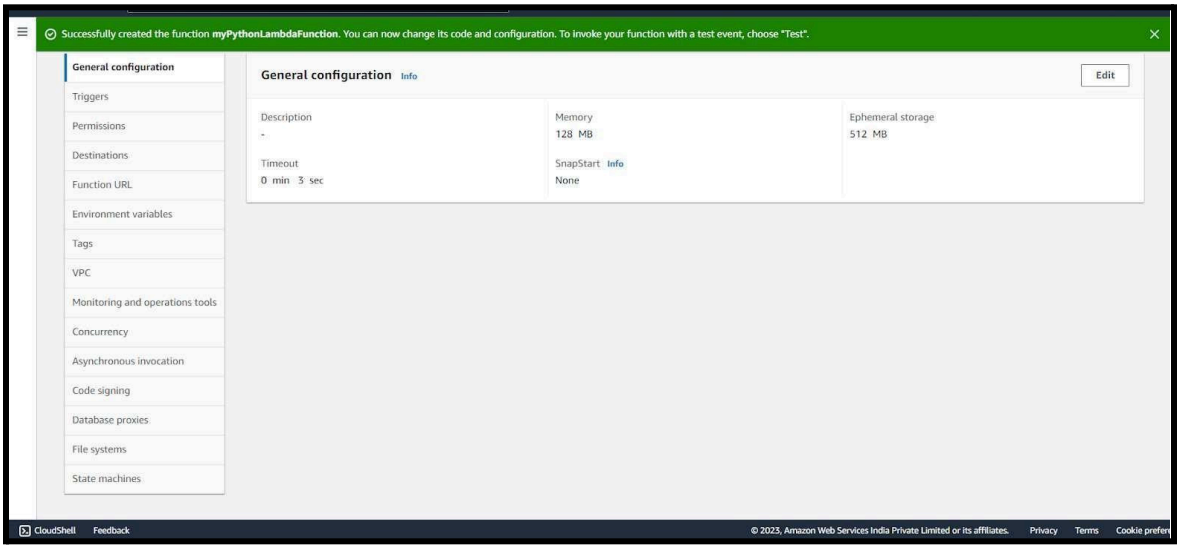
3. This process will take a while to finish and after that, you'll get a message that your function was successfully created.

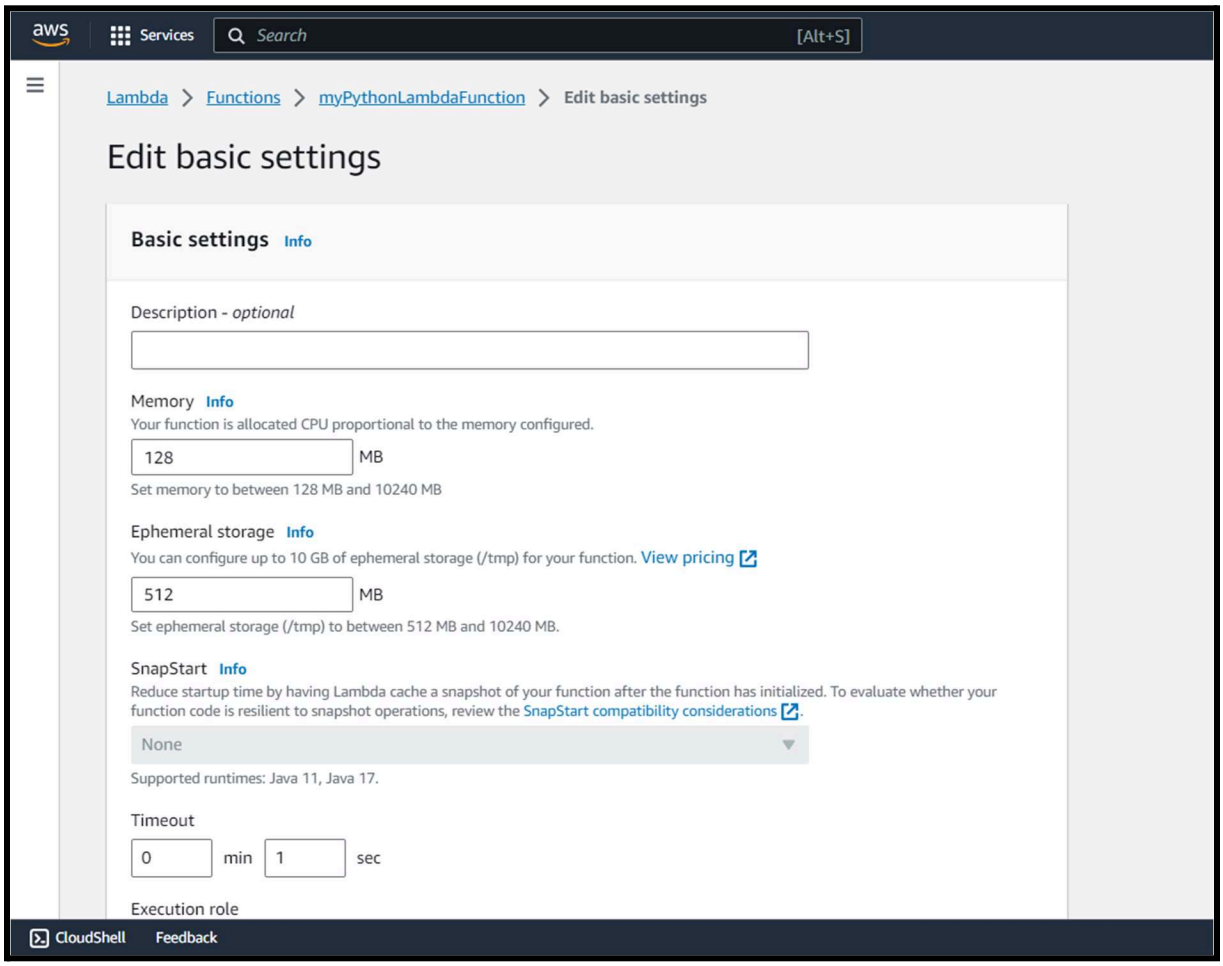




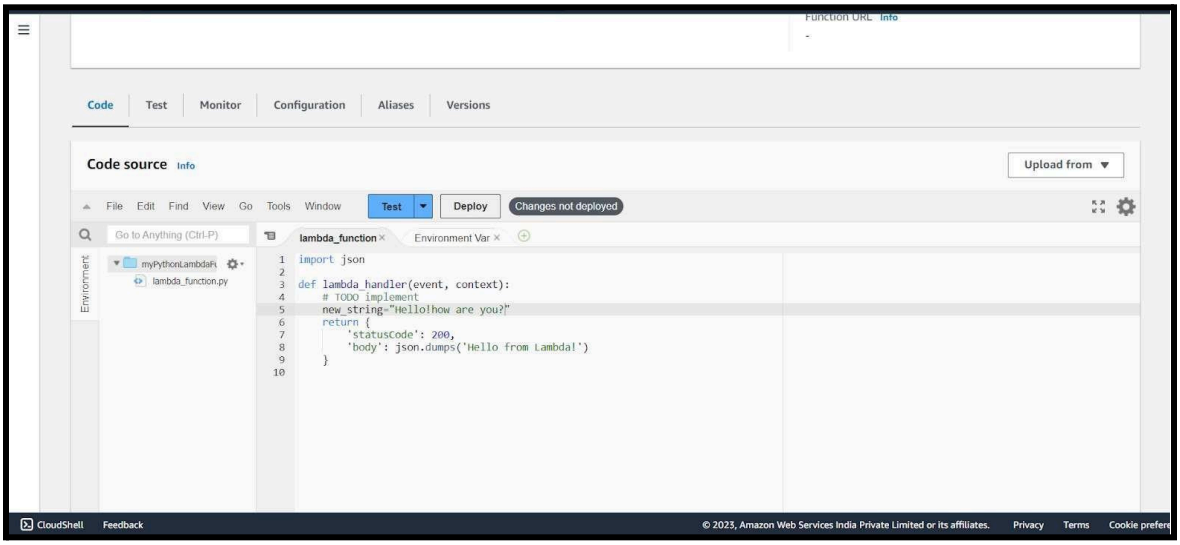
4. To change the configuration, open up the Configuration tab and under General Configuration, choose Edit.

