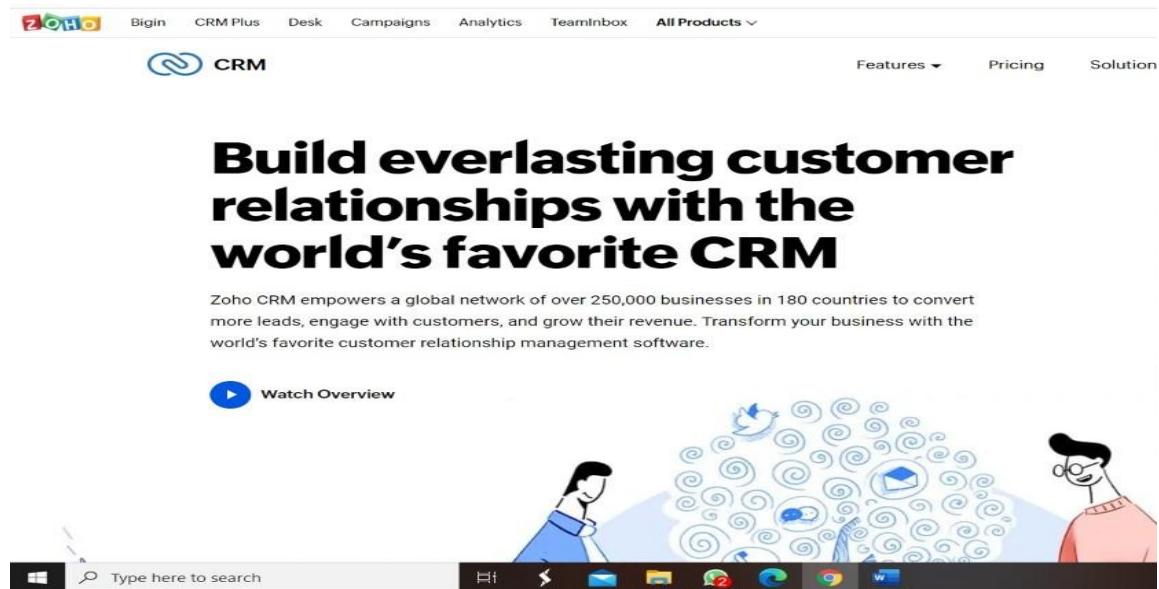
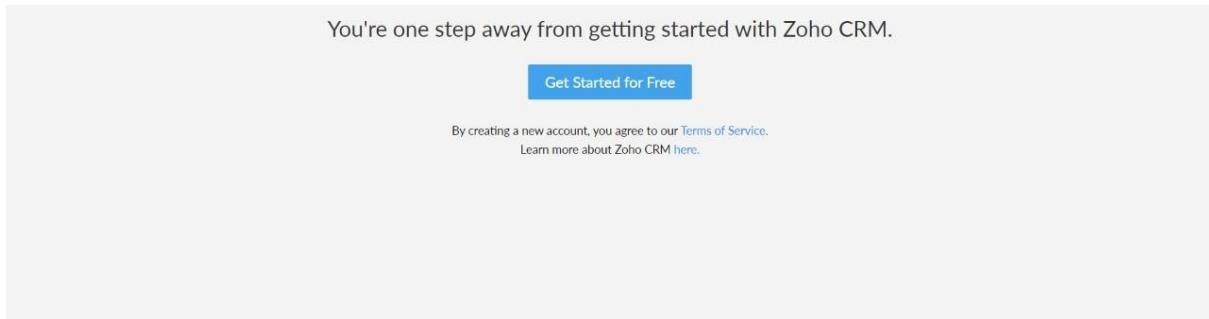


1) CREATE A SIMPLE CLOUD SOFTWARE APPLICATION AND PROVIDE IT AS A SERVICE USING ANY CLOUD SERVICE PROVIDER TO DEMONSTRATE SOFTWARE AS A SERVICE (SAAS).

STEP1: GOTO ZOHO.COM



STEP 2: LOGINTO THE ZOHO.COM

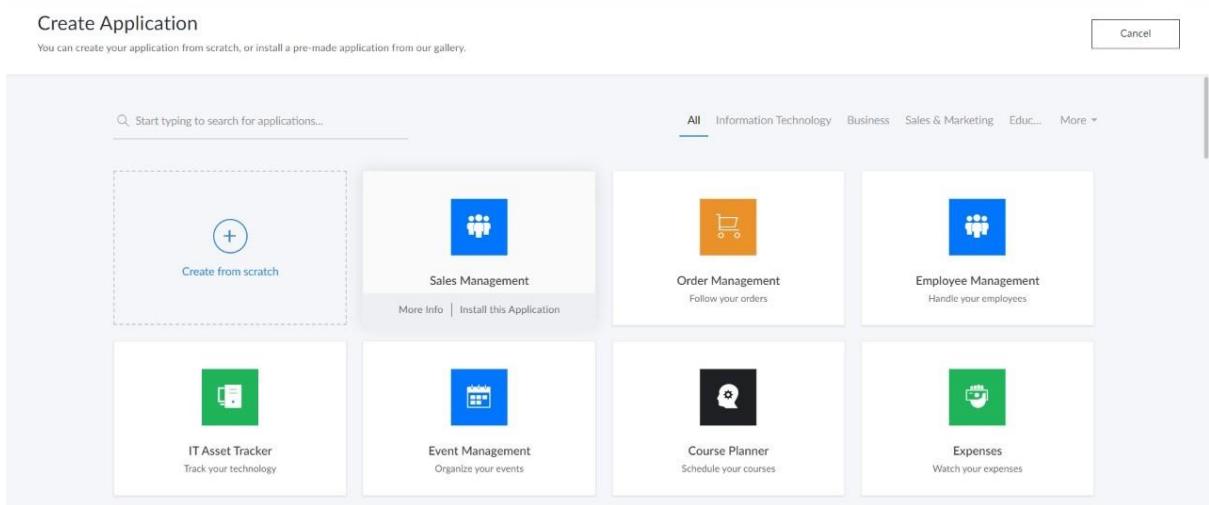


You're one step away from getting started with Zoho CRM.

[Get Started for Free](#)

By creating a new account, you agree to our [Terms of Service](#).
Learn more about Zoho CRM [here](#).

STEP 3: SELECT ONE APPLICATION



Create Application

You can create your application from scratch, or install a pre-made application from our gallery.

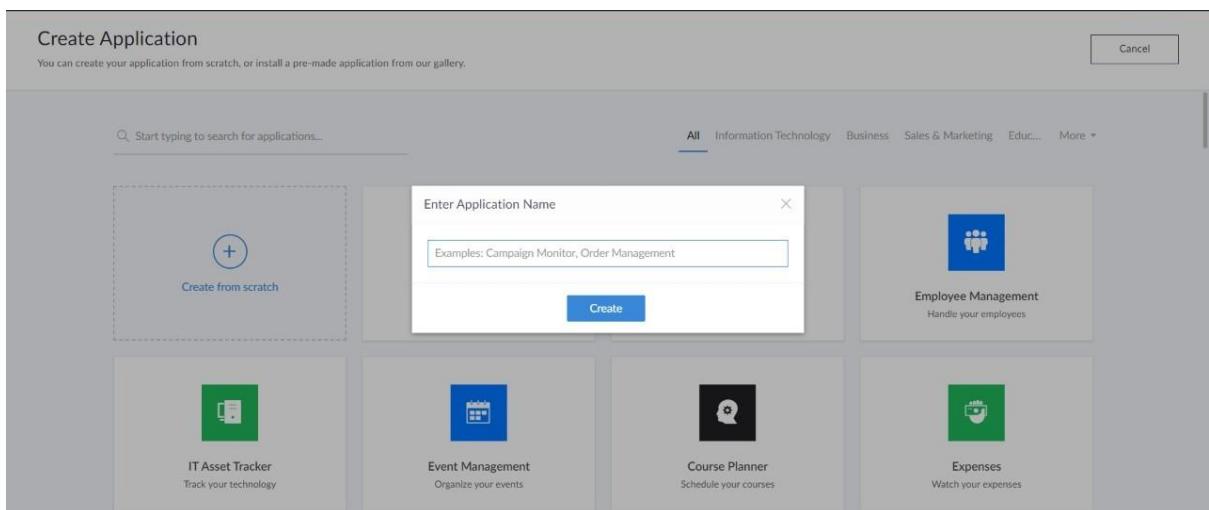
[Cancel](#)

Start typing to search for applications...

All Information Technology Business Sales & Marketing Educ... More ▾

| | | | |
|---|--|---|--|
| Create from scratch | Sales Management More Info Install this Application | Order Management Follow your orders | Employee Management Handle your employees |
| IT Asset Tracker Track your technology | Event Management Organize your events | Course Planner Schedule your courses | Expenses Watch your expenses |

STEP 4: ENTER APPLICATION NAME



Create Application

You can create your application from scratch, or install a pre-made application from our gallery.

[Cancel](#)

Start typing to search for applications...

All Information Technology Business Sales & Marketing Educ... More ▾

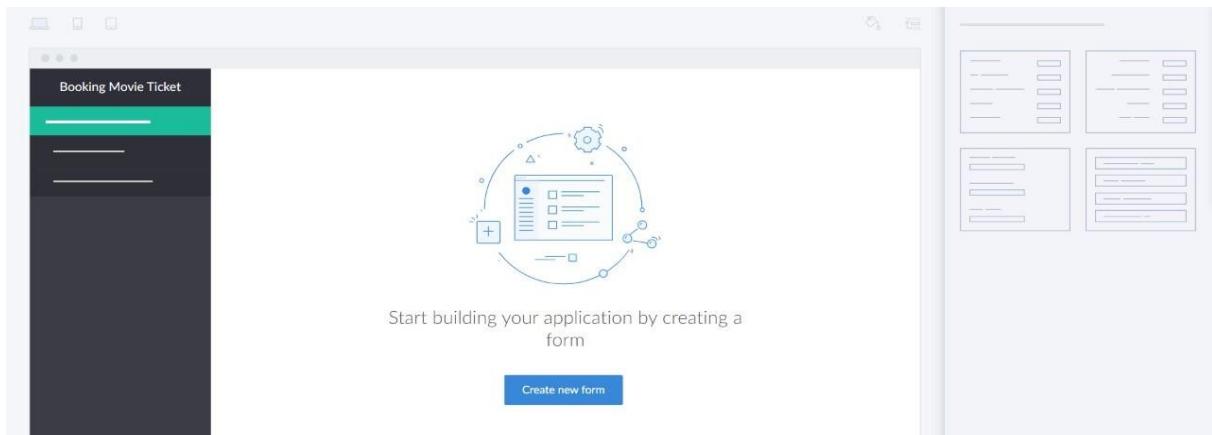
Enter Application Name

Examples: Campaign Monitor, Order Management

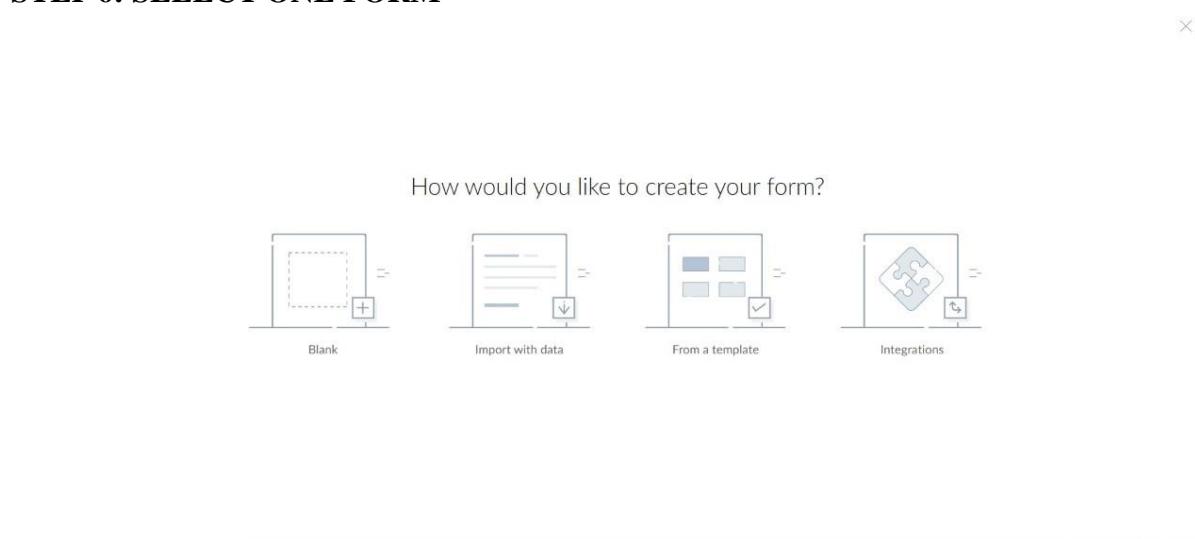
Create

| | |
|---|--|
| Create from scratch | Employee Management Handle your employees |
| IT Asset Tracker Track your technology | Event Management Organize your events |
| Course Planner Schedule your courses | Expenses Watch your expenses |

STEP 5: CREATED NEW APPLICATION



STEP 6: SELECT ONE FORM



STEP 7: THE SOFTWARE HASE BEEN CREATED.

A screenshot of a software interface showing a completed form titled "User Details". The form includes fields for Name (First Name and Last Name), Phone (with an international dial code dropdown set to +91 and the number 81234 56789), Email, Date-Time (with a date and time picker), Theatres (two separate input fields for First Name and Last Name), and Drop Down (a dropdown menu with the placeholder "Select..."). At the bottom are "Submit" and "Reset" buttons. To the right of the form is a panel titled "Form Customization - Web" which shows "Label placement" with four examples of how labels can be positioned relative to their input fields.

Booking Movie Ticket
user details

Basic Fields

| | |
|-------------|------------|
| | |
| Name | Email |
| | |
| Address | Phone |
| | |
| Single Line | Multi Line |
| | |
| Number | Date |
| | |
| Time | Drop Down |

Field Properties

Field name: Name

Field link name: Name

Validation: Mandatory

Display Fields:

Prefix

First Name

Last Name

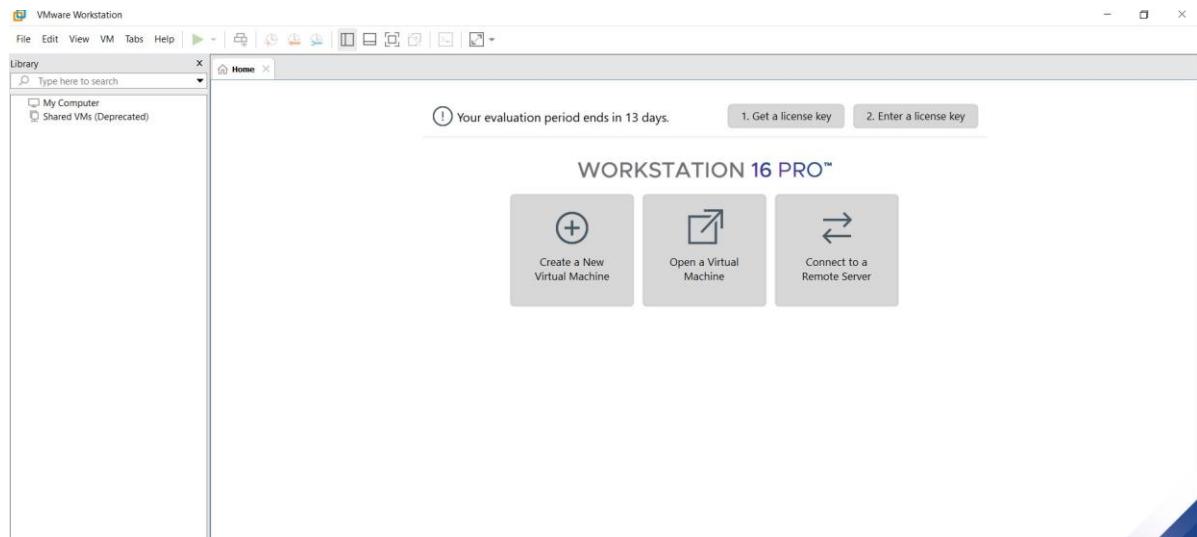
Suffix

Data Privacy

2) CREATE A VIRTUAL MACHINE WITH 1 VCPU, 2GB RAM AND 15GBSTORAGE DISK USING A TYPE 2 VIRTUALIZATION SOFTWARE

STEP 1:

