Banarsidas Chandiwala Institute of Information Technology

(AFFILIATED TO)

GURU GOBIND SINGH INDRAPRASTHA UNIVERSITY

SECTOR-16C,DWARKA,NEW DELHI

Practical Lab File
Cloud Computing

Submitted by

Nikhil Nirvan
(01011104421)
MCA 3rd SEMESTER

Submitted to

Mr. Alok Mishra
(Assistant Professor)

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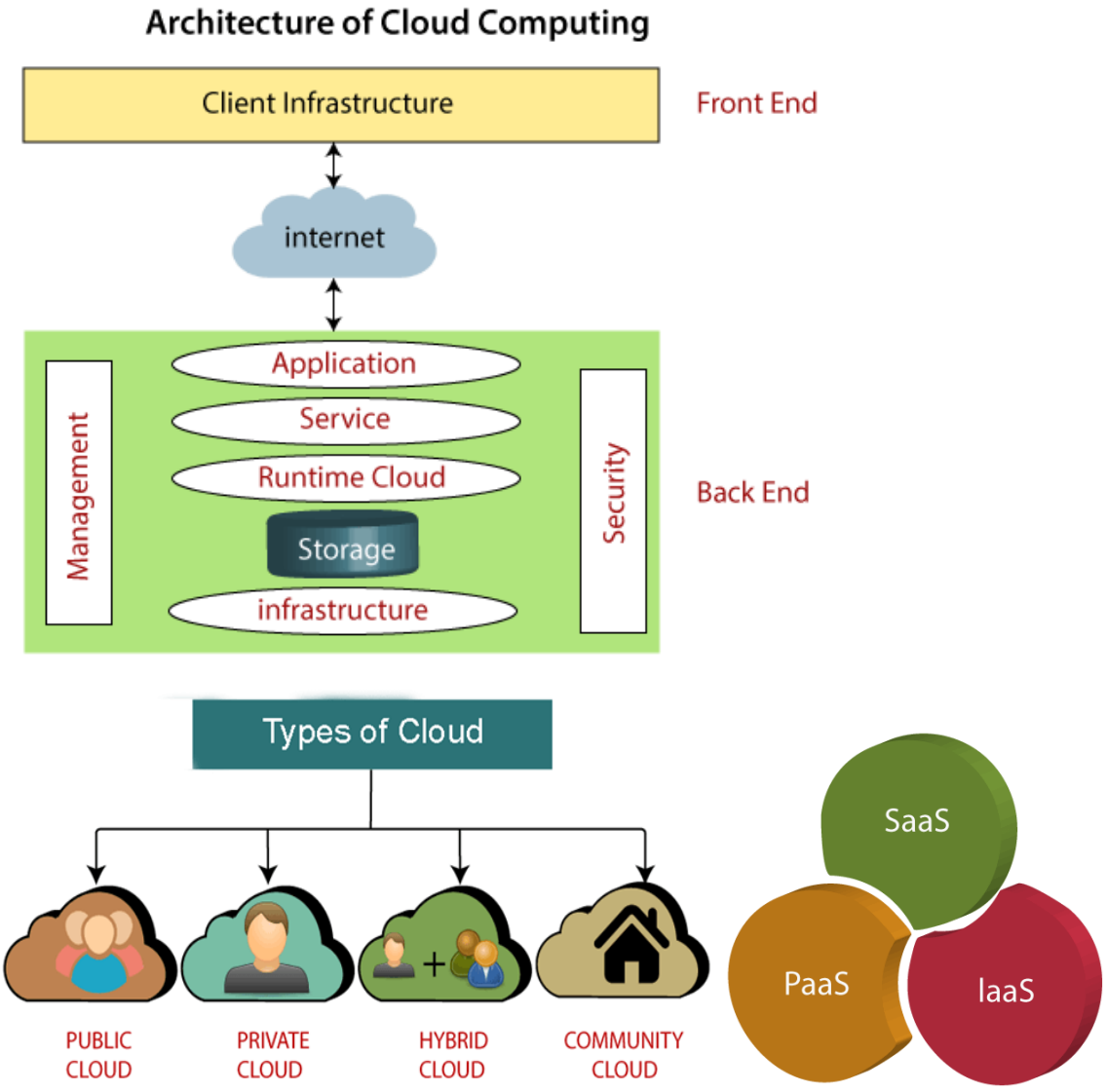
Objectives of Cloud Computing

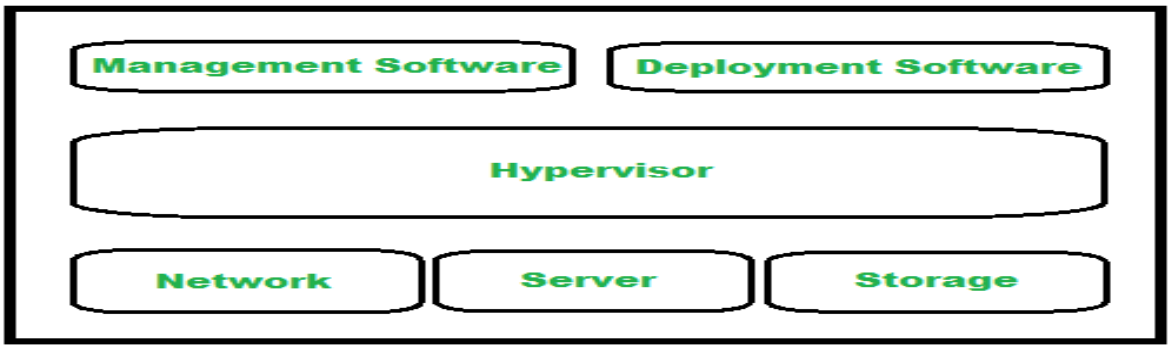
- **Elasticity**: Ability to scale virtual machines resources up or down.
- **On-demand usage**: Ability to add or delete computing power (CPU, memory), and storage according to demand.
- **Pay-per-use**: Pay only for what you use.
- **Multitenancy**: Ability to have multiple customers access their servers in the
  data center in an isolated manner.

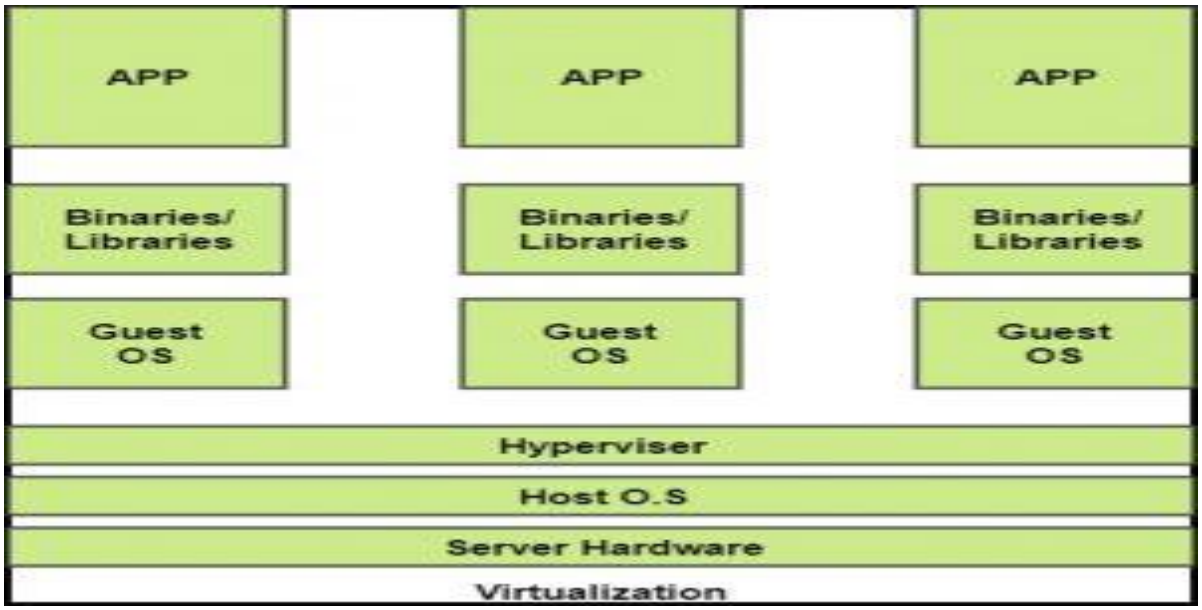
THEORY ON CLOUD COMPUTING

Cloud computing means that instead of all the computer hardware and software you're using sitting on your desktop, or somewhere inside your company's network, it's provided for you *as a service* by another company and accessed over the Internet, usually in a completely seamless way. Exactly where the hardware and software is located and how it all works doesn't matter to you, the user—it's just somewhere up in the nebulous "cloud" that the Internet represents.



Components of Cloud Infrastructure





1) Back-up and restore data

Once the data is stored in the cloud, it is easier to get back-up and restore that data using the cloud.

2) Improved collaboration

Cloud applications improve collaboration by allowing groups of people to quickly and easily share information in the cloud via shared storage.

3) Excellent accessibility

Cloud allows us to quickly and easily access store information anywhere, anytime in the whole world, using an internet connection. An internet cloud infrastructure increases organization productivity and efficiency by ensuring that our data is always accessible.

4) Low maintenance cost

Cloud computing reduces both hardware and software maintenance costs for organizations.

5) Mobility

Cloud computing allows us to easily access all cloud data via mobile.

6) IServices in the pay-per-use model

Cloud computing offers Application Programming Interfaces (APIs) to the users for access services on the cloud and pays the charges as per the usage of service.

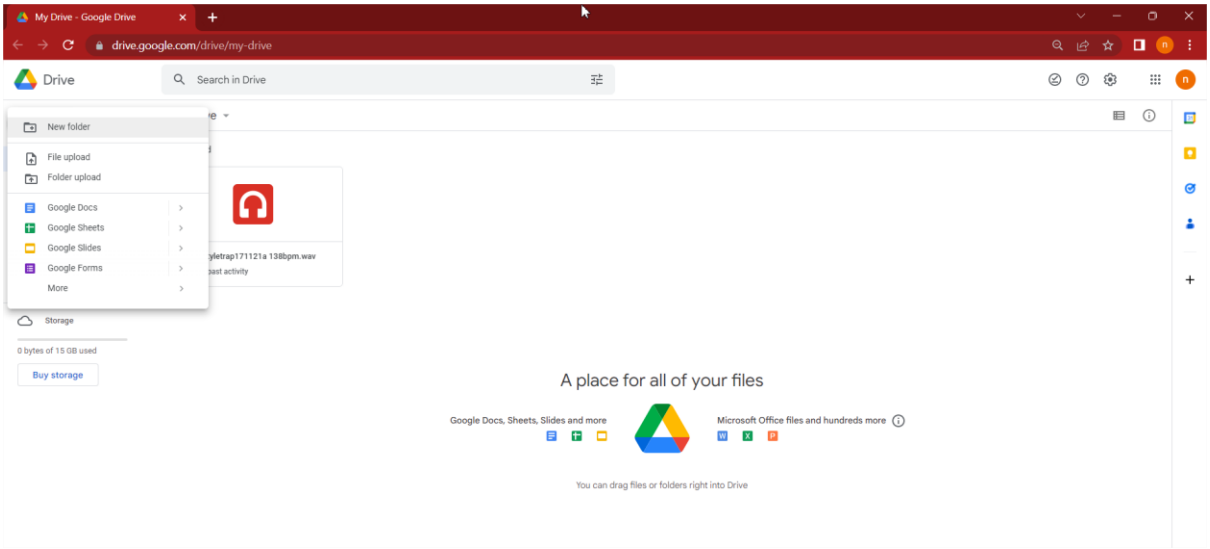
1)Implement the process to store your data using any personal cloud:

a) GOOGLE DRIVE

Step 1: Go to drive.google.com

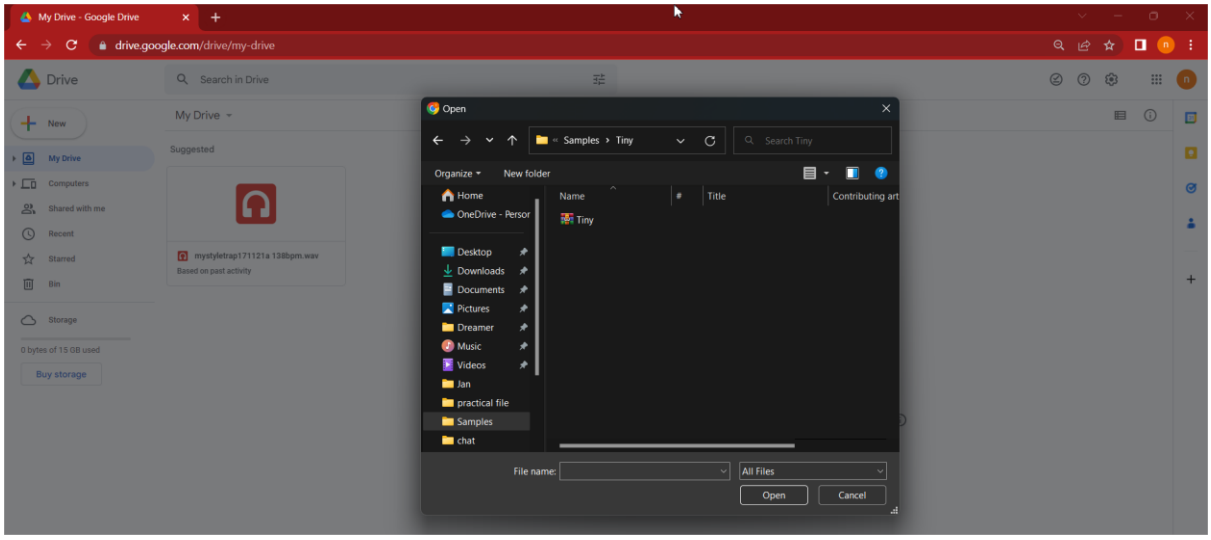
On your computer, go to drive.google.com. You'll see "My Drive," which has:

- Files and folders you upload or sync
- Google Docs, Sheets, Slides, and Forms you create