Here, you can enter a description and change Memory and Timeout. I've changed the Timeout period to 1 sec since that is sufficient for now.

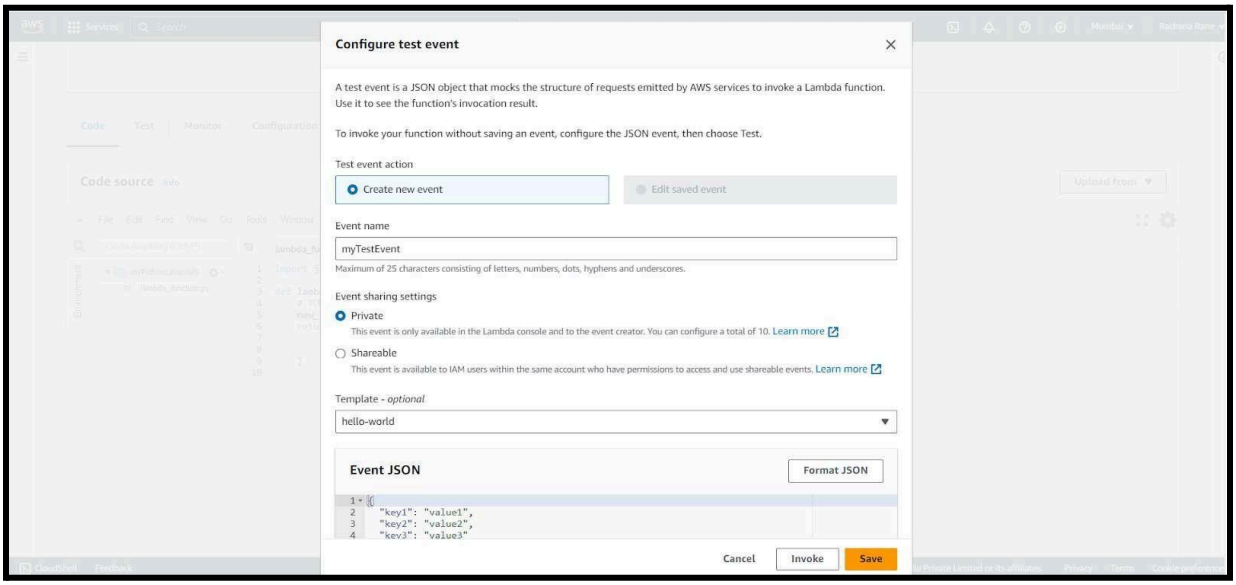




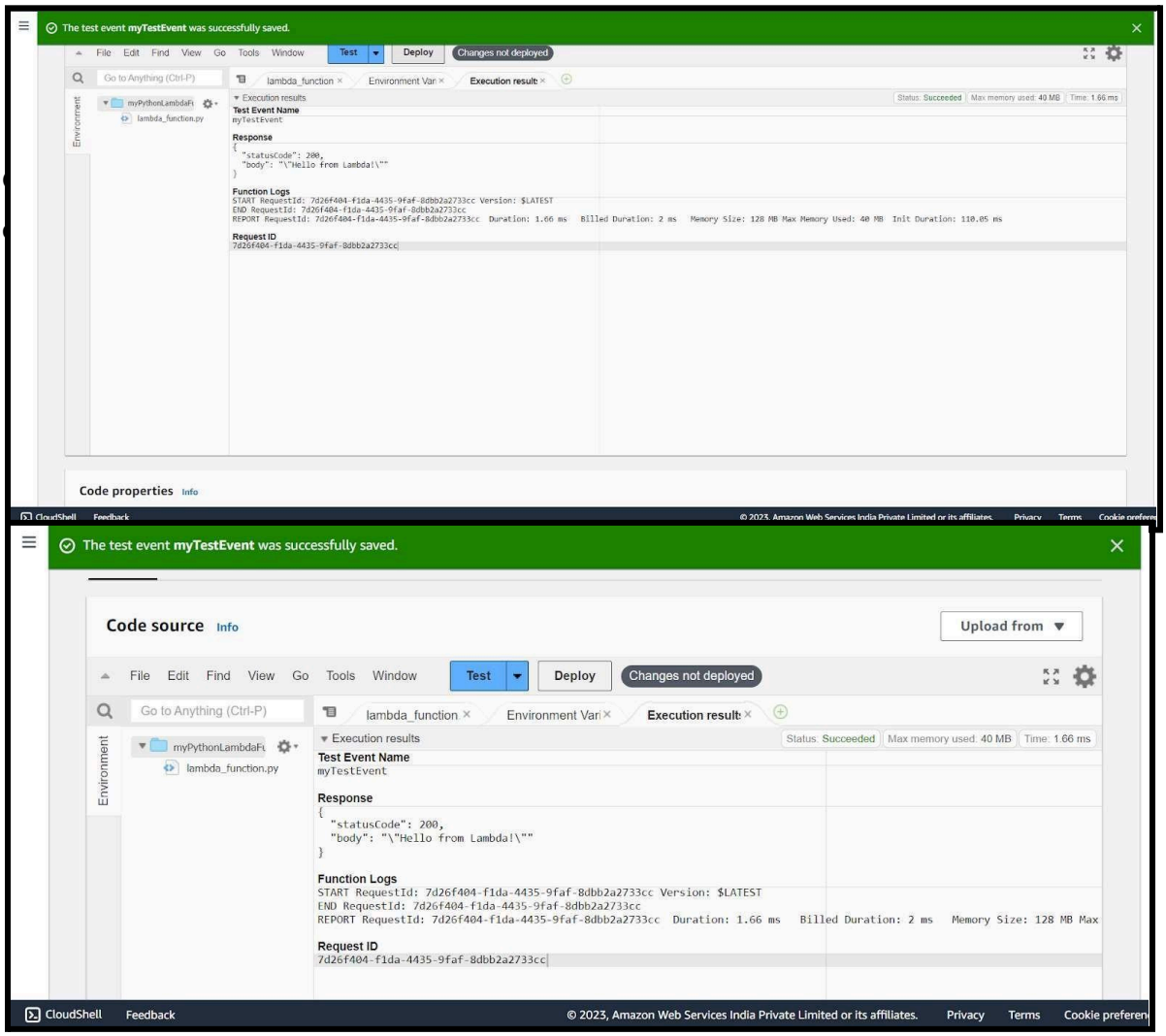
5. You can make changes to your function inside the code editor. You can also upload a zip file of your function or upload one from an S3 bucket if needed.
Press Ctrl + S to save the file and click Deploy to deploy the changes.



6. Click on Test and you can change the configuration, like so. If you do not have anything in the request body, it is important to specify two curly braces as valid JSON, so make sure they are there.