DOWLOAD VMWARE WORKSTATION AND INSTALLED AS TYPE 2 HYPERVISOR

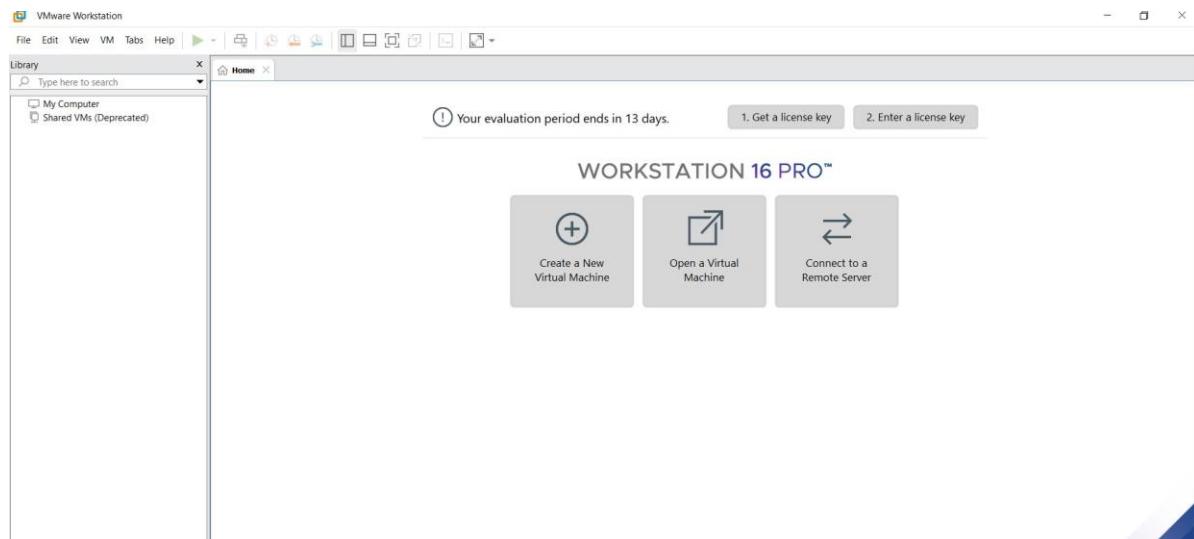


STEP2: DOWNLOAD UBUNTU OR TINY OS AS ISO IMAGE FILE

Index of /11.x/x86/release/

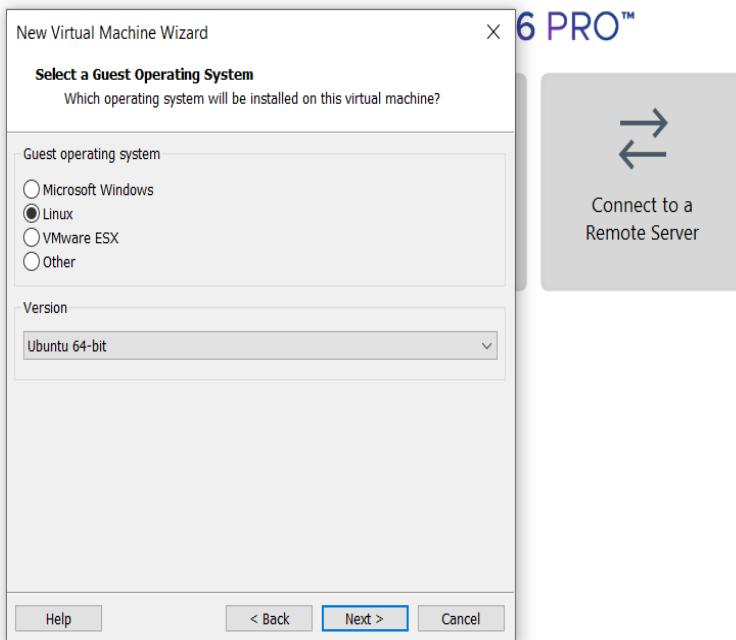
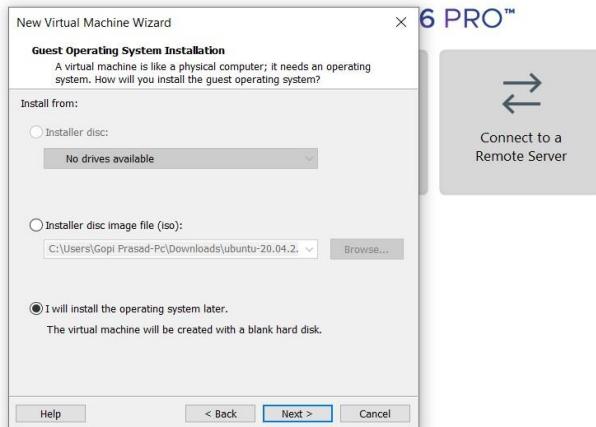
| | | |
|---------------------------|-------------------|-----------|
| .. | | |
| distribution_files/ | | |
| src/ | | |
| Core-11.1.iso | 09-Feb-2020 11:50 | - |
| Core-11.1.iso.md5.txt | 03-Dec-2019 11:14 | |
| Core-11.1.iso.zsync | 01-Apr-2020 07:49 | 14757888 |
| Core-current.iso | 01-Apr-2020 07:49 | 48 |
| CorePlus-11.1.iso | 01-Apr-2020 07:49 | 50639 |
| CorePlus-11.1.iso.md5.txt | 01-Apr-2020 07:50 | 14757888 |
| CorePlus-11.1.iso.zsync | 01-Apr-2020 07:50 | 216006656 |
| CorePlus-current.iso | 01-Apr-2020 07:50 | 52 |
| TinyCore-11.1.iso | 01-Apr-2020 07:50 | 369358 |
| TinyCore-11.1.iso.md5.txt | 01-Apr-2020 07:50 | 216006656 |
| TinyCore-11.1.iso.zsync | 01-Apr-2020 07:50 | 19922944 |
| TinyCore-current.iso | 01-Apr-2020 07:50 | 52 |
| | 01-Apr-2020 07:50 | 68301 |
| | 01-Apr-2020 07:50 | 19922944 |

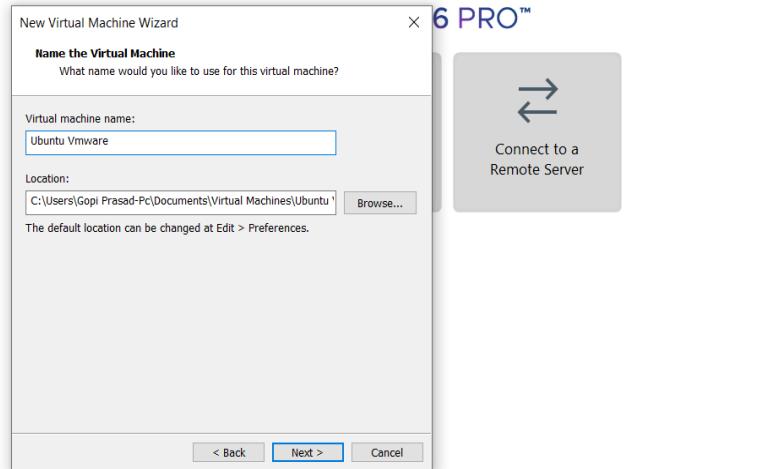
STEP 3: IN VMWARE WORKSTATION->CREATE NEW VM



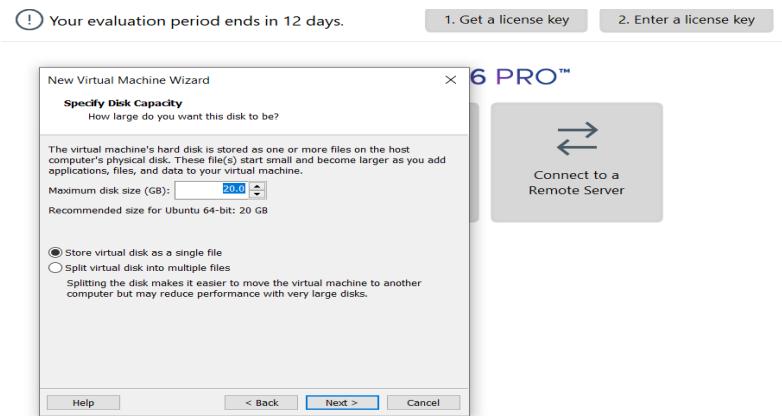
STEP 4: DO THE BASIC CONFIGURATION SETTINGS.



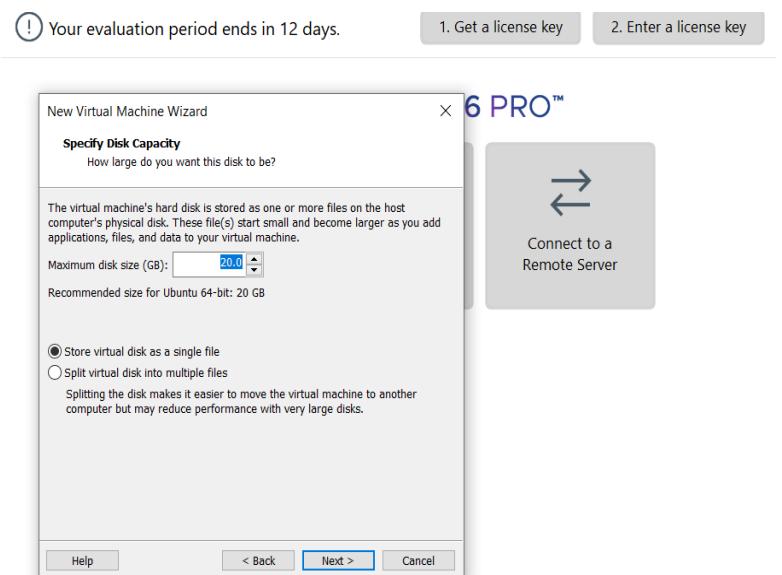
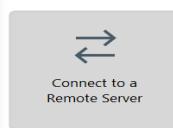




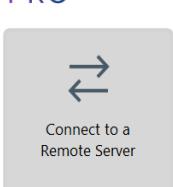
6 PRO™

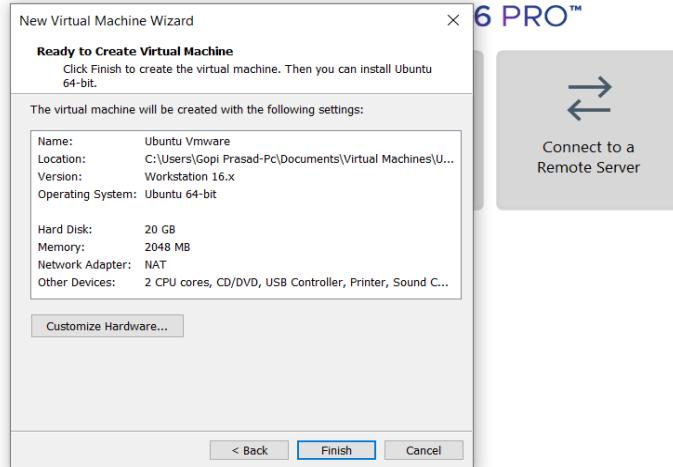


6 PRO™

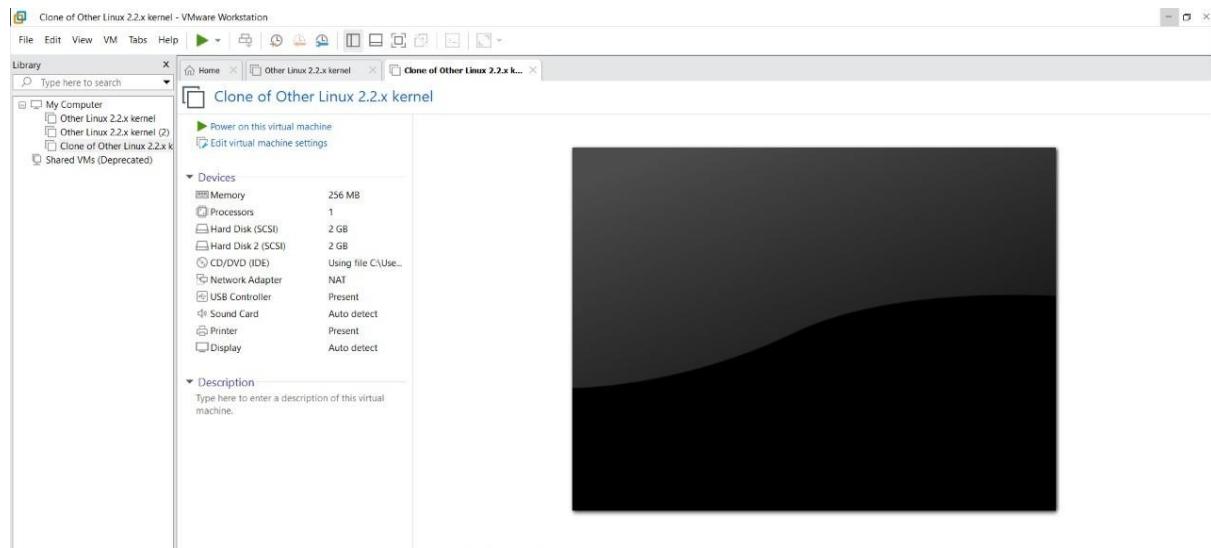


6 PRO™

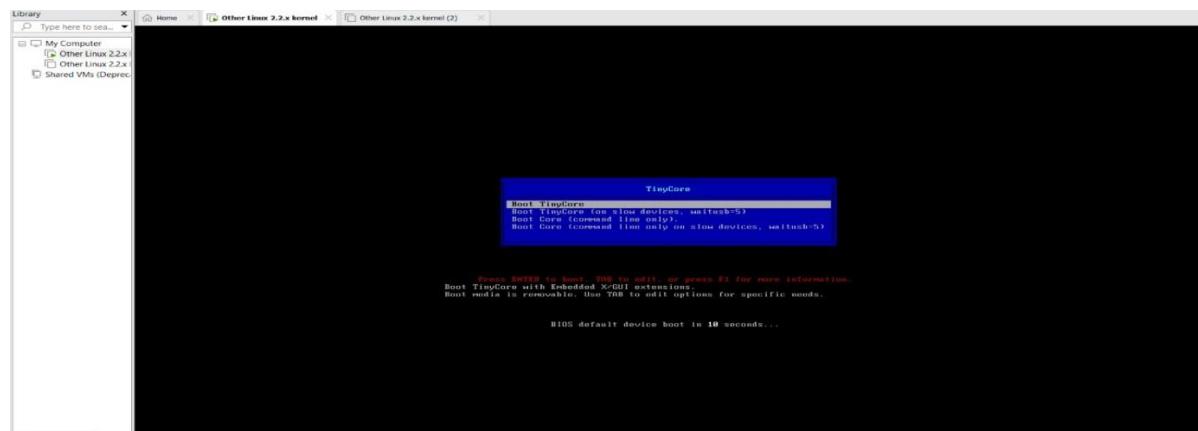




STEP 4: CREATED TINYOS VIRTUAL MACHINE



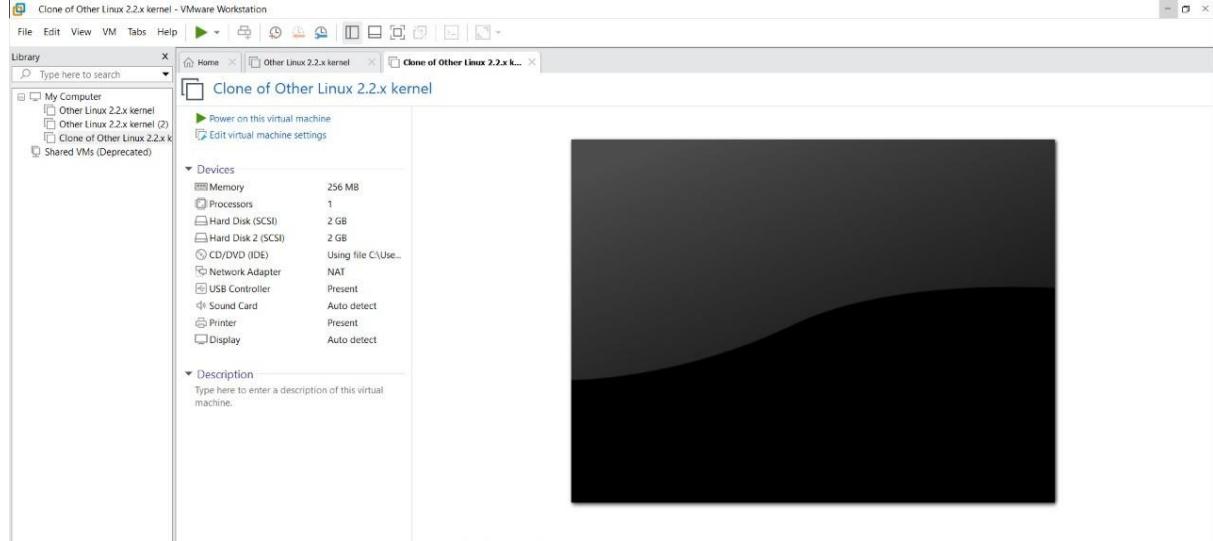
STEP 5: LAUNCH THE VM



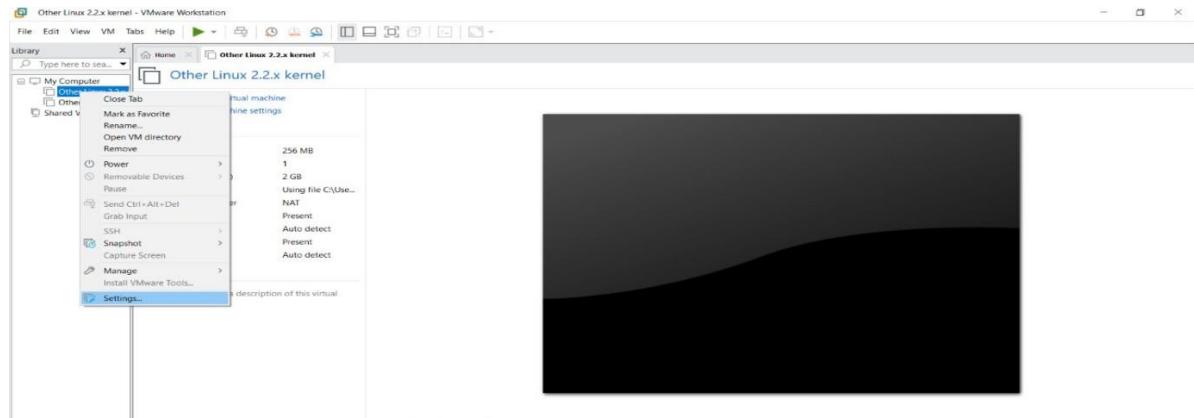
3) CREATE A VIRTUAL HARD DISK AND ALLOCATE THE STORAGEUSING VM WARE WORKSTATION

STEP 1:

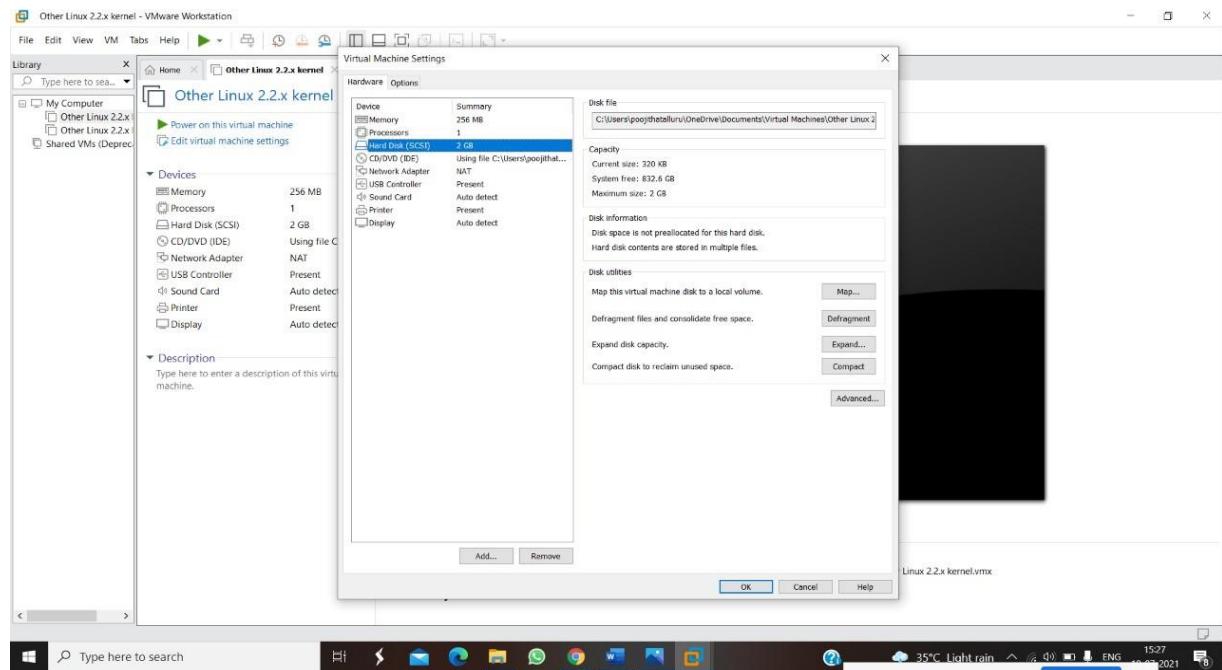
GOTO VM WARE WORKSTATION



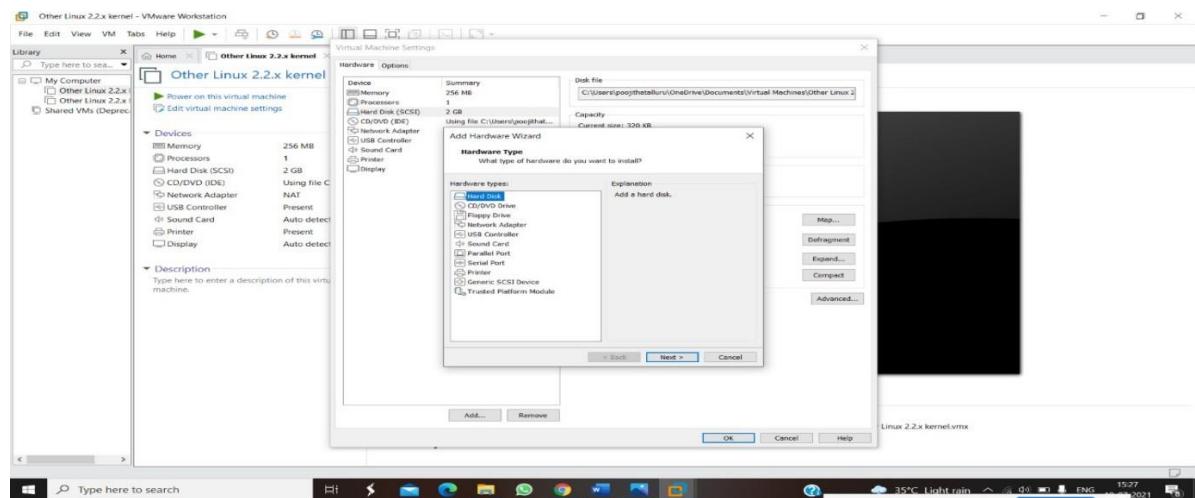
STEP2: RIGHT CLICK THE VM AND GOTO THE SETTINGS

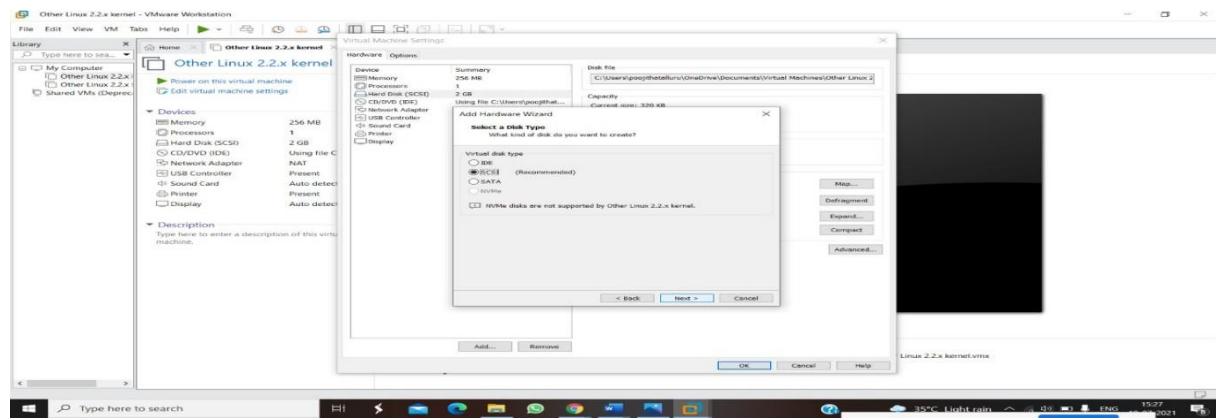


STEP 3: ADD HARDWARE WIZARD AND SELECT SCSI AND CLICK NEXT

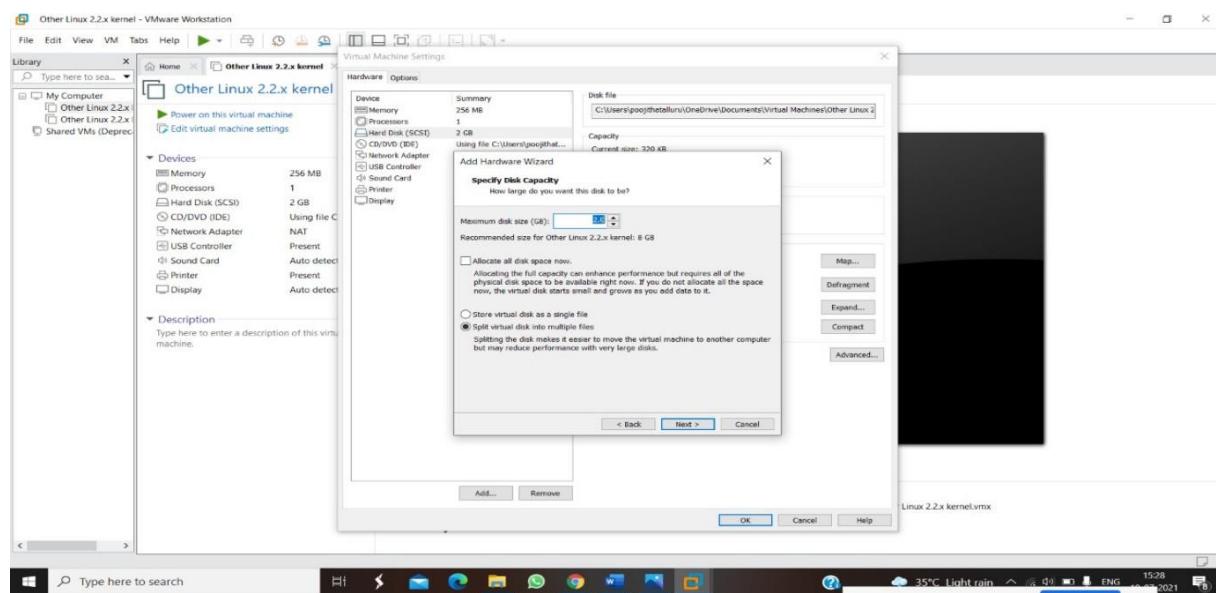


STEP 4: CREATE NEW VIRTUAL DISK

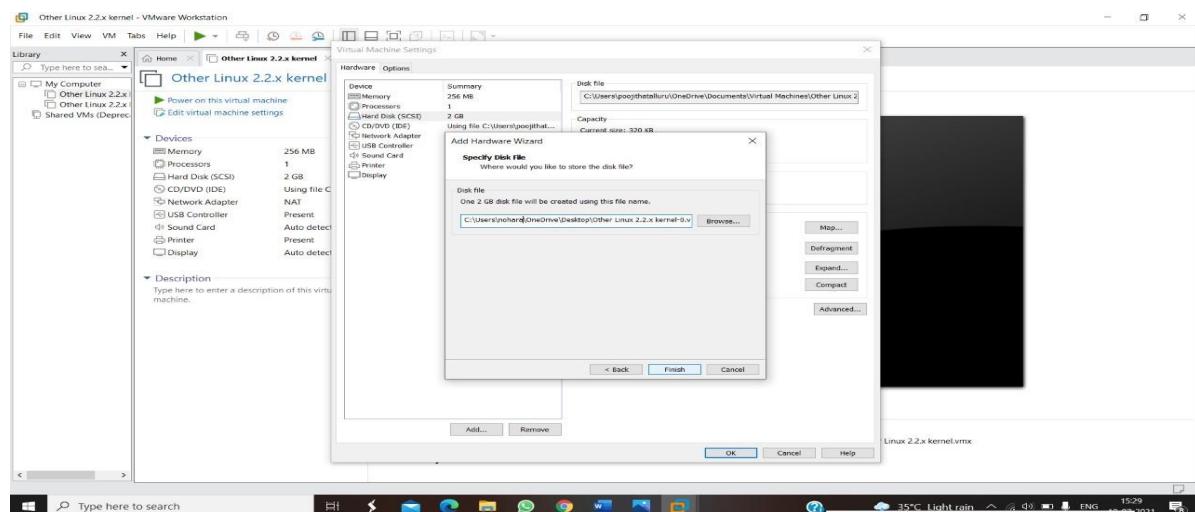


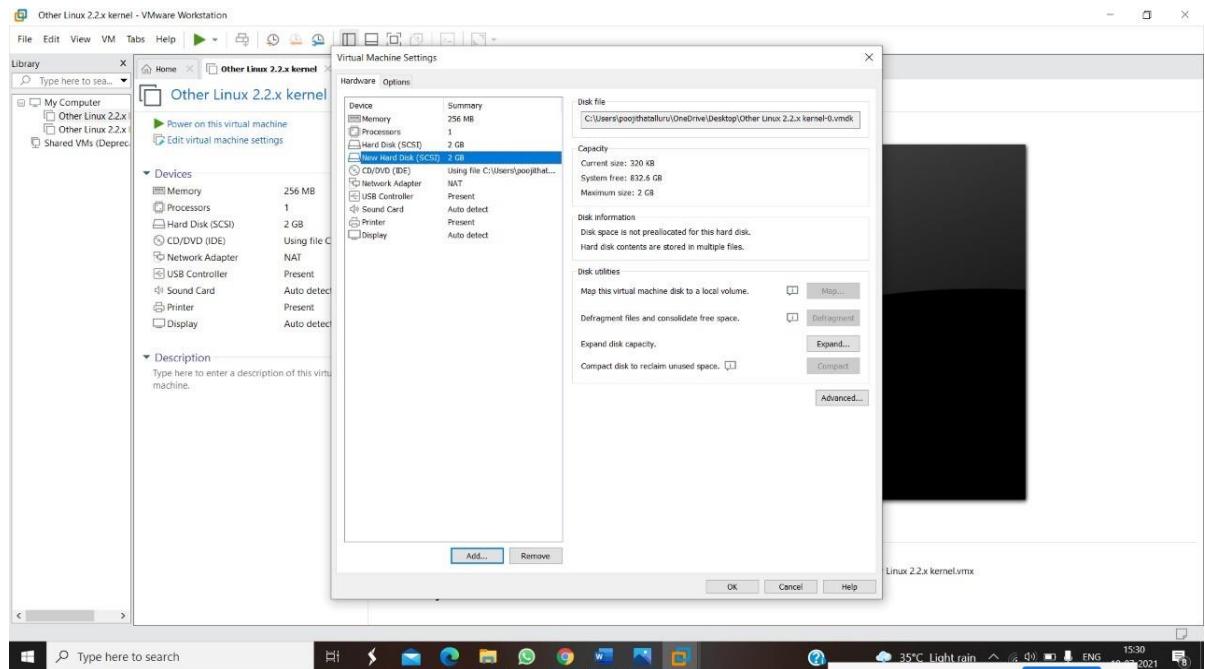


STEP 5: SELECT THE DISK SIZE AS 2.0. AND SELECT SPLIT VIRTUAL DISK INTO MULTIFILES.



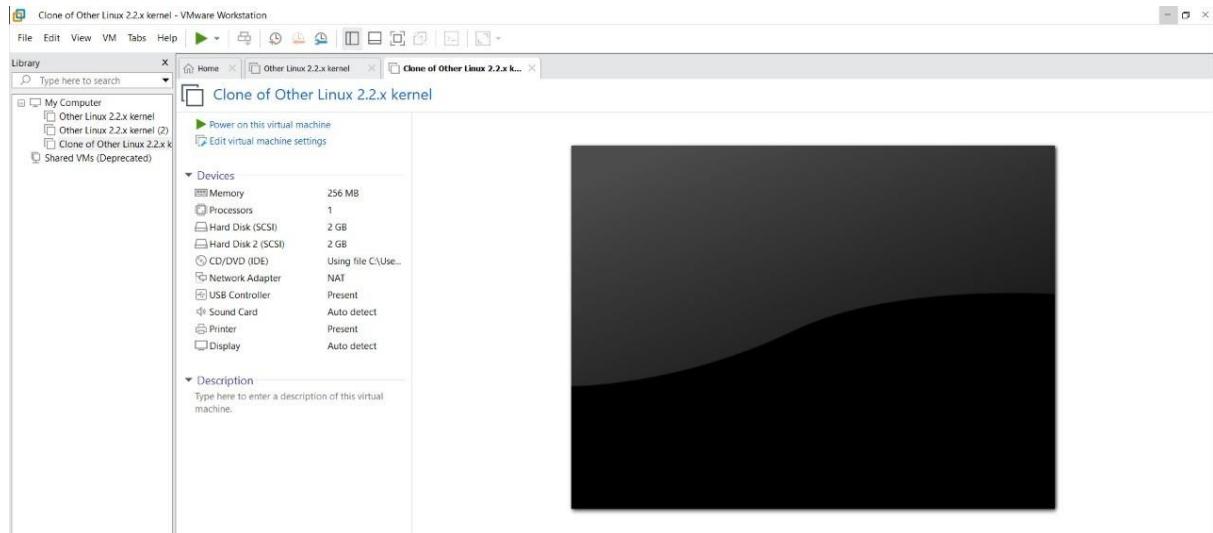
STEP 6: GIVE NAME AND CLICK THE FINISH



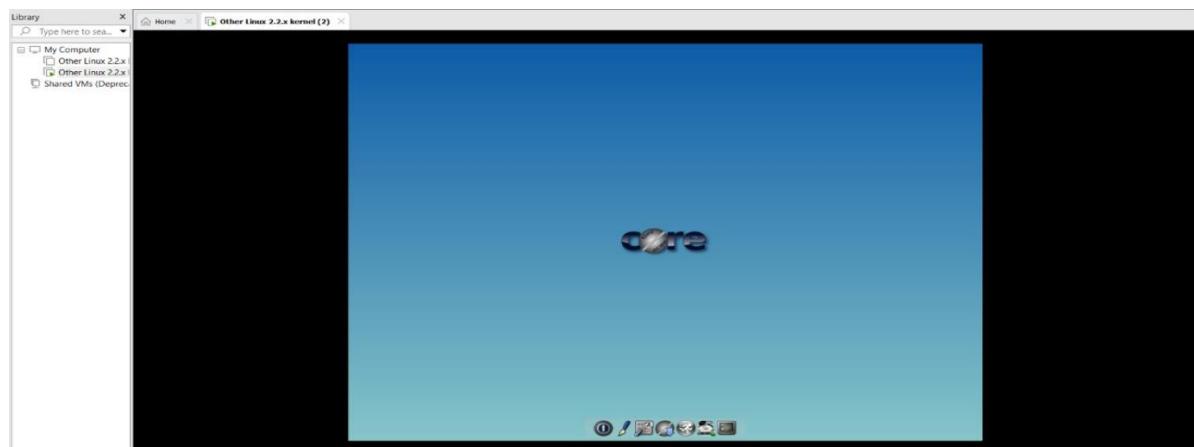


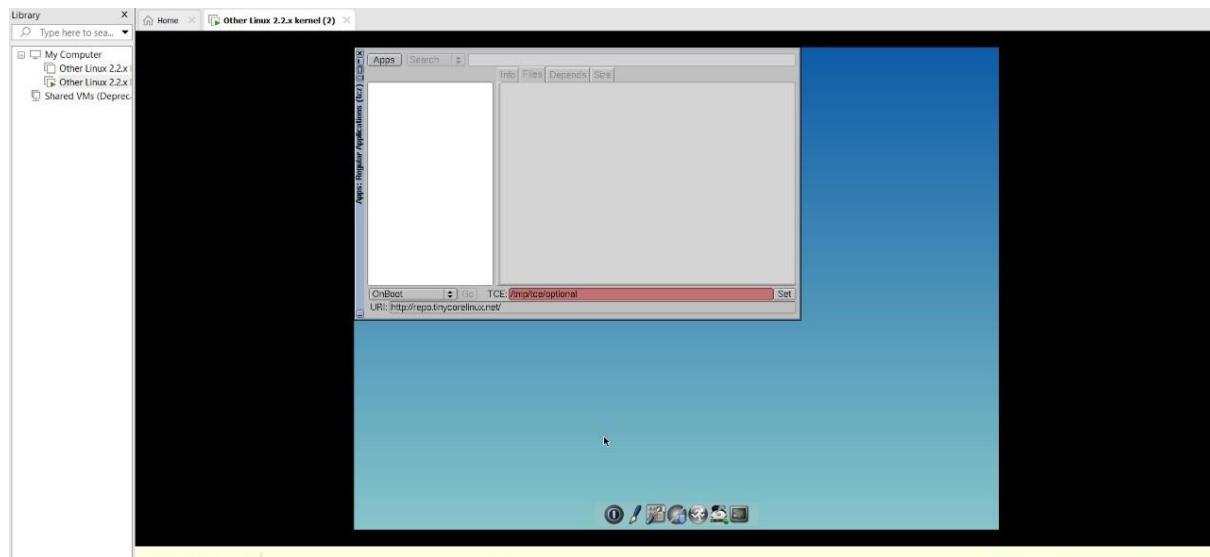
4) CREATE A SNAPSHOT AND CLONING OF A VM AND TEST IT BYLOADING THE PREVIOUS VERSION/CLONED VM