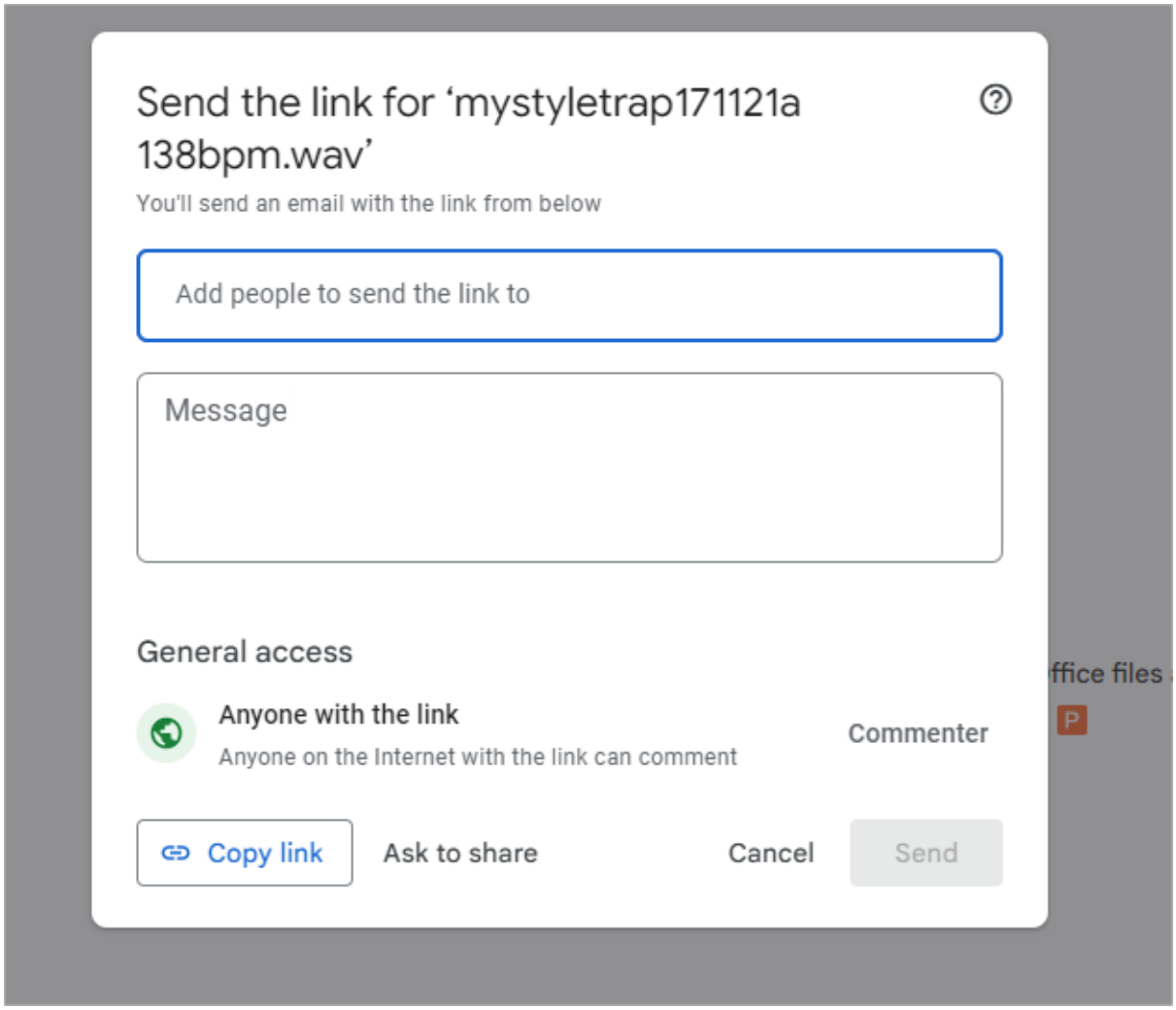
Step 2: Upload or create files

You can upload files from your computer or create files in Google Drive.



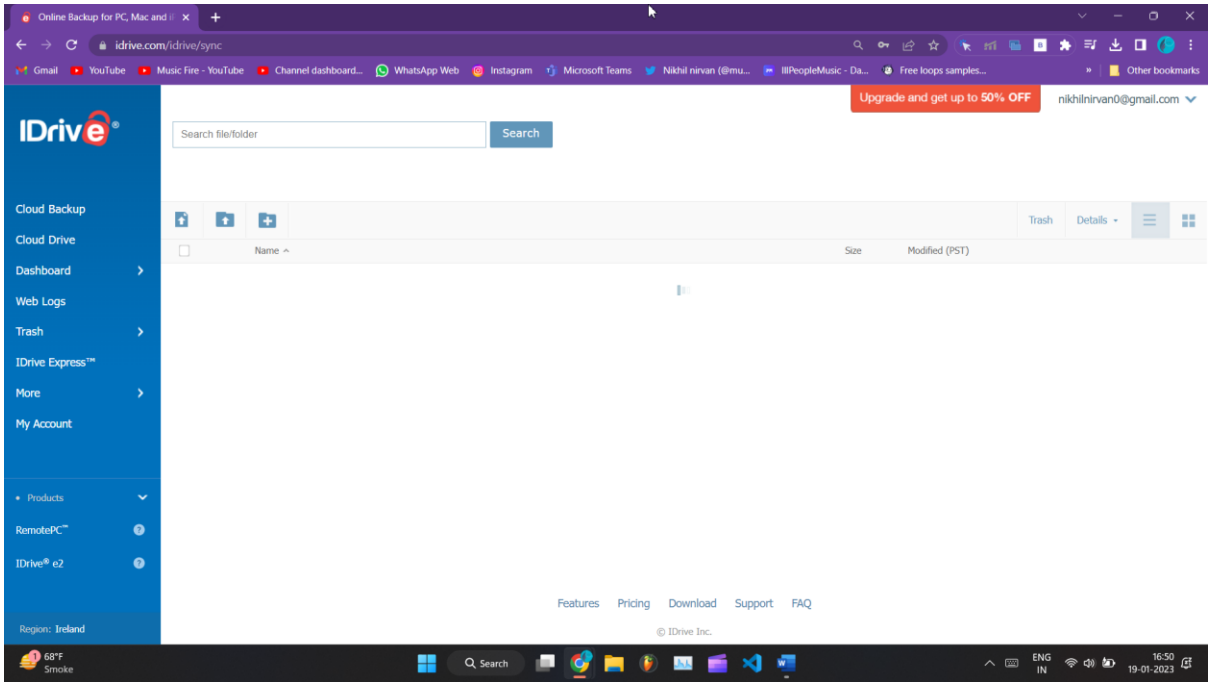
Step 3: Share and organize files

You can share files or folders, so other people can view, edit, or comment on them.

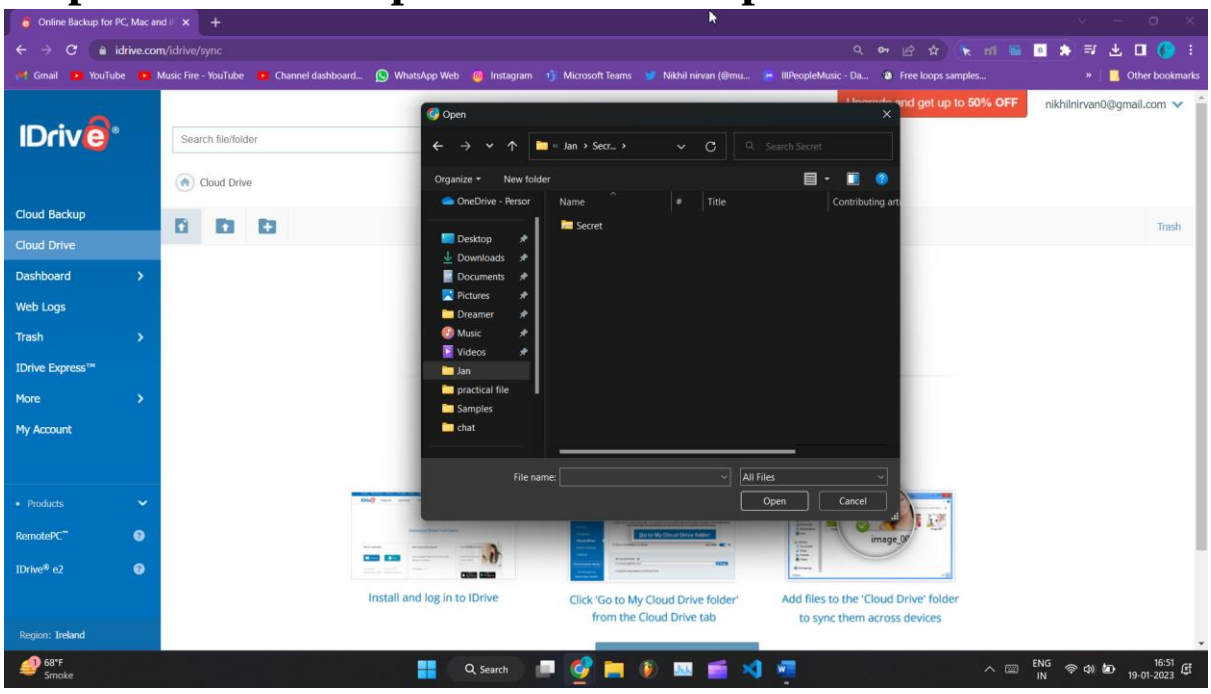


b) I Drive

Step 1: Go to https://www.idrive.com/idrive/sync

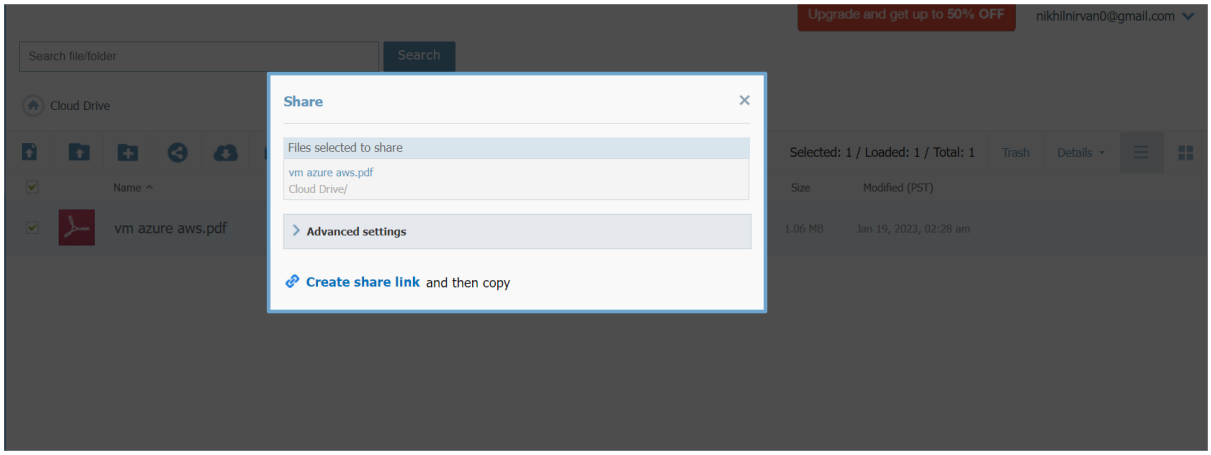


Step 2: Click On Upload File And Upload File



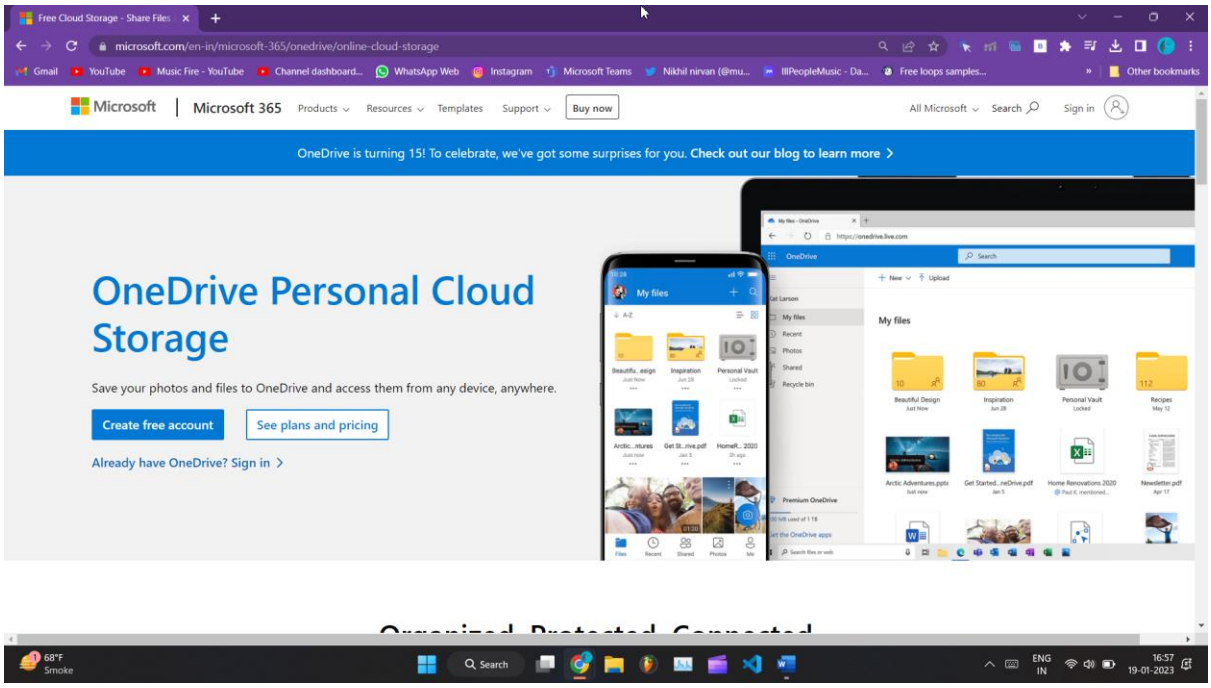
Step 3: Share and organize files

You can share files or folders, so other people can view, edit on them.



c) Microsoft one Drive

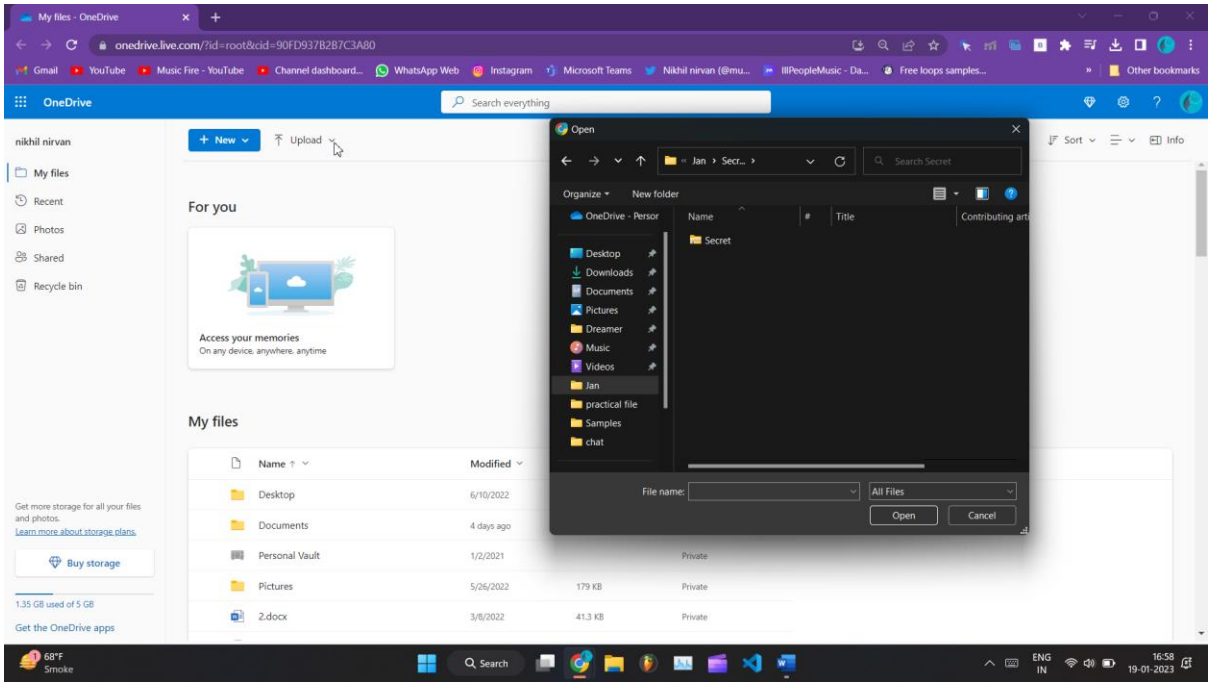
Step 1: Go to https://www.microsoft.com/en-in/microsoft-365/onedrive/online-cloud-storage



Step 2: Upload or create files

After Login, you can upload files from your computer.