7. Now click on Test and you should be able to see the results.



The test event myTestEvent was successfully saved.
Code source Info
Upload from
File Edit Find View Go Tools Window
Test
Deploy
Changes not deployed
Go to Anything (Ctrl-P)
lambda_function
Environment Vari
Execution result
Environment
myPythonLambdaFt
lambda_function.py
Execution results
Status: Succeeded
Max memory used: 40 MB
Time: 1.66 ms
Test Event Name
myTestEvent
Response
{
"statusCode": 200,
"body": "\"Hello from Lambda!\""
}
Function Logs
START RequestId: 7d26f404-f1da-4435-9faf-8dbb2a2733cc Version: $LATEST
END RequestId: 7d26f404-f1da-4435-9faf-8dbb2a2733cc
REPORT RequestId: 7d26f404-f1da-4435-9faf-8dbb2a2733cc Duration: 1.66 ms Billed Duration: 2 ms Memory Size: 128 MB Max
Request ID
7d26f404-f1da-4435-9faf-8dbb2a2733cc
CloudShell
Feedback
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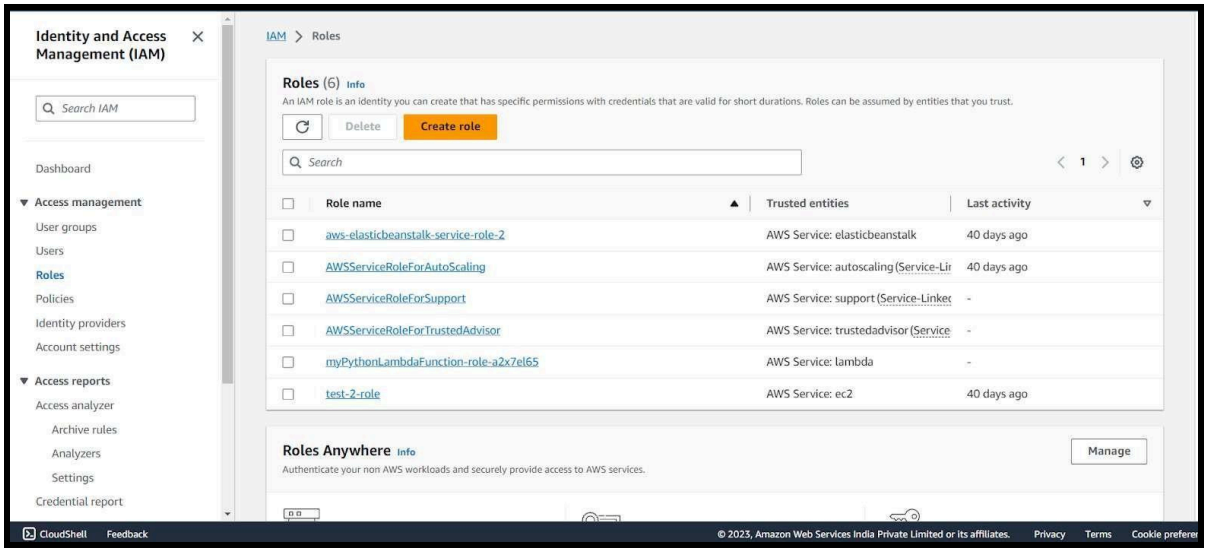
Adv. DevOps Exp. 12

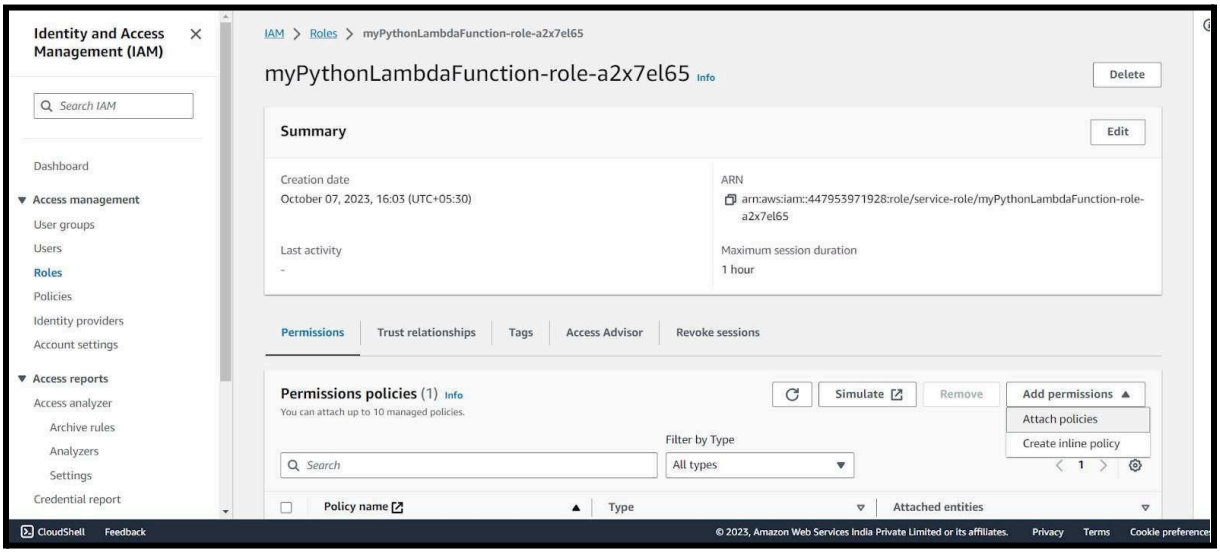
Vaishnal Mali
D15A - 27

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

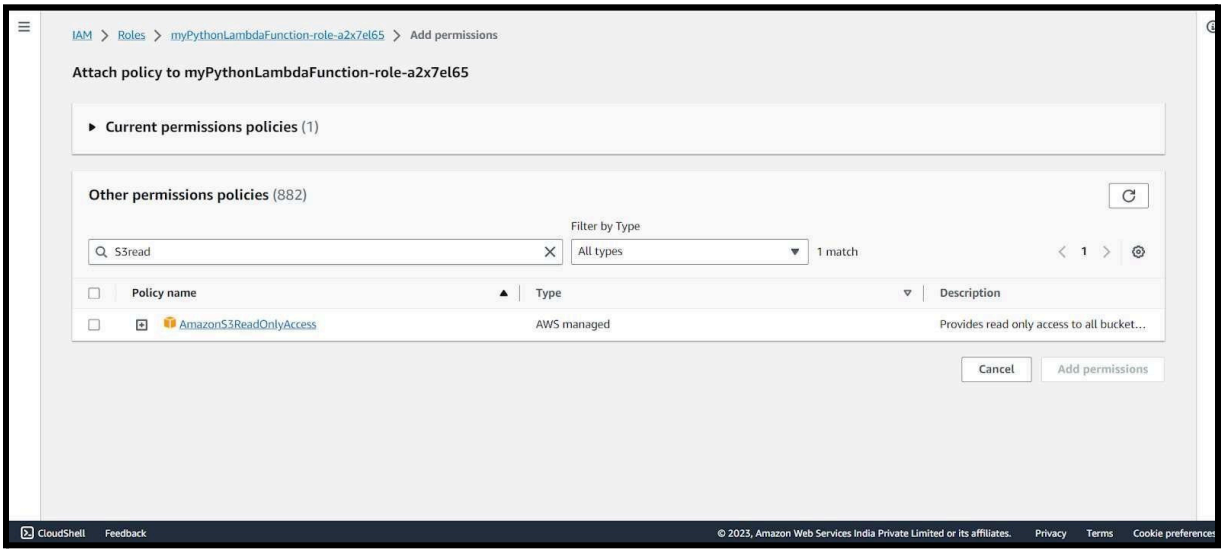
Step 1: Open up the IAM Console and under Roles, choose the Role we previously created for the Python Lambda Function (You can find your role name configuration of your Lambda function).

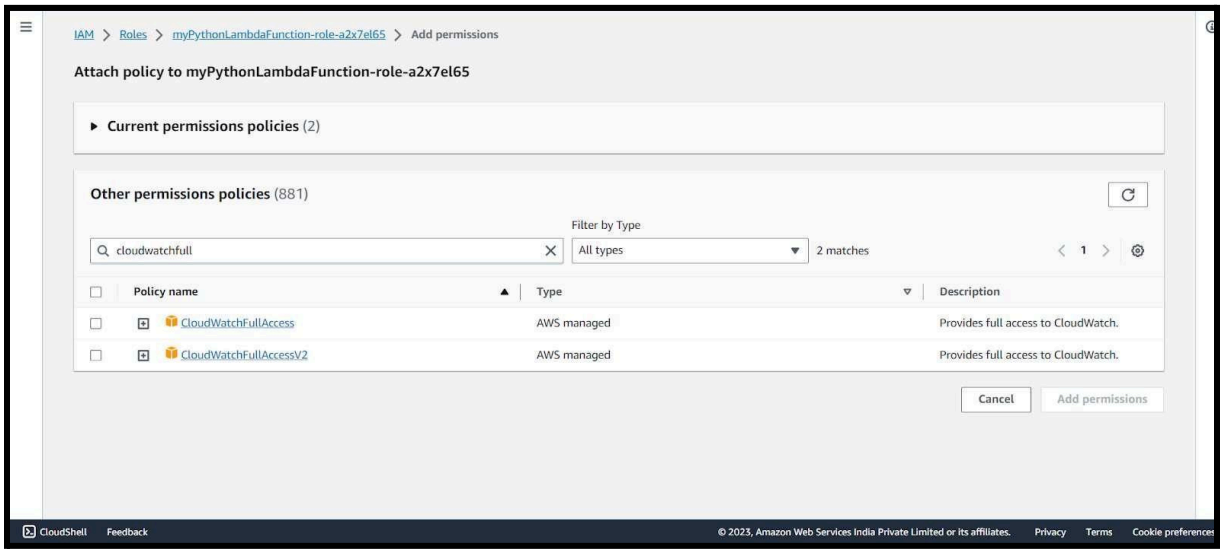


Step 2: Under Attach Policies, add S3-ReadOnly and CloudWatchFull permissions to this role.