STEP 1: GOTO VMWARE WORKSTATION

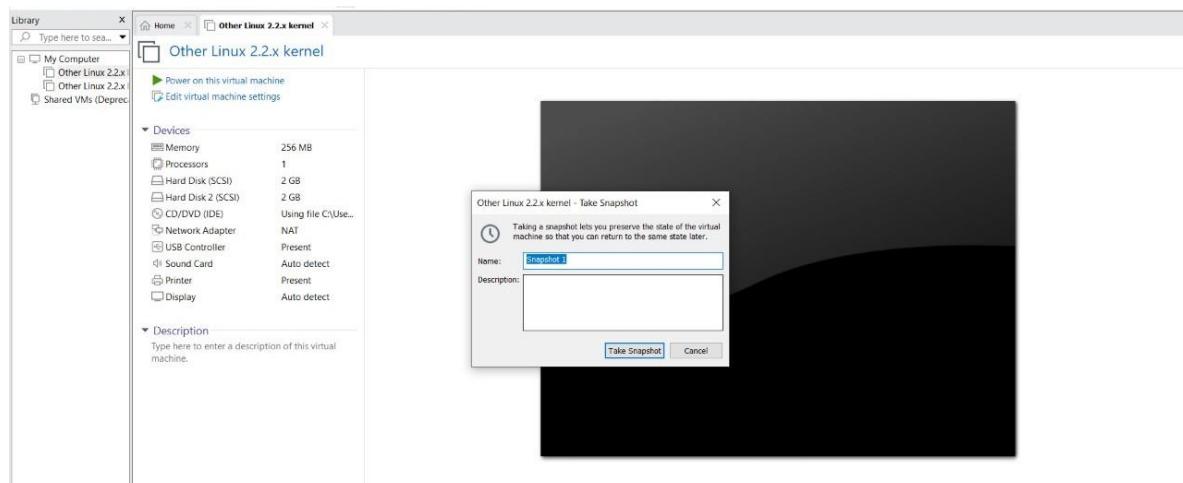
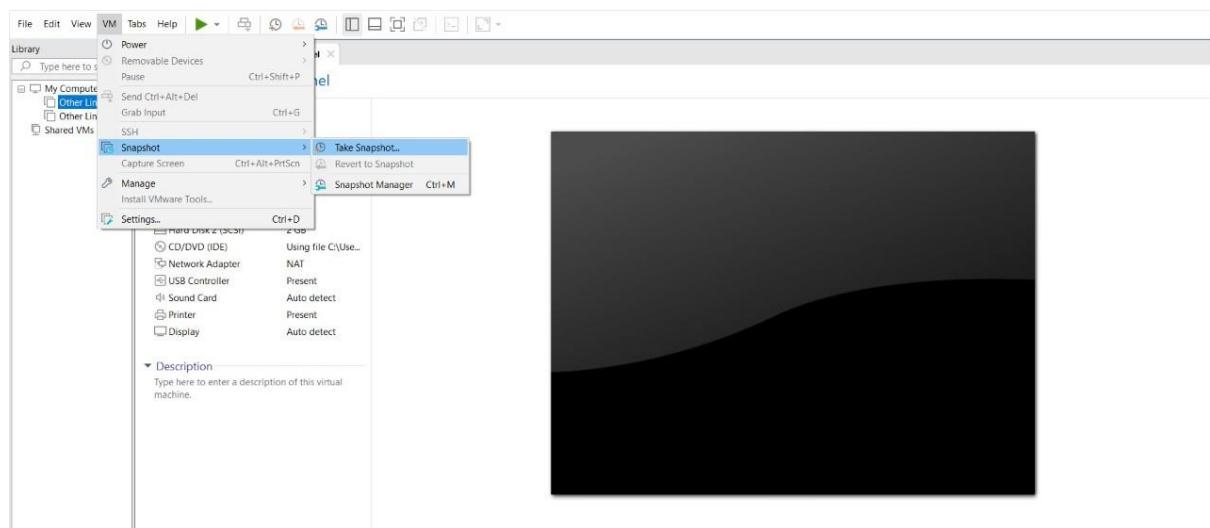


STEP 2: CREATE FILES ON DESKTOP

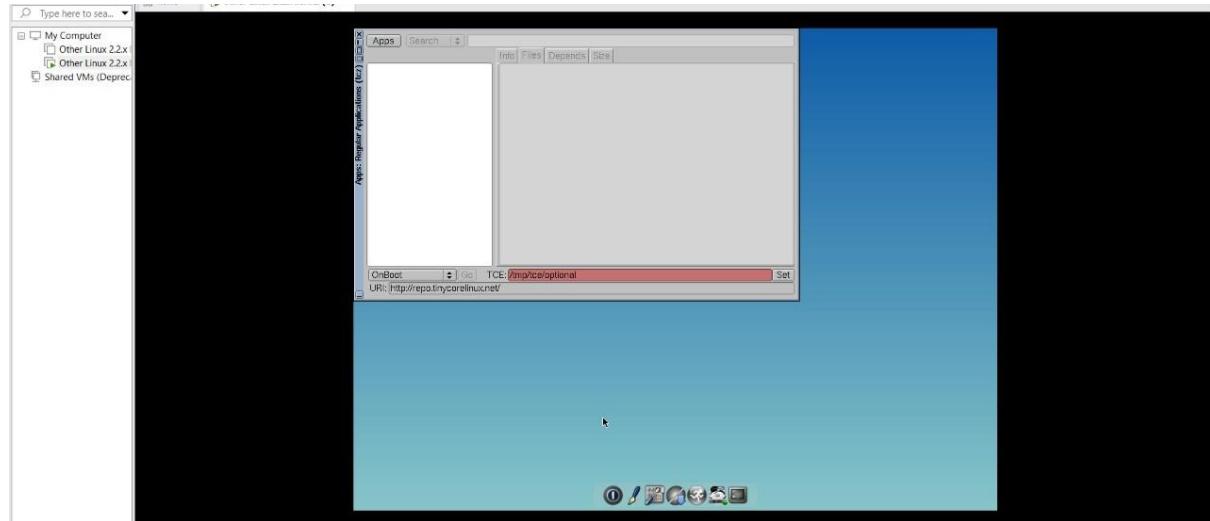




STEP 2: CLICK ON VM AND SELECTS SNAPSHOT-> TAKE SNAPSHOT.