Click on Upload, Choose File Or Folder

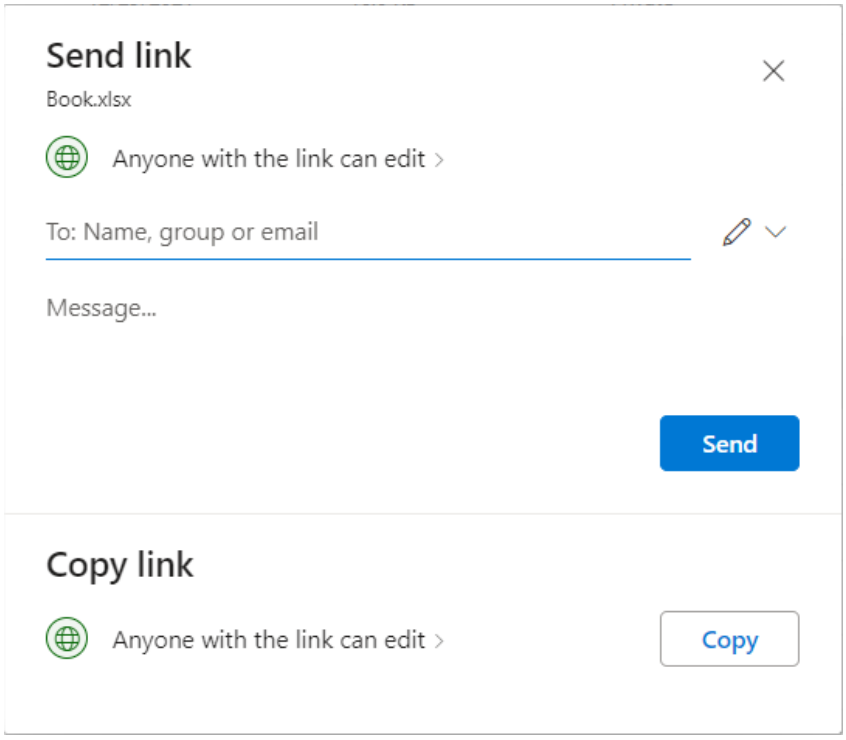


Or

There is option to sync your desktop with One Drive

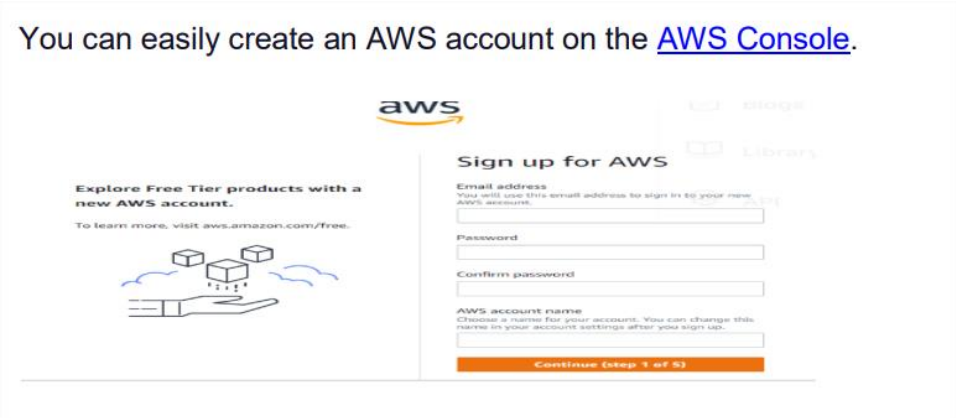
Step 3: Share and organize files

You can share files or folders, so other people can view, edit, or comment on them.

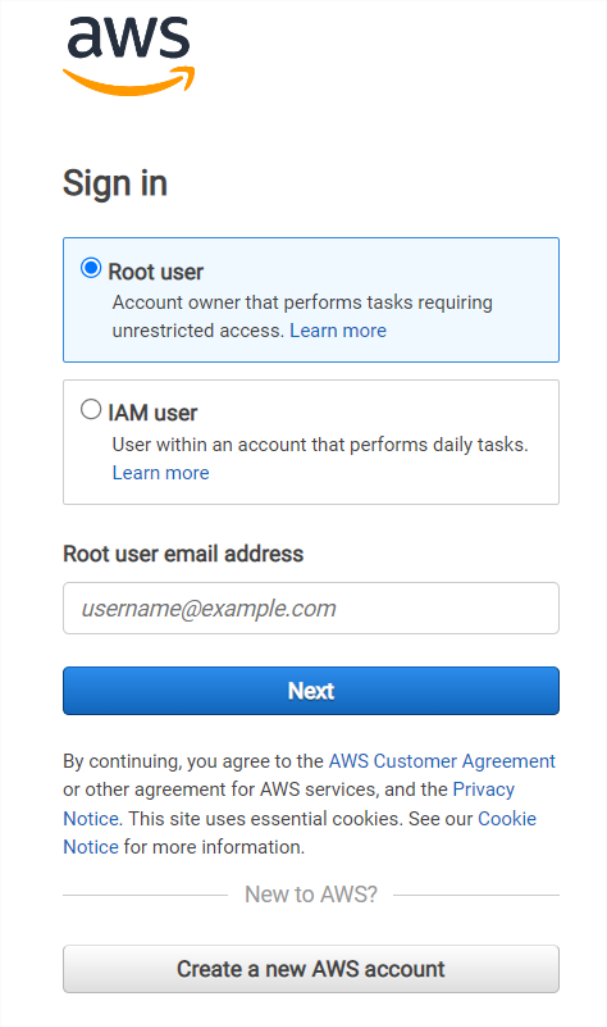


2)Implement login on AWS using http://aws.amazon.com/console/home.

1.Create an AWS account



2. Login with you email



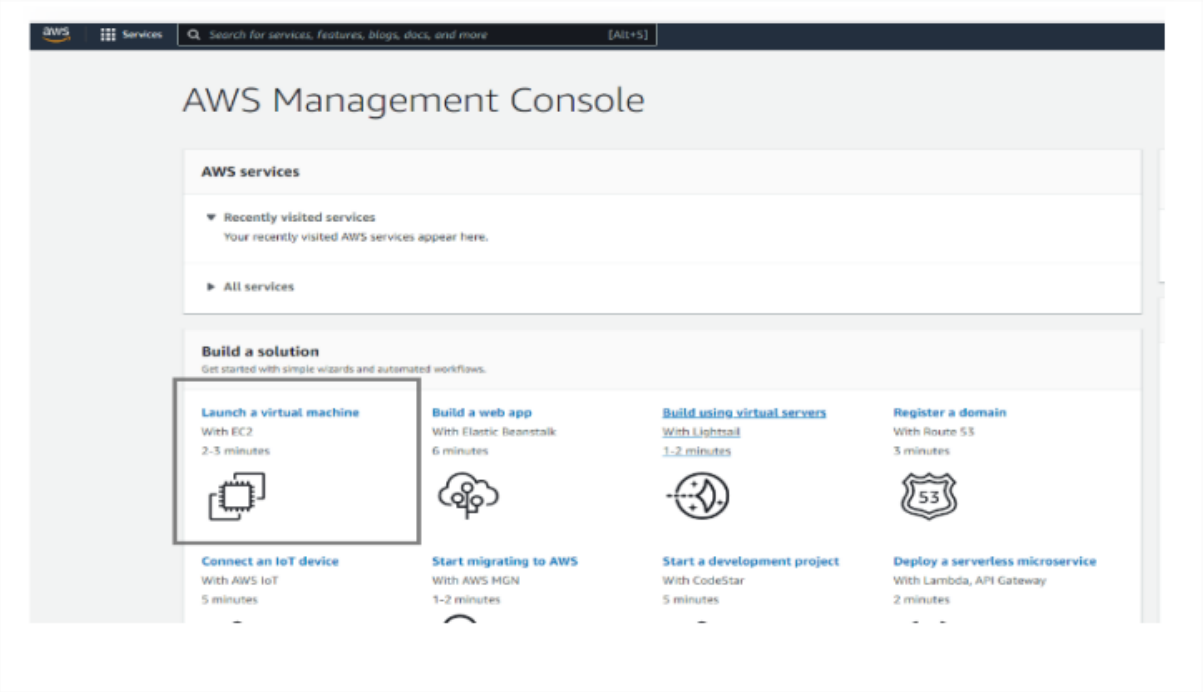
3)Create a virtual machine using any cloud

a)AWS

1. Create an AWS account

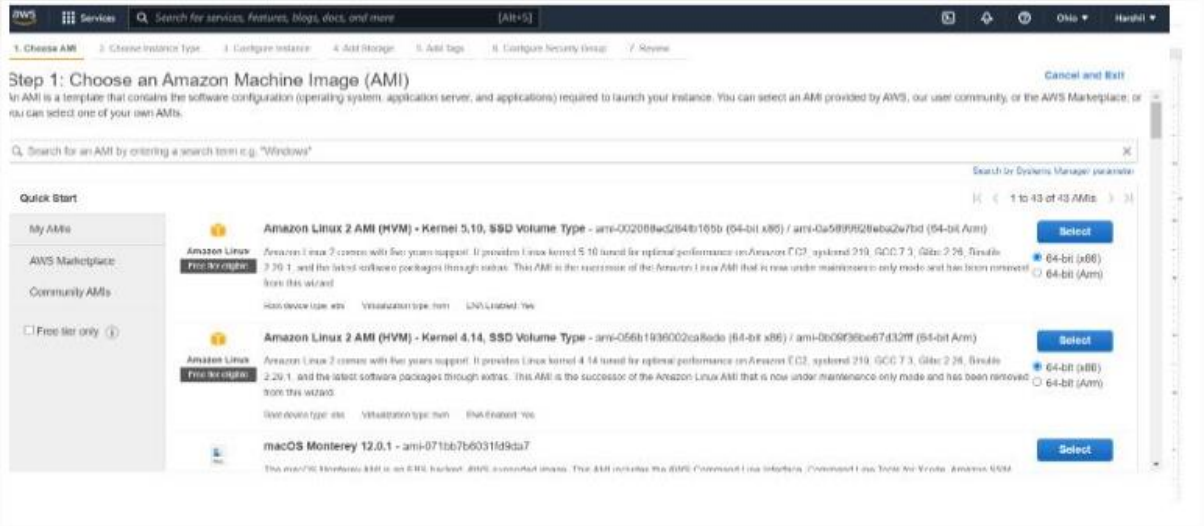
You can easily create an AWS account on the AWS Console.

2. Launch AWS virtual machine



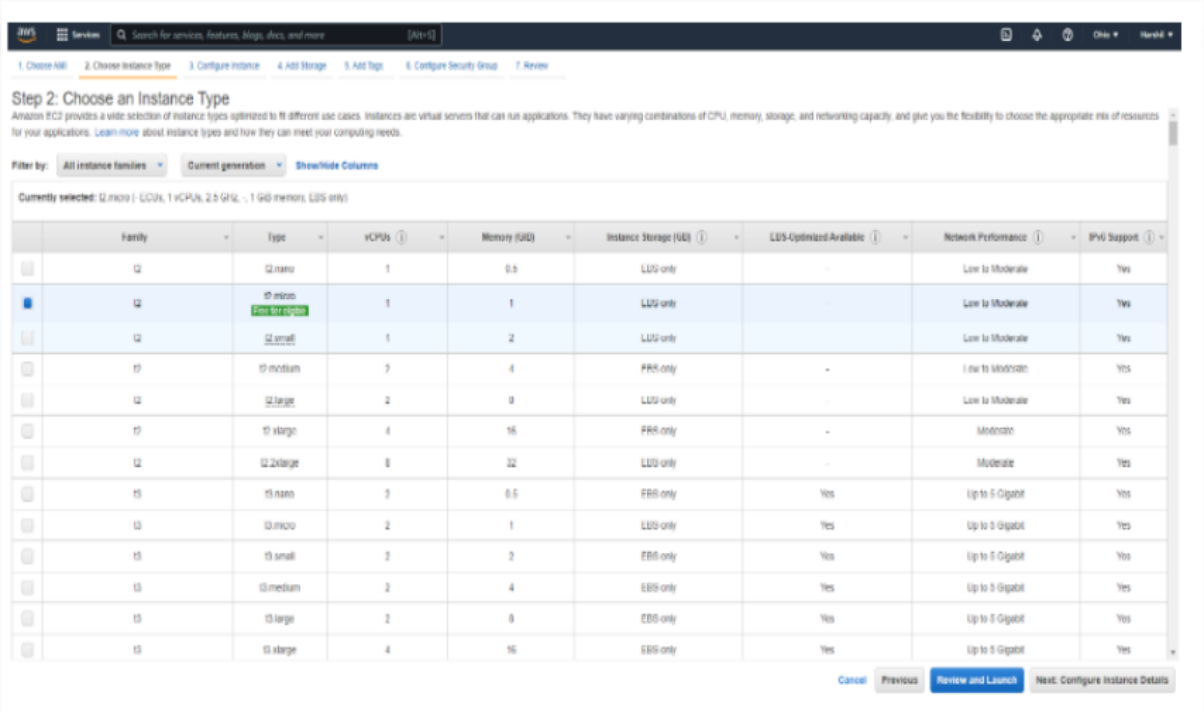
3. Choose AMI

Amazon Machine Image (AMI) highlights the software setup (OS, application server, and apps). You can select Mac, Linux, or Windows OS.