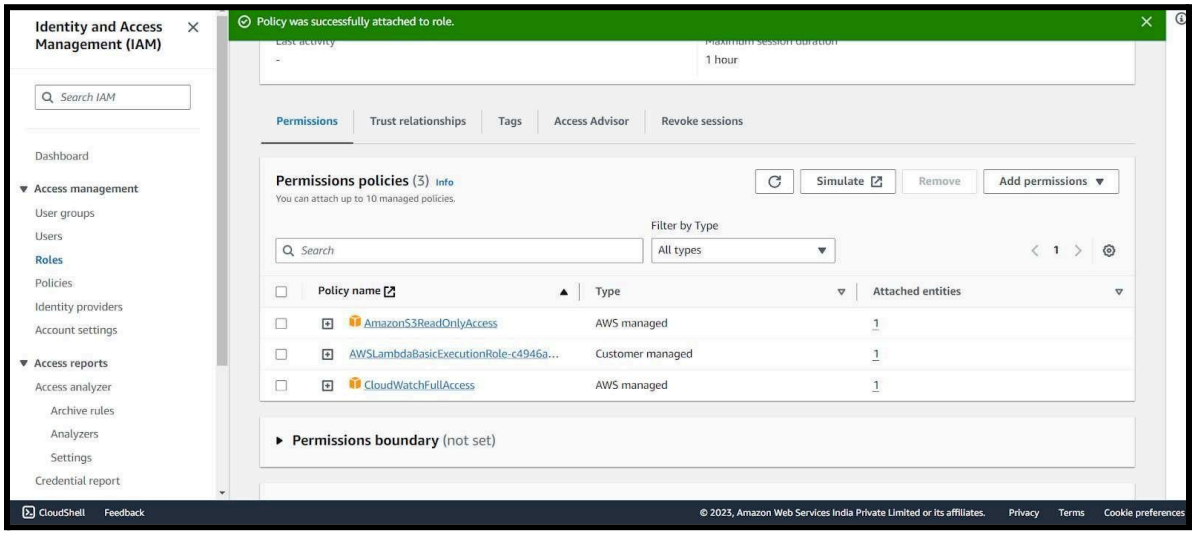
S3-ReadOnly

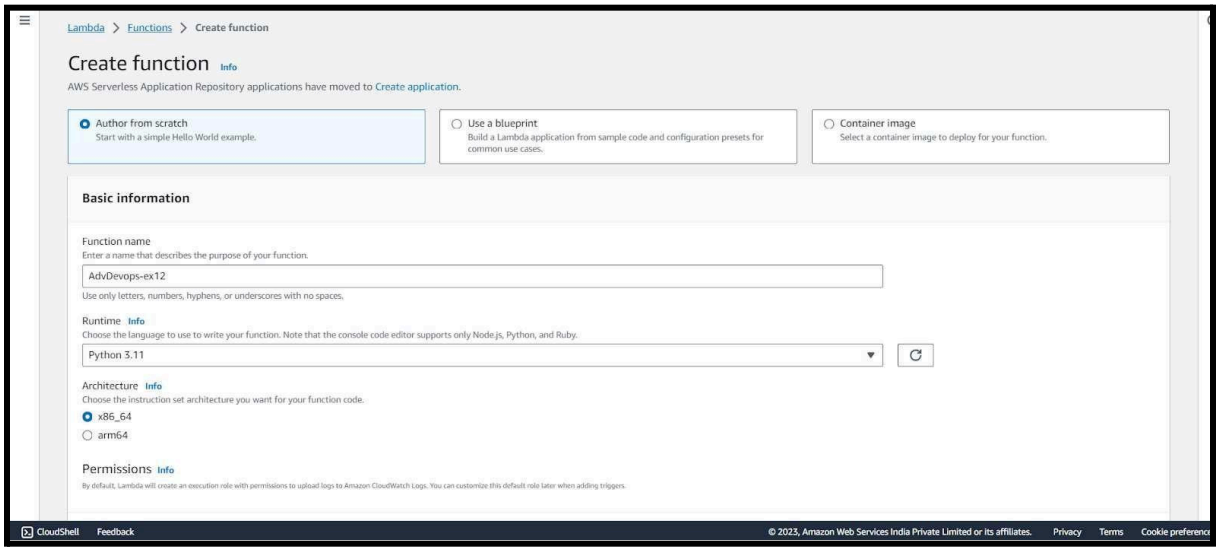




CloudWatchFull

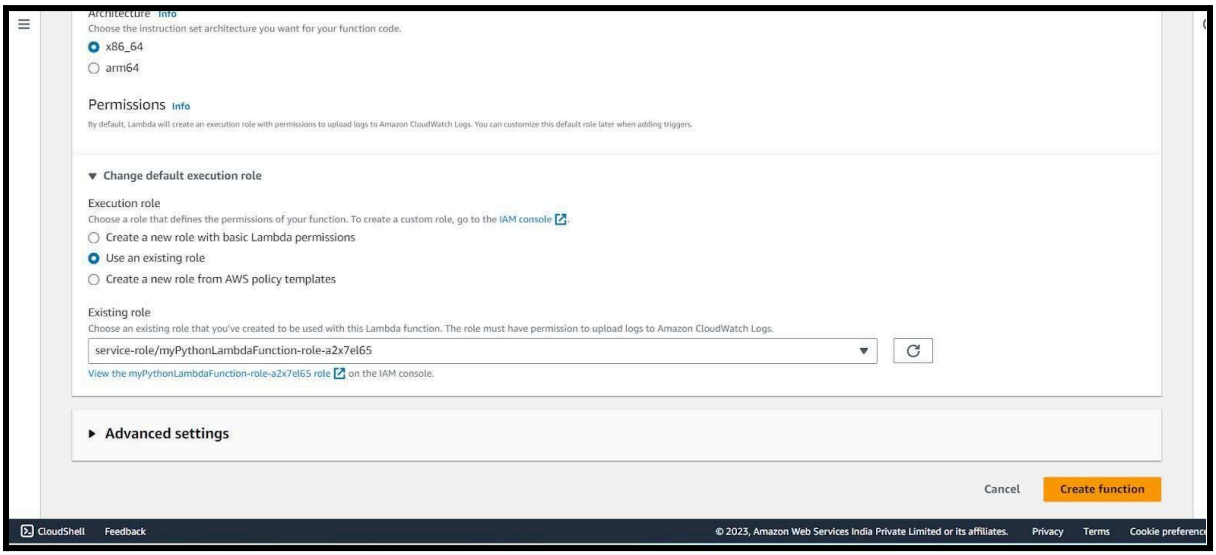
After successful attachment of policy you will see something like this you will be able to see the updated policies.



