



SAVEETHA SCHOOL OF ENGINEERING
SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCES
DEPARTMENT OF COMPUTER SCIENCE AND
ENGINEERING



LAB MANUAL

CSA15

**CLOUD COMPUTING AND BIG
DATA ANALYTICS**



SAVEETHA SCHOOL OF ENGINEERING
SAVEETHA INSTITUTE OF MEDICAL AND TECHNICAL SCIENCES
DEPARTMENT OF COMPUTER SCIENCE AND
ENGINEERING



CSE DEPARTMENT VISION-MISSION

Vision of the Department

To establish an environment to provide quality education and Inculcate research attributes among computer science engineering graduates through problem solving skills and technological innovations.

Mission of the Department

M1

To create and sustain an academic environment to the highest level in teaching and research by enhancing the knowledge of the faculties and students in technological advancements to solve real time problems.

M2

Providing a suitable environment for the students to develop professionalism with knowledge in Computer Science & Engineering to meet the contemporary industry needs and satisfy global standards.

M3

To facilitate the development of professional behaviour and stronger ethical values so as to work with commitment for the progress of the nation and face challenges with ethical and social responsibility.

Course Outcomes (CO)

CO7	Able to show resource provisioning in the cloud services using VMware workstation and CSP	PO5
CO8	Ability to use the Hadoop Distributed File Systems using Hadoop.	PO5
CO9	Ability to identify suitable Cloud deployment services and BigData analytics to find solutions to real time problems.	PO10
CO10	Ability to identify the solution for real time applications using Cloud and Big Data Analytics	PO10

INSTRUCTIONS FOR THE EXPERIMENTS

1. Students are advised to come to the laboratory on time; those who come after 5 minutes will not be allowed into the lab.
2. Plan your task properly much before to the commencement, come prepared to the lab with the synopsis / program / experiment details. Student should enter into the laboratory with:
 - Laboratory observation notes with all the details (Problem statement, Aim, Implementation, Steps, Program, Expected Output, etc.,) filled in for the lab session.
 - Laboratory Record updated up to the last session experiments and other utensils (if any) needed in the lab.
 - Proper Dress code and Identity card.
 - Sign in the laboratory login register, write the TIME-IN, and occupy the computer system allotted to you by the faculty.
 - Execute your task in the laboratory, and record the results / output in the lab observation note book, and get certified by the concerned faculty.
 - All the students should be polite and cooperative with the laboratory staff, must maintain the discipline and decency in the laboratory.
 - Computer labs are established with sophisticated and high-end branded systems, which should be utilized properly.
 - Students / Faculty must keep their mobile phones in SWITCHED OFF mode during the lab sessions. Misuse of the equipment, misbehaviors with the staff and systems etc., will attract severe punishment.
 - Students must take the permission of the faculty in case of any urgency to go out; if anybody found loitering outside the lab / class without permission during working hours will be treated seriously and punished appropriately.
 - Students should LOG OFF/ SHUT DOWN the computer system before he/she leaves the lab after completing the task (experiment) in all aspects. He/she must ensure the system / seat is kept properly.



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DO'S AND DON'TS

- ✓ Be on time to lab and maintain silence.
- ✓ Inform the instructor /TA in case of any working environment problem.
- ✓ Be aware of all the safety devices. Even through the instructor and TA will take care of emergencies.
- ✓ Bring all the necessary things required to do laboratory experiments like observation notebook, record notebook and any others.
- ✓ Enter the system number, in-time, out-time register number, name and signature in the students log register.
- ✓ Arrange the seating chairs and system accessories in place at the end of the session.
- ✓ Shut down the system properly and switch off the power switch at the end of the session.
- ✓ Keep your bags in front of the labs empty space.
- ✓ Do not eat, drink, chew gum, smoke or apply cosmetics in the lab.
- ✓ Do not unplug/plug any wires of the system connectivity.
- ✓ Do not use or charge the mobile phone or any electronic gadgets inside the lab.
- ✓ Not to troubleshoot by yourself without knowledge of instructor/TA.
- ✓ Do not open any unnecessary applications in system.
- ✓ Mobiles phones are prohibited inside the lab.
- ✓ Do not share a system to do experiments.

Students strictly follow all the above instructions



SAVEETHA SCHOOL OF ENGINEERING

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

**CSA15 – CLOUD COMPUTING AND BIG DATA
ANALYTICS LABORATORY**

LIST OF EXPERIMENTS

SNO	EXPERIMENT NAME	Blooms Taxonomy	CO	PO
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).	K03, K04	C07	PO5
2.	Create a simple cloud software application for Flight Reservation System using any Cloud Service Provider to demonstrate SaaS	K03, K04	C07	PO5
3.	Create a simple cloud software application for Property Buying & Rental process (In Chennai city) using any Cloud Service Provider to demonstrate SaaS	K03, K04	C07	PO5
4.	Create a simple cloud software application for Car Booking Reservation System using any Cloud Service Provider to demonstrate SaaS.	K03, K04	C07	PO5
5.	Create a simple cloud software application for Library book reservation system for SIMATS library using any Cloud Service Provider to demonstrate SaaS	K03, K04	C07	PO5
6.	Create a simple cloud software application for product selling using any cloud service provider to demonstrate saas.	K03, K04	C07	PO5
7.	Demonstrate virtualization by Installing Type-2 Hypervisor in your device, create and configure VM image with a Host Operating system (Either Windows/Linux).	K03, K04	C07	PO5

8.	Create a Virtual Machine with 1 CPU, 2GB RAM and 15GB storage disk using a Type 2 Virtualization Software.	K03, K04	C07	P05
9.	Create a Virtual Hard Disk and allocate the storage using VM ware Workstation	K03, K04	C07	P05
10.	Create a Snapshot of a VM and Test it by loading the Previous Version/Cloned VM	K03, K04	C07	P05
11.	Create a Cloning of a VM and Test it by loading the Previous Version/Cloned VM	K03, K04	C07	P05
12.	Change Hardware compatibility of a VM (Either by clone/create new one) which is already created and configured.	K03, K04	C07	P05
13.	Demonstrate Infrastructure as a Service (IaaS) by creating a resources group using a Public Cloud Service Provider (Azure), configure with minimum CPU, RAM, and Storage.	K03, K04	C07	P05
14.	Demonstrate Infrastructure as a Service (IaaS) by creating a Virtual Machine using a Public Cloud Service Provider (Azure), configure with required memory and CPU.	K03, K04	C07	P05
15.	Demonstrate Infrastructure as a Service (IaaS) by establishing the remote connection, launch the created VM image and run in your desktop.	K03, K04	C07	P05
16.	Demonstrate Platform as a Service (PaaS) create and configure a new VM Image in any Public Cloud Service Provider	K03, K04	C07	P05
17.	Create a Simple Web Application using Java or Python and host it in any Public Cloud Service Provider (Azure/GCP/AWS) to demonstrate Platform as a Service (PaaS).	K03, K04	C07	P05
18.	Demonstrate Storage as a Service (SaaS) create and configure a new VM Image in any Public Cloud Service Provider	K03, K04	C07	P05
19.	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.	K03, K04	C07	P05
20.	Database as a Service (DaaS) create and configure a new VM Image in any Public Cloud Service Provider	K03, K04	C07	P05
21.	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)	K03, K04	C08	P05

22.	Perform the basic configuration setup for installing HADOOP 2.x like creating the HDUSER and SSH localhost	K03, K04	CO8	PO5
23.	Install Hadoop 2.x and configure the Name Node and Data Node.	K03, K04	CO8	PO5
24.	Launch the Hadoop 2.x and test the Map-Reduce Platform with Hadoop.	K03, K04	CO8	PO5
25.	Launch the Hadoop 2.x and perform Map-Reduce program For a word count problem	K03, K04	CO8	PO5

EXP NO 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).

DATE:

AIM:

To create a simple cloud software application and provide it as a service using any cloud service provider to demonstrate software as a service (saas).

PROCEDURE:

STEP 1: GOTO ZOHO.COM

STEP 2: LOGIN TO THE ZOHO.COM

STEP 3: SELECT ONE APPLICATION

STEP 4: ENTER APPLICATION NAME

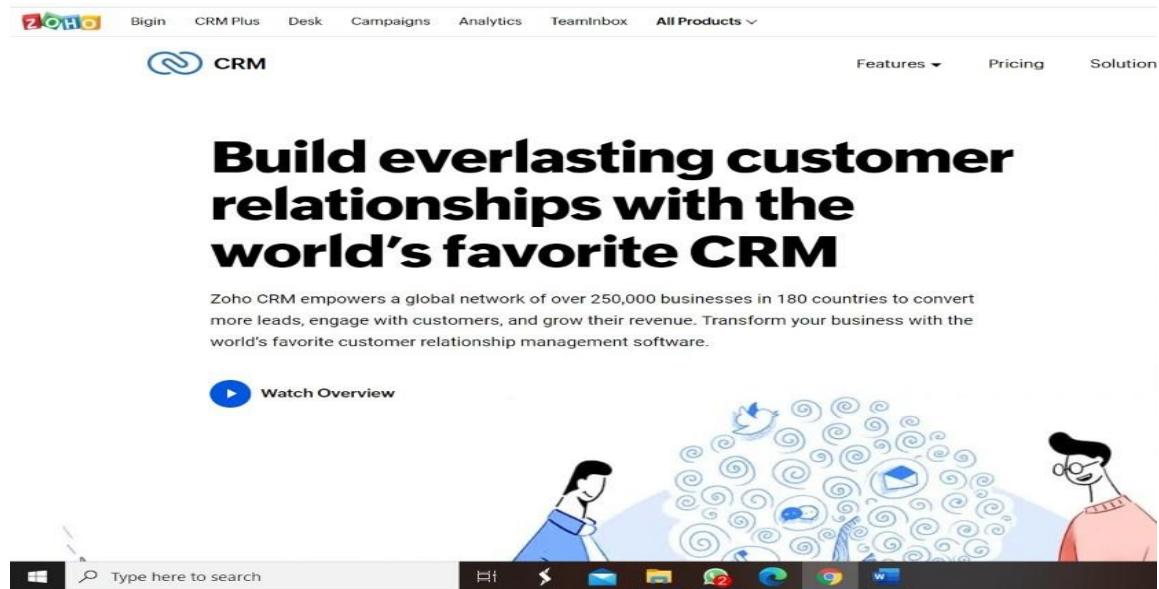
STEP 5: CREATED NEW APPLICATION

STEP 6: SELECT ONE FORM

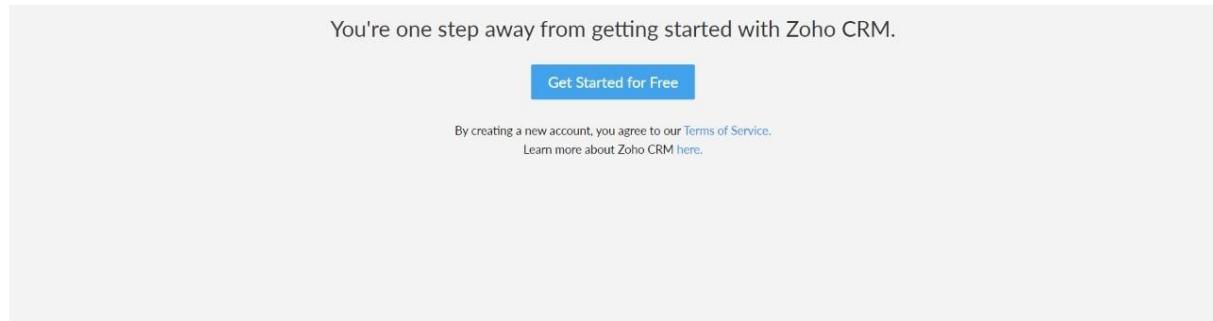
STEP 7: THE SOFTWARE HAS BEEN CREATED.