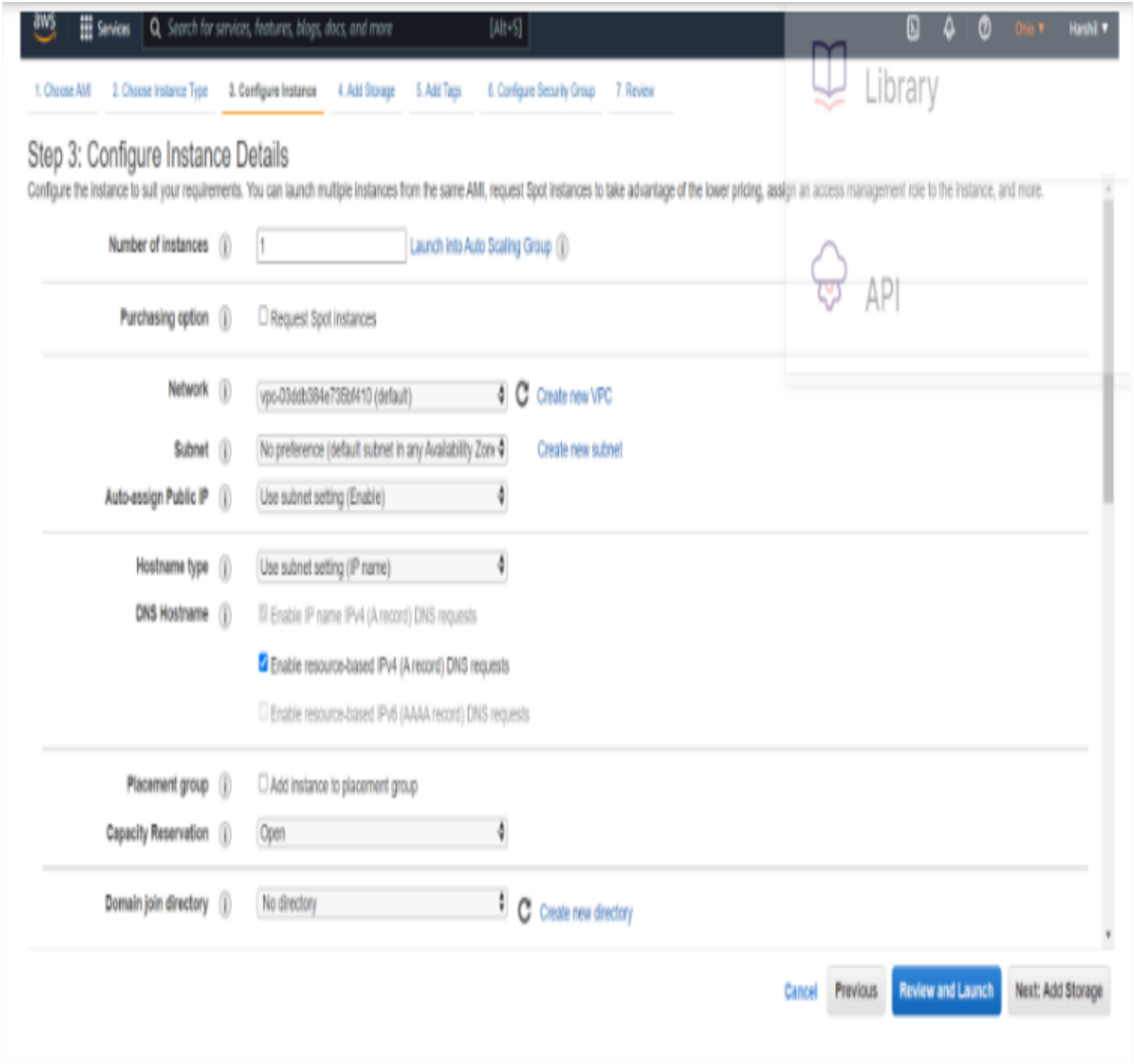
4. Choose and configure instance type

After choosing your operating system, you need to pick an instance type. Amazon EC2 offers many instance types tailored to specific use cases. An instance is a virtual server or virtual machine. They come in a variety of CPU, memory, storage, networking, and a lot more.



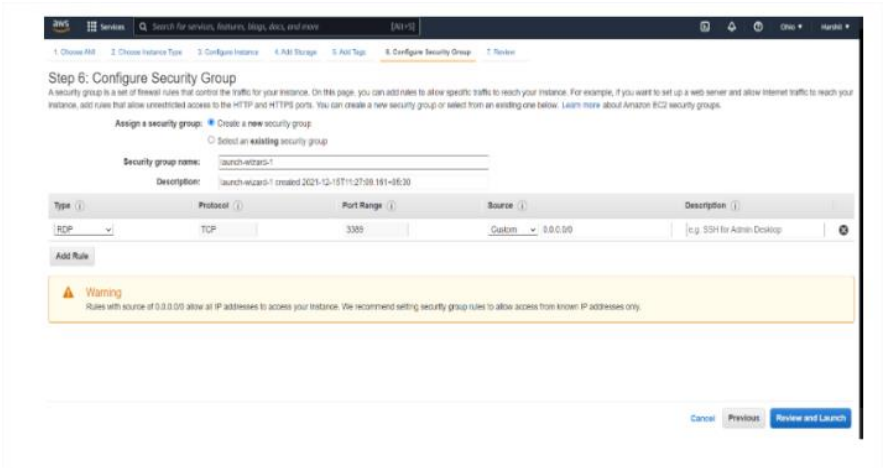
You can configure instance details, such as the number of instances, network, host type, and so on. Here, we'll use one instance and keep the remaining details default.

5. Add storage and tags



Amazon Elastic Block Store (EBS) provides block-level storage volumes for use with EC2 instances. It behaves like raw, unformatted block devices. You can mount these volumes as devices on your instances.

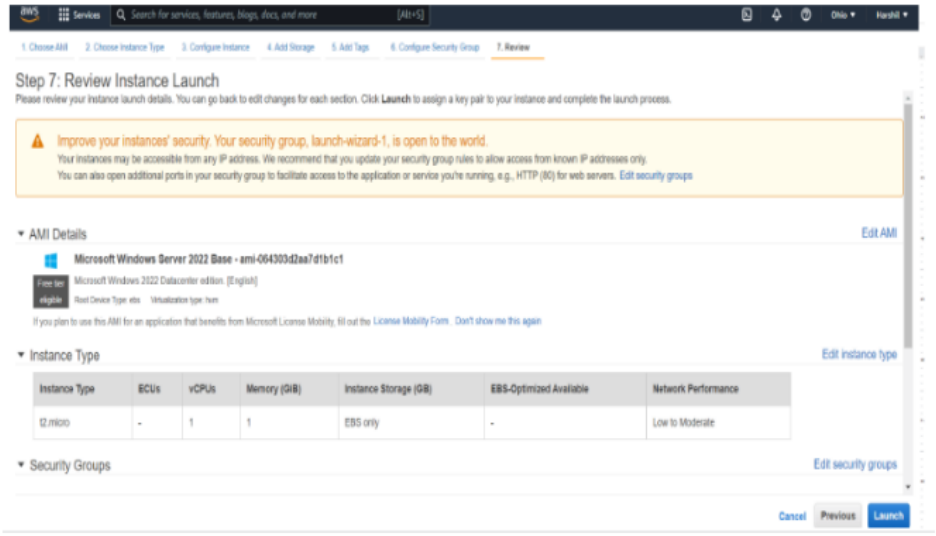
6. Configure security



A security group is a set of firewall rules that control data entering and exiting your instance. You may either recreate it or pick an existing security group.

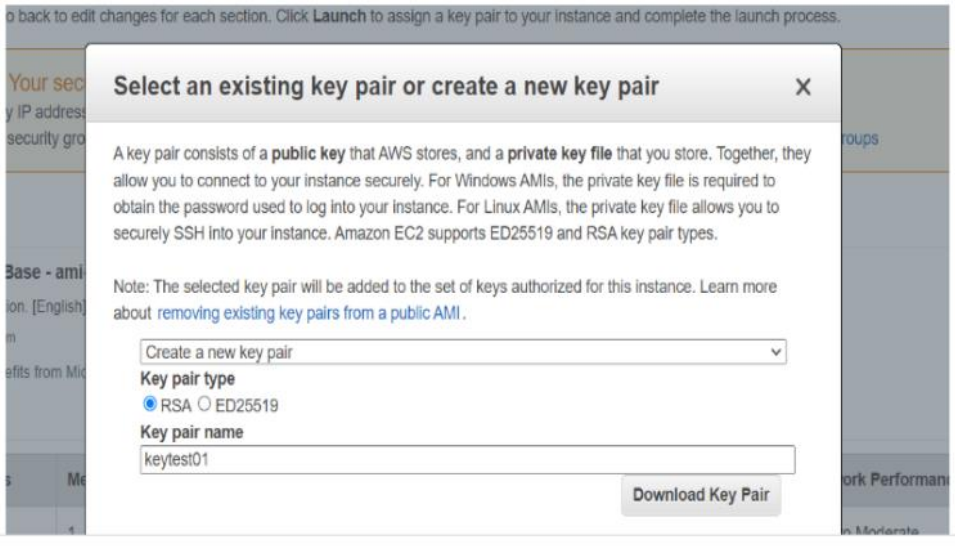
7. Review and launch your AWS virtual machine

The final step in creating an AWS virtual machine is to go through your instance details. Make sure every detail is correct, then click **"Launch"**.



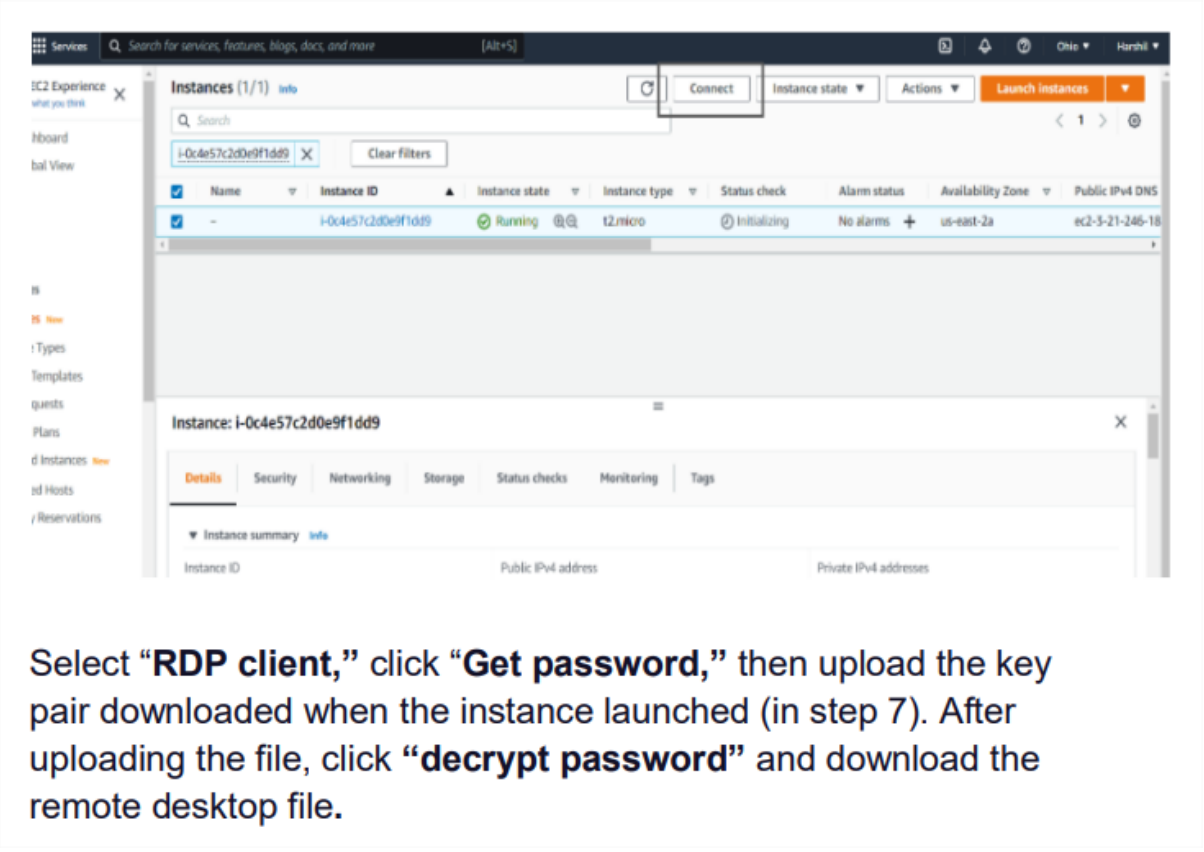
When you click "Launch," you need to provide a key. To create a new key, select "Create a new key pair" from the drop-down menu and set a key name, for example, keytask, keytest1, and so on. Make sure you download "key pair" before launching your instance.

A key pair is made up of a public key stored by AWS and your private key file. They work together to allow you to connect to your instance safely.