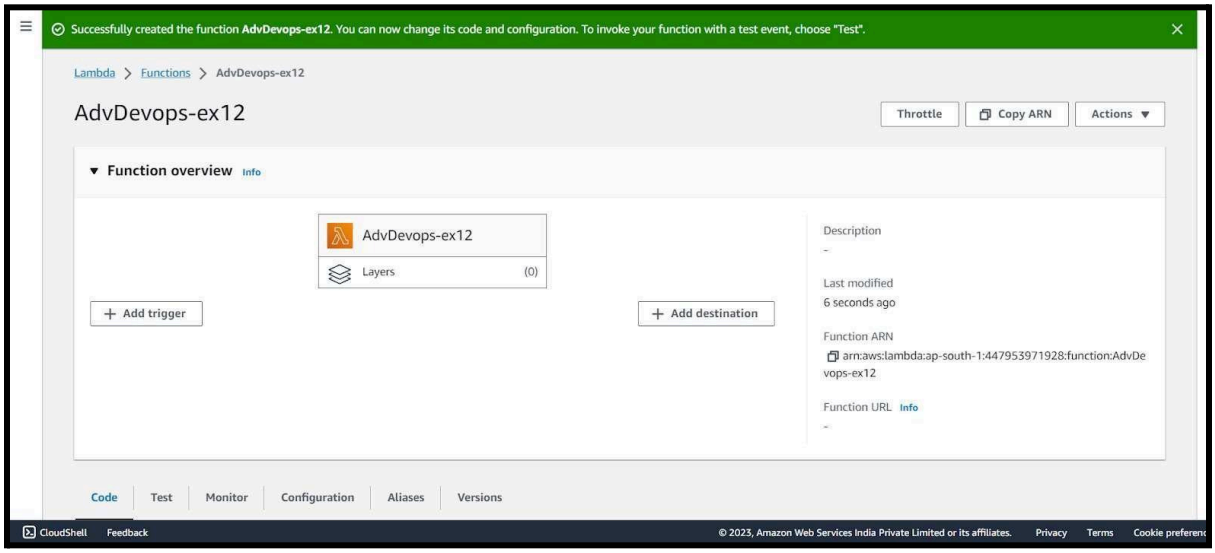


Step 3: Open up AWS Lambda and create a new Python function.

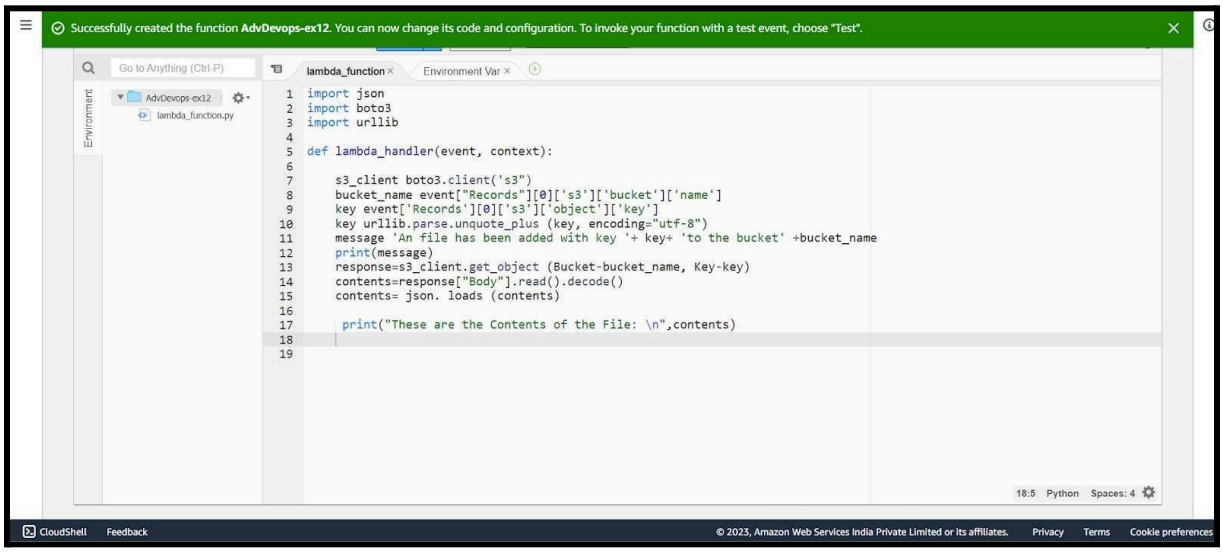
Under Execution Role, choose the existing role, then select the one which was previously created and to which we just added permissions.



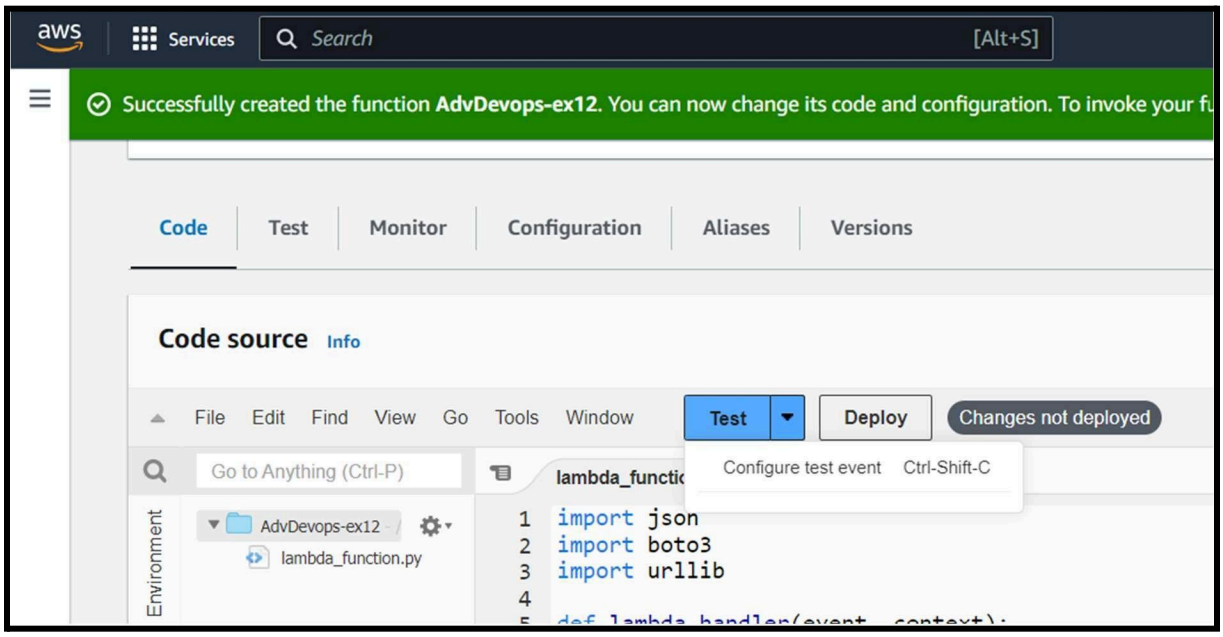
Step 4: The function is up and running.