IMPLEMENTATION:

STEP1: GOTO ZOHO.COM



STEP 2: LOGINTO THE ZOHO.COM



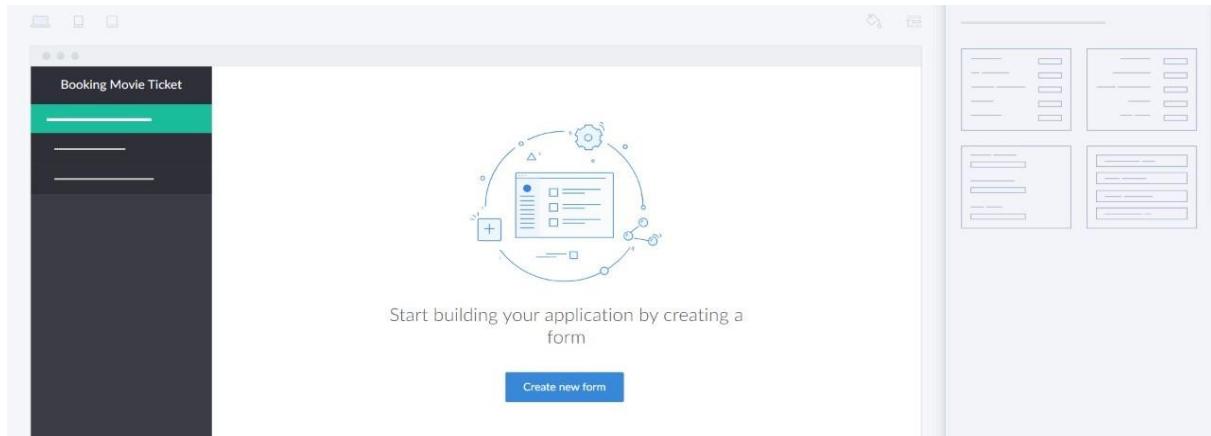
STEP 3: SELECT ONE APPLICATION

A screenshot of the Zoho Application Gallery. The title is "Create Application". A search bar at the top says "Start typing to search for applications...". Below it, there are two rows of application cards. The first row includes "Create from scratch" (with a plus sign icon), "Sales Management" (blue icon with people), "Order Management" (orange icon with a shopping cart), and "Employee Management" (blue icon with people). The second row includes "IT Asset Tracker" (green icon with a computer monitor), "Event Management" (blue icon with a calendar), "Course Planner" (black icon with a person), and "Expenses" (green icon with a credit card). A "Cancel" button is in the top right corner.

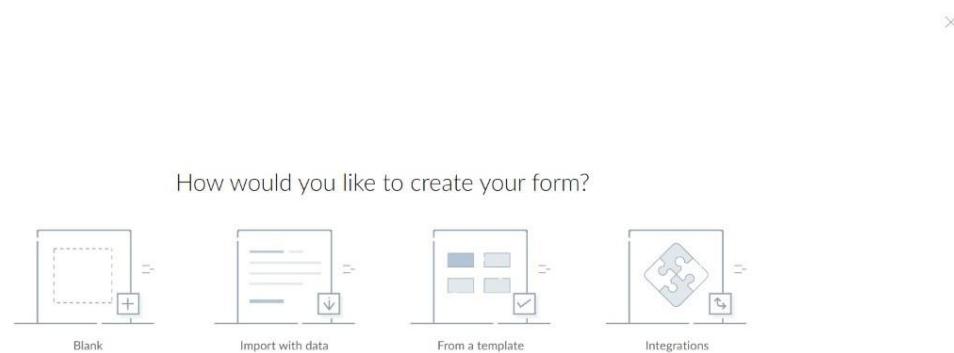
STEP 4: ENTER APPLICATION NAME

A screenshot of the Zoho Application Gallery with an "Enter Application Name" input dialog open. The dialog has a text input field with placeholder text "Examples: Campaign Monitor, Order Management" and a "Create" button. The rest of the application gallery interface is visible in the background, showing the same grid of application cards as in Step 3.

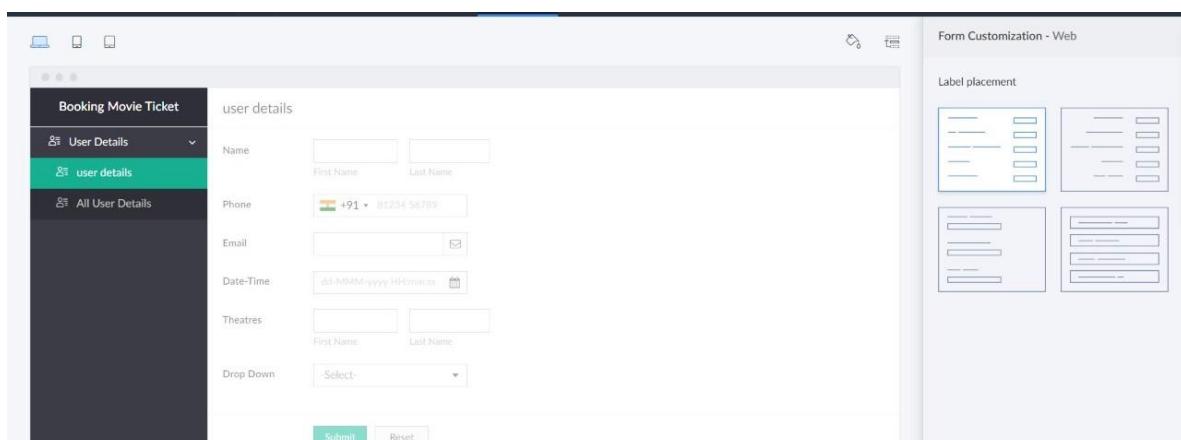
STEP 5: CREATED NEW APPLICATION



STEP 6: SELECT ONE FORM



STEP 7: THE SOFTWARE HASE BEEN CREATED.



Booking Movie Ticket
user details

Basic Fields

Name	Email
Address	Phone
Single Line	Multi Line
123	Date
Time	Drop Down

Name

Phone

Email

Date-Time

Theatres

Drop Down

Field Properties

Field name: Name

Field link name: Name

Validation: Mandatory

Display Fields

Prefix

First Name

Last Name

Suffix

Data Privacy

Done

EXP NO 2: CREATE A SIMPLE CLOUD SOFTWARE APPLICATION FOR FLIGHT RESERVATION SYSTEM USING ANY CLOUD SERVICE PROVIDER TO DEMONSTRATE SAAS.

DATE:

AIM:

To create a simple cloud software application for flight reservation system using any cloud service provider to demonstrate saas.

PROCEDURE:

step1: Go to zoho.com.

step 2: Log into the zoho.com.

step 3: Select one application step.

step4: Enter application name as flight reservation system.

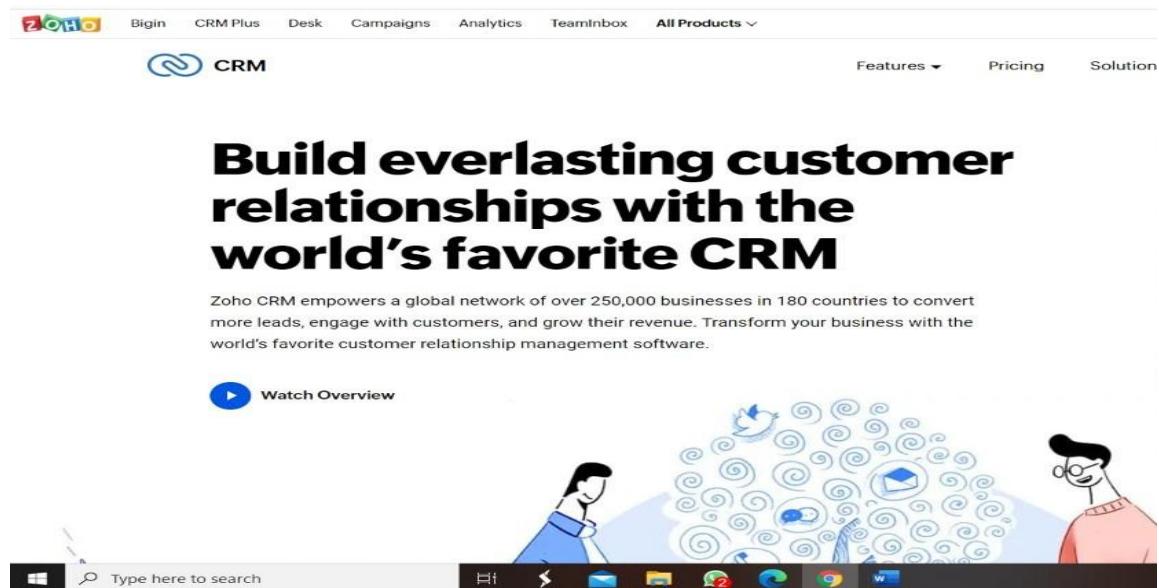
step 5: Created new application flight reservation system.

step 6: Select one form

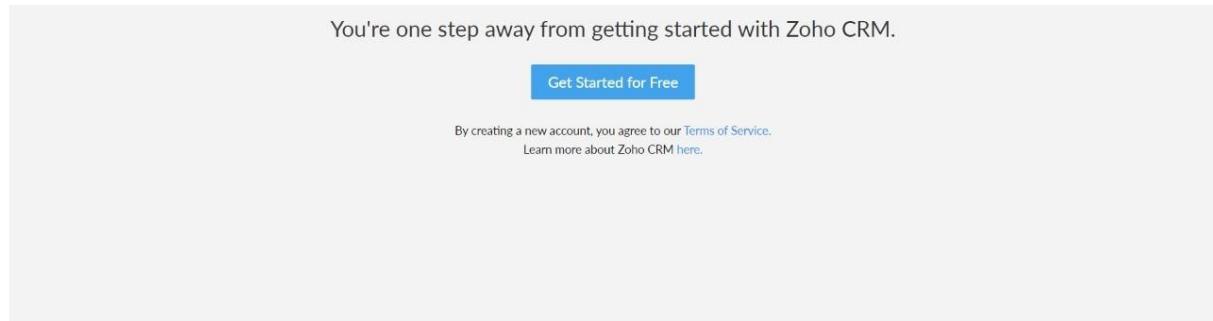
step 7: The software has been created.

IMPLEMENTATION:

STEP1: GOTO ZOHO.COM



STEP 2: LOGINTO THE ZOHO.COM



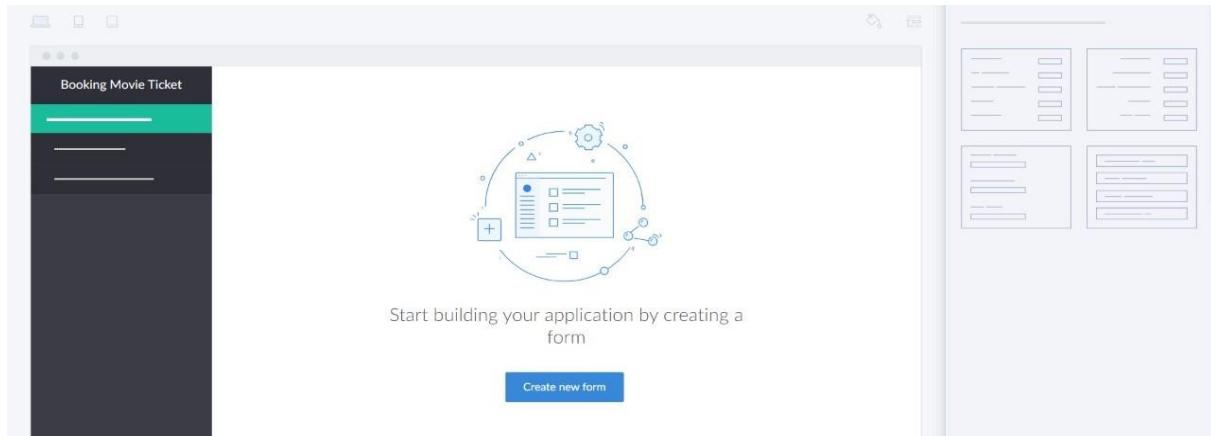
STEP 3: SELECT ONE APPLICATION

A screenshot of the Zoho Application Gallery. The title is "Create Application". A search bar at the top says "Start typing to search for applications...". Below it, there are two rows of application cards. The first row includes "Create from scratch" (with a plus icon), "Sales Management" (blue icon), "Order Management" (orange icon), and "Employee Management" (blue icon). The second row includes "IT Asset Tracker" (green icon), "Event Management" (blue icon), "Course Planner" (black icon), and "Expenses" (green icon). A navigation bar at the top right shows categories: All, Information Technology, Business, Sales & Marketing, Education, and More.

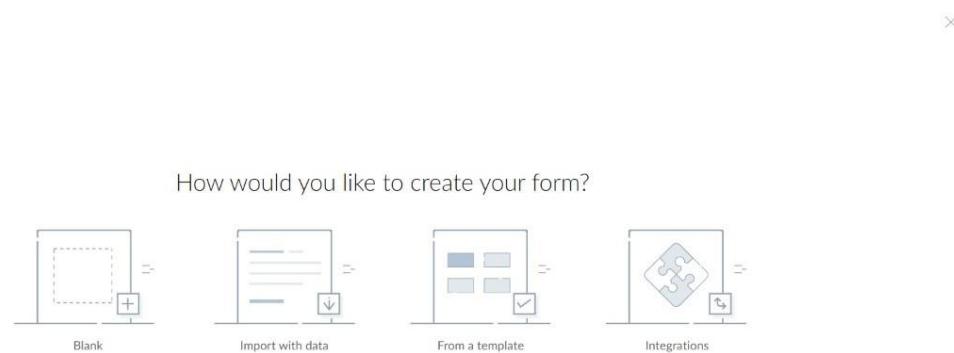
STEP 4: ENTER APPLICATION NAME

A screenshot of the Zoho Application Gallery with an "Enter Application Name" input dialog open. The dialog has a text input field with placeholder text "Examples: Campaign Monitor, Order Management" and a "Create" button. The rest of the interface is identical to the previous screenshot, showing the application cards and navigation bar.