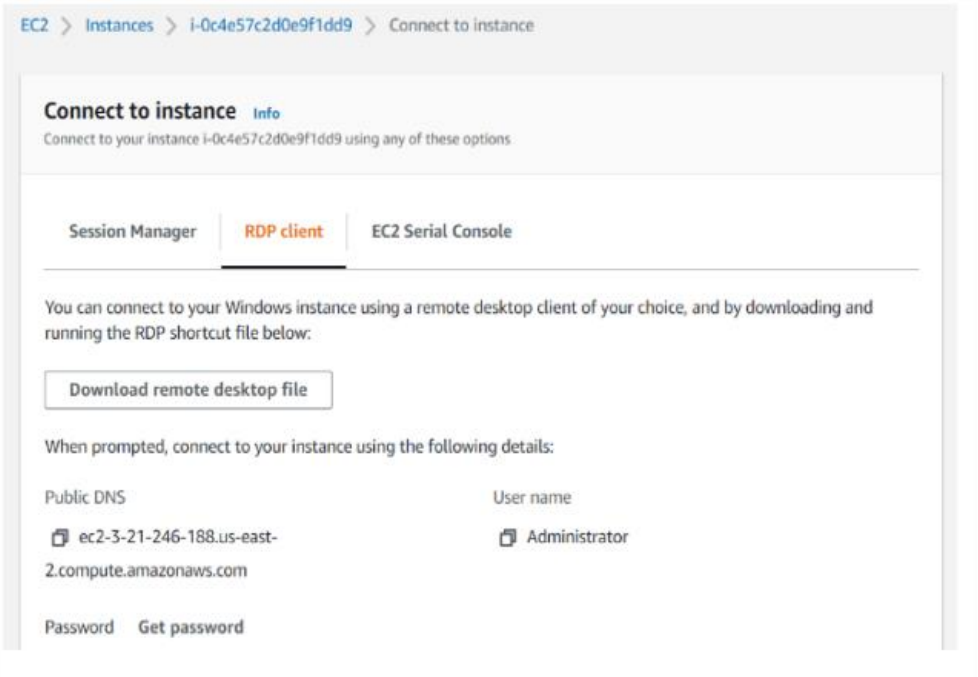


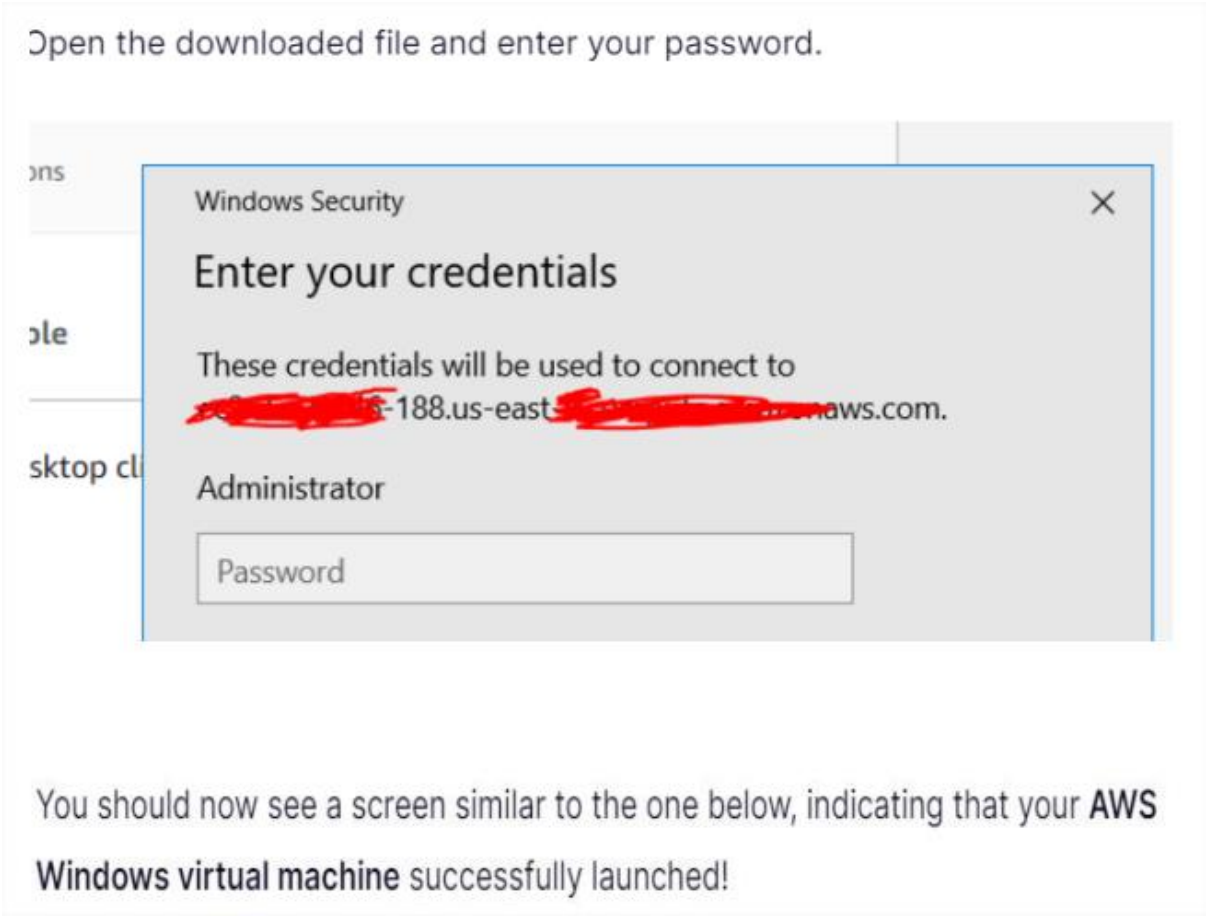
8. Connect to an instance

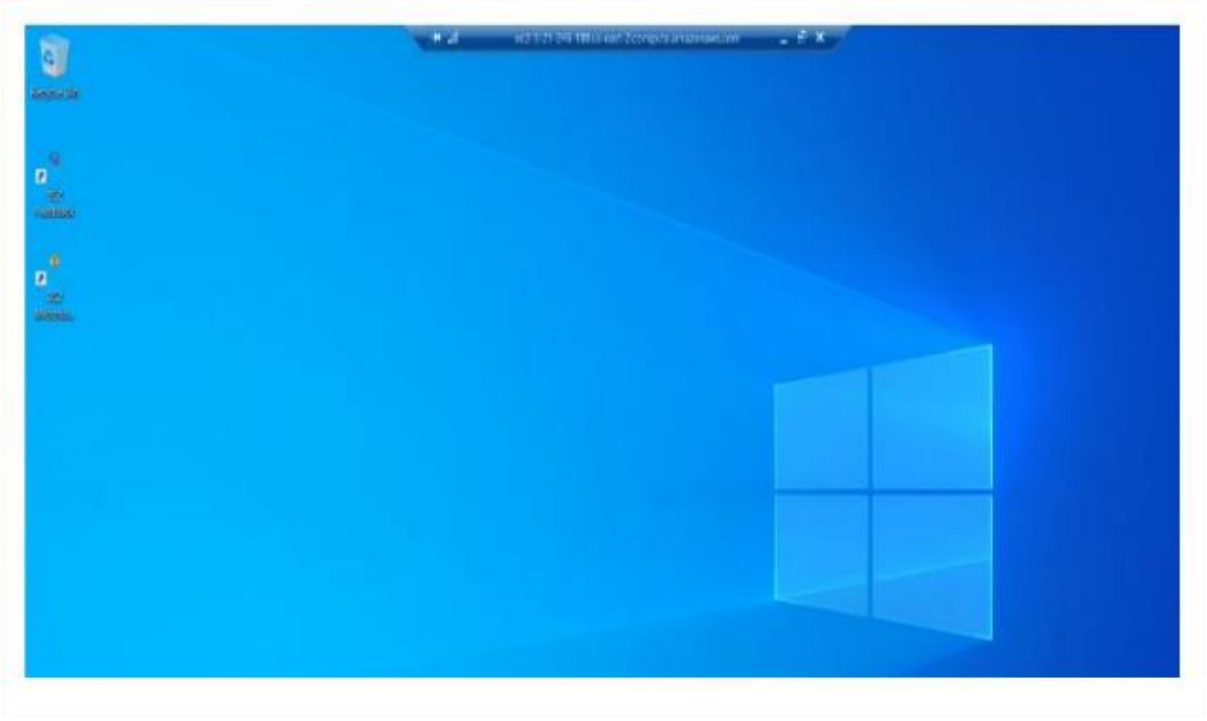
After starting the instance, you can check the status using “Dashboard>Instances”. Select your instance in the instance dashboard and click “Connect”.



Select “**RDP client,**” click “**Get password,**” then upload the key pair downloaded when the instance launched (in step 7). After uploading the file, click **“decrypt password”** and download the remote desktop file.







b)Microsoft Azure

Deploy VM into Azure

1. Go to the Azure portal, then search for and select Azure Compute Gallery.

2. Select the gallery you want to use from the list.

3. On the page for your gallery, select Add from the top of the page and then select VM application definition from the drop-down. The Create a VM application definition page will open.

4. In the Basics tab, enter a name for your application and choose whether the application is for VMs running Linux or Windows.

5. Select the Publishing options tab if you want to specify any of the following optional settings for your VM application definition:

- A description of the VM application definition.
- End of life date
- Link to a Eula
- URI of a privacy statement
- URI for release notes

6. When you're done, select Review + create.

7. When validation completes, select Create to have the definition deployed.

8. Once the deployment is complete, select Go to resource.

9. On the page for the application, select Create a VM application version. The Create a VM Application Version page will open.

10. Enter a version number like 1.0.0.

11. Select the region where you've uploaded your application package.and perform operations.

4)Create Virtual machine using Google Cloud.

1. In the Google Cloud console, go to the **VM instances** page.

   Go to VM instances
2. Select your project and click **Continue**.
3. Click **Create instance**.
4. Specify a **Name** for your VM. For more information, see Resource naming convention.
5. Optional: Change the **Zone** for this VM. Compute Engine randomizes the list of zones within each region to encourage use across multiple zones.
6. Select a **Machine configuration** for your VM.
7. In the **Boot disk** section, click **Change**, and then do the following:

    a. On the **Public images** tab, choose the following:

- Operating system
- OS version
- Boot disk type
- Boot disk size

b. Optional: For advanced configuration options, click **Show advanced configuration**.

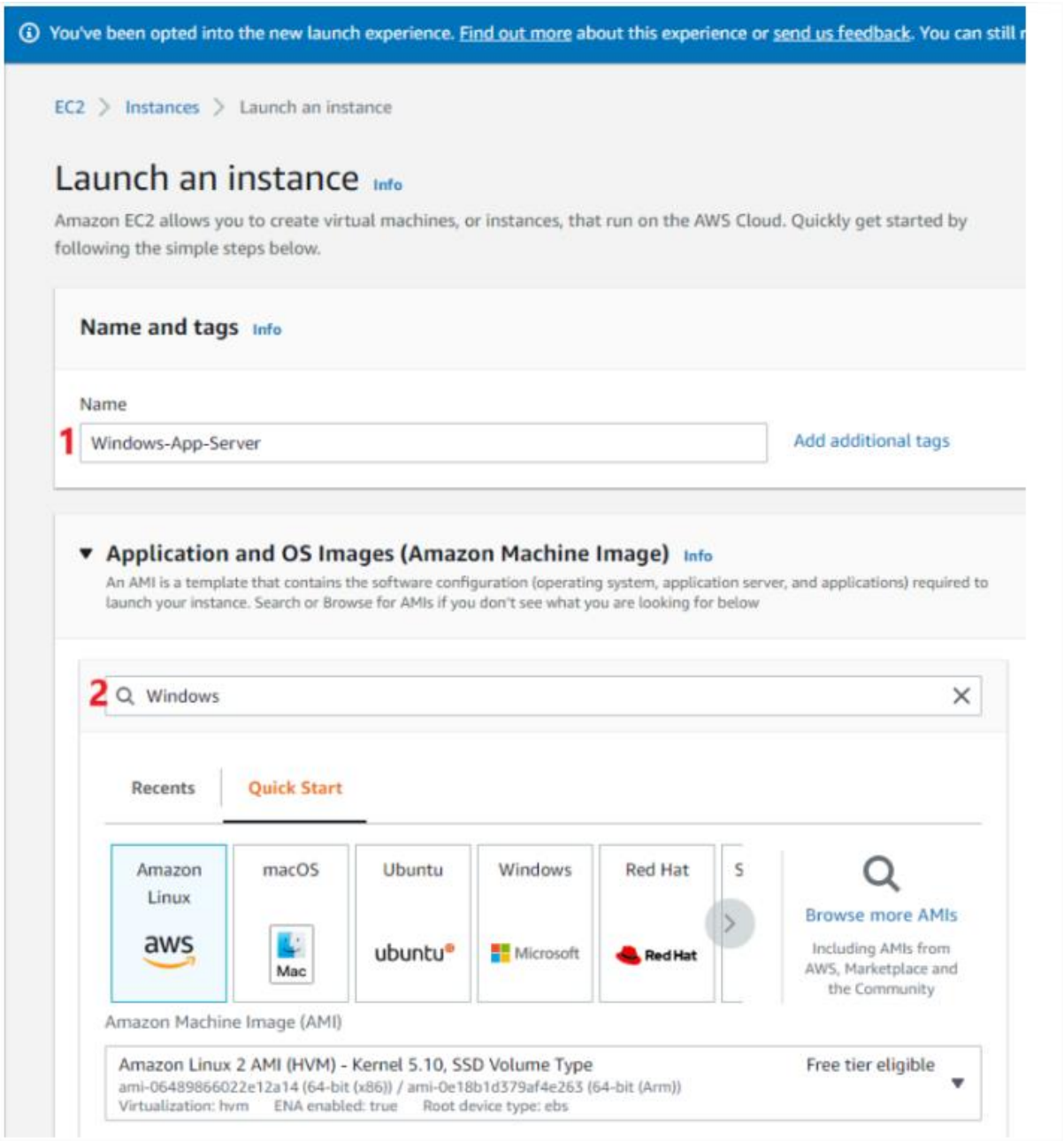
c. To confirm your boot disk options, click **Select**.

8. In the **Firewall** section, to permit HTTP or HTTPS traffic to the VM, select **Allow HTTP traffic** or **Allow HTTPS traffic**. When you select one of these, Compute Engine adds a network tag to your VM, which associates the firewall rule with the VM. Then, Compute Engine creates the corresponding ingress firewall rule that allows all incoming traffic on tcp:80 (HTTP) or tcp:443 (HTTPS).
9. Optional: If you chose an OS image that supports Shielded VM features, you can modify the Shielded VM settings. To modify shielded VM settings, expand the Security section in the Networking, disks, security, management, sole tenancy section and do the following, as required:

    a. To turn on Secure Boot, select **Turn on Secure Boot**. Secure Boot is disabled by default.
    b. To turn off vTPM, clear the **Turn on vTPM** checkbox. vTPM is enabled by default. Disabling vTPM also disables integrity monitoring because integrity monitoring relies on data gathered by Measured Boot.
    c. To turn off integrity monitoring, clear the **Turn on Integrity Monitoring** checkbox. Integrity monitoring is enabled by default.
10. To create and start the VM, click **Create**.