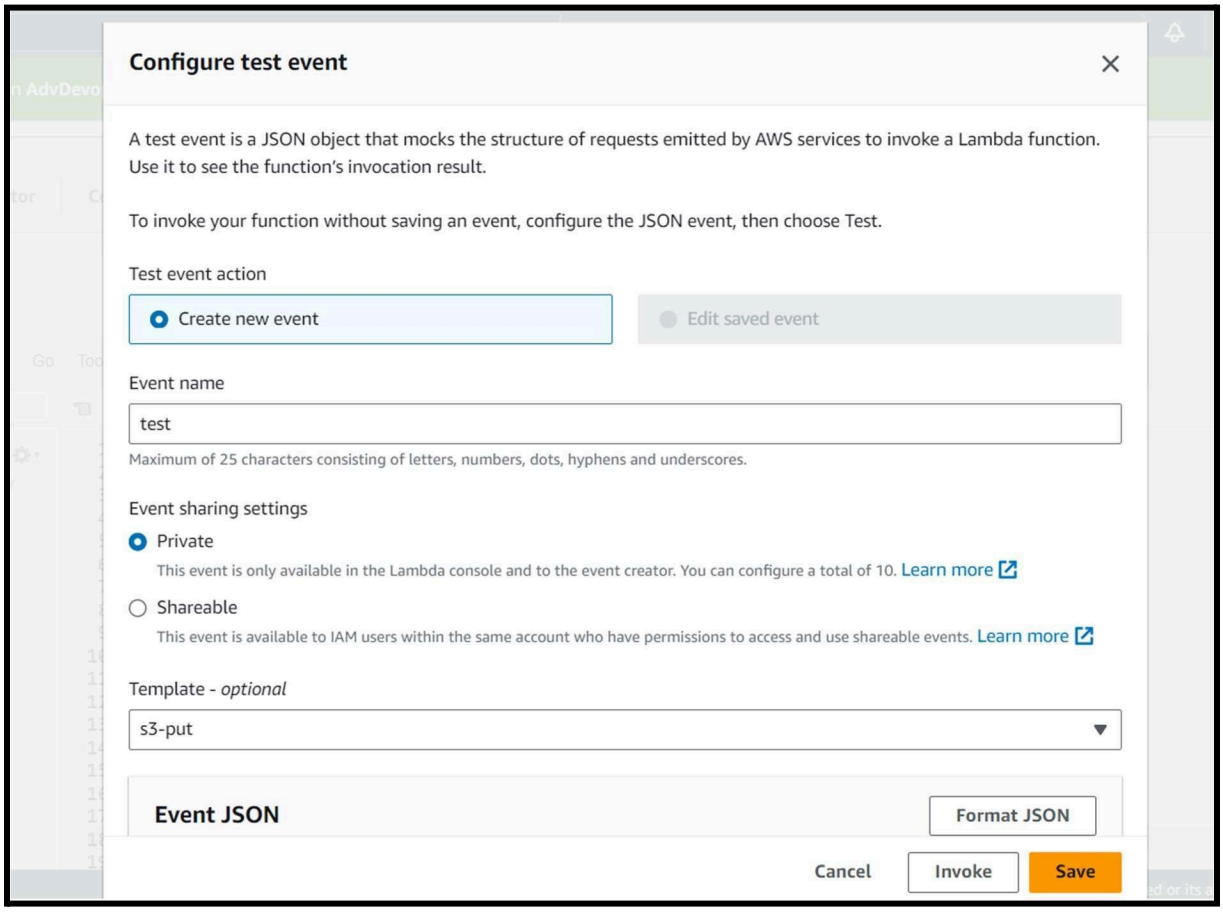


Step 5: Make the following changes to the function and click on the deploy button. This code basically logs a message and logs the contents of a JSON file which is uploaded to an S3 Bucket and then deploy the code.



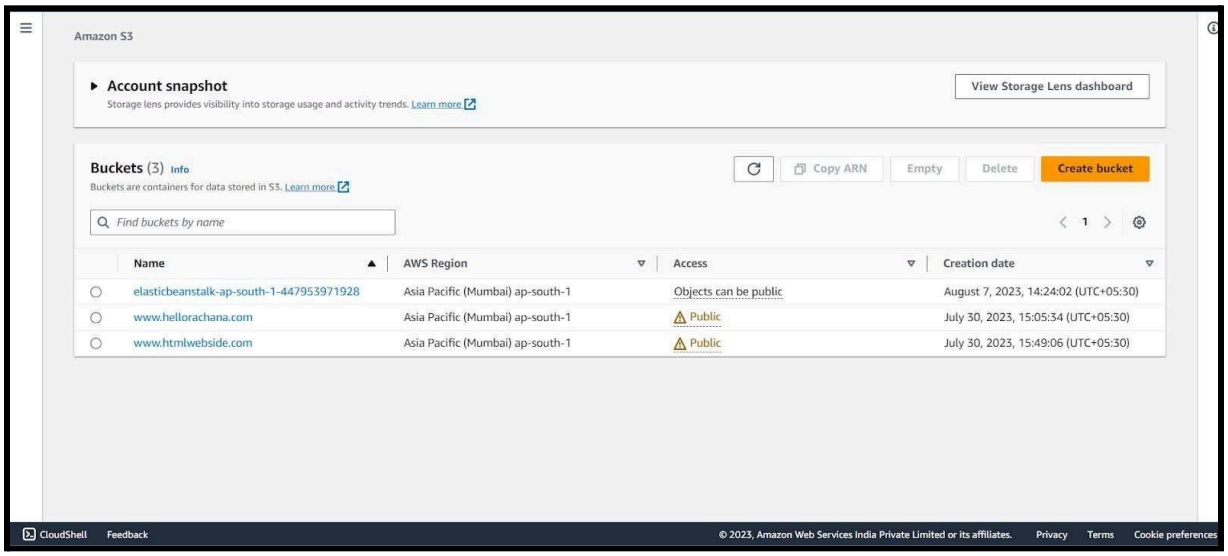
Step 6: Click on Test and choose the ‘S3 Put’ Template.



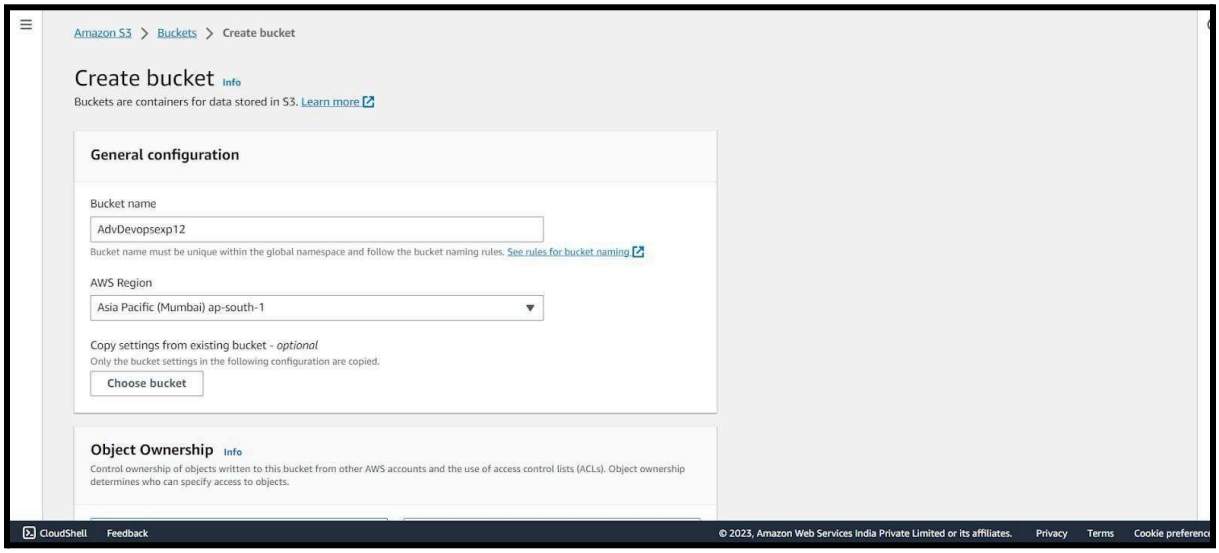


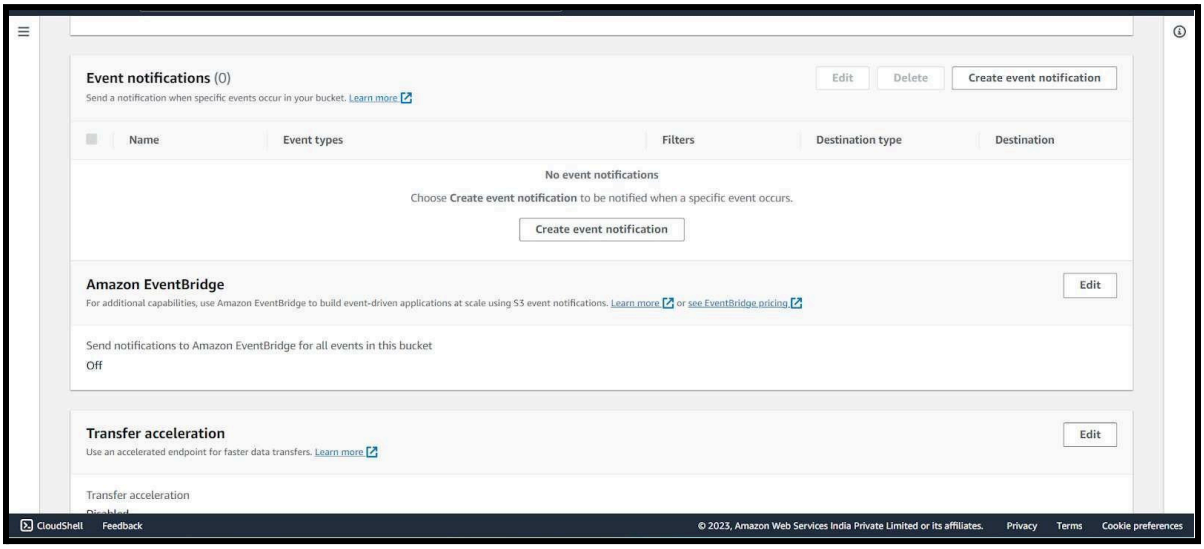
And Save it.