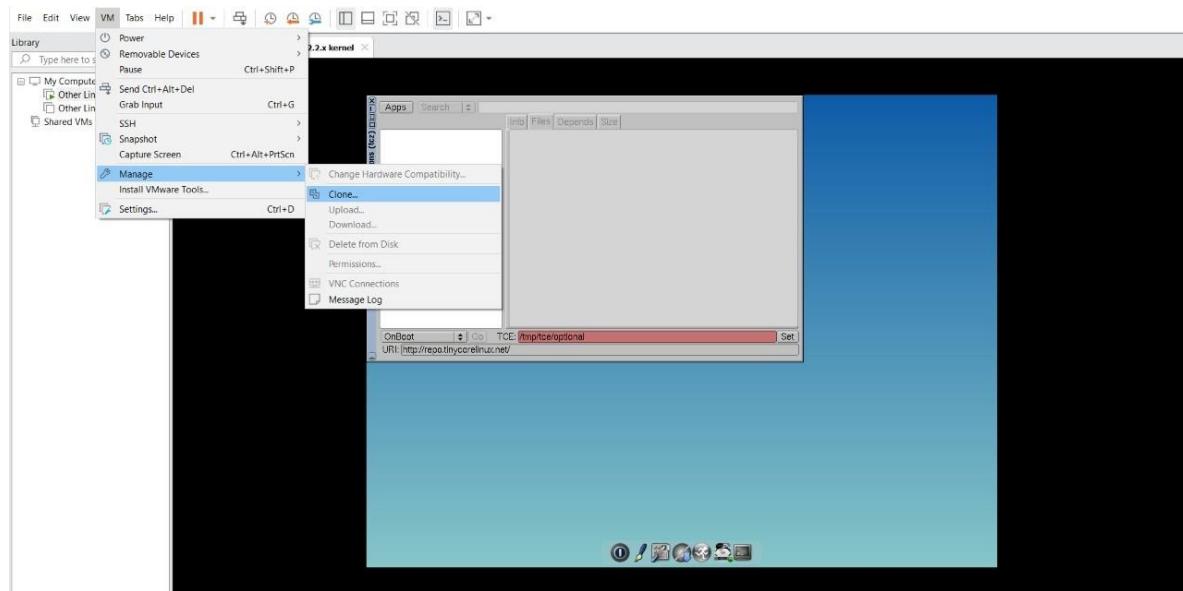


STEP 4: SNAPSHOT IS BEING DONE

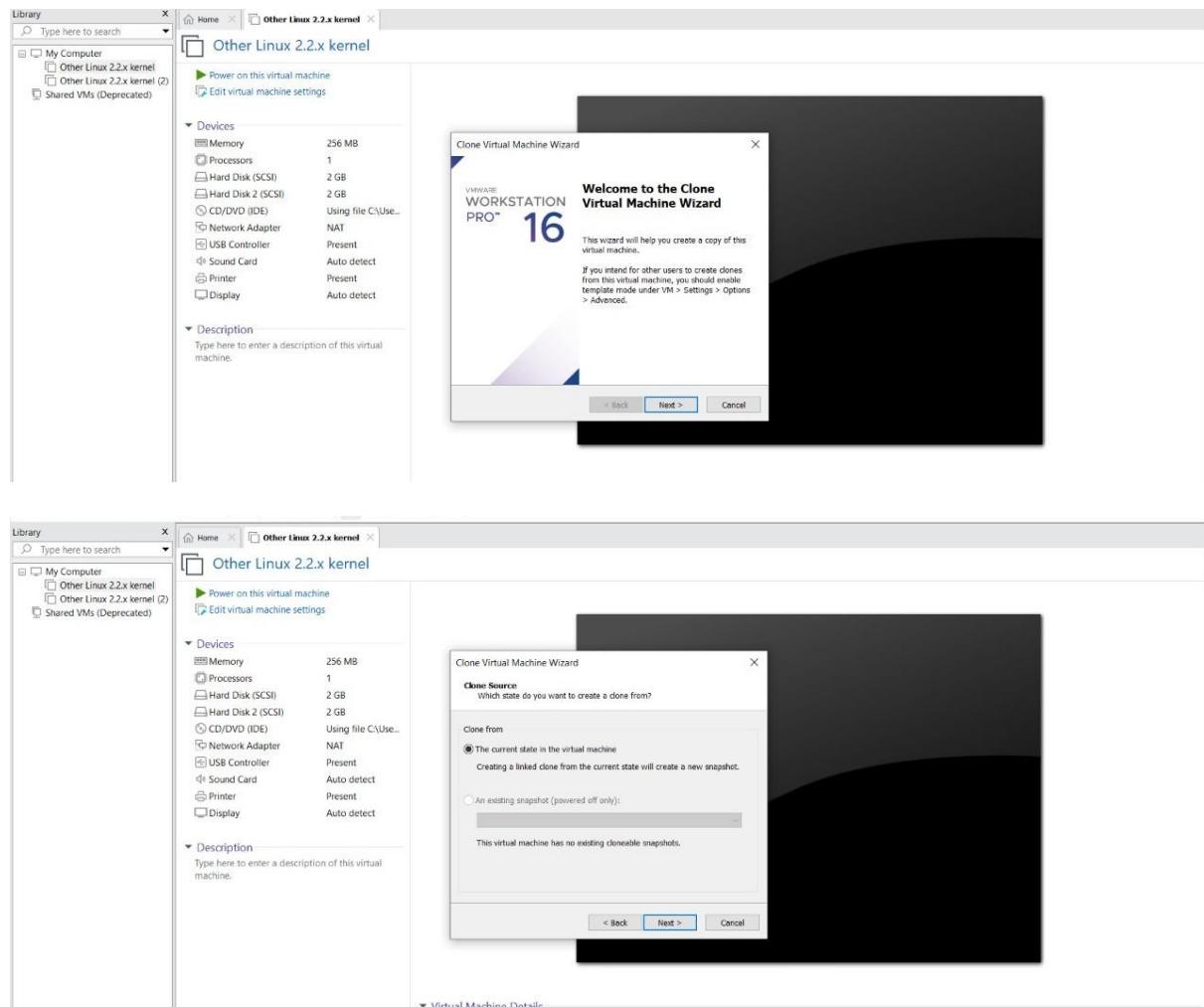


CLONING OF A VM

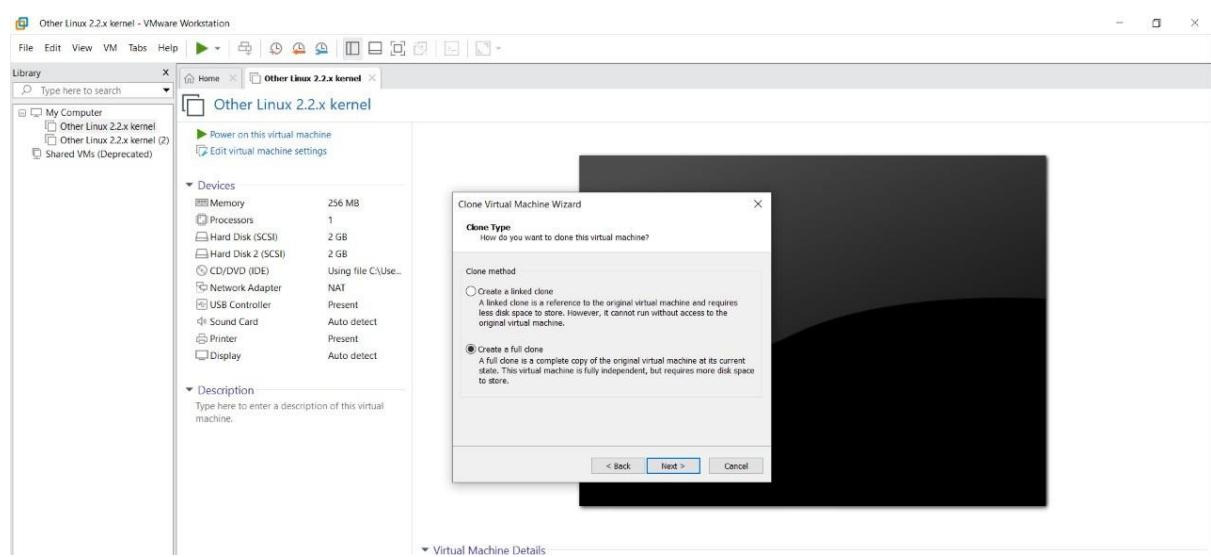
STEP 1: GO TO VM AND GOTO MANAGE AND CLICK CLONE

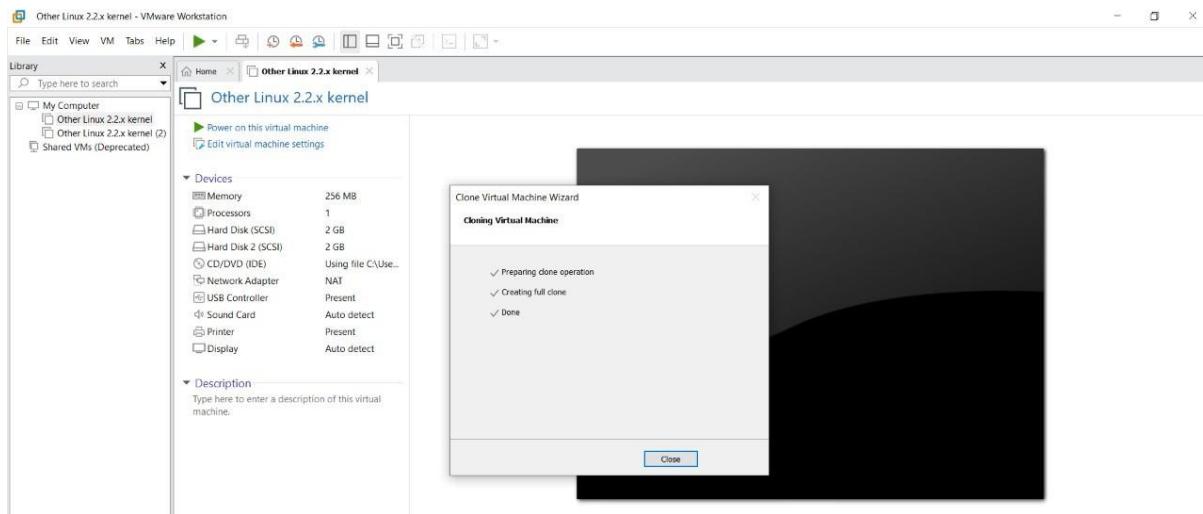


STEP 2: CLICK CLONE

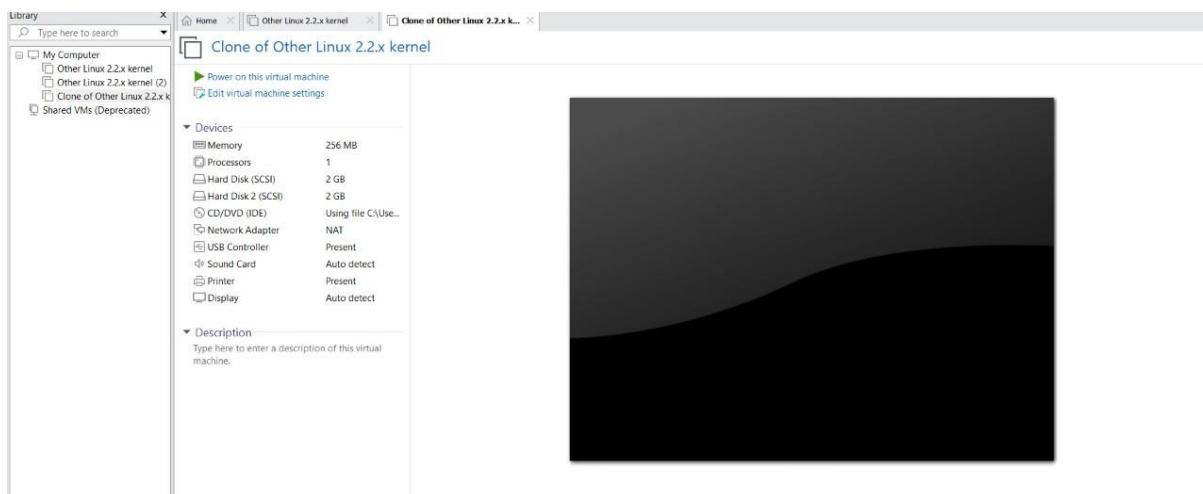


STEP 3: SELECT THE FULL CLONE





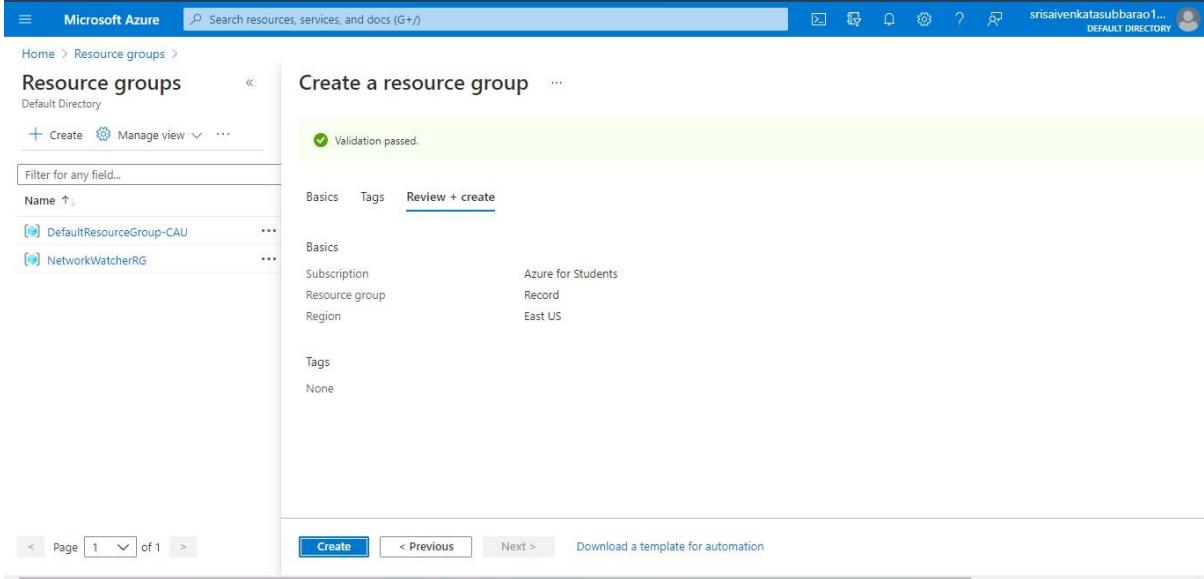
STEP 4: AFTER CLONE AGAIN OR VM IS OPENED.



5) DEMONSTRATE INFRASTRUCTURE AS A SERVICE(IAAS) BY CREATING A VIRTUAL MACHINE USING A PUBLIC CLOUD SERVICE PROVIDER(AZURE/GCP/AWS) CONFIGURE WITH MINIMUM CPU,RAM AND STORAGE AND LAUNCH THE VM IMAGE.

STEP1:CREATE AN ACCOUNT IN MICROSOFT AZURE.

STEP2: GOTO RESOURCE GROUP AND CREATE A RESOURCE GROUP.



The screenshot shows the Microsoft Azure portal interface for creating a new resource group. The top navigation bar includes the Microsoft Azure logo, a search bar, and various icons. On the left, there's a sidebar titled 'Resource groups' with a 'Create' button and a 'Manage view' dropdown. The main content area is titled 'Create a resource group' with a green validation message 'Validation passed.' Below this, there are tabs for 'Basics', 'Tags', and 'Review + create'. Under the 'Basics' tab, the following configuration is shown:

| Setting | Value |
|----------------|--------------------|
| Subscription | Azure for Students |
| Resource group | Record |
| Region | East US |

Under the 'Tags' section, it says 'None'. At the bottom of the page, there are buttons for 'Create', 'Previous', 'Next', and 'Download a template for automation'.

STEP3: GIVE NECESSARY THINGS FOR RESOURCE GROUP.

The screenshot shows the Microsoft Azure portal interface for creating a new resource group. The top navigation bar includes the Microsoft Azure logo, a search bar, and user information. The main title is "Create a resource group".

Project details:

- Subscription: Azure for Students
- Resource group: Record

Resource details:

- Region: (US) East US

Tags:

| Name | Value | Resource |
|------|-------|----------------|
| Name | Value | Resource group |

At the bottom, there are buttons for "Review + create", "< Previous", and "Next : Tags >".

STEP4: CREATE A VIRTUAL NETWORK FOR TO CREATE A VIRTUAL MACHINE .

The screenshot shows the Microsoft Azure portal's Resource groups page. At the top, there's a search bar and a user profile. Below it, a navigation bar includes 'Home >', 'Resource groups', and a 'Default Directory' dropdown. The main area lists three resource groups:

| Name | Subscription | Location | Actions |
|--------------------------|--------------------|-------------------|---------|
| DefaultResourceGroup-CAU | Azure for Students | Australia Central | ... |
| NetworkWatcherRG | Azure for Students | East US | ... |
| Record | Azure for Students | East US | ... |

At the bottom, there are pagination controls ('Page 1 of 1') and a URL bar ('https://portal.azure.com/#').

STEP5: NOW CREATE A VIRTUAL MACHINE WITH UR IP ADDRESS AN USERNAME AND PASSWORD FOR YOUR VIRTUAL MACINE.

STEP6: AND YOUR VIRTUAL MACHINE IS DEPLOYED.

The screenshot shows the Microsoft Azure portal's 'CreateVm-MicrosoftWindowsServer.WindowsServer-201-20210721104828 | Overview' page. The left sidebar has tabs for 'Overview', 'Inputs', 'Outputs', and 'Template'. The main content area shows a green checkmark icon and the message 'Your deployment is complete'. It provides deployment details: Deployment name: CreateVm-MicrosoftWindowsServer.WindowsSe..., Start time: 7/21/2021, 10:52:14 AM, Subscription: Azure for Students, Correlation ID: a0f40b35-8270-49dc-bcf7-42eec66e5c61, and Resource group: Record. There are also sections for 'Deployment details' (with a download link) and 'Next steps' (including 'Setup auto-shutdown Recommended', 'Monitor VM health, performance and network dependencies Recommended', and 'Run a script inside the virtual machine Recommended'). At the bottom are 'Go to resource' and 'Create another VM' buttons. The right sidebar features links for 'Security Center', 'Free Microsoft tutorials', and 'Work with an expert'.

STEP7: NOW CONNECT THE VIRTUAL MACHINE AND DOWNLOAD THE RDP FILE TO OPEN YOUR WINDOWS VIRTUAL MACHINE.

Microsoft Azure Search resources, services, and docs (G+)

Home > CreateVm-MicrosoftWindowsServer.WindowsServer-201-20210721104828 >

Record-virtual

Virtual machine

Search (Ctrl+F) Connect Start Restart Stop Capture Delete Refresh Open in mobile

Overview Activity log Access control (IAM) Tags Diagnose and solve problems

Settings Networking Connect Windows Admin Center (preview) Disks Size Security Advisor recommendations Extensions

Resource group (change) : Record Status : Running Location : East US Subscription (change) : Azure for Students Subscription ID : db4eee0b-1e34-4be0-9c9c-65cc8d398405 Tags (change) : Click here to add tags

Operating system : Windows (Windows Server 2019 Datacenter) Size : Standard DS1 v2 (1 vcpus, 3.5 GiB memory) Public IP address : 23.96.9.147 Virtual network/subnet : Record-vnet/default DNS name : Not configured

Properties Monitoring Capabilities (8) Recommendations Tutorials

Virtual machine

| | |
|------------------|--|
| Computer name | Record-virtual |
| Operating system | Windows (Windows Server 2019 Datacenter) |
| Publisher | MicrosoftWindowsServer |
| Offer | WindowsServer |
| Plan | 2019-Datacenter |
| VM generation | V1 |
| Agent status | Ready |

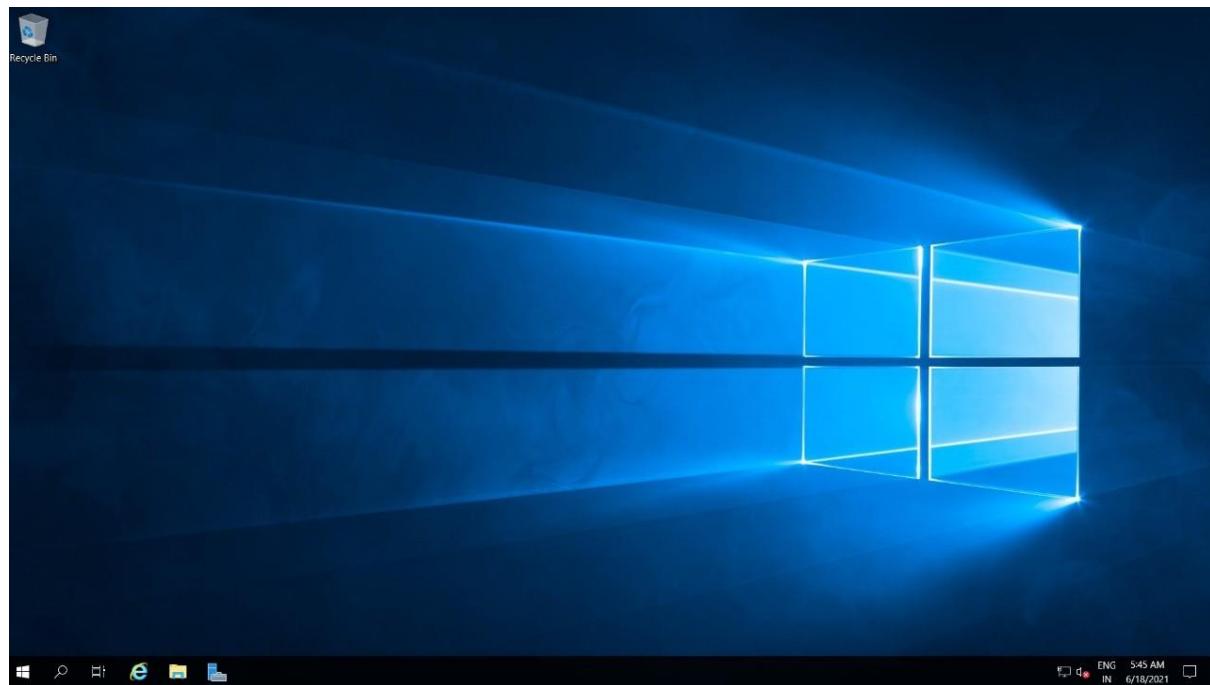
Networking

| | |
|---------------------------|---------------------|
| Public IP address | 23.96.9.147 |
| Public IP address (IPv6) | - |
| Private IP address | 10.0.0.4 |
| Private IP address (IPv6) | - |
| Virtual network/subnet | Record-vnet/default |
| DNS name | Configure |

JSON View

<https://portal.azure.com/#>

STEP8: CREATED A NEW WINDOWS VIRTUAL MACHINE.



6. CREATE A SIMPLE WEB SITE USING ANY PUBLIC CLOUD SERVICE PROVIDER (AZURE/GCP/AWS) AND CHECK THE PUBLIC ACCESSIBILITY OF THE STORED FILE TO DEMONSTRATE STORAGE AS A SERVICE

STEP1: FIRSTLY GO TO APPSERVICE TO CREATE AN WEBAPP.

The screenshot shows the Azure portal interface with the URL <https://portal.azure.com/#blade/HubsExtension/BrowseResourceBlade/resourceType/Microsoft.Web%2Fsites>. The left sidebar is open, showing 'App Services' selected under 'FAVORITES'. The main content area is titled 'App Services' and displays a brief description: 'Create, build, deploy, and manage powerful web, mobile, and API apps for employees or customers using a single back-end. Build standards-based web apps and APIs using .NET, Java, Node.js, PHP, and Python.' Below this, there's a section for 'Free training from Microsoft' with links to host a web application, deploy a containerized web app, and scale an App Service web app. A large 'No app services to display' message is centered, accompanied by a circular icon with three dots. At the bottom, there are 'Useful links' for 'Overview' and 'Get started', and a prominent blue 'Create app service' button. The top navigation bar includes tabs for 'Assign tags', 'Start', 'Restart', 'Stop', 'Delete', and 'Feedback'. The status bar at the bottom shows the URL again, the weather (25°C Rain show...), and system information (ENG 12:47).

STEP2: ENTER THE RESOURCE GROUP AND WEBAPP NAME AND REGION AND SELECT THE LINUX OS.

Microsoft Azure

Search resources, services, and docs (G+)

Home > App Services >

Create Web App ...

Project Details

Select a subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription *

Resource Group *

Instance Details

Name * .azurewebsites.net

Publish * Code Docker Container

Runtime stack *

Operating System * Linux Windows

Review + create < Previous Next : Deployment (Preview) >

STEP3: AFTER ENTER THE ALL THE NECESSARY THINGS CLICK THE REVIEW AND CREATE AND CLICK THE CREATE THE WEB APP.

Microsoft Azure

Search resources, services, and docs (G+)

Home > App Services >

Create Web App ...

Basics Deployment (Preview) Monitoring Tags **Review + create**

Summary

Web App by Microsoft

Basic (B1) sku
Estimated price - loading ...

Details

Subscription: db4eee0b-1e34-4be0-9c9c-65cc8d398405
Resource Group: Record
Name: Record-app
Publish: Code
Runtime stack: Node 14 LTS

App Service Plan (New)

Name: ASP-Record-92e3
Operating System: Linux
Region: Australia Central

Create < Previous Next > Download a template for automation

STEP4: AND OUR DEPLOYMENT IS COMPLETED.

Microsoft.Web-WebApp-Portal-1b6a401b-9ae6 | Overview

Your deployment is complete

Deployment name: Microsoft.Web-WebApp-Portal-1b6a401b-9ae6 Start time: 7/21/2021, 12:49:54 PM
Subscription: Azure for Students Correlation ID: 76653cd2-c090-4d97-a1e5-21033aa42efc
Resource group: Record

Deployment details (Download)

Next steps

Manage deployments for your app. Recommended
Protect your app with authentication. Recommended

Go to resource

Security Center
Secure your apps and infrastructure
[Go to Azure security center >](#)

Free Microsoft tutorials
[Start learning today >](#)

Work with an expert
Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support.
[Find an Azure expert >](#)

STEP5: GOTO WEBSITE URL LINK.

Record-app App Service

Overview

Activity log, Access control (IAM), Tags, Diagnose and solve problems, Security, Events (preview), Quickstart, Deployment slots, Deployment Center.

Deployment

Essentials

| Resource group (change) | : | Record | URL | : | https://record-app.azurewebsites.net |
|-------------------------|---|--|-------------------------|---|---|
| Status | : | Running | App Service Plan | : | ASP-Record-92e3 (B1: 1) |
| Location | : | Australia Central | FTP/deployment username | : | No FTP/deployment user set |
| Subscription (change) | : | Azure for Students | FTP hostname | : | ftp://waws-prod-cbr20-003.ftp.azurewebsites.wind... |
| Subscription ID | : | db4eee0b-1e34-4be0-9c9c-65cc8d398405 | FTPS hostname | : | https://waws-prod-cbr20-003.ftp.azurewebsites.win... |
| Tags (change) | : | Click here to add tags | | | |

JSON View

Diagnose and solve problems, Application Insights, App Service Advisor.

STEP6: THIS IS OUR WEBAPP SERVICE.

Microsoft Azure

Hey, Node developers!

Your app service is up and running.
Time to take the next step and deploy your code.