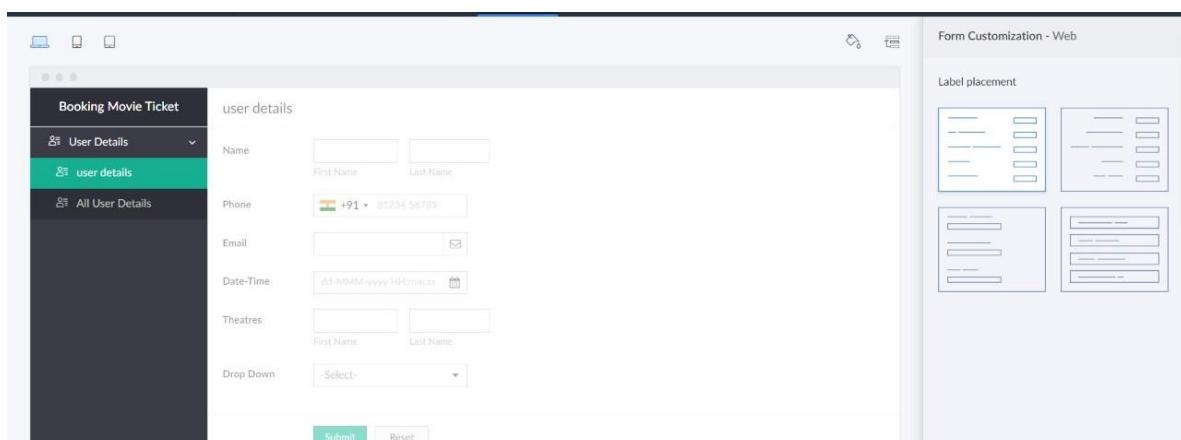
STEP 5: CREATED NEW APPLICATION



STEP 6: SELECT ONE FORM



STEP 7: THE SOFTWARE HASE BEEN CREATED.



Booking Movie Ticket
user details

Basic Fields

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

Name

Phone

Email

Date-Time

Theatres

Drop Down

Field Properties

Field name: Name

Field link name: Name

Validation: Mandatory

Display Fields

Prefix

First Name

Last Name

Suffix

Data Privacy

Done

EXP NO 3: CREATE A SIMPLE CLOUD SOFTWARE APPLICATION FOR PROPERTY BUYING & RENTAL PROCESS (IN CHENNAI CITY) USING ANY CLOUD SERVICE PROVIDER TO DEMONSTRATE SAAS.

DATE:

AIM:

To Create a simple cloud software application for Property Buying & Rental process (In Chennai city) using any Cloud Service Provider to demonstrate SaaS.

PROCEDURE:

step1: Go to zoho.com.

step 2: Log into the zoho.com.

step 3: Select one application step.

step4: Enter application name as property buying & rental.

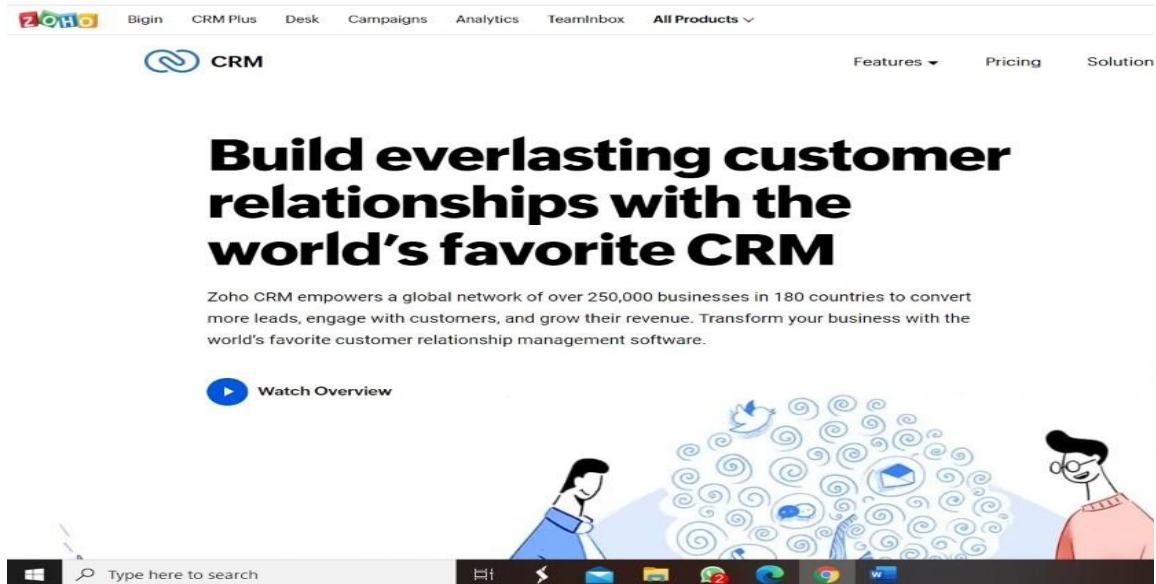
step 5: Created new application as property buying & rental.

step 6: Select one form

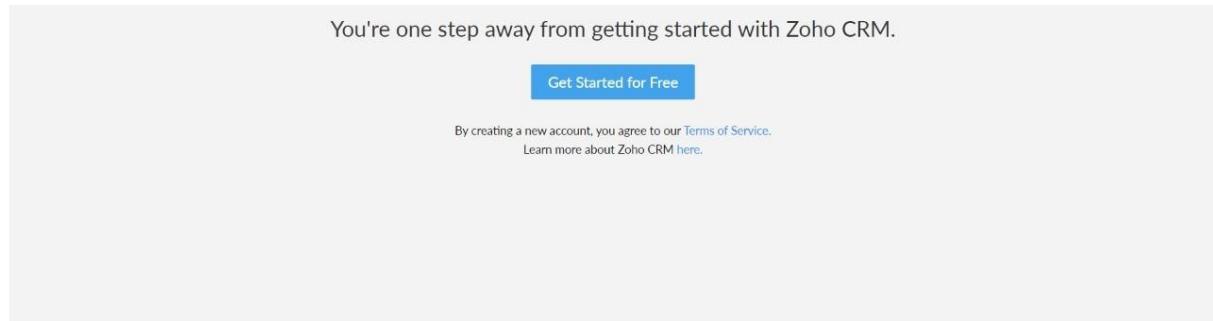
step 7: The software has been created.

IMPLEMENTATION:

STEP1: GOTO ZOHO.COM



STEP 2: LOGINTO THE ZOHO.COM



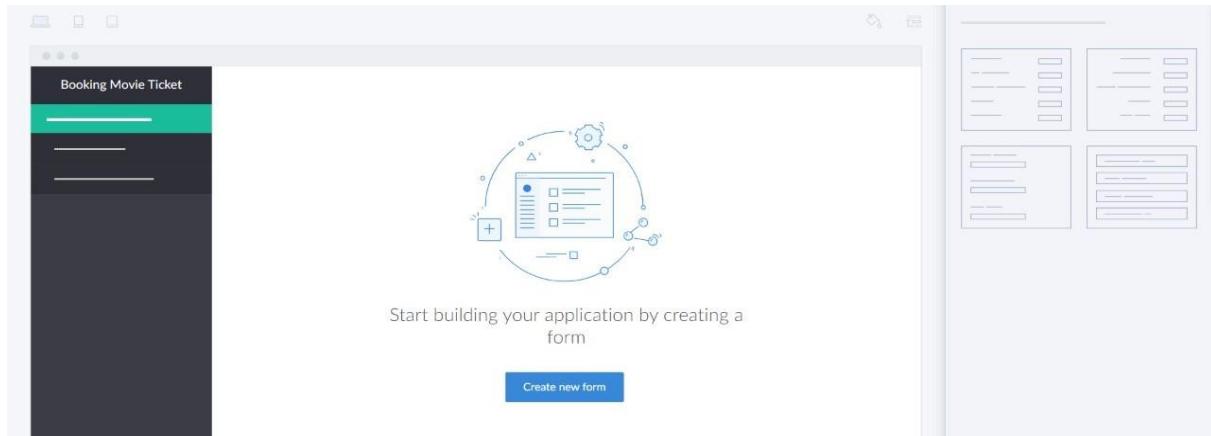
STEP 3: SELECT ONE APPLICATION

A screenshot of the Zoho Application Gallery. The title is "Create Application" with a "Cancel" button. A search bar at the top says "Start typing to search for applications...". Below it, a filter bar shows categories: All, Information Technology, Business, Sales & Marketing, Education, and More. The main area displays eight application cards in a grid:- Create from scratch (dashed border)
- Sales Management
- Order Management
- Employee Management
- IT Asset Tracker
- Event Management
- Course Planner
- Expenses
Each card includes a small icon, the application name, and a brief description.

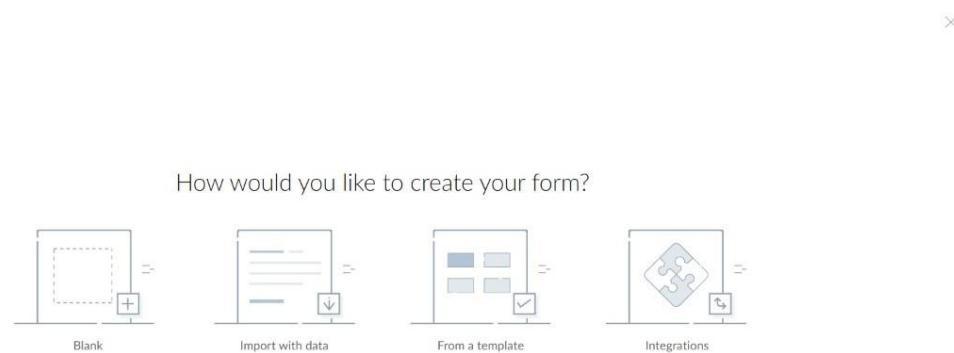
STEP 4: ENTER APPLICATION NAME

A screenshot of the Zoho Application Gallery with an "Enter Application Name" overlay. The overlay has a close button "X" and a text input field containing "Examples: Campaign Monitor, Order Management". Below the input field is a "Create" button. The rest of the interface is identical to the previous screenshot, showing the application cards and navigation elements.

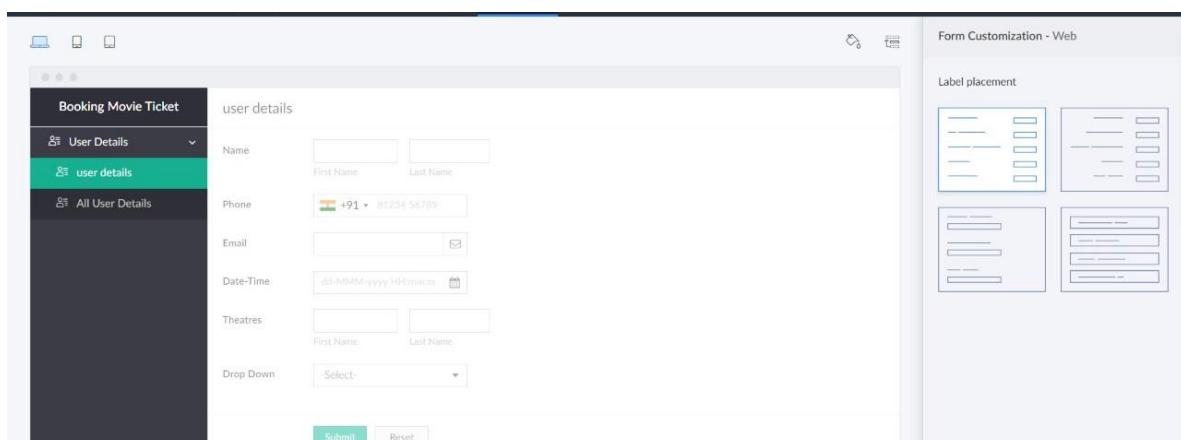
STEP 5: CREATED NEW APPLICATION



STEP 6: SELECT ONE FORM



STEP 7: THE SOFTWARE HASE BEEN CREATED.