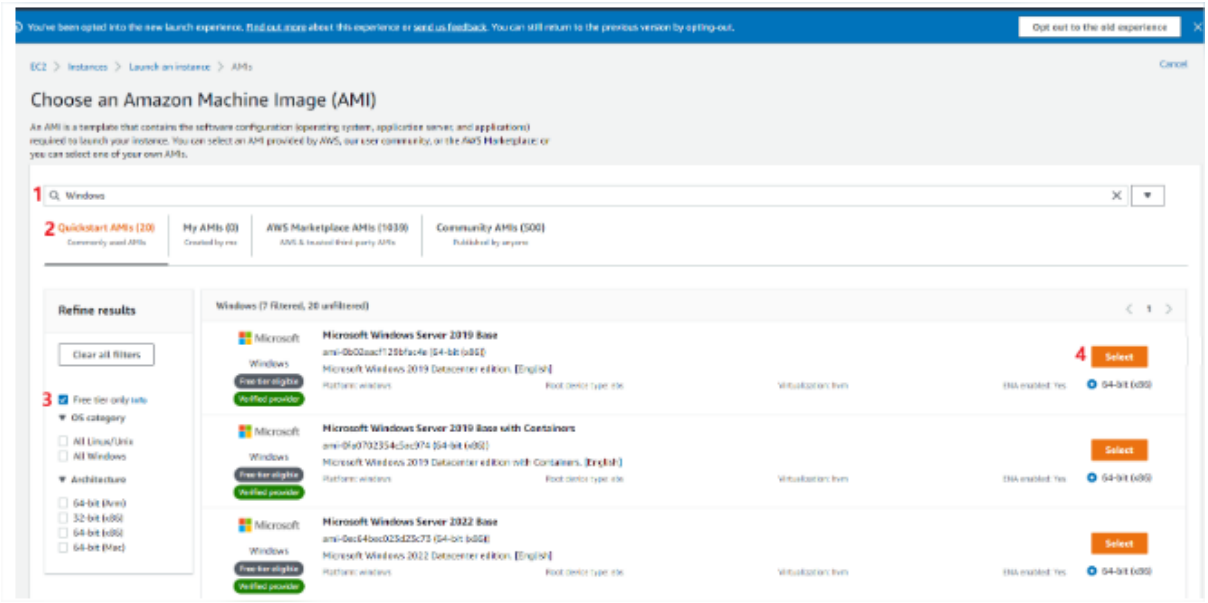
5)Create Amazon EC2 Windows instances using AWS Management console.

1. log in to AWS Console and go to EC2 home
2. Click Launch Instance > **Launch Instance**
3. Enter your instance > **Name and tags**

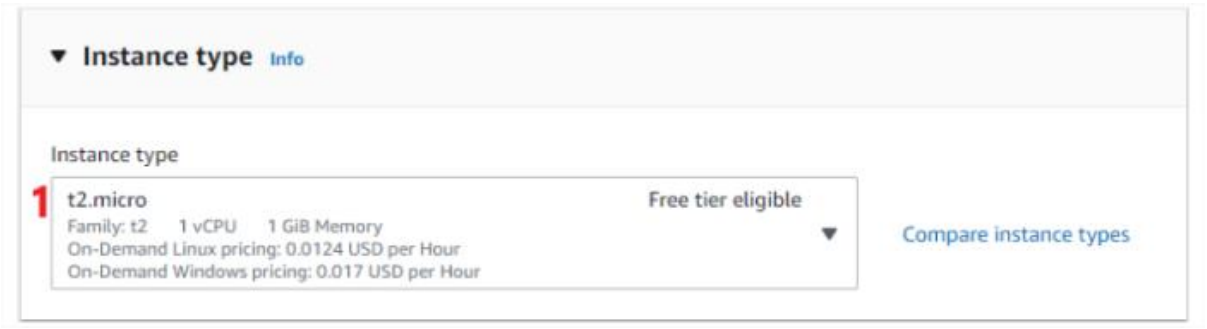


4. Choose > Application and OS Images (Amazon Machine Image)

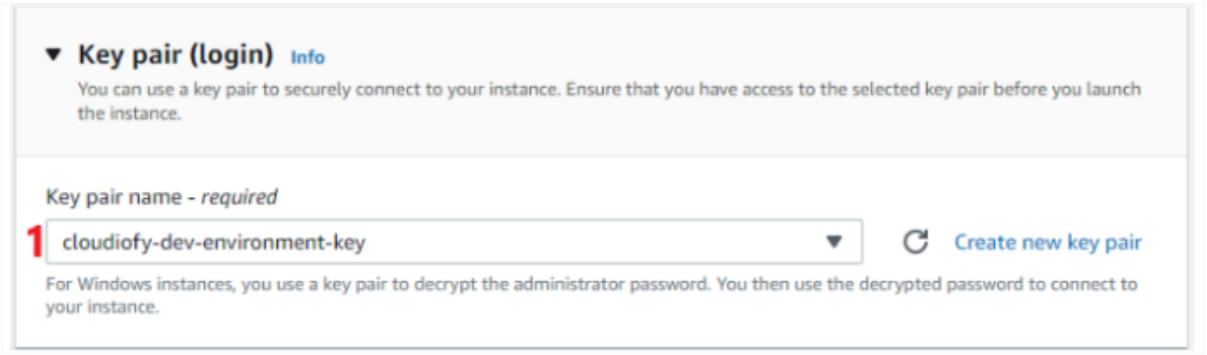
   Search available windows Amazon Machine Image > **Microsoft Windows Server 2019 Base** > **select**
   Note: You can select any AMI as per your requirement.



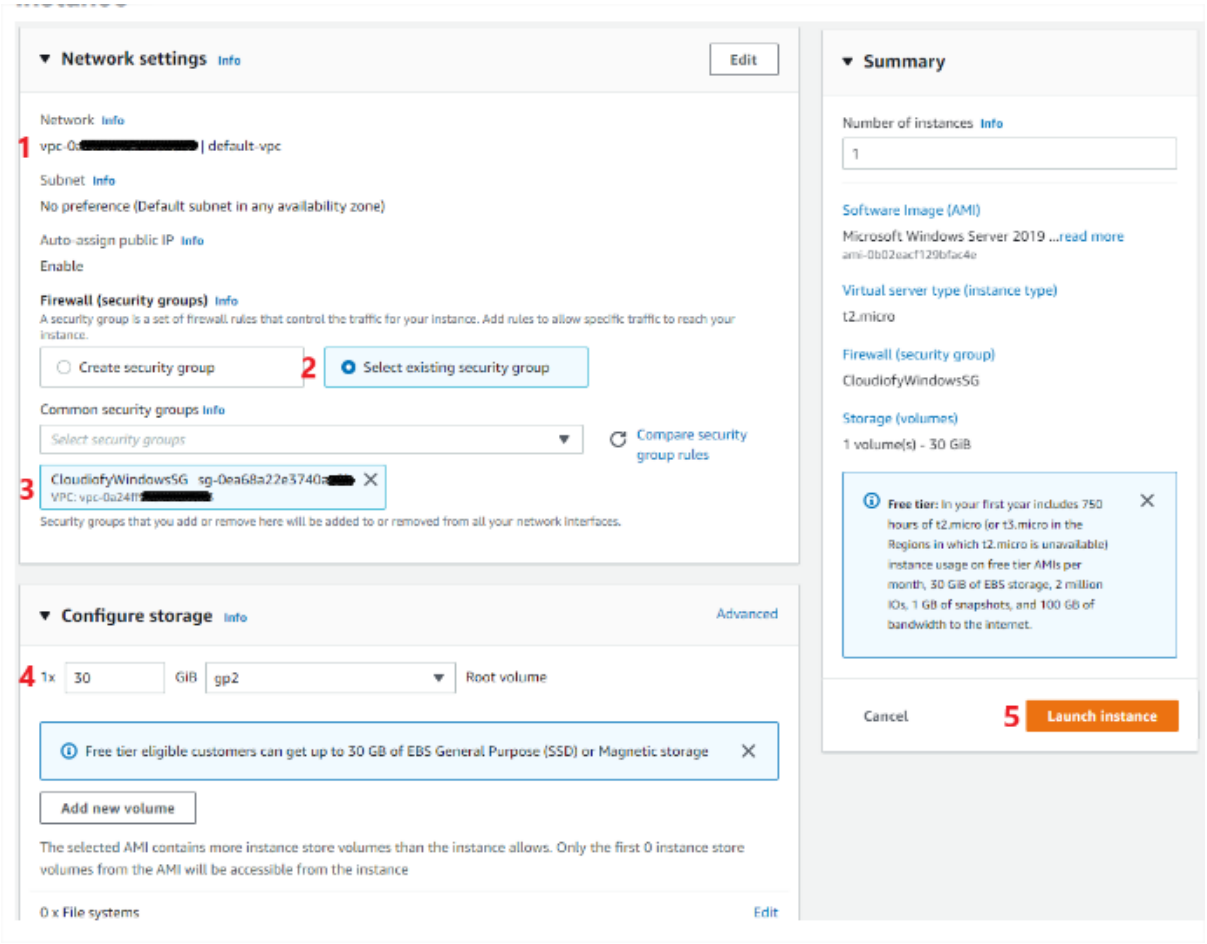
5. Choose an **Instance Type**



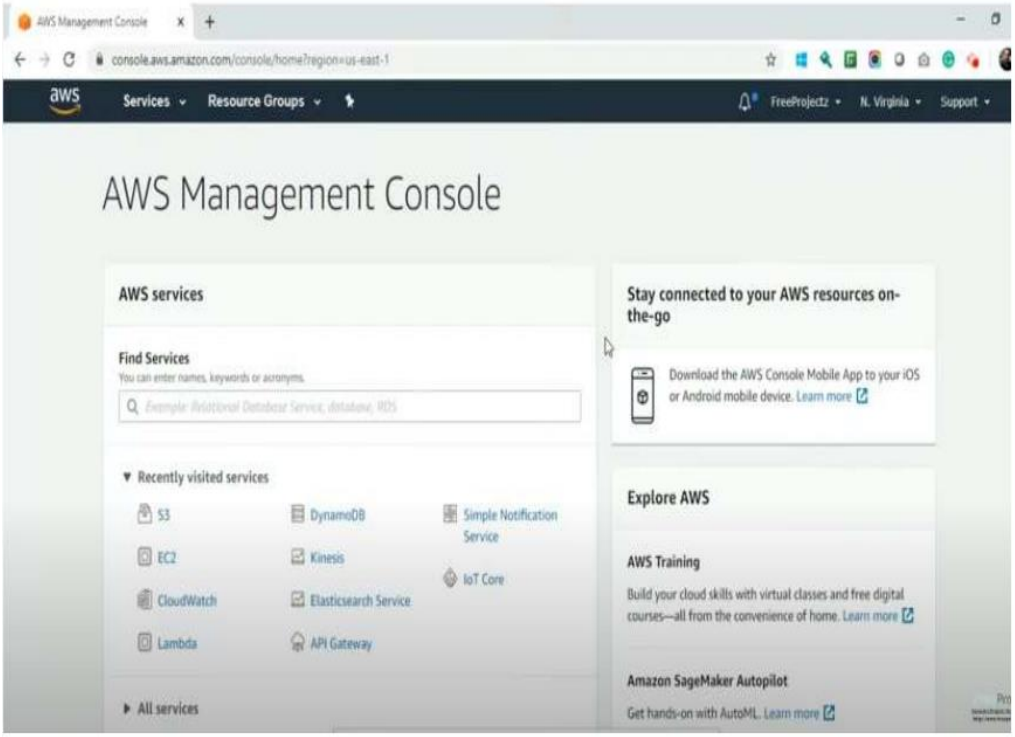
6. Configure Key Pair: Select your **key pair name** > cloudiofy-dev-environment-key that is already created in Prerequisite step-2.

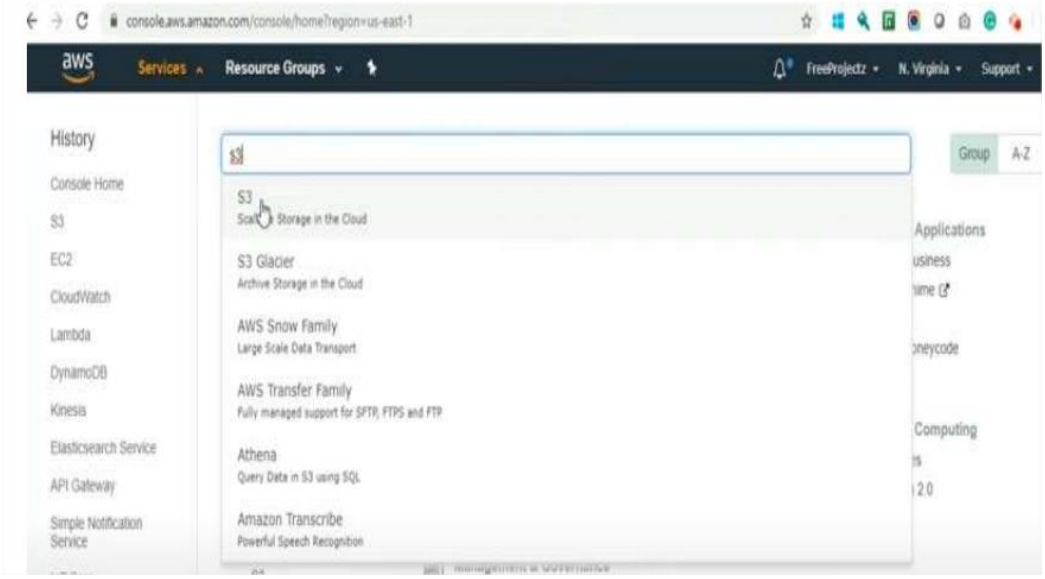


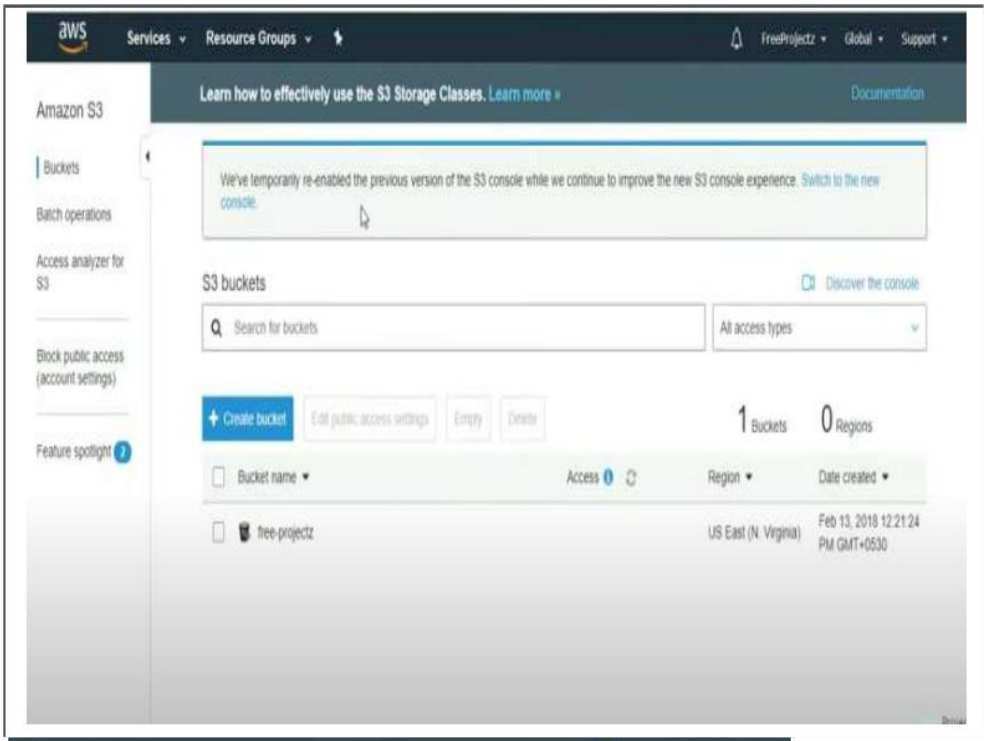
7. Network Settings > **Select existing security group** > CloudiofyWindowsSG that is already created in Prerequisite step-3
8. **Configure storage** > Default value > 30 GB
9. For now, leave the rest of the configuration with default values and > Click to **Launch instance**