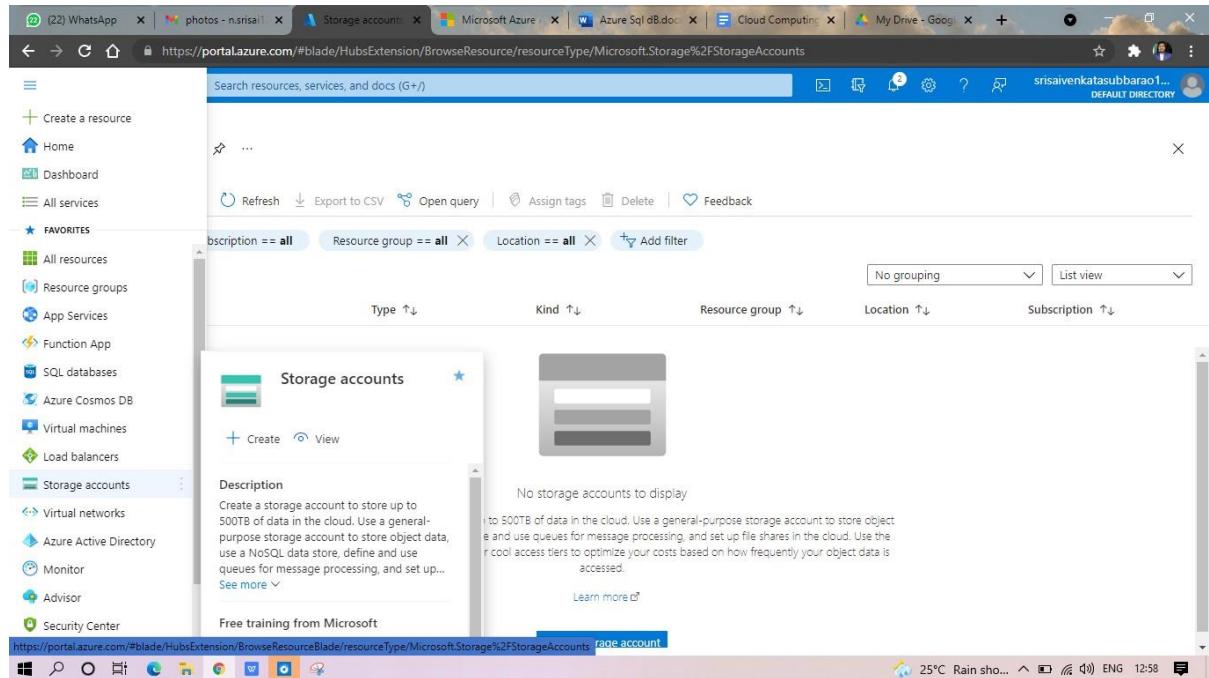
Have your code ready?
Use deployment center to get code published from your client or setup continuous deployment.

Don't have your code yet?
Follow our quickstart guide and you'll be full app ready in 5 minutes or less.

[Deployment Center](#) [Quickstart](#)

7. CREATE A STORAGE SERVICE USING ANY PUBLIC CLOUD SERVICE PROVIDER (AZURE/GCP/AWS) AND CHECK THE PUBLIC ACCESSIBILITY OF THE STORED FILE TO DEMONSTRATE STORAGE AS A SERVICE.

STEP1: OPEN AZURE AND GOTO STORAGE ACCOUNTS AND CREATE STOROAGE ACCOUNT



STEP2: ENTER THE RESOURC GROUP AND AND STORAGE ACCOUNT NAME AND REVIEW AND CREATE AND CLICK TH CREATE AND YOUR STORAGE ACCOUNT WILL BE DEPLOYED SUCESSFULLY.

The screenshot shows the Microsoft Azure Deployment Overview page for a deployment named "recordstoragesubbarao_1626852653220". The status bar at the top indicates "Deployment succeeded". The main content area displays deployment details: Deployment name: recordstoragesubbarao_1626852653220, Subscription: Azure for Students, Resource group: Record. The deployment started at 7/21/2021, 1:00:57 PM with Correlation ID: 49a91964-e371-4019-ae37-954bf26dd89f. A "Go to resource" button is present. On the right, there are links to Security Center, Free Microsoft tutorials, and Work with an expert.

STEP3: AND OUR STORAGE ACCOUNT IS CREATED.

The screenshot shows the Microsoft Azure Storage account overview for "recordstoragesubbarao". The left sidebar lists navigation options: Overview, Activity log, Tags, Diagnose and solve problems, Access Control (IAM), Data migration, Events, Storage Explorer (preview), Data storage (Containers, File shares, Queues, Tables), Security + networking, and Networking. The main content area displays the storage account's properties, including Resource group (Record), Location (East US), Primary/Secondary Location (Primary: East US, Secondary: West US), Subscription (Azure for Students), Subscription ID (db4eee0b-1e34-4be0-9c9c-65cc8d398405), Disk state (Primary: Available, Secondary: Available), and tags (change). The "Properties" tab is selected. The "Security" section shows Blob service settings: Hierarchical namespace (Disabled), Default access tier (Hot), Blob public access (Enabled), and Blob soft delete (Enabled / 7 days). The "Security" section also includes settings for require secure transfer for REST API operations, Storage account key access, and Minimum TLS version (Version 1.2).

STEP5: GOTO STATIC WEBSITE

This screenshot shows the Microsoft Azure Storage account details page for a resource group named 'Gopi'. The page displays various configuration settings such as location (East US), replication type (Read-access geo-redundant storage (RA-GRS)), and account kind (StorageV2). It also shows the subscription ID, provisioning state (Succeeded), and creation date (6/22/2021, 10:17:25 AM). The 'Blob service' section is expanded, showing settings like hierarchical namespace, default access tier (Hot), blob public access (Enabled), and blob soft delete (Enabled (7 days)). The 'Security' section includes options for require secure transfer for REST API operations, storage account key access, minimum TLS version (Version 1.2), and infrastructure encryption (Disabled). The 'Networking' section is partially visible at the bottom.

STEP6: AND ENABLE AND ENTER YOUR INDEX AND ERROR HTML FILENAMES.

This screenshot shows the Microsoft Azure Static website configuration page for the 'deeksha' storage account. The 'Static website' section is enabled, with the primary endpoint set to 'https://deeksha.z13.web.core.windows.net/'. The secondary endpoint is listed as 'https://deeksha-secondary.z13.web.core.windows.net/'. The 'Index document name' is set to 'index.html', and the 'Error document path' is set to '404.html'. The left sidebar shows other management options like Geo-replication, Data protection, and Blob inventory (preview).

STEP7: AND GOTO STORAGE EXPLORER(Review) AND AND GOTO BLOB CONTAINERS AND WEB AND UPLOAD THE TWO HTML FILES INIT

The screenshot shows the Microsoft Azure Storage Explorer interface. On the left, there's a sidebar with various options like Data migration, Events, Storage Explorer (preview), Data storage (Containers, File shares, Queues, Tables), Security + networking (Networking, Azure CDN, Access keys, Shared access signature, Encryption), and a link to the portal.azure.com. The main area is titled "recordstoragesubbarao | Storage Explorer (preview)" and shows a tree view of "BLOB CONTAINERS" with "\$web" selected. Under "\$web", there are "FILE SHARES", "QUEUES", and "TABLES". The "FILE SHARES" section is expanded, showing a list of files: "about.jpg", "hero-bg.png", "hero-img.png", "index.html", "logo.png", "README.md", "script.js", "style.css", "values-1.png", "values-2.png", and "values-3.png". Each file has columns for NAME, ACCESS TIER, ACCESS TIER LAST MODIFIED, LAST MODIFIED, BLOB TYPE, CONTENT TYPE, SIZE, and STATUS. The "index.html" file is highlighted. At the bottom, it says "Showing 1 to 11 of 11 cached items".

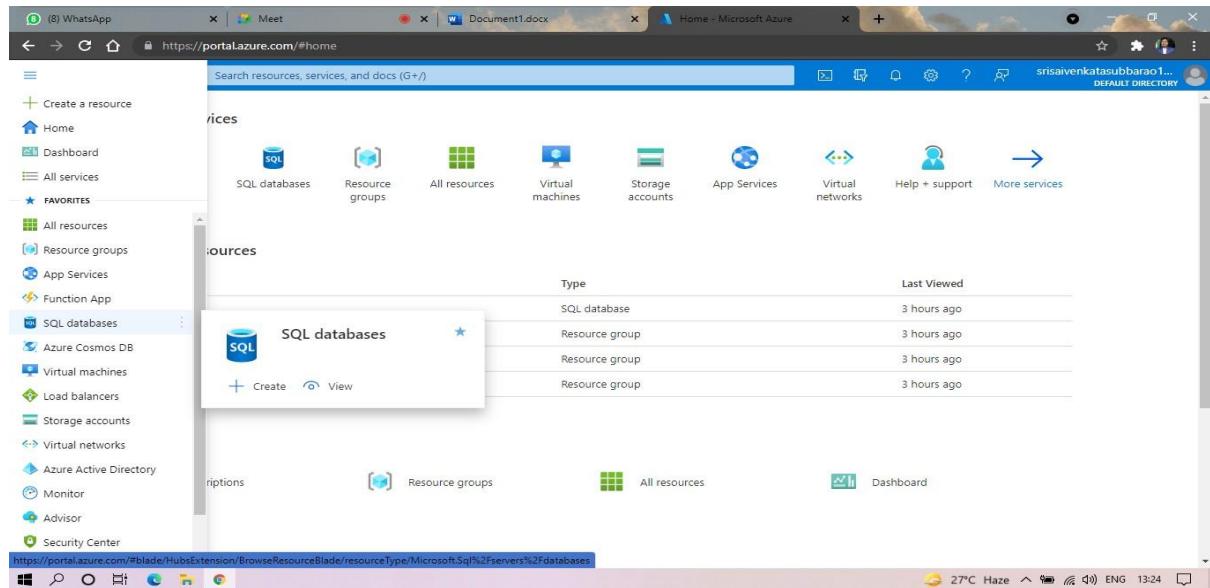
STEP8: AND AGAIN RETURN TO STATIC WEBSITE AND OPEN THE PRIMARY LINK AND YOUR WEB PAGE IS CREATED

The screenshot shows a static website page. The URL in the browser bar is "https://recordstoragesubbarao.z13.web.core.windows.net". The page has a blue header with the word "React" and a React logo. Below the header, there's a large blue text block: "We offer modern solutions for growing your business". Underneath that, a smaller text block says: "We are team of talented designers making websites with Bootstrap". There's a blue button labeled "Get Started". To the right of the text, there's a large, stylized 3D illustration of three people (two men and one woman) working together on a massive computer monitor. The monitor displays some code or a design. The background of the page is white.

8) CREATE A SQL STORAGE SERVICE AND PERFORM A BASIC QUERY USING ANY PUBLIC CLOUD SERVICE PROVIDER (AZURE/GCP/AWS) TO DEMONSTRATE DATABASE AS A SERVICE (DAAS)

STEP1: GOTO AZURE AND GOTO SQLDATABASE.

STEP 02:- Now Create a Sql Databse

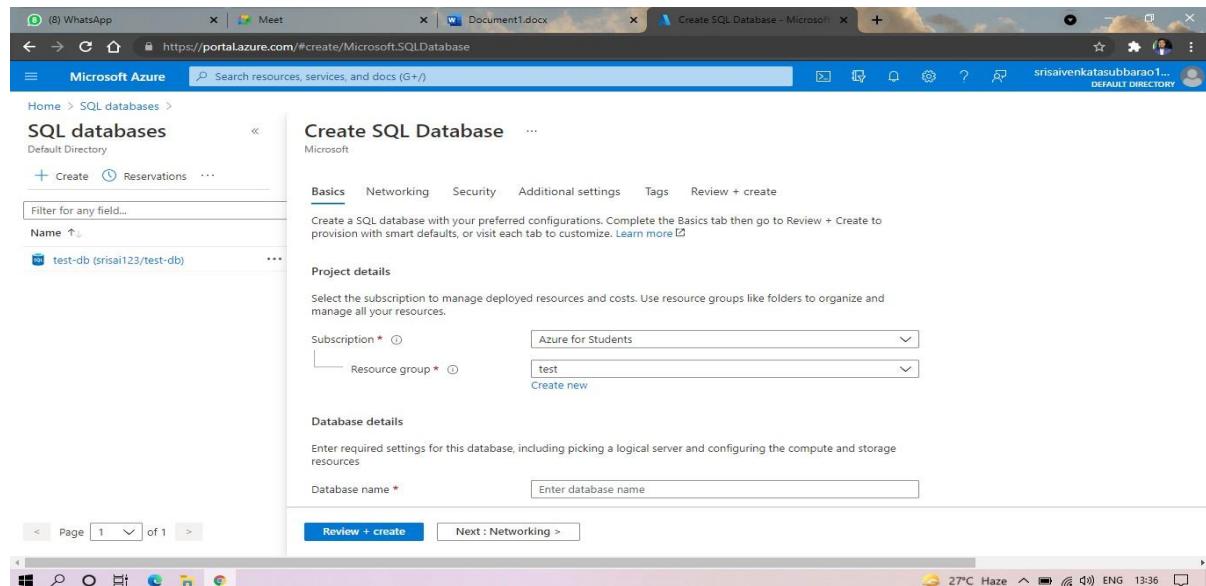


The screenshot shows the Microsoft Azure portal interface. The left sidebar includes options like 'Create a resource', 'Home', 'Dashboard', 'All services', 'FAVORITES' (with 'SQL databases' selected), 'All resources', 'Resource groups', 'App Services', 'Function App', 'SQL databases' (selected), 'Azure Cosmos DB', 'Virtual machines', 'Load balancers', 'Storage accounts', 'Virtual networks', 'Azure Active Directory', 'Monitor', 'Advisor', and 'Security Center'. The main content area has a search bar at the top. Below it, there are several service icons: SQL databases, Resource groups, All resources, Virtual machines, Storage accounts, App Services, Virtual networks, Help + support, and More services. The 'SQL databases' section is expanded, showing a table with four rows:

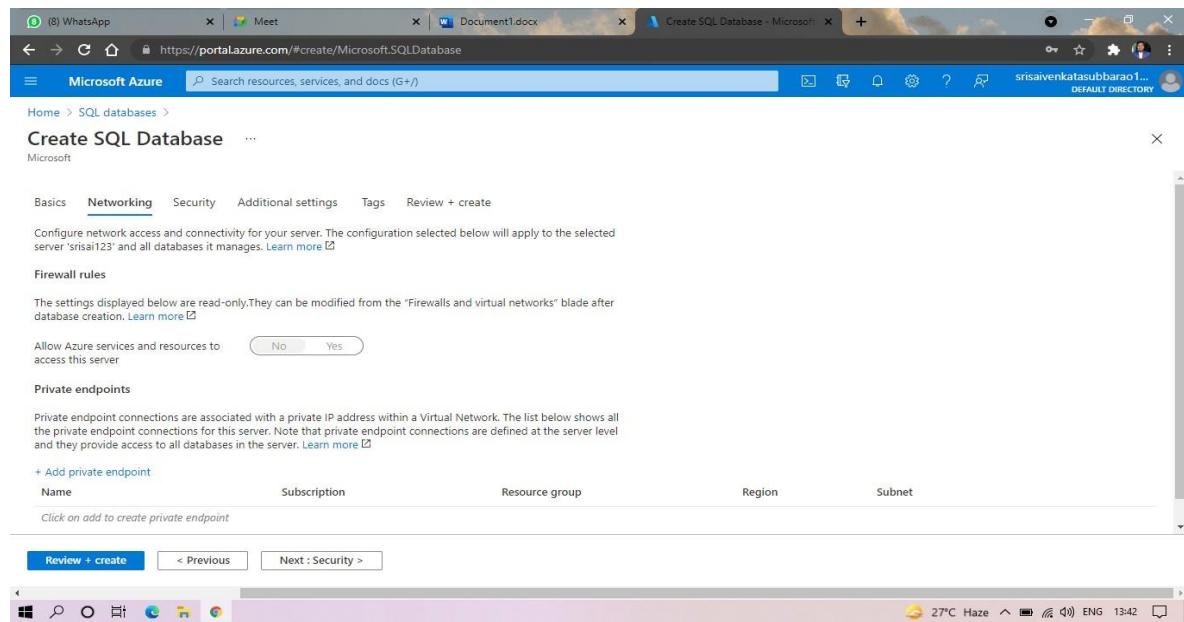
| Type | Last Viewed |
|----------------|-------------|
| SQL database | 3 hours ago |
| Resource group | 3 hours ago |
| Resource group | 3 hours ago |
| Resource group | 3 hours ago |

At the bottom of the page, the URL is https://portal.azure.com/#blade/HubsExtension/BrowseResourceBlade/resourceType/Microsoft.Sql%2Fservers%2Fdatabases and the taskbar shows system information like 27°C Haze, ENG, and 13:24.

STEP3: SELECT THE RESOURCE GROUP AND ENTER THE SERVERNAME THAT APPLICABLE.



STEP4: IN NETWORKING SELECT ALLOW AZURE SERVICES AND RESOURCES TO ACCESS THIS SERVER.



STEP5: IN ADDITIONAL SETTINGS SELECT SAMPLE.

Microsoft Azure

Create SQL Database

Home > SQL databases >

Basics Networking Security Additional settings Tags Review + create

Customize additional configuration parameters including collation & sample data.

Data source

Start with a blank database, restore from a backup or select sample data to populate your new database.

Use existing data * None Backup Sample

Database collation

Select a preferred maintenance window from the drop down. Please note, during a maintenance event, Azure SQL Database are fully available and accessible but some of the maintenance updates require a failover as Azure takes SQL

Collation * SQL_Latin1_General_CI_AS Find a collation

Maintenance window

Select a preferred maintenance window from the drop down. Please note, during a maintenance event, Azure SQL Database are fully available and accessible but some of the maintenance updates require a failover as Azure takes SQL

Review + create < Previous Next : Tags >

STEP6:AND THE SQL DATABASE IS DEPLOYED.

Microsoft Azure

Microsoft.SQLDatabase.newDatabaseExistingServer_155c16593e594aad | Overview

Deployment

Deployment succeeded 1:50 PM

Deployment 'Microsoft.SQLDatabase.newDatabaseExistingServer_15...' to resource group 'test' was successful.

Go to resource Pin to dashboard

Overview Inputs Outputs Template

We'd love your feedback! →

Your deployment is complete

Deployment name: Microsoft.SQLDatabase.newDatabaseExistingSe... Start time: 6/23/2021, 1:49:20 PM Correlation ID: 7c008dac-27eb-4552-aa41-fddab3c6e7eb

Subscription: Azure for Students Resource group: test

Deployment details (Download)

Next steps Go to resource

Security Center Secure your apps and infrastructure Go to Azure security center >

Free Microsoft tutorials Start learning today >

Work with an expert Azure experts are service provider partners who can help manage your assets on Azure and be your first line of support. Find an Azure expert >

STEP7:AND NOW GOTO QUERY EDITOR.