Booking Movie Ticket
user details

Basic Fields

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

Name

Phone

Email

Date-Time

Theatres

Drop Down

Field Properties

Field name: Name

Field link name: Name

Validation: Mandatory

Display Fields

Prefix

First Name

Last Name

Suffix

Data Privacy

Done

EXP NO 4: CREATE A SIMPLE CLOUD SOFTWARE APPLICATION FOR CAR BOOKING RESERVATION SYSTEM USING ANY CLOUD SERVICE PROVIDER TO DEMONSTRATE SaaS.

DATE:

AIM:

To Create a simple cloud software application for Car Booking Reservation System using any Cloud Service Provider to demonstrate SaaS.

PROCEDURE:

step1: Go to zoho.com.

step 2: Log into the zoho.com.

step 3: Select one application step.

step4: Enter application name as Car Booking Reservation System.

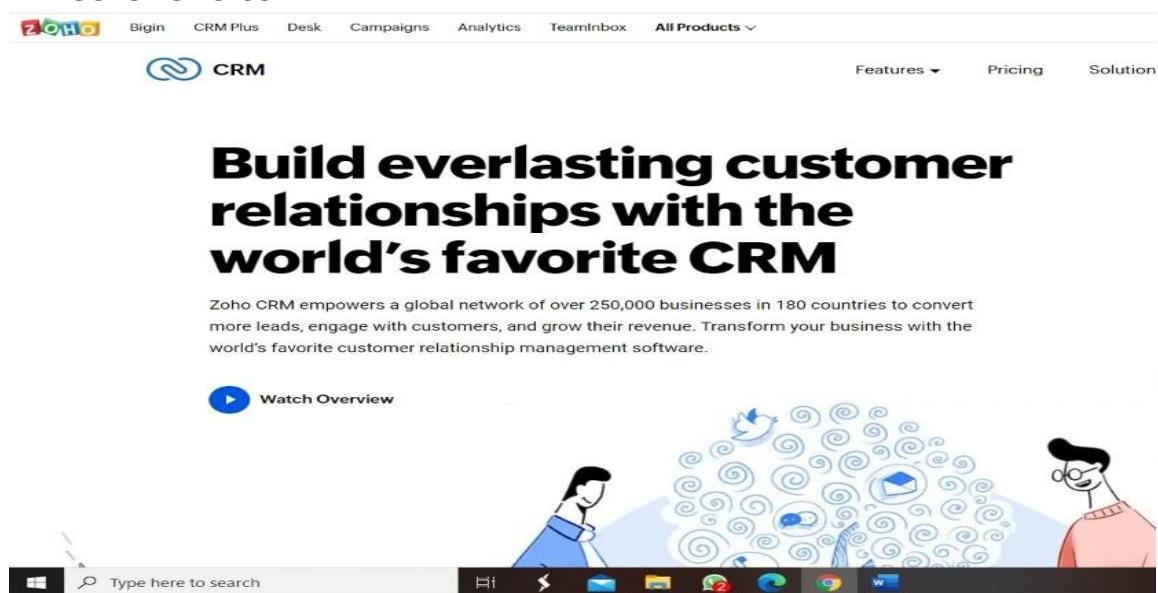
step 5: Created new application as Car Booking Reservation System.

step 6: Select one form

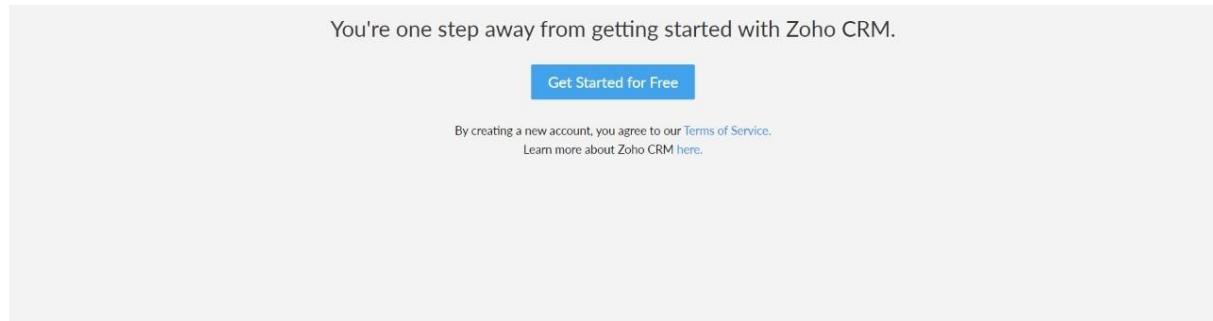
step 7: The software has been created.

IMPLEMENTATION:

STEP1: GOTO ZOHO.COM



STEP 2: LOGINTO THE ZOHO.COM



STEP 3: SELECT ONE APPLICATION

This screenshot shows the "Create Application" page. At the top, there's a search bar with placeholder text "Start typing to search for applications..." and a "Cancel" button. Below the search bar, there are several application cards arranged in a grid. The cards include:

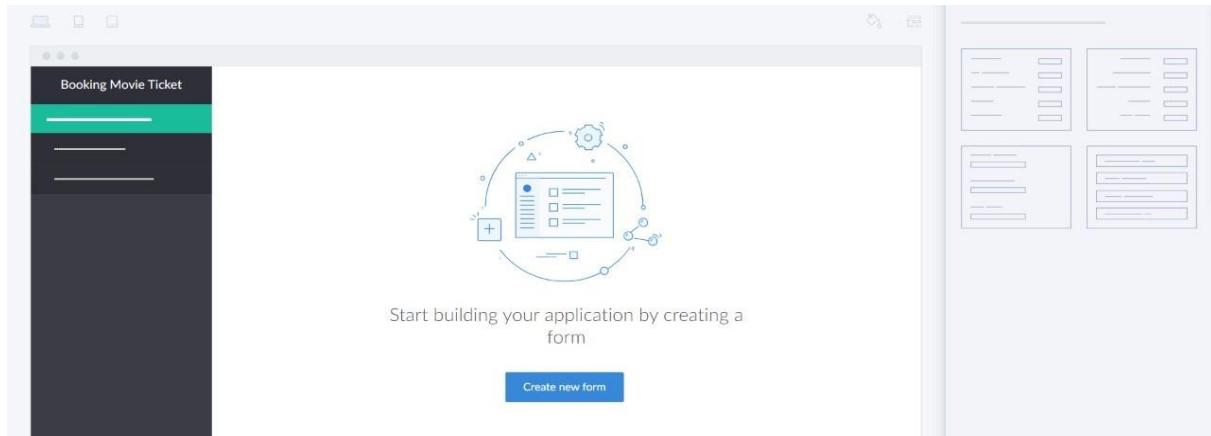
- Create from scratch**: A card with a plus sign icon.
- Sales Management**: A card with a blue square icon containing three people.
- Order Management**: A card with an orange square icon containing a shopping cart.
- Employee Management**: A card with a blue square icon containing three people.
- IT Asset Tracker**: A card with a green square icon containing a computer monitor.
- Event Management**: A card with a blue square icon containing a calendar.
- Course Planner**: A card with a black square icon containing a graduation cap.
- Expenses**: A card with a green square icon containing a credit card.

At the bottom of the page, there are navigation links: All, Information Technology, Business, Sales & Marketing, Educ..., and More.

STEP 4: ENTER APPLICATION NAME

This screenshot shows the "Create Application" page again, but with a modal dialog open in the center. The dialog is titled "Enter Application Name" and has a text input field with placeholder text "Examples: Campaign Monitor, Order Management". Below the input field is a blue "Create" button. The rest of the page is dimmed, indicating the dialog is active.

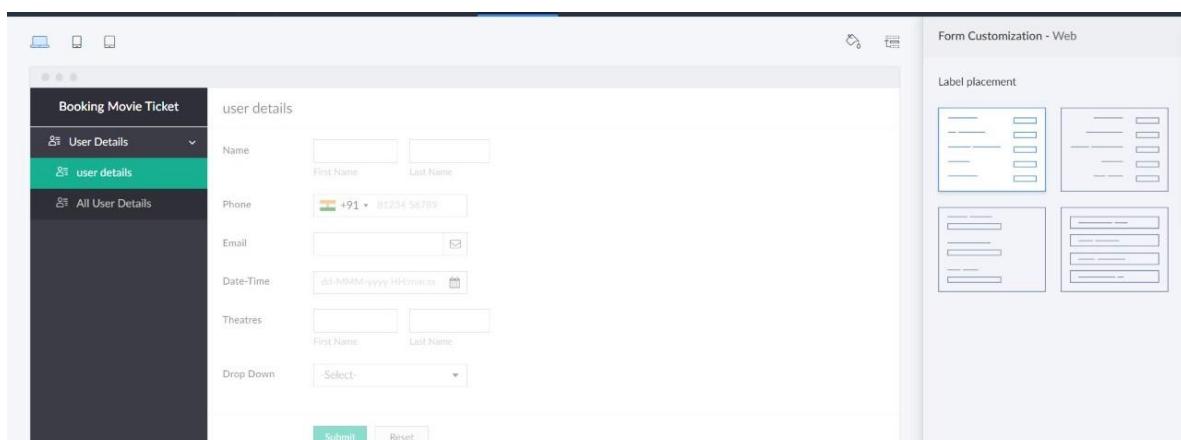
STEP 5: CREATED NEW APPLICATION



STEP 6: SELECT ONE FORM



STEP 7: THE SOFTWARE HASE BEEN CREATED.



Booking Movie Ticket

user details

Basic Fields

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

Name

Phone

Email

Date-Time

Theatres

Drop Down

Field Properties

Field name

Field link name

Validation Mandatory

Display Fields Prefix First Name Last Name Suffix

Data Privacy

Done

EXP NO 5: CREATE A SIMPLE CLOUD SOFTWARE APPLICATION FOR LIBRARY BOOK RESERVATION SYSTEM FOR SIMATS LIBRARY USING ANY CLOUD SERVICE PROVIDER TO DEMONSTRATE SAAS

DATE:

AIM:

To Create a simple cloud software application for Library book reservation system for SIMATS library using any Cloud Service Provider to demonstrate SaaS

PROCEDURE:

step1: Go to zoho.com.

step 2: Log into the zoho.com.

step 3: Select one application step.

step4: Enter application name as library book reservation system.

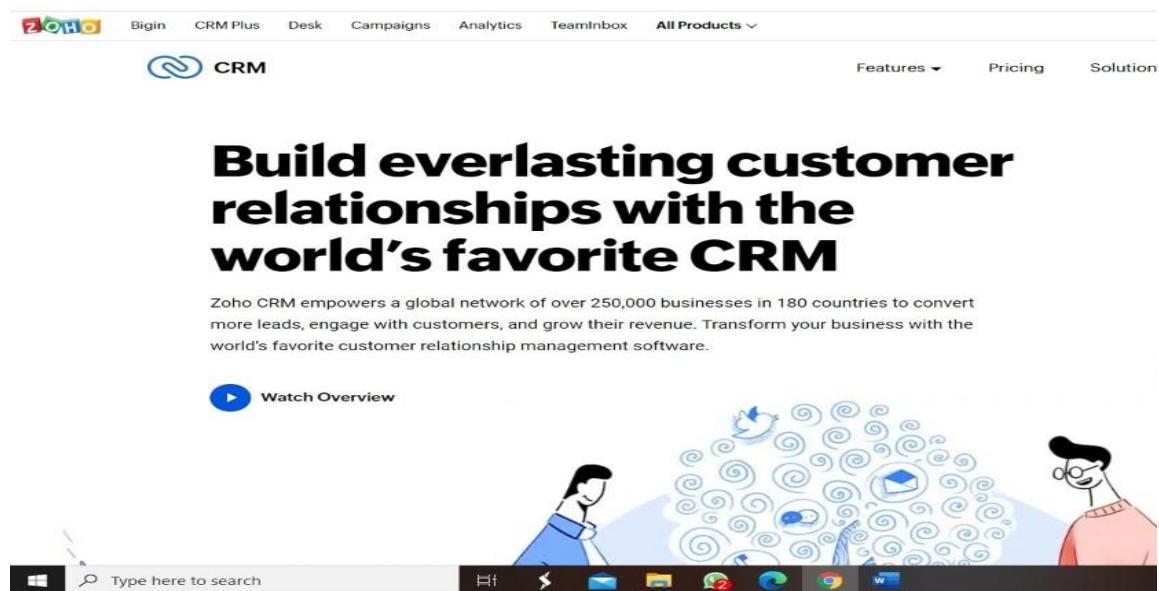
step 5: Created new application as library book reservation system.

step 6: Select one form

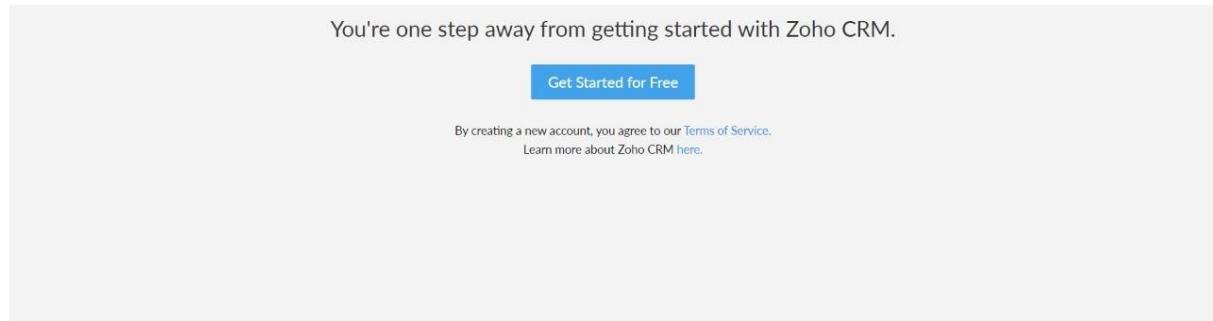
step 7: The software has been created.