Step 7: Open up the S3 Console and create a new bucket.



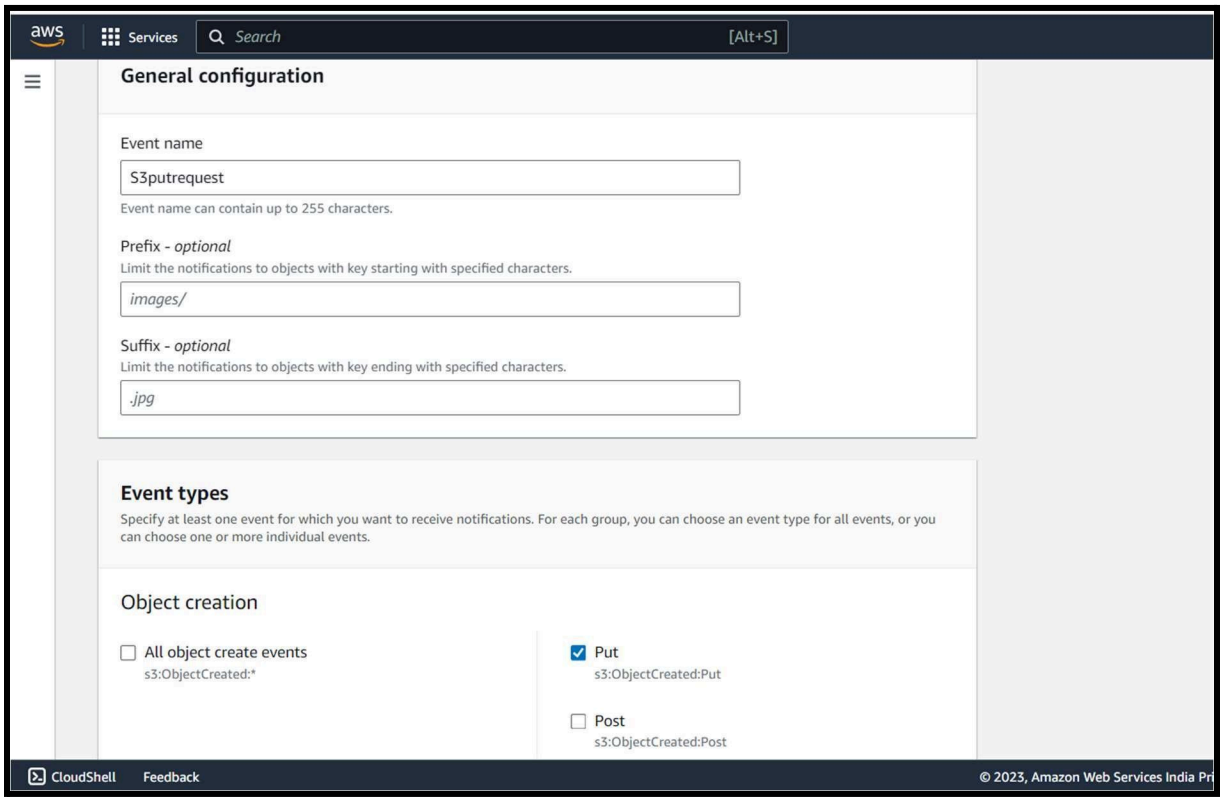
Step 8: With all general settings, create the bucket in the same region as the function.



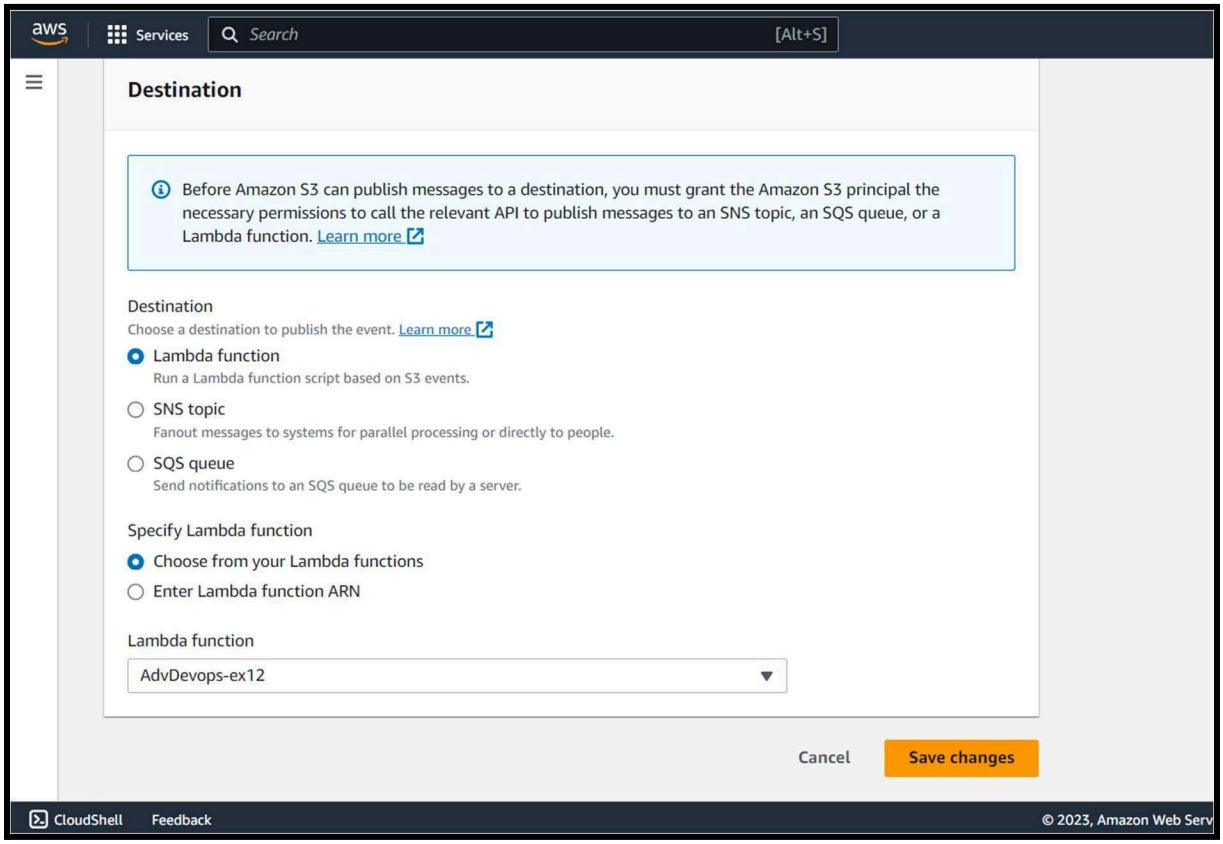


Step 9: Click on the created bucket and under properties, look for events.

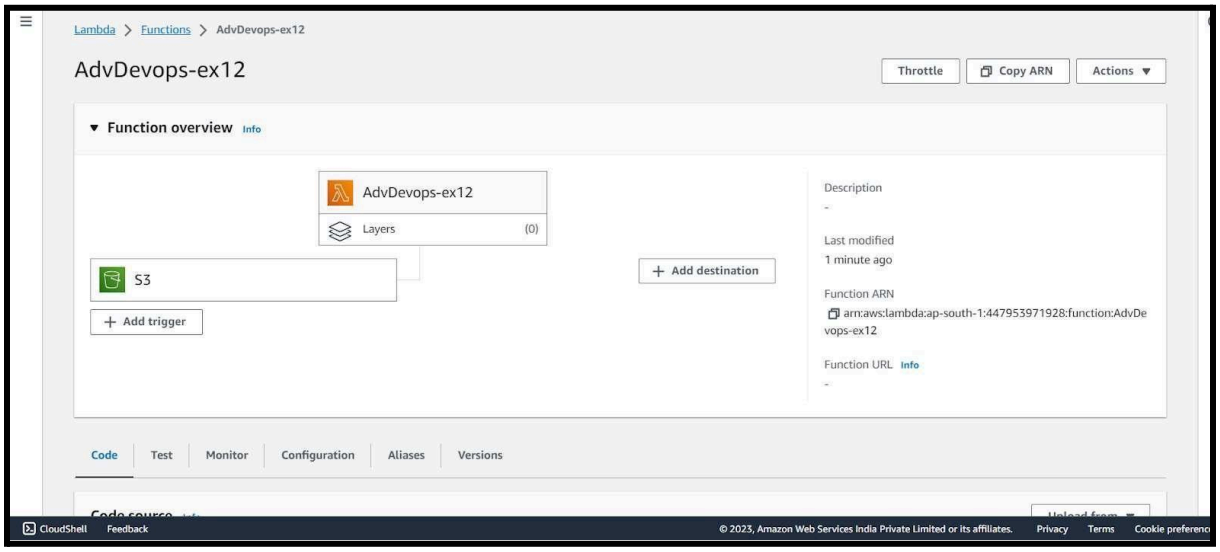
Click on Create Event Notification.