The screenshot shows the Microsoft Azure portal interface. The main title bar says "test-db (srисai123/test-db) - Microsoft Azure". The left sidebar has a "SQL database" icon selected. The main content area displays the "Essentials" section for the database, including details like Resource group (change) : test, Status : Paused, Location : West US 3, Subscription (change) : Azure for Students, Subscription ID : db4eee0b-1e34-4be0-9c9c-65cc8d398405, and Tags (change) : Click here to add tags. Below this is a "Compute utilization" chart. At the bottom, there are navigation links for "Search (Ctrl+/", "Copy", "Restore", "Export", "Set server firewall", "Delete", "Connect with...", "Feedback", and "JSON View".

STEP8:AND NOW AGAIN LOGIN TO THE SQLDATADBATABASE

The screenshot shows the Microsoft Azure portal interface, specifically the "Query editor (preview)" page for the test-db. The title bar says "test-db (srисai123/test-db) | Microsoft Azure". The left sidebar has a "Query editor (preview)" icon selected. The main content area shows the "Welcome to SQL Database Query Editor" screen. It features two authentication options: "SQL server authentication" (Login: srисai, Password: [redacted]) and "Active Directory authentication" (Continue as srисaivenkatasubbarao18@srисai123). There is also an "OK" button at the bottom. The left sidebar also includes "Overview", "Activity log", "Tags", "Diagnose and solve problems", "Quick start", and "Power Platform" sections.

STEP: AND OUR TABLES WILL SHOWN AND TYPE THE QUERY TO EXECUTED.

test-db (srisai123/test-db) | Query editor (preview)

Query 1

```
1 SELECT TOP 20 pc.Name as CategoryName, p.name as ProductName
2 FROM SalesLT.ProductCategory pc
3 JOIN SalesLT.Product p
4 ON pc.productcategoryid = p.productcategoryid;
```

| CategoryName | ProductName |
|--------------|---------------------------|
| Road Frames | HL Road Frame - Black, 58 |
| Road Frames | HL Road Frame - Red, 58 |
| Helmets | Snort-100 Helmet, Red |

STEP10: AND OUR OUTPUT IS READY.

test-db (srisai123/test-db) | Query editor (preview)

Query 1

```
1 SELECT TOP 20 pc.Name as CategoryName, p.name as ProductName
2 FROM SalesLT.ProductCategory pc
3 JOIN SalesLT.Product p
4 ON pc.productcategoryid = p.productcategoryid;
```

| CategoryName | ProductName |
|--------------|---------------------------|
| Road Frames | HL Road Frame - Black, 58 |
| Road Frames | HL Road Frame - Red, 58 |
| Helmets | Snort-100 Helmet, Red |

9) PERFORM THE BASIC CONFIGURATION SETUP FOR INSTALLING HADOOP 2.X LIKE CREATING THE HDUSER AND SSH LOCALHOST

Step 1 – System Update

```
$ sudo apt-get update
```

Step 2 – Install Java and Set JAVA_HOME

//This first thing to do is to setup the webupd8 ppa on your system. Run the following command and proceed.

```
$ sudo apt-add-repository ppa:webupd8team/java
```

```
$ sudo apt-get update
```

//After setting up the ppa repository, update the package cache as well.

//Install the Java 8 installer

```
$ sudo apt-get install oracle-java8-installer
```

// After the installation is finished, Oracle Java is setup. Run the java command again to check the version and vendor.

[or]

```
$ sudo apt-get install default-jdk
```

```
$ java -version
```

Step 3 – Add a dedicated Hadoop user

```
$ sudo addgroup hadoop
```

```
$ sudo adduser --ingroup hadoop hduser
```

// Add hduser to sudo user group

```
$ sudo adduser hduser sudo
```

Step 4 – Install SSH and Create Certificates

```
$ sudo apt-get install ssh
```

```
$ su hduser
```

```
$ ssh-keygen -t rsa -P ""  
  
// Set Environmental variables  
$ cat $HOME/.ssh/id_rsa.pub >> $HOME/.ssh/authorized_keys
```

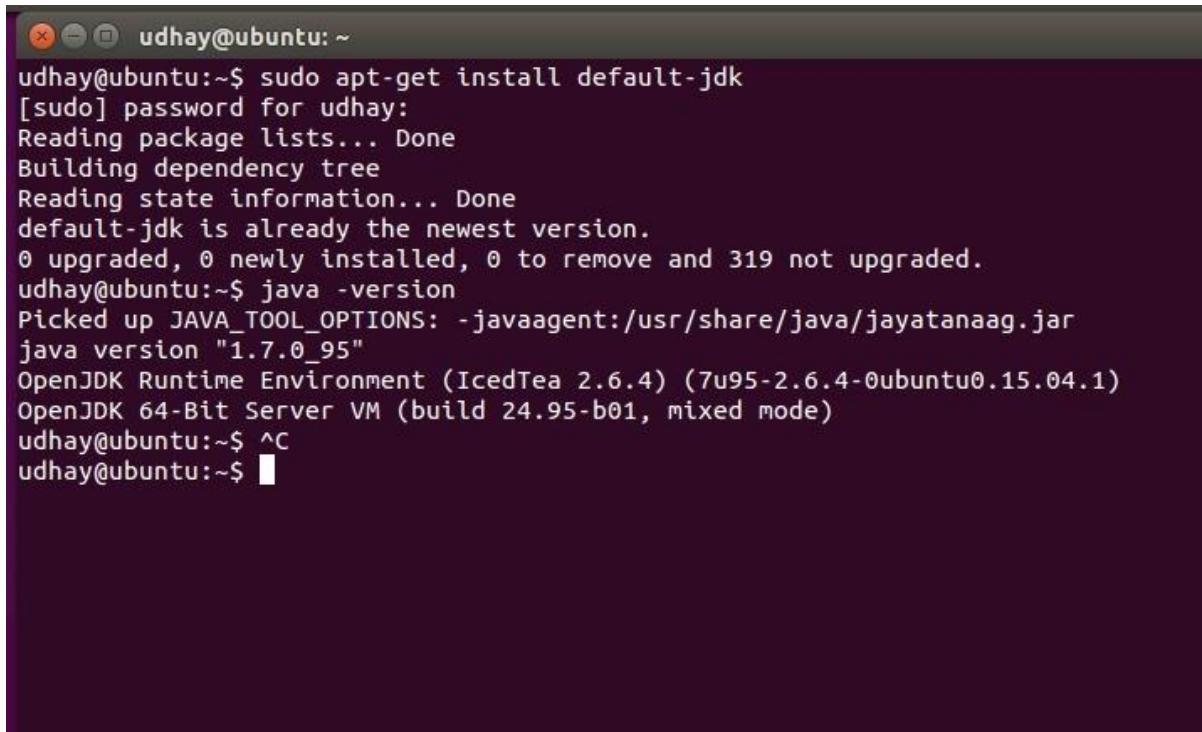
Step 5 – Check if SSH works
\$ ssh localhost

Step 6 – Install Hadoop
// Extract Hadoop-2.7.2
\$ sudo tar xvzf hadoop-2.7.2.tar.gz

```
// Create a folder ‘hadoop’ in /usr/local  
$ sudo mkdir -p /usr/local/hadoop  
  
// Move the Hadoop folder to /usr/local/hadoop  
$ sudo mv hadoop-2.7.2 /usr/local/hadoop
```

```
// Assigning read and write access to Hadoop folder  
$ sudo chown -R hduser:hadoop /usr/local/hadoop
```

Implementation:



The screenshot shows a terminal window titled "udhay@ubuntu: ~". The user runs the command "sudo apt-get install default-jdk" and provides their password. The output shows that "default-jdk" is already the newest version, with 0 upgraded, 0 newly installed, and 319 not upgraded. Then, the user runs "java -version" and gets the output: "Picked up JAVA_TOOL_OPTIONS: -javaagent:/usr/share/java/jayatanaag.jar", "java version "1.7.0_95"" followed by details about the OpenJDK Runtime Environment and Server VM.

```
udhay@ubuntu:~$ sudo apt-get install default-jdk  
[sudo] password for udhay:  
Reading package lists... Done  
Building dependency tree  
Reading state information... Done  
default-jdk is already the newest version.  
0 upgraded, 0 newly installed, 0 to remove and 319 not upgraded.  
udhay@ubuntu:~$ java -version  
Picked up JAVA_TOOL_OPTIONS: -javaagent:/usr/share/java/jayatanaag.jar  
java version "1.7.0_95"  
OpenJDK Runtime Environment (IcedTea 2.6.4) (7u95-2.6.4-0ubuntu0.15.04.1)  
OpenJDK 64-Bit Server VM (build 24.95-b01, mixed mode)  
udhay@ubuntu:~$ ^C  
udhay@ubuntu:~$
```

```
udhay@ubuntu:~$ sudo apt-get install ssh
Reading package lists... Done
Building dependency tree
Reading state information... Done
ssh is already the newest version.
0 upgraded, 0 newly installed, 0 to remove and 319 not upgraded.
udhay@ubuntu:~$ su hduser
Password:
hduser@ubuntu:/home/udhay$
```

```
udhay@ubuntu:~$ su hduser
Password:
hduser@ubuntu:/home/udhay$ ssh-keygen -t rsa -P ""
Generating public/private rsa key pair.
Enter file in which to save the key (/home/hduser/.ssh/id_rsa):
/home/hduser/.ssh/id_rsa already exists.
Overwrite (y/n)? y
Your identification has been saved in /home/hduser/.ssh/id_rsa.
Your public key has been saved in /home/hduser/.ssh/id_rsa.pub.
The key fingerprint is:
09:0f:15:f2:b2:b7:5e:11:1a:6c:d3:2f:c3:09:02:15 hduser@ubuntu
The key's randomart image is:
+---[RSA 2048]---+
| ..E.o. |
| . = . |
| = B o |
| O B + |
| . S * . |
| . . + |
| . . |
| . . |
+-----+
hduser@ubuntu:/home/udhay$ cat $HOME/.ssh/id_rsa.pub >> $HOME/.ssh/authorized_keys
hduser@ubuntu:/home/udhay$ ssh localhost
Welcome to Ubuntu 15.04 (GNU/Linux 3.19.0-84-generic x86_64)
```

* Documentation: <https://help.ubuntu.com/>

```
Last login: Thu Jul 15 22:00:14 2021 from localhost
hduser@ubuntu:~$
```

Home Clone of Ubuntu 64-bit

About the Cluster - Mozilla Firefox

Restore Session About the Cluster Namenode information +

localhost:8088/cluster/cluster

Search

hadoop

About the Cluster

Cluster Metrics

| | Apps Submitted | Apps Pending | Apps Running | Apps Completed | Containers Running | Memory Used | Memory Total | Memory Reserved | Vcores Used | Vcores Total | Vcores Reserved | Active Nodes | Standby Nodes |
|---|----------------|--------------|--------------|----------------|--------------------|-------------|--------------|-----------------|-------------|--------------|-----------------|--------------|---------------|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 B | 8 GB | 0 B | 0 | 8 | 0 | 1 | 0 |

Scheduler Metrics

| Scheduler Type | Scheduling Resource Type | Minimum Allocation |
|--------------------|--------------------------|-------------------------|
| Capacity Scheduler | [MEMORY] | <memory:1024, vCores:1> |

Cluster ID: 1626414170591
ResourceManager state: STARTED
ResourceManager HA state: active
ResourceManager HA zookeeper connection state: ResourceManager HA is not enabled.
ResourceManager RMStateStore: org.apache.hadoop.yarn.server.resourcemanager.recovery.NullRMStateStore
ResourceManager started on: Thu Jul 15 22:42:50 -0700 2021
ResourceManager version: 2.7.2 from b165c4fe8a74265c792ce23f546c64604acf0e41 by jenkins source checksum 2016-01-26T00:16Z
Hadoop version: 2.7.2 from b165c4fe8a74265c792ce23f546c64604acf0e41 by jenkins source checksum 2016-01-26T00:08Z

Activate Windows

10) INSTALL HADOOP 2.X AND CONFIGURE THE NAME NODE AND DATA NODE.

Step 7 - Modify Hadoop config files

//Hadoop Environmental variable setting – The following files will be modified

1. `~/.bashrc`
2. `/usr/local/hadoop/hadoop-2.7.2/etc/hadoop/hadoop-env.sh`
3. `/usr/local/hadoop/hadoop-2.7.2/etc/hadoop/core-site.xml`
4. `/usr/local/hadoop/hadoop-2.7.2/etc/hadoop/hdfs-site.xml`
5. `/usr/local/hadoop/hadoop-2.7.2/etc/hadoop/yarn-site.xml`
6. `/usr/local/hadoop/hadoop-2.7.2/etc/hadoop/mapred-site.xml.template`

```
$ sudo nano ~/.bashrc
```

// Add the following lines at the end of the file

```
export JAVA_HOME=/usr/lib/jvm/java-8-oracle
export HADOOP_HOME=/usr/local/hadoop/hadoop-2.7.2
export PATH=$PATH:$HADOOP_HOME/bin
export PATH=$PATH:$HADOOP_HOME/sbin
export HADOOP_MAPRED_HOME=$HADOOP_HOME
export HADOOP_COMMON_HOME=$HADOOP_HOME
export HADOOP_HDFS_HOME=$HADOOP_HOME
export YARN_HOME=$HADOOP_HOME
HADOOP_COMMON_LIB_NATIVE_DIR=$HADOOP_HOME/lib/native
export HADOOP_OPTS="-Djava.library.path=$HADOOP_HOME/lib"
export PATH=$PATH:/usr/local/hadoop/hadoop-2.7.2/bin
```

// Configure Hadoop Files

```
$ cd /usr/local/hadoop/hadoop-2.7.2/etc/hadoop/
```

```
$ sudo nano hadoop-env.sh
```

// Add following line in hadoop-env.sh – Set JAVA variable in Hadoop

```
# The java implementation to use.
export JAVA_HOME=/usr/lib/jvm/java-8-oracle
```

// Create datanode and namenode

```
$ sudo mkdir -p /usr/local/hadoop_tmp/hdfs/namenode  
$ sudo mkdir -p /usr/local/hadoop_tmp/hdfs/datanode  
// Changing ownership to hadoop_tmp  
$ sudo chown -R hduser:hadoop /usr/local/hadoop_tmp  
// Edit hdfs-site.xml  
$ sudo nano hdfs-site.xml
```

// Add the following lines between <configuration> </configuration>

```
<configuration>  
<property>  
<name>dfs.replication</name>  
<value>1</value>  
</property>  
<property>  
<name>dfs.namenode.name.dir</name>  
<value>file:/usr/local/hadoop_tmp/hdfs/namenode</value>  
</property>  
<property>  
<name>dfs.datanode.data.dir</name>  
<value>file:/usr/local/hadoop_tmp/hdfs/datanode</value>  
</property>  
</configuration>
```

// Edit core-site.xml

```
$ sudo nano core-site.xml
```

// Add the following lines between <configuration> </configuration>

```
<configuration>  
<property>  
<name>fs.default.name</name>  
<value>hdfs://localhost:9000</value>  
</property>  
</configuration>
```

// Edit yarn-site.xml

```
$ sudo nano yarn-site.xml
```

// Add the following lines between <configuration> </configuration>

```
<configuration>  
<property>  
<name>yarn.nodemanager.aux-services</name>  
<value>mapreduce_shuffle</value>  
</property>  
<property>
```

```
<name>yarn.nodemanager.aux-services.mapreduce.shuffle.class</name>
<value>org.apache.hadoop.mapred.Shuffle-Handler</value>
</property>
</configuration>
```

// Edit mapred-site.xmsudo

```
$ cp /usr/local/hadoop/hadoop-2.7.2/etc/hadoop/mapred-site.xml.template
/usr/local/hadoop/hadoop-2.7.2/etc/hadoop/mapred-site.xml
```

```
$ sudo nano mapred-site.xml
```

// Add the following lines between <configuration> </configuration>

```
<configuration>
<property>
<name>mapreduce.framework.name</name>
<value>yarn</value>
</property>
</configuration>
```

Step-8 – Format Hadoop File System

```
$ cd /usr/local/hadoop/hadoop-2.7.2/bin
$ hadoop namenode -format
```

Step 9 - Start Hadoop

```
$ cd /usr/local/hadoop/hadoop-2.7.2/sbin
```

// Starting dfs services

```
$ start-dfs.sh
```

// Starting mapreduce services

```
$ start-yarn.sh
```

```
$ jps
```

Step 10 - Check Hadoop through web UI

Go to browser type <http://localhost:8088> – All Applications Hadoop Cluster

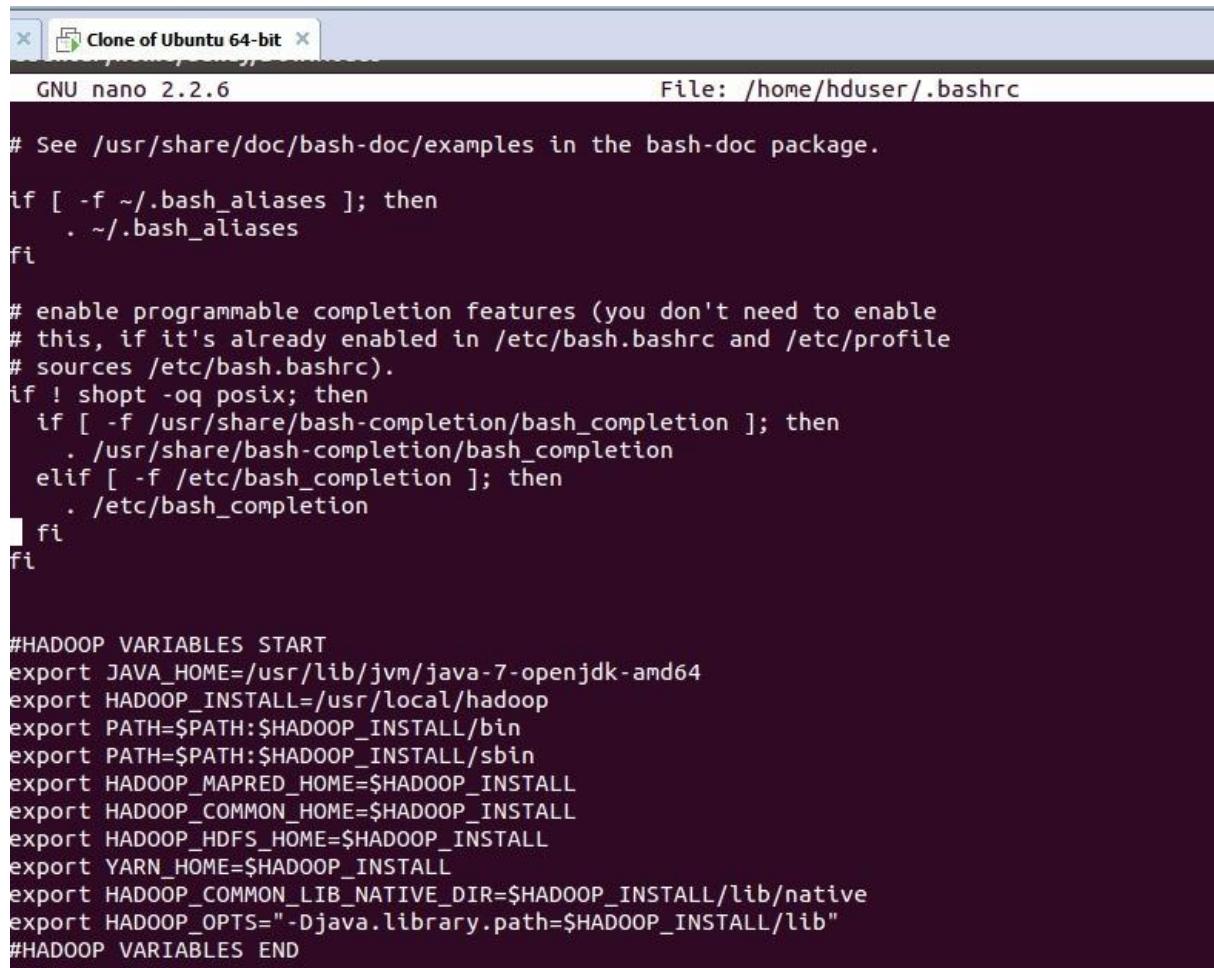
Go to browser type <http://localhost:50070> – Hadoop Namenode