IMPLEMENTATION:

STEP1: GOTO ZOHO.COM



STEP 2: LOGIN TO THE ZOHO.COM



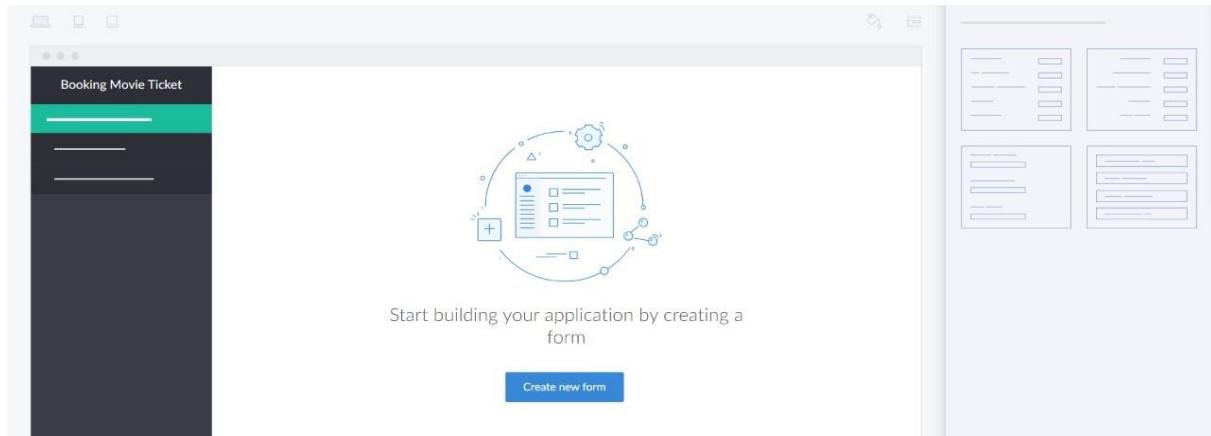
STEP 3: SELECT ONE APPLICATION

A screenshot of the "Create Application" interface. At the top, there's a search bar with placeholder text "Start typing to search for applications...". Below the search bar, there are several application cards arranged in a grid. The cards include: "Create from scratch" (with a plus sign icon), "Sales Management" (blue icon with three people), "Order Management" (orange icon with a shopping cart), "Employee Management" (blue icon with three people), "IT Asset Tracker" (green icon with a computer monitor), "Event Management" (blue icon with a calendar), "Course Planner" (black icon with a person and a gear), and "Expenses" (green icon with a credit card). Each card has a brief description below it. A navigation bar at the top right includes buttons for "All", "Information Technology", "Business", "Sales & Marketing", "Educ...", and "More". A "Cancel" button is located in the top right corner of the main content area.

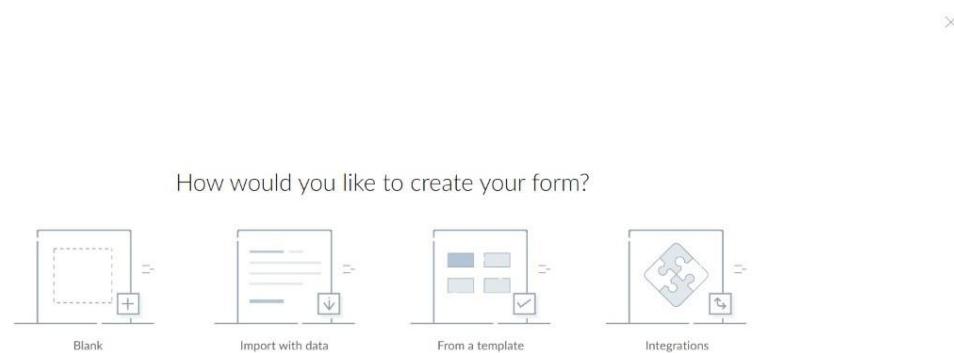
STEP 4: ENTER APPLICATION NAME

A screenshot of the "Create Application" interface, similar to the previous one but with a modal window open. The modal is titled "Enter Application Name" and contains a text input field with the placeholder "Examples: Campaign Monitor, Order Management" and a "Create" button below it. The background of the main interface is dimmed. The same application cards as in the previous screenshot are visible, though some are partially obscured by the modal. The navigation bar and "Cancel" button are also present.

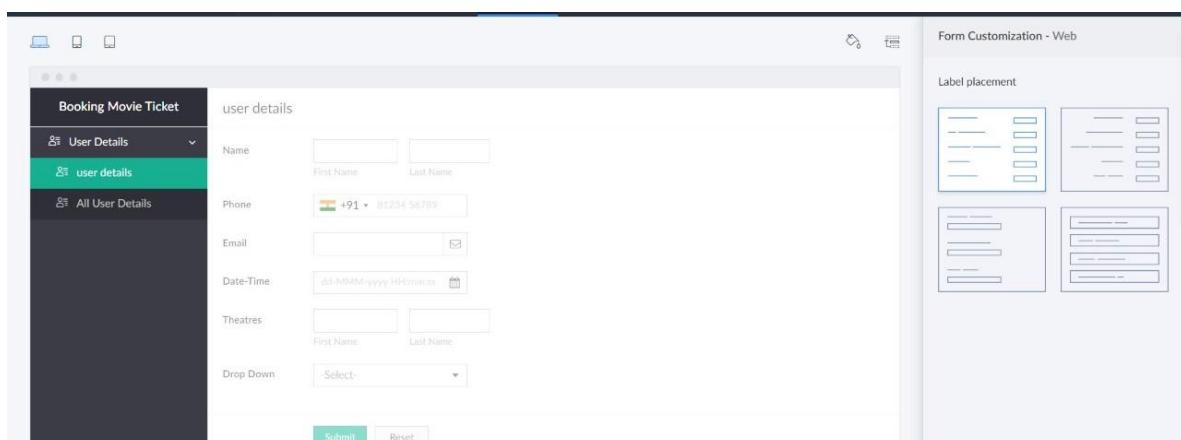
STEP 5: CREATED NEW APPLICATION



STEP 6: SELECT ONE FORM



STEP 7: THE SOFTWARE HASE BEEN CREATED.



Booking Movie Ticket
user details

Basic Fields

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

Name

Phone

Email

Date-Time

Theatres

Drop Down

Field Properties

Field name: Name

Field link name: Name

Validation: Mandatory

Display Fields

Prefix

First Name

Last Name

Suffix

Data Privacy

Done

EXP NO 6: CREATE A SIMPLE CLOUD SOFTWARE APPLICATION FOR PRODUCT SELLING USING ANY CLOUD SERVICE PROVIDER TO DEMONSTRATE SAAS.

DATE:

AIM:

To create a simple cloud software application for product selling using any cloud service provider to demonstrate saas.

PROCEDURE:

step1: Go to zoho.com.

step 2: Log into the zoho.com.

step 3: Select one application step.

step4: Enter application name as product selling.

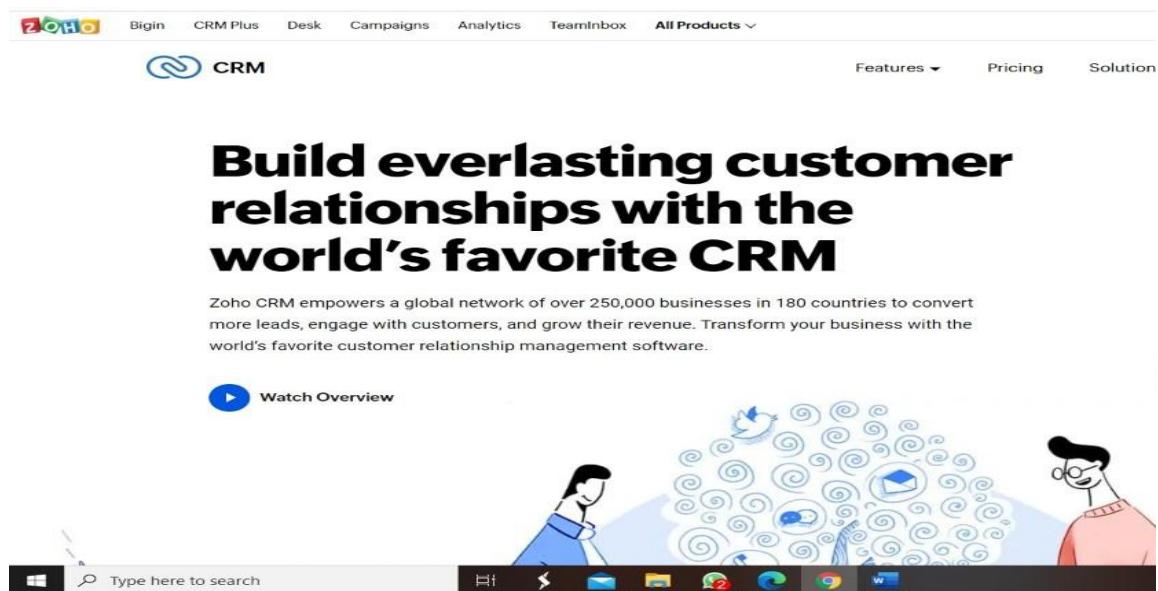
step 5: Created new application as product selling.

step 6: Select one form

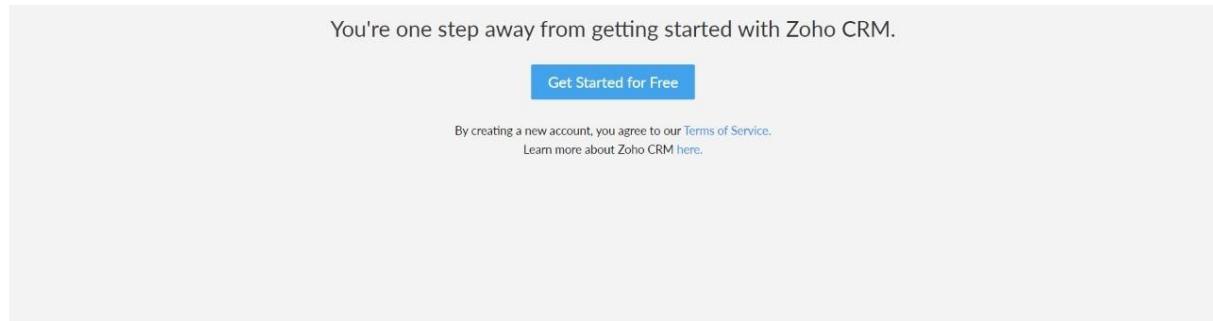
step 7: The software has been created.