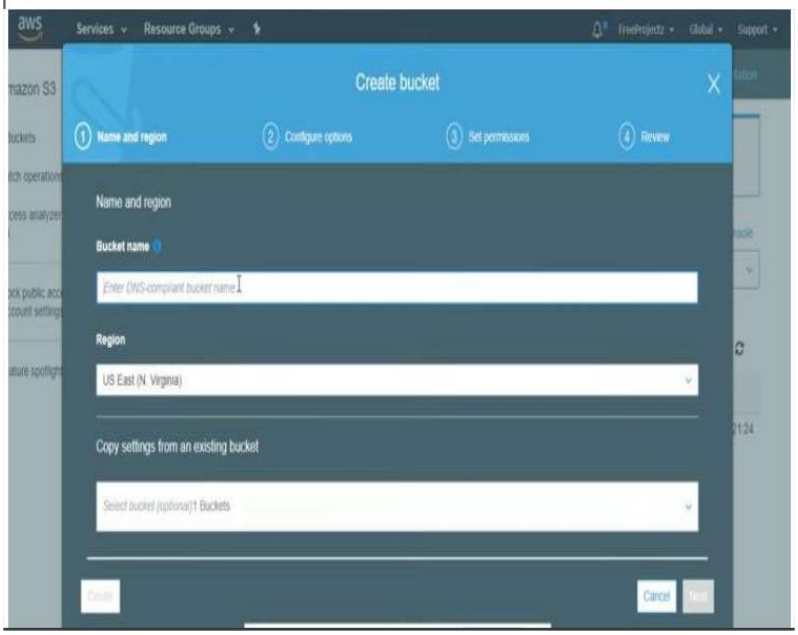


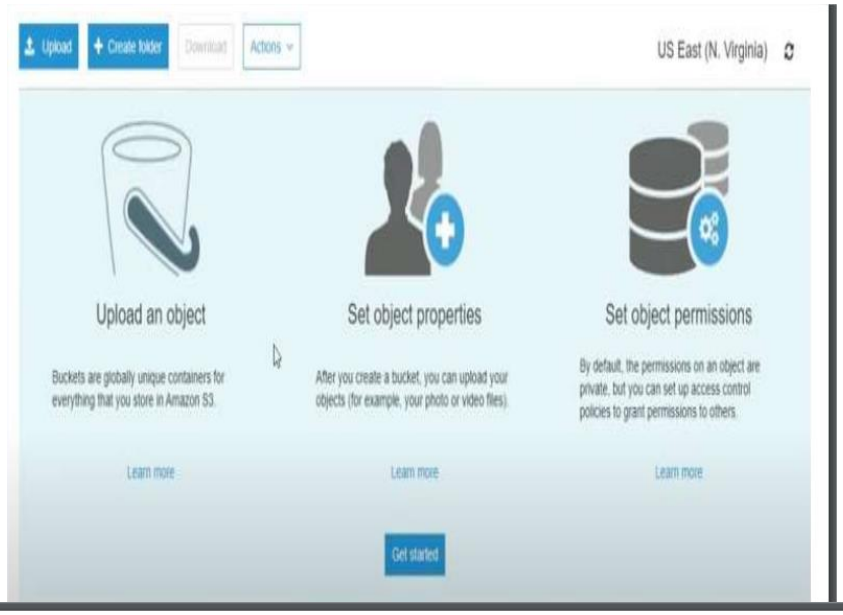
6) Create Amazon S3(Simple Storage Service) Windows instances to lunch static website using AWS Management console.

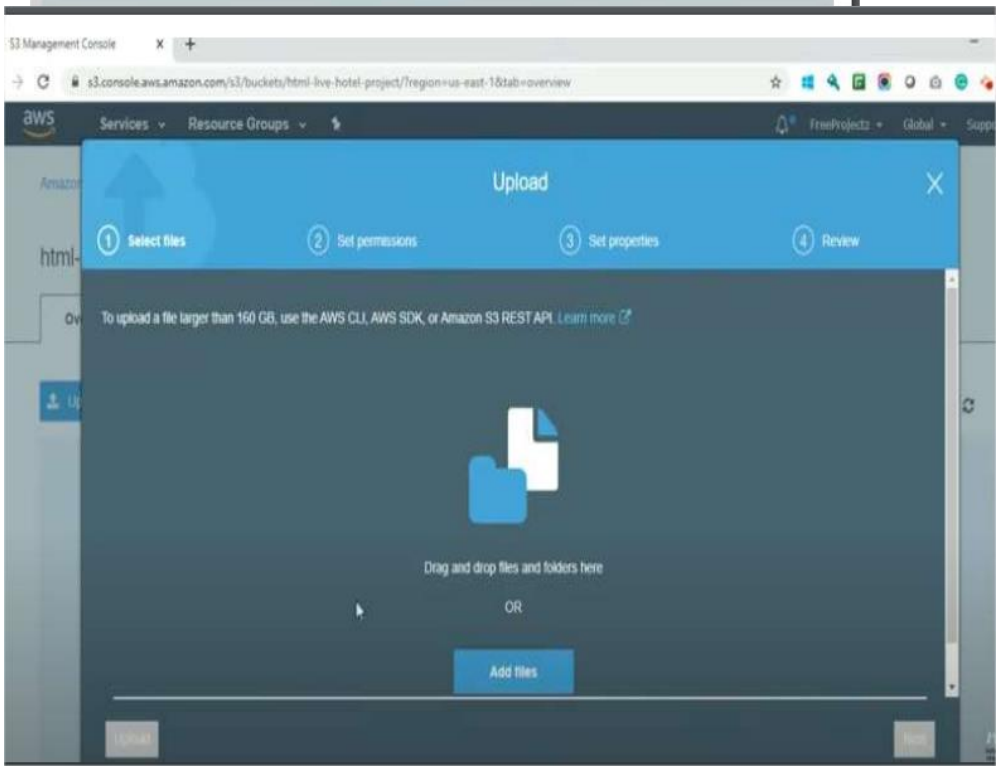

AWS Management Console
console.aws.amazon.com/console/home?region=us-east-1
Services
Resource Groups
FreeProjectz
N. Virginia
Support
AWS Management Console
AWS services
Find Services
You can enter names, keywords or acronyms.
Recently visited services
S3
DynamoDB
Simple Notification Service
EC2
Kinesis
IoT Core
CloudWatch
Elasticsearch Service
Lambda
API Gateway
All services
Stay connected to your AWS resources on-the-go
Download the AWS Console Mobile App to your iOS or Android mobile device. Learn more
Explore AWS
AWS Training
Build your cloud skills with virtual classes and free digital courses—all from the convenience of home. Learn more
Amazon SageMaker Autopilot
Get hands-on with AutoML. Learn more

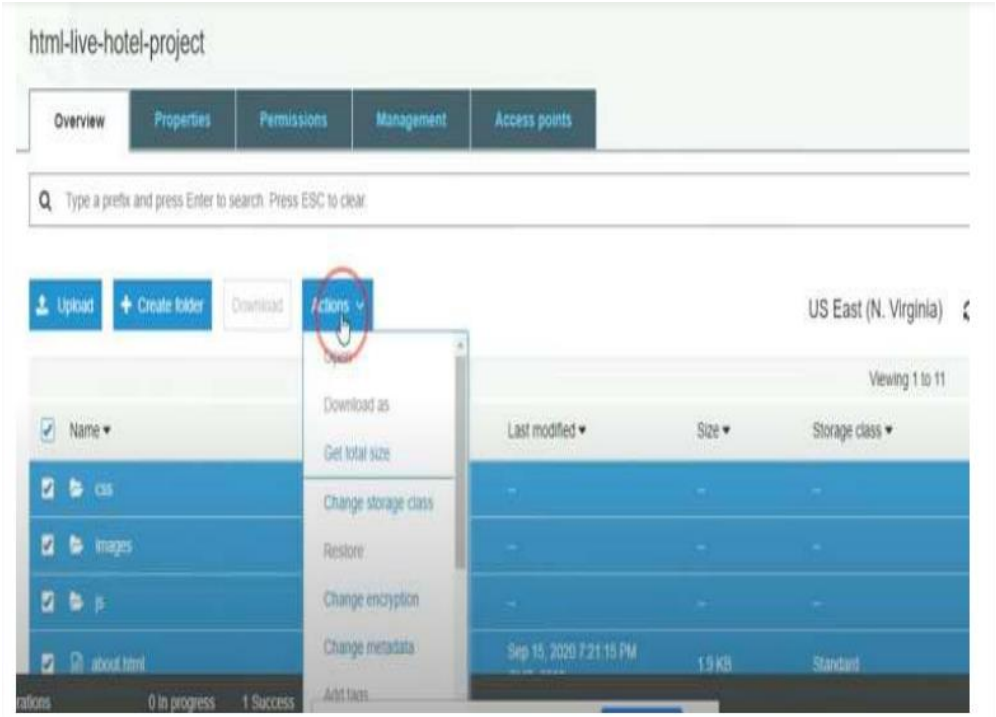

console.aws.amazon.com/console/home?region=us-east-1
Services
Resource Groups
FreeProjectz
N. Virginia
Support
History
Console Home
S3
EC2
CloudWatch
Lambda
DynamoDB
Kinesis
Elasticsearch Service
API Gateway
Simple Notification Service
s3
S3
Scalable Storage in the Cloud
S3 Glacier
Archive Storage in the Cloud
AWS Snow Family
Large Scale Data Transport
AWS Transfer Family
Fully managed support for SFTP, FTPS and FTP
Athena
Query Data in S3 using SQL
Amazon Transcribe
Powerful Speech Recognition
Group
A-Z
Applications
Computing


aws
Services
Resource Groups
FreeProjectz
Global
Support
Amazon S3
Learn how to effectively use the S3 Storage Classes. Learn more »
Documentation
Buckets
Batch operations
Access analyzer for S3
Block public access (account settings)
Feature spotlight
We've temporarily re-enabled the previous version of the S3 console while we continue to improve the new S3 console experience. Switch to the new console.
S3 buckets
Discover the console
Search for buckets
All access types
Create bucket
Edit public access settings
Empty
Delete
1 Buckets
0 Regions
Bucket name
Access
Region
Date created
free-projectz
US East (N. Virginia)
Feb 13, 2018 12:21:24 PM GMT+0530

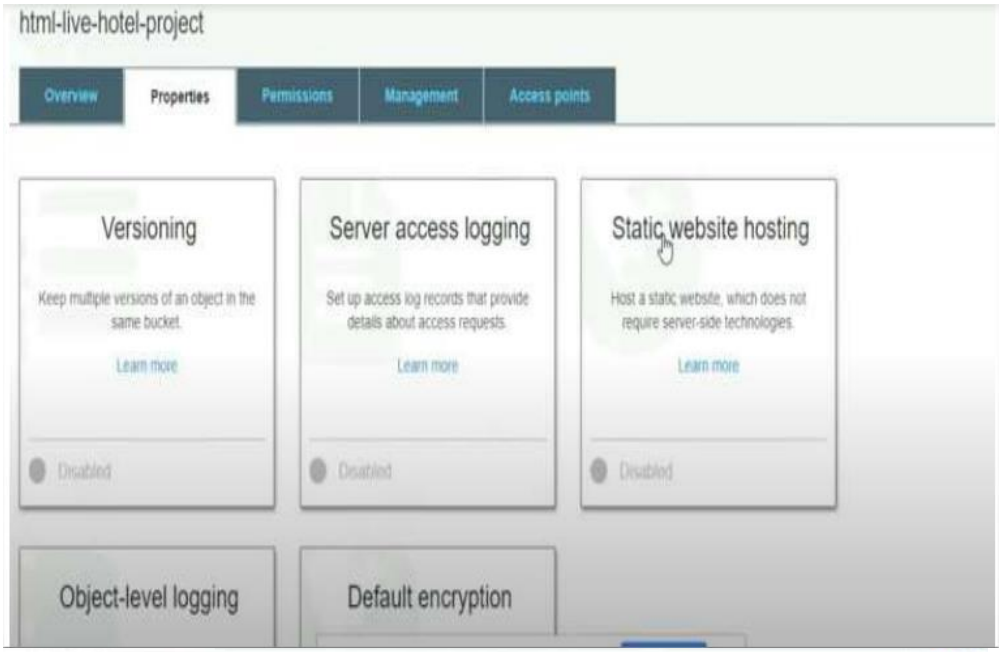

Create bucket
1 Name and region
2 Configure options
3 Set permissions
4 Review
Name and region
Bucket name
Enter DNS-compliant bucket name
Region
US East (N. Virginia)
Copy settings from an existing bucket
Select bucket (optional) 1 Buckets
Cancel
Next

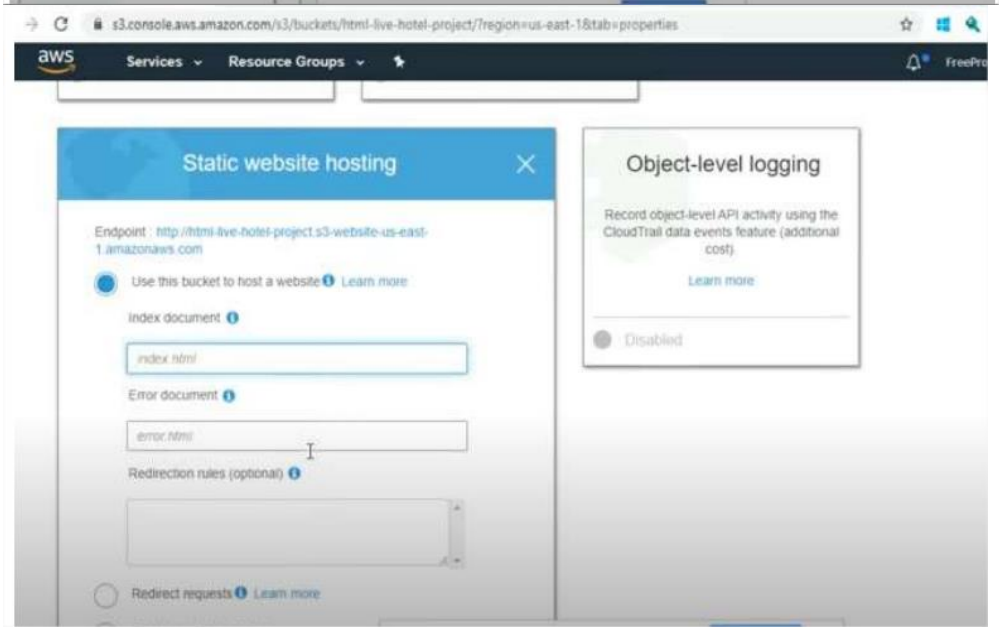

Upload
Create folder
Download
Actions
US East (N. Virginia)
Upload an object
Buckets are globally unique containers for everything that you store in Amazon S3.
Learn more
Set object properties
After you create a bucket, you can upload your objects (for example, your photo or video files).
Learn more
Set object permissions
By default, the permissions on an object are private, but you can set up access control policies to grant permissions to others.
Learn more
Get started