Step 11 - Stop Hadoop

```
$ stop-dfs.sh
```

```
$ stop-yarn.sh
```

IMPLEMENTATION:



The screenshot shows a terminal window titled "Clone of Ubuntu 64-bit" with the file "/home/hduser/.bashrc" open in the nano editor. The code in the file is as follows:

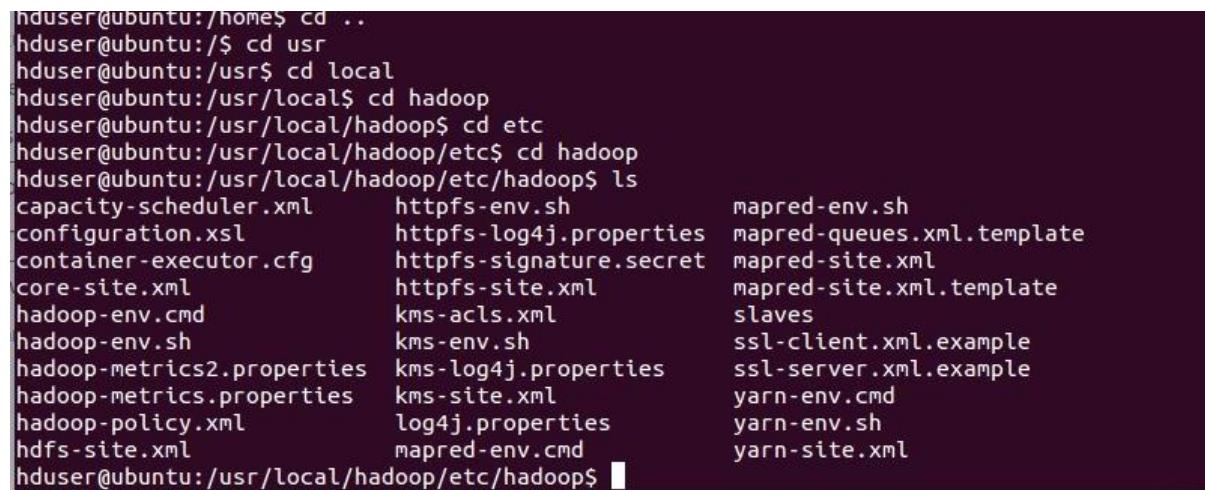
```
GNU nano 2.2.6 File: /home/hduser/.bashrc

# See /usr/share/doc/bash-doc/examples in the bash-doc package.

if [ -f ~/.bash_aliases ]; then
    . ~/.bash_aliases
fi

# enable programmable completion features (you don't need to enable
# this, if it's already enabled in /etc/bash.bashrc and /etc/profile
# sources /etc/bash.bashrc).
if ! shopt -oq posix; then
    if [ -f /usr/share/bash-completion/bash_completion ]; then
        . /usr/share/bash-completion/bash_completion
    elif [ -f /etc/bash_completion ]; then
        . /etc/bash_completion
    fi
fi

#HADOOP VARIABLES START
export JAVA_HOME=/usr/lib/jvm/java-7-openjdk-amd64
export HADOOP_INSTALL=/usr/local/hadoop
export PATH=$PATH:$HADOOP_INSTALL/bin
export PATH=$PATH:$HADOOP_INSTALL/sbin
export HADOOP_MAPRED_HOME=$HADOOP_INSTALL
export HADOOP_COMMON_HOME=$HADOOP_INSTALL
export HADOOP_HDFS_HOME=$HADOOP_INSTALL
export YARN_HOME=$HADOOP_INSTALL
export HADOOP_COMMON_LIB_NATIVE_DIR=$HADOOP_INSTALL/lib/native
export HADOOP_OPTS="-Djava.library.path=$HADOOP_INSTALL/lib"
#HADOOP VARIABLES END
```



The screenshot shows a terminal window with the following command history and output:

```
hduser@ubuntu:/home$ cd ..
hduser@ubuntu:$ cd usr
hduser@ubuntu:/usr$ cd local
hduser@ubuntu:/usr/local$ cd hadoop
hduser@ubuntu:/usr/local/hadoop$ cd etc
hduser@ubuntu:/usr/local/hadoop/etc$ cd hadoop
hduser@ubuntu:/usr/local/hadoop/etc/hadoop$ ls
capacity-scheduler.xml      httpfs-env.sh          mapred-env.sh
configuration.xsl           httpfs-log4j.properties  mapred-queues.xml.template
container-executor.cfg       httpfs-signature.secret mapred-site.xml
core-site.xml                httpfs-site.xml        mapred-site.xml.template
hadoop-env.cmd               kms-acls.xml         slaves
hadoop-env.sh                kms-env.sh           ssl-client.xml.example
hadoop-metrics2.properties   kms-log4j.properties  ssl-server.xml.example
hadoop-metrics.properties    kms-site.xml         yarn-env.cmd
hadoop-policy.xml            log4j.properties     yarn-env.sh
hdfs-site.xml                 mapred-env.cmd       yarn-site.xml
hduser@ubuntu:/usr/local/hadoop/etc/hadoop$
```

```
hduser@ubuntu: /usr/local/hadoop/etc/hadoop
GNU nano 2.2.6          File: hadoop-env.sh

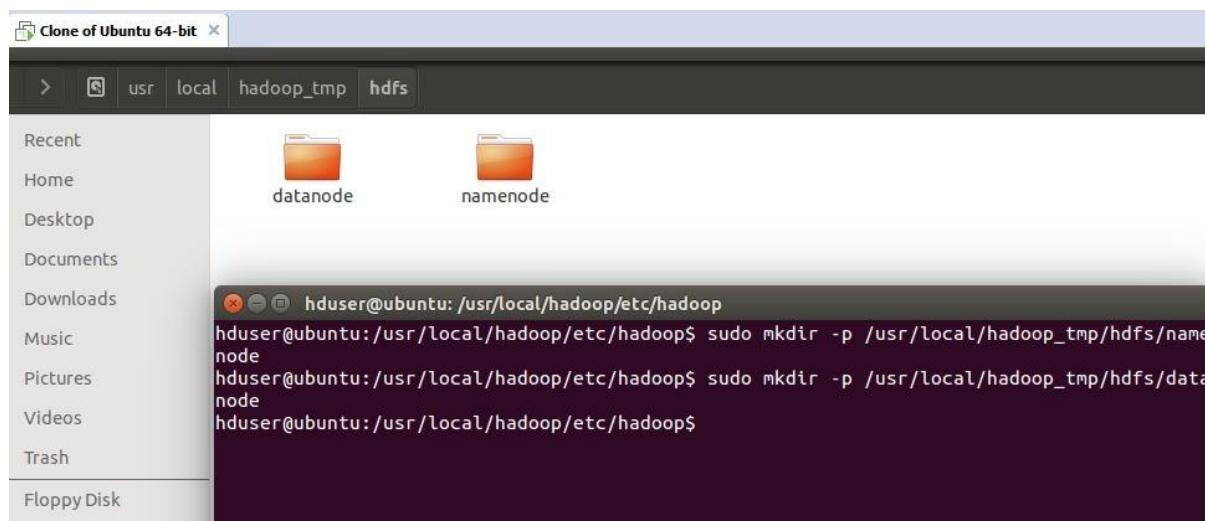
# distributed under the License is distributed on an "AS IS" BASIS,
# WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
# See the License for the specific language governing permissions and
# limitations under the License.

# Set Hadoop-specific environment variables here.

# The only required environment variable is JAVA_HOME. All others are
# optional. When running a distributed configuration it is best to
# set JAVA_HOME in this file, so that it is correctly defined on
# remote nodes.

# The java implementation to use.
export JAVA_HOME=/usr/lib/jvm/java-7-openjdk-amd64
export JAVA_HOME=${JAVA_HOME}

# The jsvc implementation to use. Jsvc is required to run secure datanodes
# that bind to privileged ports to provide authentication of data transfer
# protocol. Jsvc is not required if SASL is configured for authentication of
# data transfer protocol using non-privileged ports.
```



11) LAUNCH THE HADOOP 2.X AND PERFORM MAPREDUCE PROGRAMFOR A WORD COUNT PROBLEM

Step 1 - Open Terminal

```
$ su hduser
```

Password:

Step 2 - Start dfs and mapreduce services

```
$ cd /usr/local/hadoop/hadoop-2.7.2/sbin
```

```
$ start-dfs.sh
```

```
$ start-yarn.sh
```

```
$ jps
```

Step 3 - Check Hadoop through web UI

// Go to browser type <http://localhost:8088> – All Applications Hadoop Cluster

// Go to browser type <http://localhost:50070> – Hadoop Namenode

Step 4 – Open New Terminal

```
$ cd Desktop/
```

```
$ mkdir inputdata
```

```
$ cd inputdata/
```

```
$ echo "Hai, Hello, How are you? How is your health?" >> hello.txt
```

```
$ cat >> hello.txt
```

Step 5 – Go back to old Terminal

```
$ hadoop fs –copyFromLocal /home/hduser/Desktop/inputdata/hello.txt /folder/hduser
```

// Check in hello.txt in Namenode using Web UI

Step 6 – Download and open eclipse by creating workspace

Create a new java project.

Step 7 – Add jar to the project

You need to remove dependencies by adding jar files in the hadoop source folder. Now Click on **Project** tab and go to Properties.Under Libraries tab, click Add External JARs and select all the

jars in the folder (click on 1st jar, and Press Shift and Click on last jar to select all jars in between and click ok)

/usr/local/hadoop/hadoop-2.7.2/share/hadoop/commonand

/usr/local/hadoop/hadoop-2.7.2/share/hadoop/mapreduce folders.

Step -8 – WordCount Program

Create 3 java files named

- WordCount.java
- WordCountMapper.java
- WordCountReducer.java

WordCount.java

```
import org.apache.hadoop.conf.Configured;
import org.apache.hadoop.fs.Path;
import org.apache.hadoop.io.IntWritable;
import org.apache.hadoop.mapred.FileInputFormat;
import org.apache.hadoop.mapred.FileOutputFormat;
import org.apache.hadoop.mapred.JobClient;
import org.apache.hadoop.mapred.JobConf;

import org.apache.hadoop.util.Tool;
import org.apache.hadoop.util.ToolRunner;
import org.apache.hadoop.io.Text;

public class WordCount extends Configured implements Tool {

    @Override
    public int run(String[] arg0) throws Exception {
        // TODO Auto-generated method stub
        if(arg0.length<2)
        {
            System.out.println("check the command line arguments");
        }
        JobConf conf=new JobConf(WordCount.class);
        FileInputFormat.setInputPaths(conf, new Path(arg0[0]));
        FileOutputFormat.setOutputPath(conf, new Path(arg0[1]));
        conf.setMapperClass(WordMapper.class);
        conf.setReducerClass(WordReducer.class);
        conf.setOutputKeyClass(Text.class);
        conf.setOutputValueClass(IntWritable.class);
        conf.setOutputKeyClass(Text.class);
        conf.setOutputValueClass(IntWritable.class);
        JobClient.runJob(conf);

        return 0;
    }
    public static void main(String args[]) throws Exception
    {
        int exitcode=ToolRunner.run(new WordCount(), args);
        System.exit(exitcode);
    }
}
```

```
    }
}
```

WordCountMapper.java

```
import java.io.IOException;

import org.apache.hadoop.io.IntWritable;
import org.apache.hadoop.io.LongWritable;
import org.apache.hadoop.mapred.MapReduceBase;
import org.apache.hadoop.mapred.OutputCollector;
import org.apache.hadoop.mapred.Reporter;
import org.apache.hadoop.io.Text;
import org.apache.hadoop.mapred.Mapper;

public class WordCountMapper extends MapReduceBase implements
Mapper<LongWritable,Text,Text,IntWritable>
{
    @Override
    public void map(LongWritable arg0, Text arg1, OutputCollector<Text, IntWritable> arg2,
Reporter arg3)
        throws IOException {
        // TODO Auto-generated method stub

        String s=arg1.toString();
        for(String word:s.split(" "))
        {
            arg2.collect(new Text(word),new IntWritable(1));
        }
    }
}
```

WordCountReducer.java

```
import java.io.IOException;
import java.util.Iterator;
import org.apache.hadoop.io.IntWritable;
import org.apache.hadoop.mapred.JobConf;
import org.apache.hadoop.mapred.OutputCollector;
import org.apache.hadoop.mapred.Reducer;
import org.apache.hadoop.mapred.Reporter;
import org.apache.hadoop.io.Text;

public class WordCountReducer implements Reducer<Text,IntWritable,Text,IntWritable> {
    @Override
    public void configure(JobConf arg0) {
        // TODO Auto-generated method stub
    }
    @Override
    public void close() throws IOException {
        // TODO Auto-generated method stub
    }
}
```

```

    }
    @Override
    public void reduce(Text arg0, Iterator<IntWritable> arg1, OutputCollector<Text, IntWritable>
arg2, Reporter arg3)
        throws IOException {
        // TODO Auto-generated method stub
        int count=0;
        while(arg1.hasNext())
        {
            IntWritable i=arg1.next();
            count+=i.get();
        }
        arg2.collect(arg0,new IntWritable(count));
    }
}

```

Step 9 - Create JAR file

Now Click on the Run tab and click Run-Configurations. Click on New Configuration button on the left-top side and Apply after filling the following properties.

Step 10 - Export JAR file

Now click on File tab and select Export. under Java, select Runnable Jar.

In Launch Config – select the config fie you created in **Step 9** (WordCountConfig).

Select an export destination (lets say desktop.)

Under Library handling, select Extract Required Libraries into generated JAR and click Finish.

Right-Click the jar file, go to Properties and under **Permissionstab**, Check Allow executing file as a program. and give Read and Write access to all the users

Step 11 – Go back to old Terminal for Execution of WordCount Program

\$hadoop jar wordcount.jar/usr/local/hadoop/input/usr/local/hadoop/output

| Permission | Owner | Group | Size | Last Modified | Replication | Size | Name |
|------------|--------|------------|------|------------------------|-------------|------|---------|
| drwxr-xr-x | hduser | supergroup | 0 B | 8/12/2016, 12:20:50 AM | 0 | 0 B | cloud |
| drwxr-xr-x | hduser | supergroup | 0 B | 8/11/2016, 1:47:41 AM | 0 | 0 B | cse |
| drwxr-xr-x | hduser | supergroup | 0 B | 8/4/2016, 11:37:37 PM | 0 | 0 B | folder |
| drwxr-xr-x | hduser | supergroup | 0 B | 8/11/2016, 9:52:15 PM | 0 | 0 B | grid |
| drwxr-xr-x | hduser | supergroup | 0 B | 8/11/2016, 9:54:38 PM | 0 | 0 B | output |
| drwxr-xr-x | hduser | supergroup | 0 B | 8/11/2016, 11:54:23 PM | 0 | 0 B | project |
| drwx----- | hduser | supergroup | 0 B | 8/4/2016, 11:40:37 PM | 0 | 0 B | tmp |

Step 12 – To view results in old Terminal

```
$hdfs dfs -cat /usr/local/hadoop/output/part-r-00000
```

```
hadoop1@ubuntu-1:~/project$ hadoop fs -cat /output/wordcount4/part-r-00000
.
a 1
and 1
as 1
count 1
counts 1
file 2
for 1
input 1
is 1
job 1
job. 1
map 1
returns 1
sample 1
takes 1
```

Browsing HDFS - Mozilla Firefox

Browsing HDFS

localhost:50070/explorer.html#/output

Hadoop Overview Datanodes Snapshot Startup Progress Utilities

Browse Directory

/output Go!

| Permission | Owner | Group | Size | Last Modified | Replication | Block Size | Name |
|------------|--------|------------|------|-----------------------|-------------|------------|------------|
| -rw-r--r-- | hduser | supergroup | 0 B | 8/11/2016, 9:54:38 PM | 1 | 128 MB | _SUCCESS |
| -rw-r--r-- | hduser | supergroup | 44 B | 8/11/2016, 9:54:38 PM | 1 | 128 MB | part-00000 |

Step 13 - To Remove folders created using hdfs

```
$ hdfs dfs -rm -R /usr/local/hadoop/output
```