IMPLEMENTATION:

STEP1: GOTO ZOHO.COM



STEP 2: LOGIN TO THE ZOHO.COM



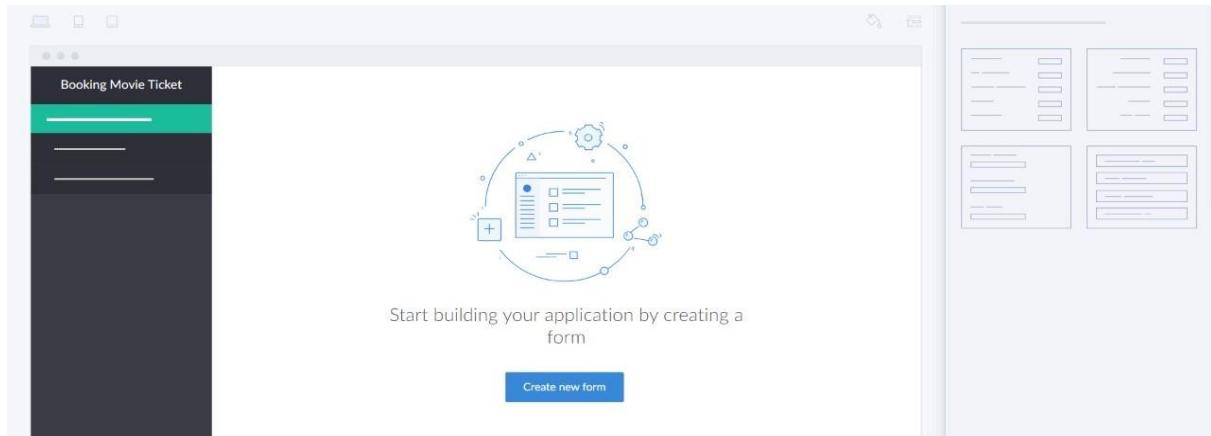
STEP 3: SELECT ONE APPLICATION

A screenshot of the "Create Application" interface. The top bar includes a search bar, category filters (All, Information Technology, Business, Sales & Marketing, Education, More), and a "Cancel" button. The main area displays a grid of application cards. The first card, "Create from scratch", is highlighted with a dashed border. Other cards include "Sales Management", "Order Management", "Employee Management", "IT Asset Tracker", "Event Management", "Course Planner", and "Expenses". Each card has a small description below its icon.

STEP 4: ENTER APPLICATION NAME

A screenshot of the "Create Application" interface, similar to the previous one but with a modal window open. The modal is titled "Enter Application Name" and contains a text input field with the placeholder "Examples: Campaign Monitor, Order Management" and a "Create" button. The background grid of application cards is dimmed, indicating they are inactive while the name is being entered.

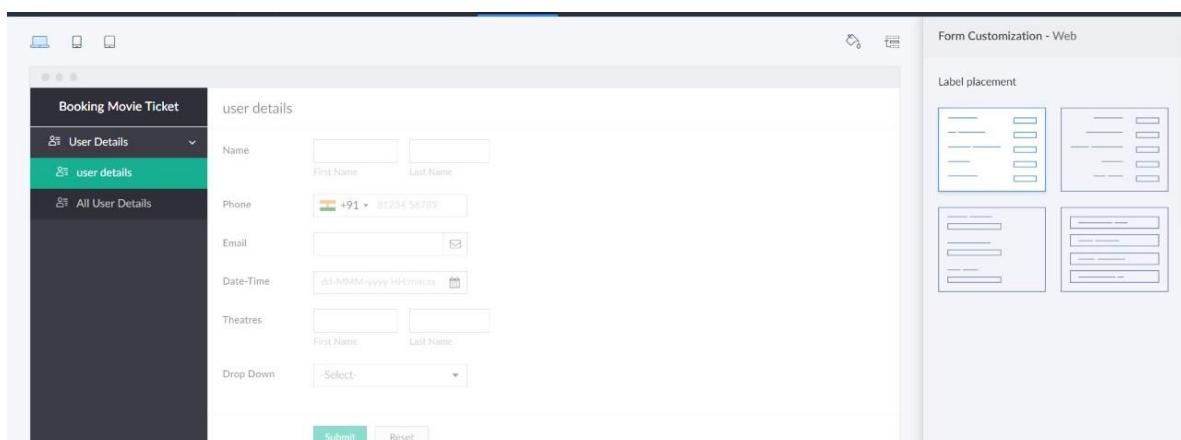
STEP 5: CREATED NEW APPLICATION



STEP 6: SELECT ONE FORM



STEP 7: THE SOFTWARE HASE BEEN CREATED.



Booking Movie Ticket
user details

Basic Fields

Name	Email
Address	Phone
Single Line	Multi Line
123	Date
Time	Drop Down

Name

Phone

Email

Date-Time

Theatres

Drop Down

Field Properties

Field name: Name

Field link name: Name

Validation: Mandatory

Display Fields

Prefix

First Name

Last Name

Suffix

Data Privacy

Done

EXP NO 7: DEMONSTRATE VIRTUALIZATION BY INSTALLING TYPE-2 HYPERVISOR IN YOUR DEVICE, CREATE AND CONFIGURE VM IMAGE WITH A HOST OPERATING SYSTEM (EITHER WINDOWS/LINUX).

DATE:

AIM:

To demonstrate virtualization by installing type-2 hypervisor in your device, create and configure VM image with a host operating system (either windows/linux).

PROCEDURE:

STEP 1: Download VMware workstation and installed as type 2hypervisor.

STEP2: Download ubuntu or tiny OS as iso image file.

STEP 3: In VMware workstation->create new VM.

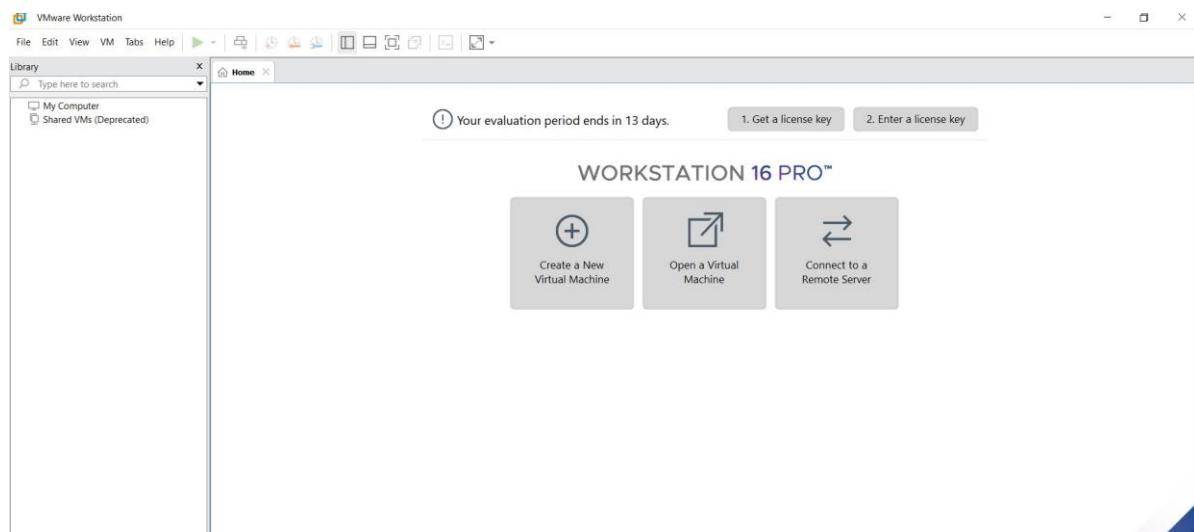
STEP 4: Do the basic configuration settings.

STEP 5: Created tiny OS virtual machine.

STEP 6: Launch the VM.

IMPLEMENTATION:

STEP 1:DOWLOAD VMWARE WORKSTATION AND INSTALLED AS TYPE 2HYPERVISOR

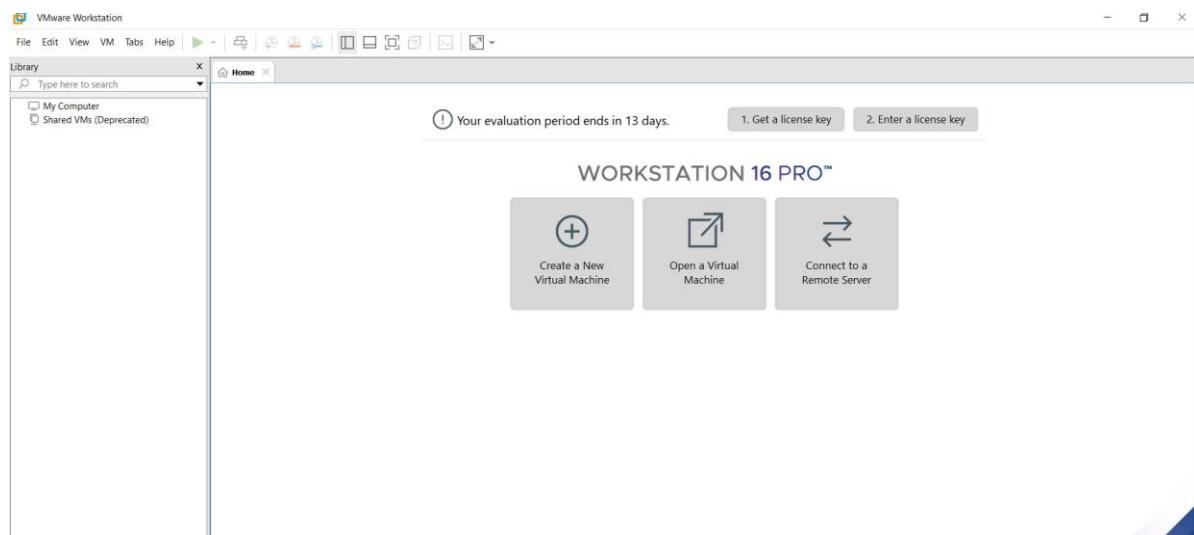


STEP2: DOWNLOAD UBUNTU OR TINY OS AS ISO IMAGE FILE

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	-
Core-current.iso	01-Apr-2020 07:49
CorePlus-11.1.iso	14757888
CorePlus-11.1.iso.md5.txt	01-Apr-2020 07:49
CorePlus-11.1.iso.zsync	48
CorePlus-current.iso	50639
TinyCore-11.1.iso	01-Apr-2020 07:49
TinyCore-11.1.iso.md5.txt	14757888
TinyCore-11.1.iso.zsync	216006656
TinyCore-current.iso	52
TinyCore-11.1.iso	01-Apr-2020 07:50
TinyCore-11.1.iso.md5.txt	369358
TinyCore-11.1.iso.zsync	216006656
TinyCore-current.iso	19922944
TinyCore-11.1.iso	01-Apr-2020 07:50
TinyCore-11.1.iso.md5.txt	52
TinyCore-11.1.iso.zsync	68301
TinyCore-current.iso	19922944

STEP 3: IN VMWARE WORKSTATION->CREATE NEW VM



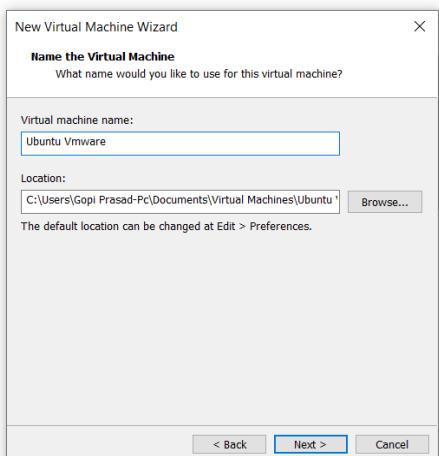
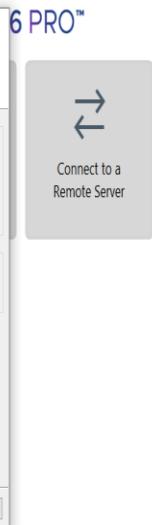
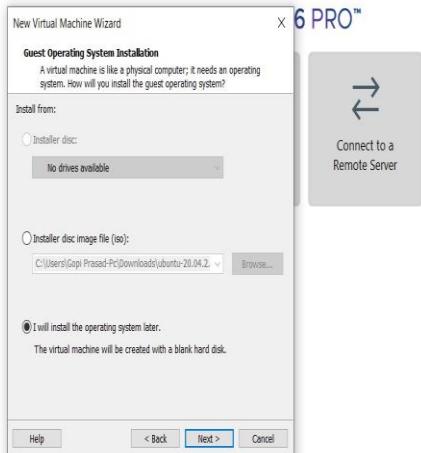
STEP 4: DO THE BASIC CONFIGURATION SETTINGS.

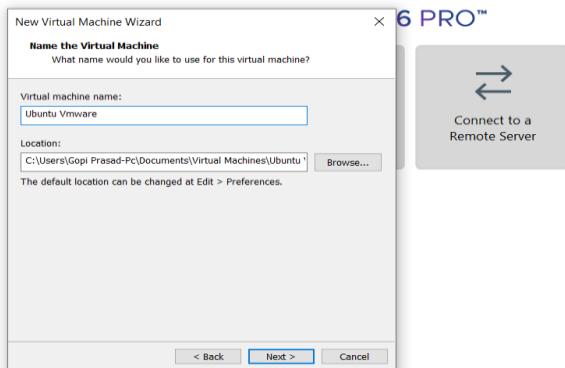


! Your evaluation period ends in 12 days.