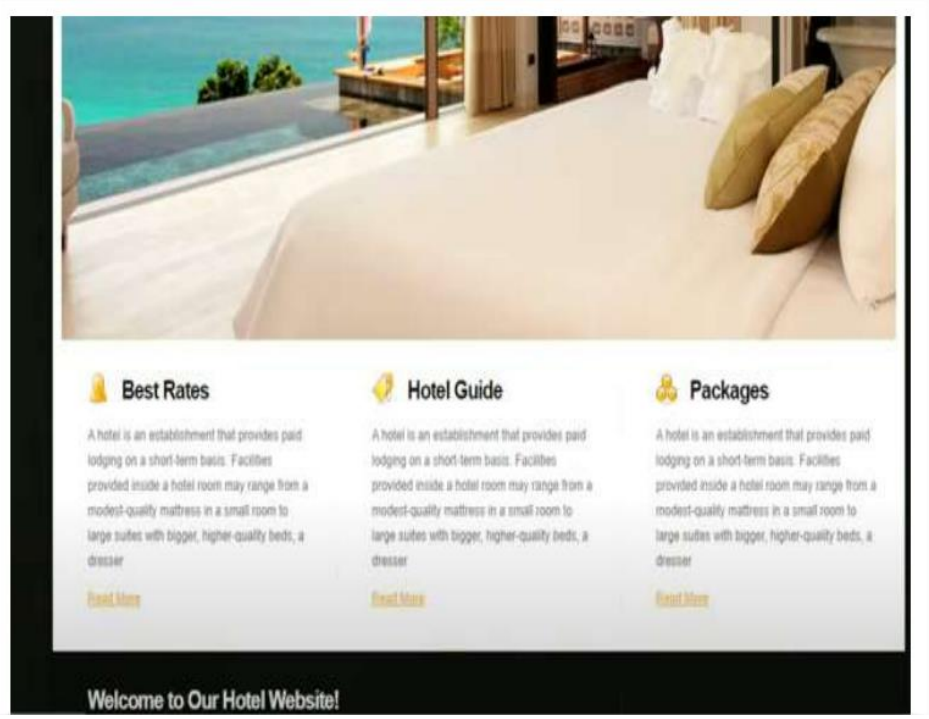

S3 Management Console
s3.console.aws.amazon.com/s3/buckets/html-live-hotel-project/?region=us-east-1&tab=overview
aws
Services
Resource Groups
Upload
1 Select files
2 Set permissions
3 Set properties
4 Review
To upload a file larger than 160 GB, use the AWS CLI, AWS SDK, or Amazon S3 REST API. Learn more
Drag and drop files and folders here
OR
Add files


html-live-hotel-project
Overview
Properties
Permissions
Management
Access points
Type a prefix and press Enter to search. Press ESC to clear
Upload
Create folder
Download
Actions
US East (N. Virginia)
Viewing 1 to 11
Name
Last modified
Size
Storage class
Download as
Get total size
Change storage class
Restore
Change encryption
Change metadata
Add tags
css
images
js
about.html
Sep 15, 2020 7:21:15 PM
1.9 KB
Standard
0 In progress
1 Success


html-live-hotel-project
Overview
Properties
Permissions
Management
Access points
Upload
Create folder
Download
Actions
US East (N. Virginia)
This bucket is empty. Upload new objects to get started.


html-live-hotel-project
Overview
Properties
Permissions
Management
Access points
Versioning
Keep multiple versions of an object in the same bucket.
Learn more
Disabled
Server access logging
Set up access log records that provide details about access requests.
Learn more
Disabled
Static website hosting
Host a static website, which does not require server-side technologies.
Learn more
Disabled
Object-level logging
Default encryption


s3.console.aws.amazon.com/s3/buckets/html-live-hotel-project/?region=us-east-1&tab=properties
aws
Services
Resource Groups
Static website hosting
Endpoint : http://html-live-hotel-project.s3-website-us-east-1.amazonaws.com
Use this bucket to host a website
Learn more
Index document
index.html
Error document
error.html
Redirection rules (optional)
Redirect requests
Learn more
Object-level logging
Record object-level API activity using the CloudTrail data events feature (additional cost)
Learn more
Disabled



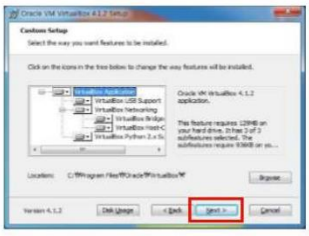
7)Create virtual box allowed to take OS image.

Install VirtualBox

1. Visit http://www.virtualbox.org/wiki/downloads
2. Download VirtualBox platform packages for your OS
3. Open the Installation Package by double clicking

MAC

PC



Install VirtualBox

4. Click continue and finish installing VirtualBox

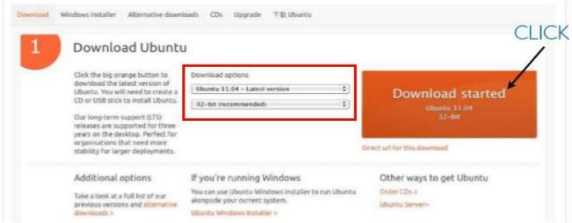
MAC

PC

5. When finished installation, close the window.

Download Linux

1. Visit the page
   http://www.ubuntu.com/download/ubuntu/download
2. Choose the Latest version of Ubuntu and 32-bit and click "Start Download"



Install VirtualBox

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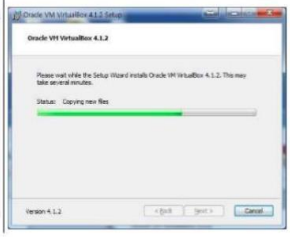
MAC

PC



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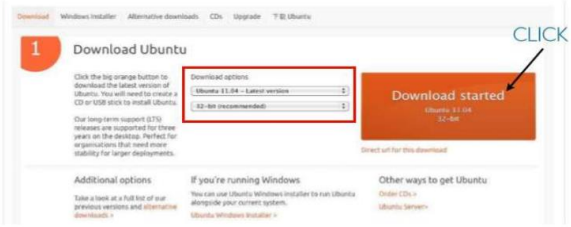


Install Linux using Virtual Box

1. Run VirtualBox by double-clicking the icon
2. Click "New" button on the top left corner

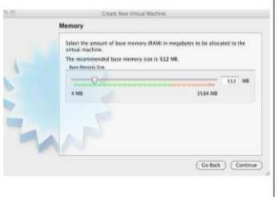
MAC

PC

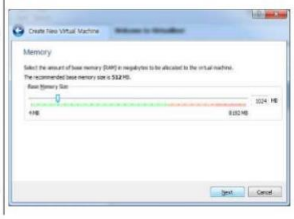
Install Linux using Virtual Box

5. Choose the amount of memory to allocate (I suggest choosing between 512 MB to 1024 MB)
6. Click Continue or Next

MAC



PC



Install Linux using Virtual Box

9. Choose VDI (VirtualBox Disk Image)
10. Click Continue or Next

MAC

PC

Install Linux using Virtual Box

11. Choose "Dynamically Allocated" click continue.
    This way, the size of your Virtual Hard Disk will grow as you use.

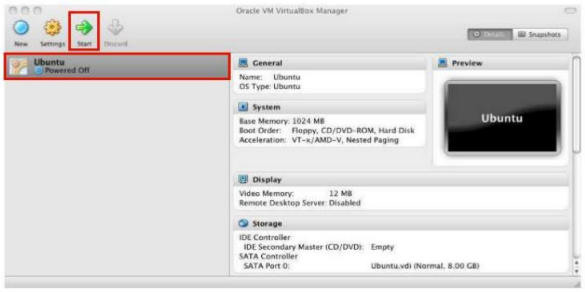
MAC

PC

Running Linux

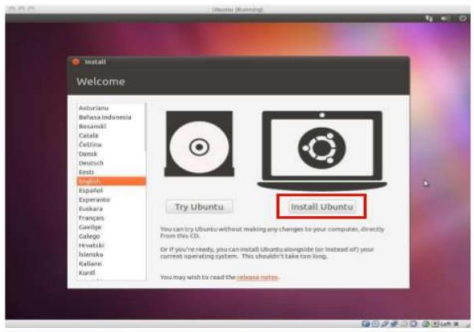
1. Choose Ubuntu from left column and click Start

MAC & PC



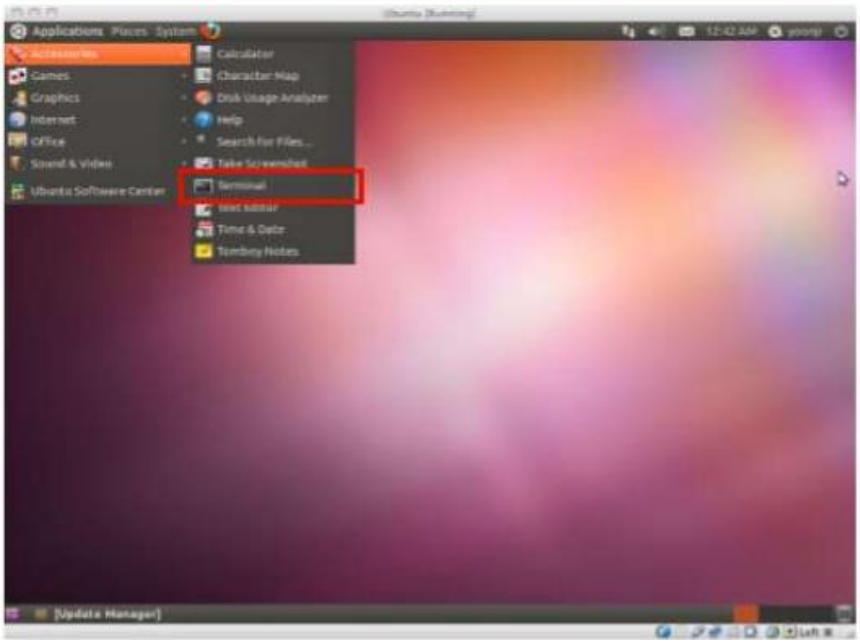
Running Linux

4. Click Install Ubuntu

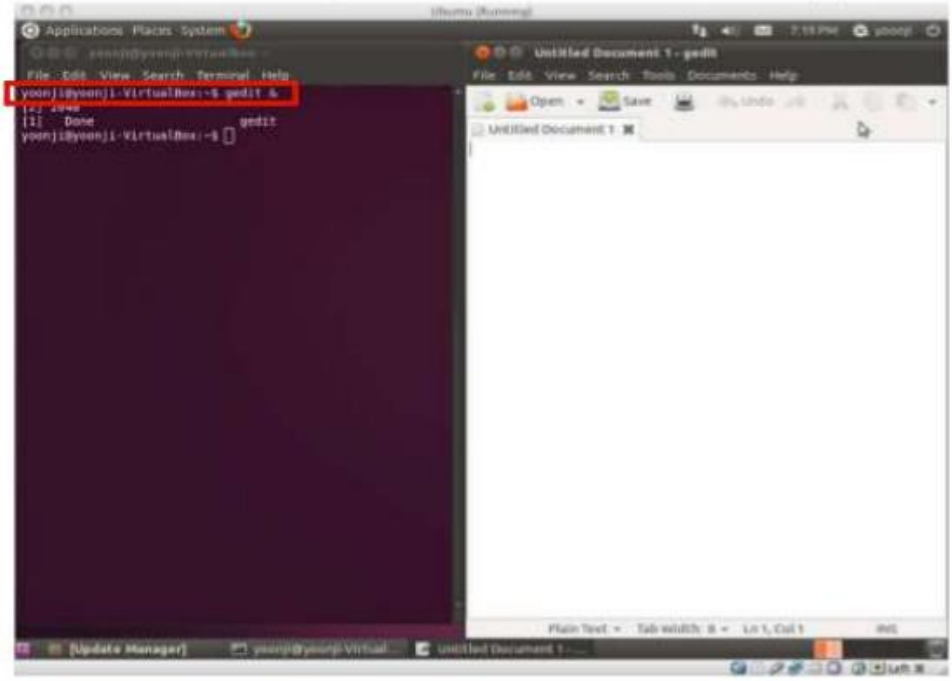


8)Set a C programming environment using virtual box to execute a program.

1. Open Terminal (Applications-Accessories-Terminal)



2. Open gedit by typing "gedit &" on terminal
(You can also use any other Text Editor application)

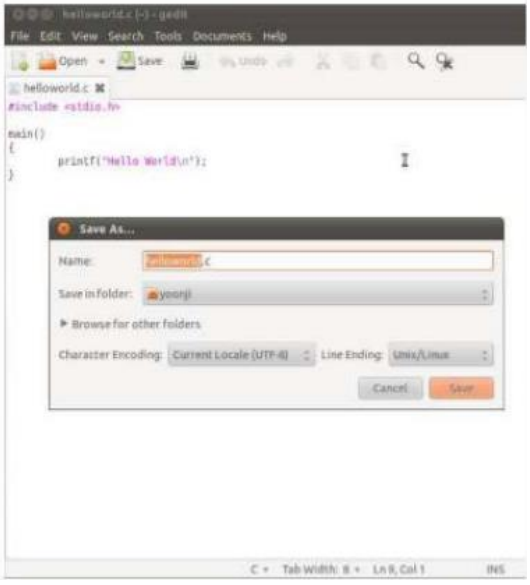


3. Type the following on gedit
(or any other text editor)

```
#include<stdio.h>

main()
{
    printf("Hello World\n");
}
```

4. Save this file as
"helloworld.c"



5. Type "ls" on Terminal to see all files under current folder

6. Confirm that "helloworld.c" is in the current directory. If not, type cd DIRECTORY_PATH to go to the directory that has "helloworld.c"

7. Type "gcc helloworld.c" to compile, and type "ls" to confirm that a new executable file "a.out" is created