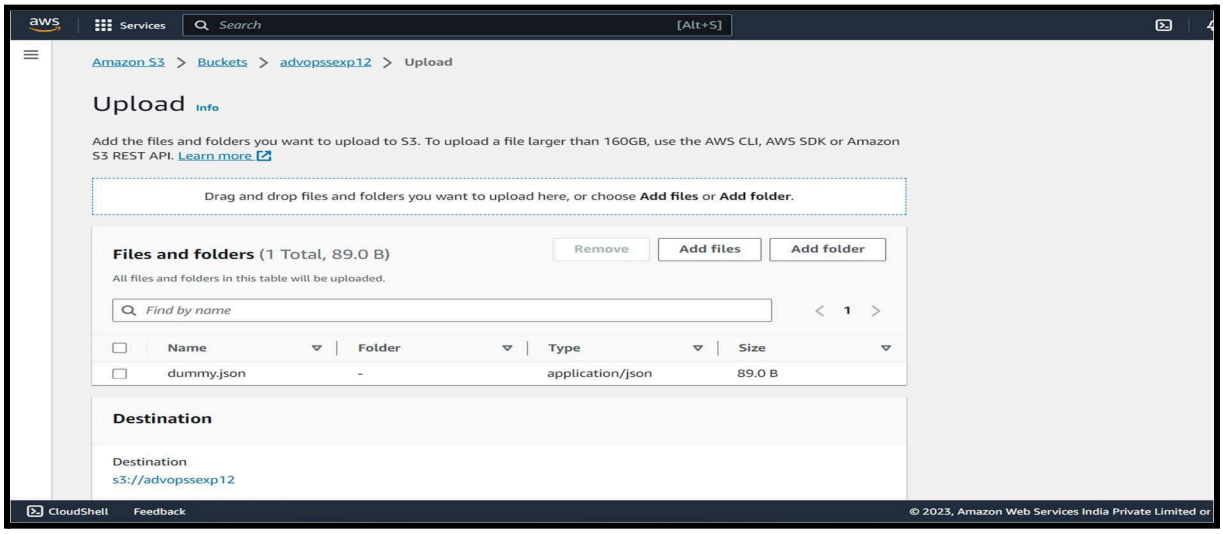
Step 10: Mention an event name and check Put under event types.
Choose Lambda function as destination and choose your lambda function and save the changes.



Step 11: Refresh the Lambda function console and you should be able to see an S3 Trigger in the overview.



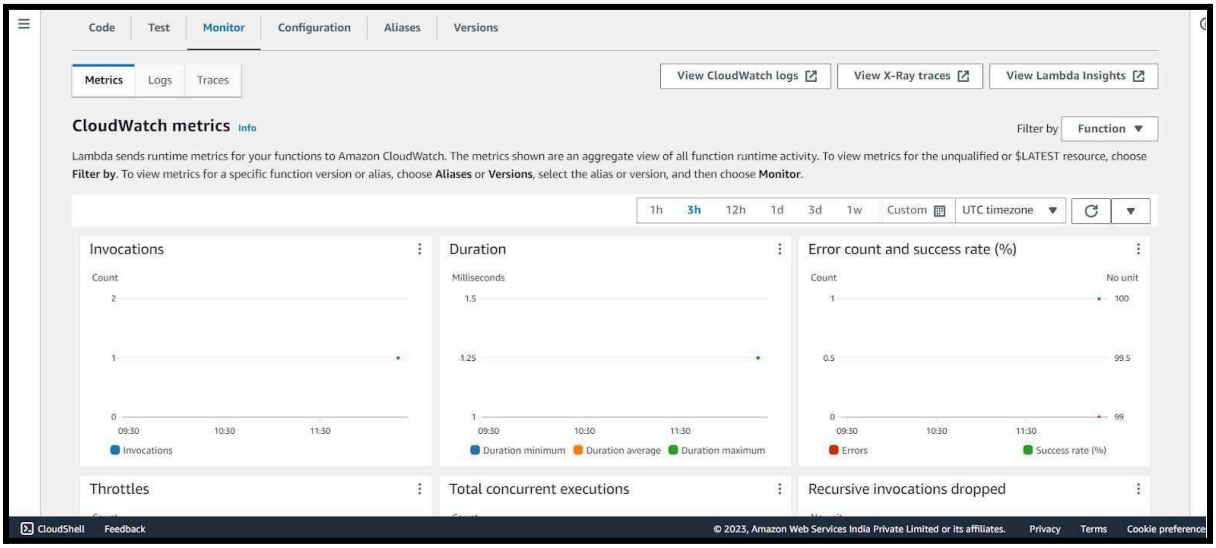
Step 12: Go back to your S3 Bucket and click on Add Files to upload a new file. Select the dummy data file fro



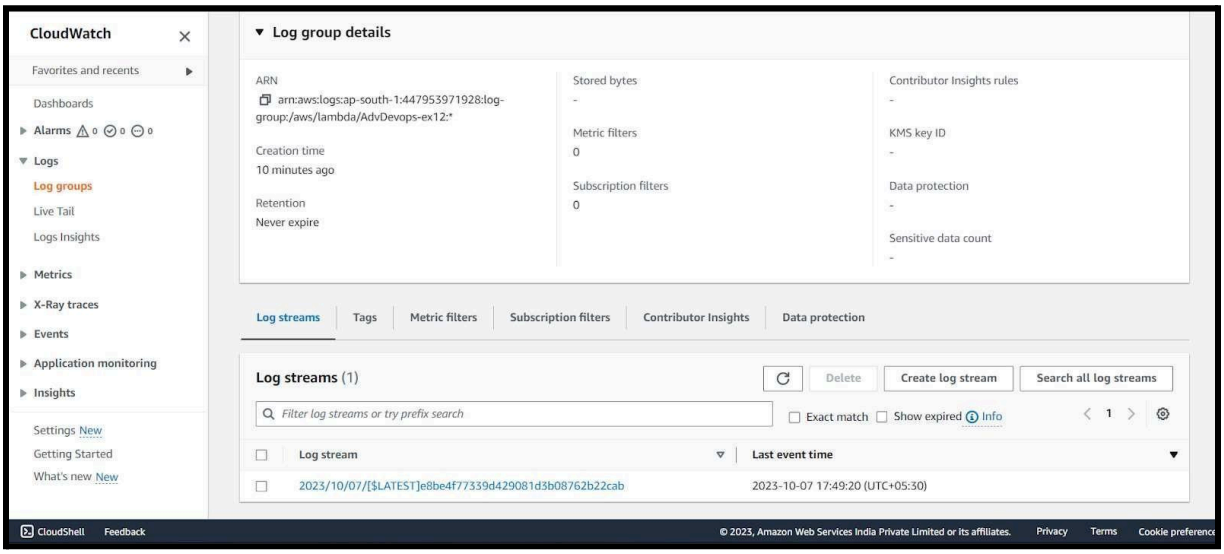
m your computer and click Upload.

Step 13: After this make the necessary changes in the Test configuration file which we created it previously by replacing the Bucket Name and the ARN of Bucket.

Step 14: Go back to your Lambda function , Refresh it and ch



eck the Monitor tab.



Under Log streams, click on View logs in Cloudwatch to check the Function logs.

Step 15: Click on this log Stream that was created to view what was logged by your function.