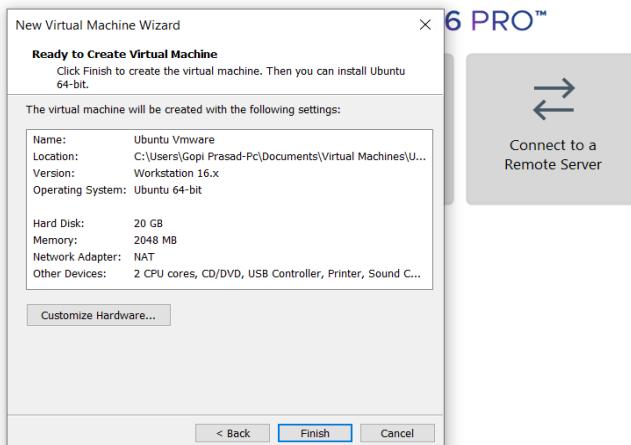
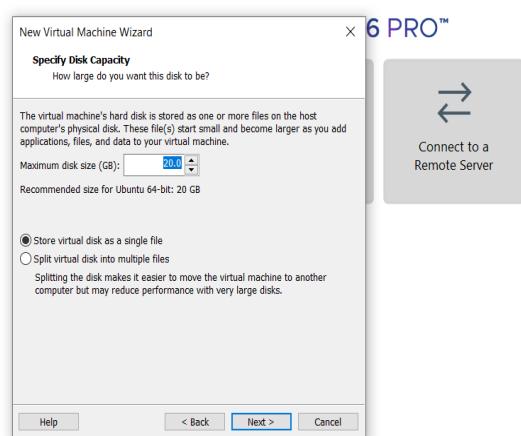
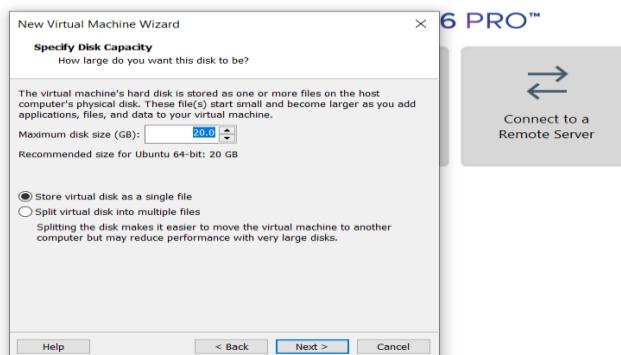
1. Get a license key

2. Enter a license key

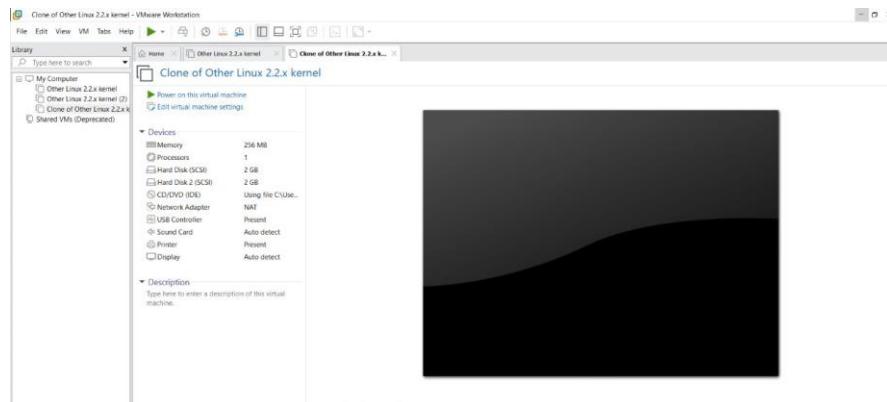




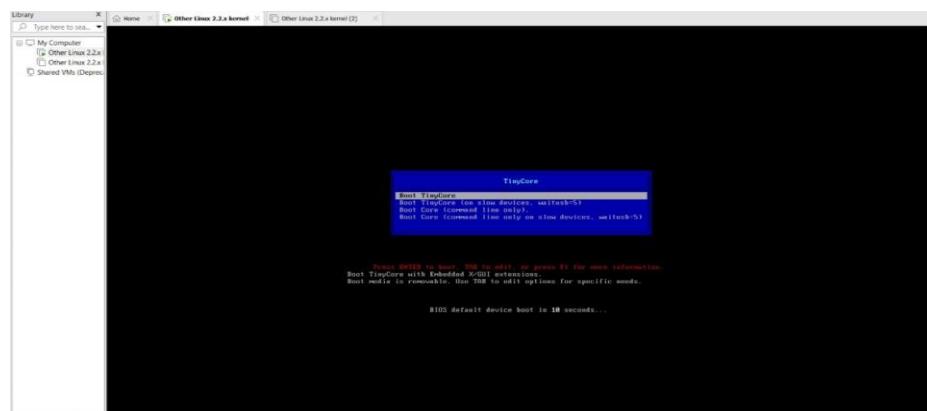
! Your evaluation period ends in 12 days. 1. Get a license key 2. Enter a license key ! Your evaluation period ends in 12 days. 1. Get a license key 2. Enter a license key



STEP 5: CREATED TINYOS VIRTUAL MACHINE



STEP 6: LAUNCH THE VM



EXPNO 8: CREATE A VIRTUAL MACHINE WITH 1 CPU, 2GB RAM AND 15GB STORAGE DISK USING A TYPE 2 VIRTUALIZATION SOFTWARE.

DATE:

AIM:

To create a virtual machine with 1 cpu, 2gb ram and 15gbstorage disk using a type 2 virtualization software.

PROCEDURE:

STEP 1: Download VMware workstation and installed as type 2hypervisor.

STEP 2: Download ubuntu or tiny OS as iso image file.

STEP 3: In VMware workstation->create new VM.

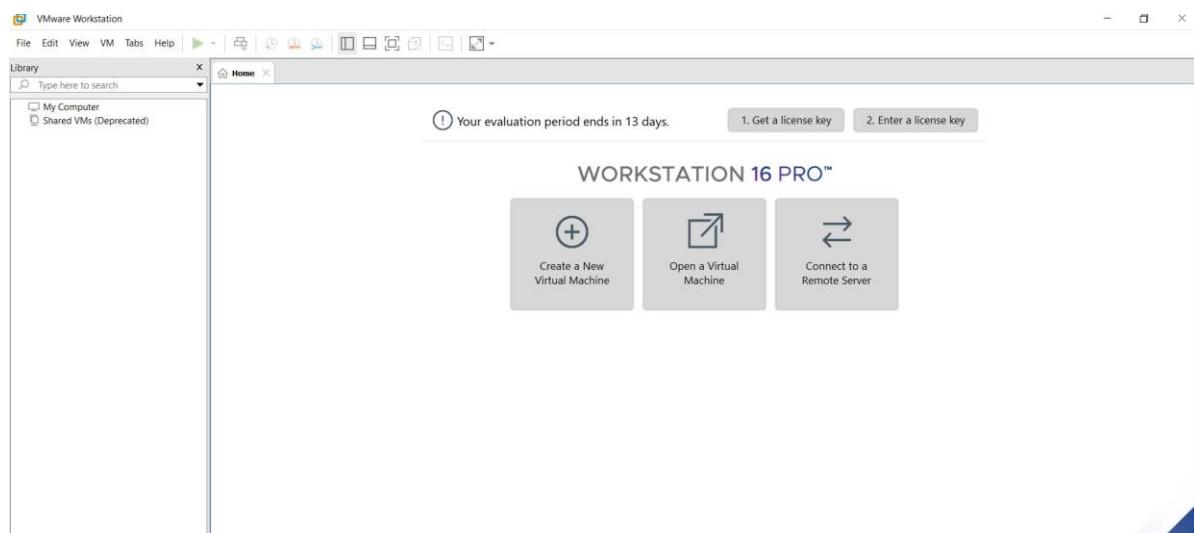
STEP 4: Do the basic configuration settings.

STEP 5: Created tiny OS virtual machine.

STEP 6: Launch the VM.

IMPLEMENTATION:

STEP 1:DOWLOAD VMWARE WORKSTATION AND INSTALLED AS TYPE 2HYPERVISOR

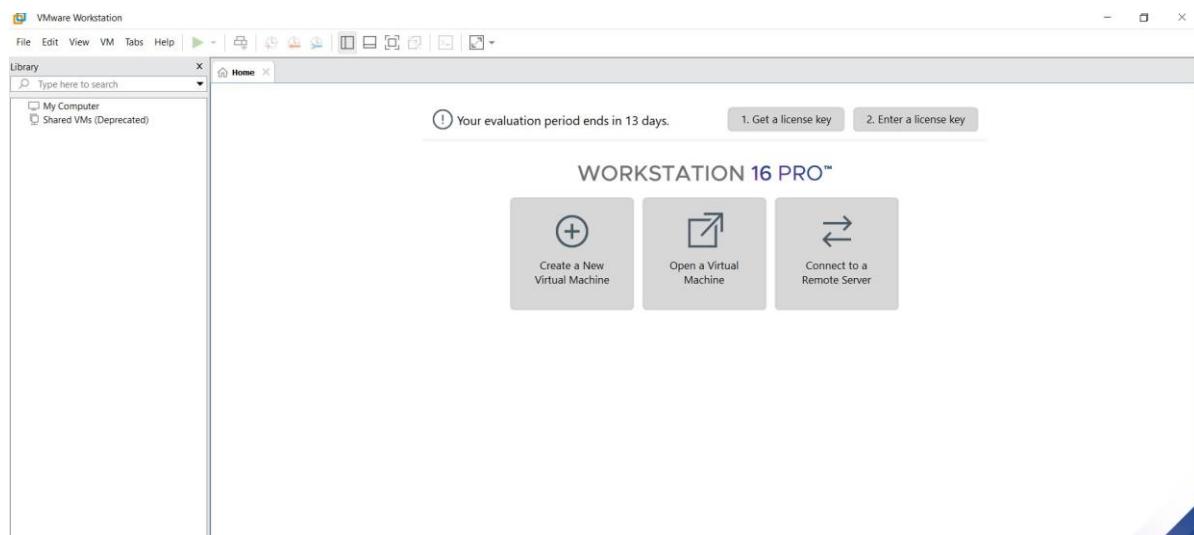


STEP2: DOWNLOAD UBUNTU OR TINY OS AS ISO IMAGE FILE

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	-
Core-current.iso	01-Apr-2020 07:49
CorePlus-11.1.iso	14757888
CorePlus-11.1.iso.md5.txt	01-Apr-2020 07:49
CorePlus-11.1.iso.zsync	48
CorePlus-current.iso	50639
TinyCore-11.1.iso	01-Apr-2020 07:49
TinyCore-11.1.iso.md5.txt	14757888
TinyCore-11.1.iso.zsync	216006656
TinyCore-current.iso	52
TinyCore-11.1.iso	01-Apr-2020 07:50
TinyCore-11.1.iso.md5.txt	369358
TinyCore-11.1.iso.zsync	216006656
TinyCore-current.iso	19922944
TinyCore-11.1.iso	01-Apr-2020 07:50
TinyCore-11.1.iso.md5.txt	52
TinyCore-11.1.iso.zsync	68301
TinyCore-current.iso	19922944

STEP 3: IN VMWARE WORKSTATION->CREATE NEW VM

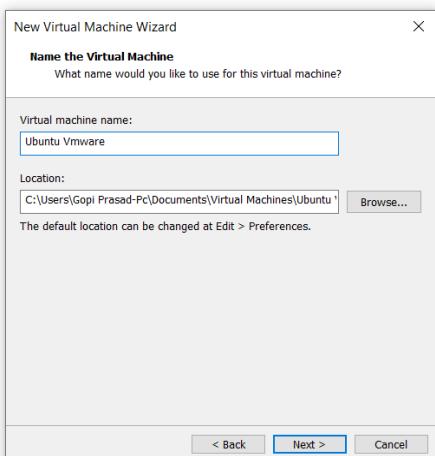
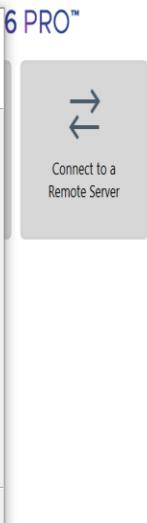
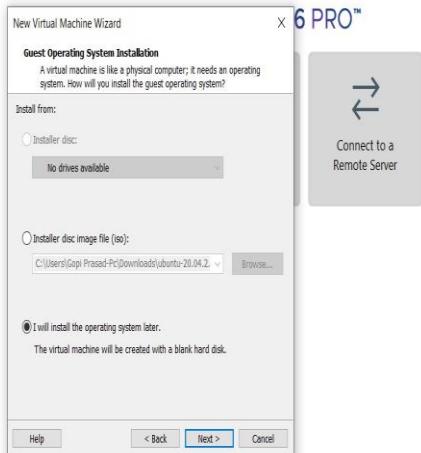


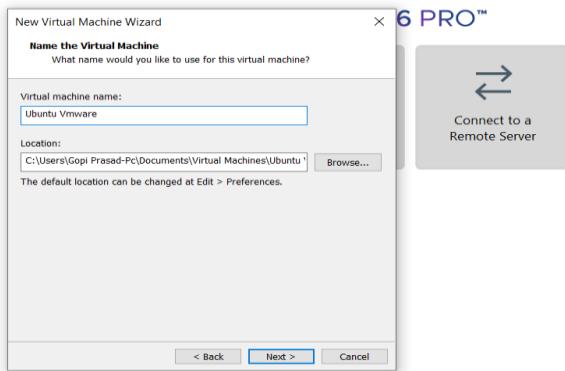
STEP 4: DO THE BASIC CONFIGURATION SETTINGS.



! Your evaluation period ends in 12 days.

1. Get a license key 2. Enter a license key

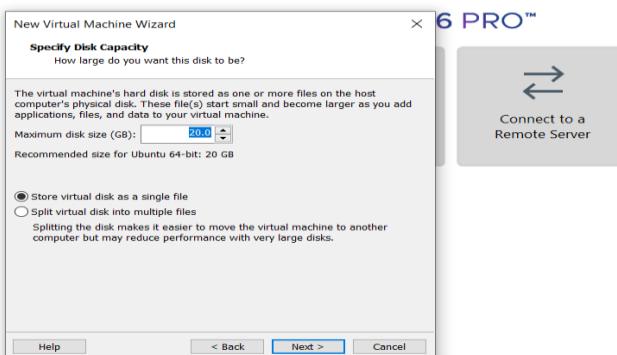




6 PRO™

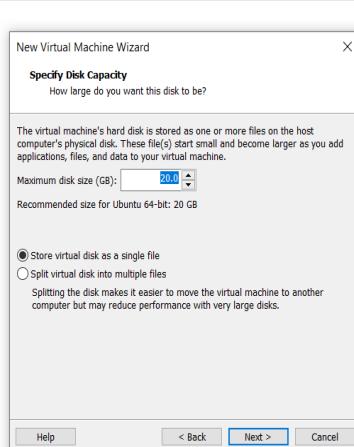
→
←
Connect to a
Remote Server

! Your evaluation period ends in 12 days. 1. Get a license key 2. Enter a license key ! Your evaluation period ends in 12 days. 1. Get a license key 2. Enter a license key



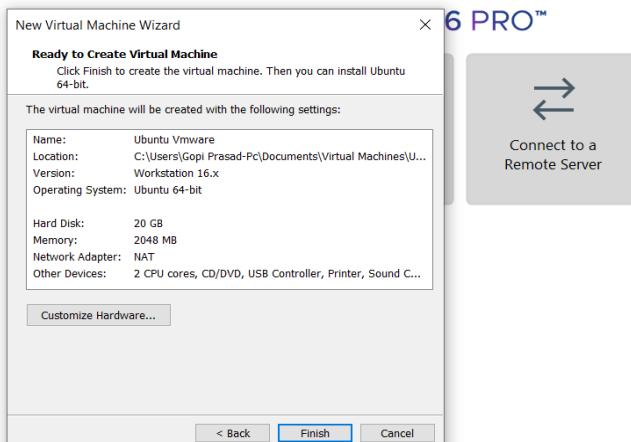
6 PRO™

→
←
Connect to a
Remote Server



6 PRO™

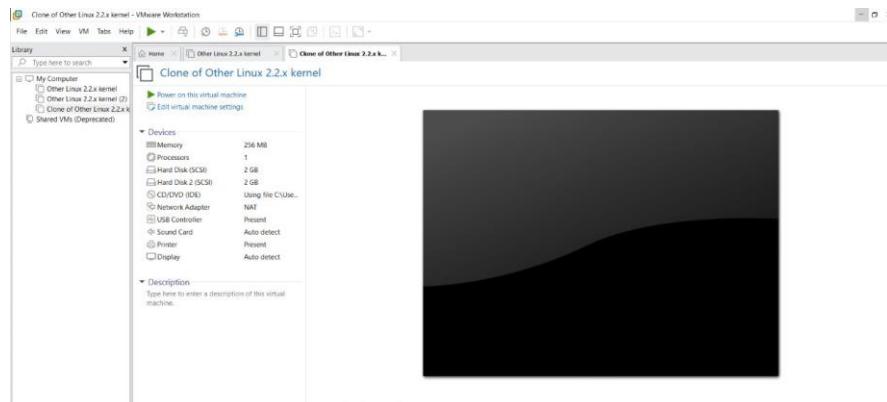
→
←
Connect to a
Remote Server



6 PRO™

→
←
Connect to a
Remote Server

STEP 5: CREATED TINYOS VIRTUAL MACHINE



EXP 9: CREATE A VIRTUAL HARD DISK AND ALLOCATE THE STORAGE USING VM WARE WORKSTATION.

DATE:

AIM:

To create a virtual hard disk and allocate the storage using vm ware workstation

PROCEDURE:

STEP 1: GOTO VM WARE WORKSTATION.

STEP 2: RIGHT CLICK THE VM AND GOTO THE SETTINGS.

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

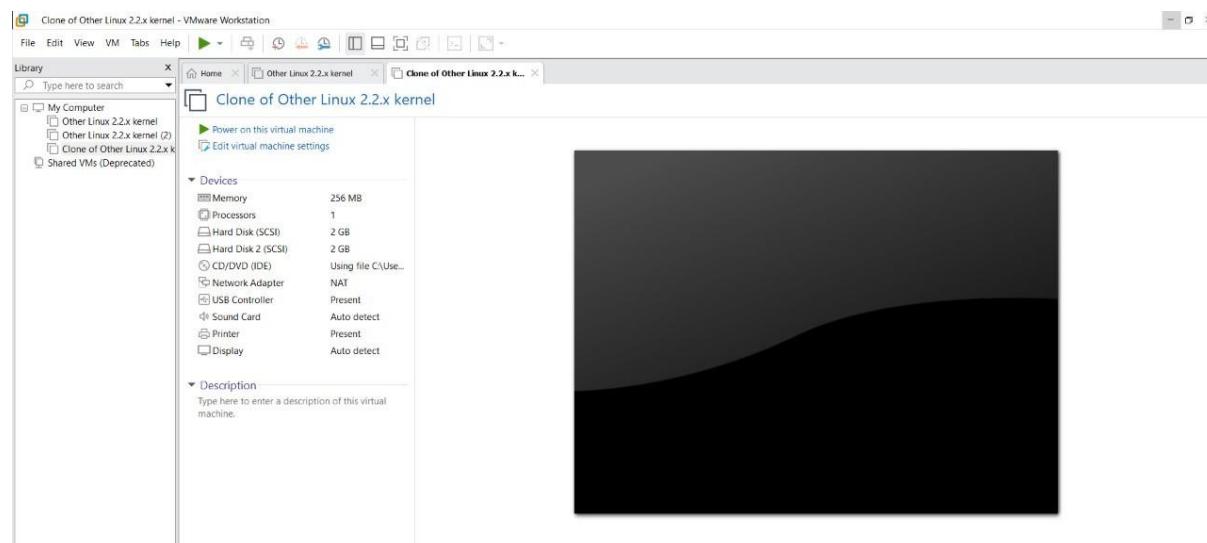
STEP 4: CREATE NEW VIRTUAL DISK.

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

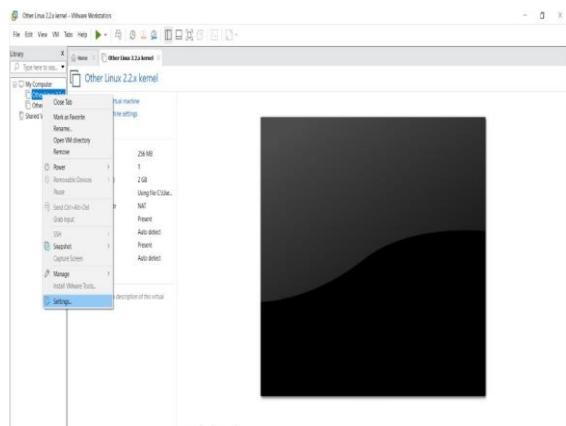
STEP 6: GIVE NAME AND CLICK THE FINISH.

IMPLEMENTATION:

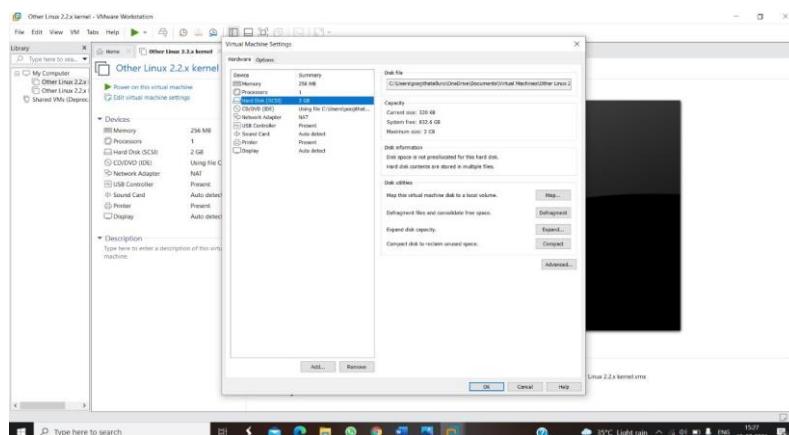
STEP 1: GOTO VM WARE WORKSTATION



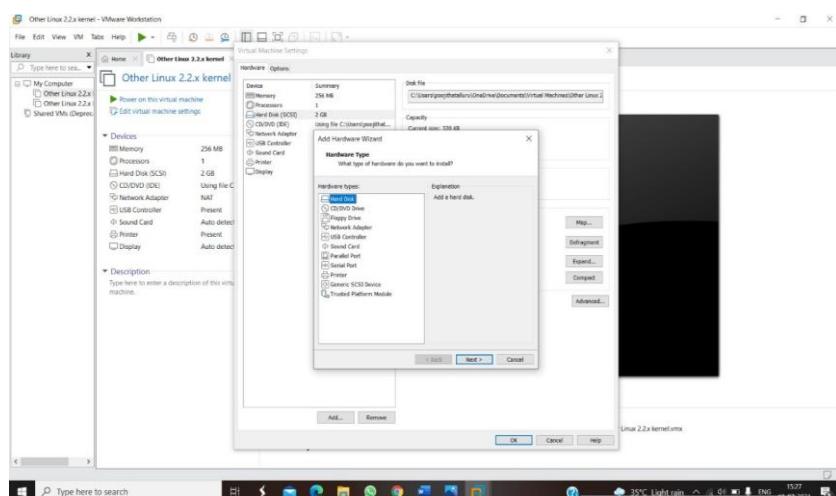
STEP2: RIGHT CLICK THE VM AND GOTO THE SETTINGS

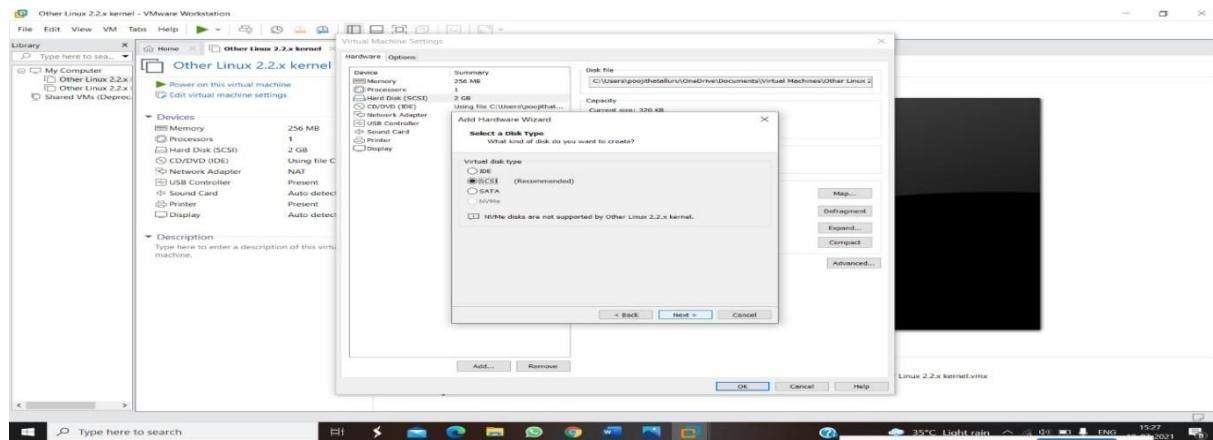


STEP 3: ADD HARDWARE WIZARD AND SELECT SCSI AND CLICK NEXT

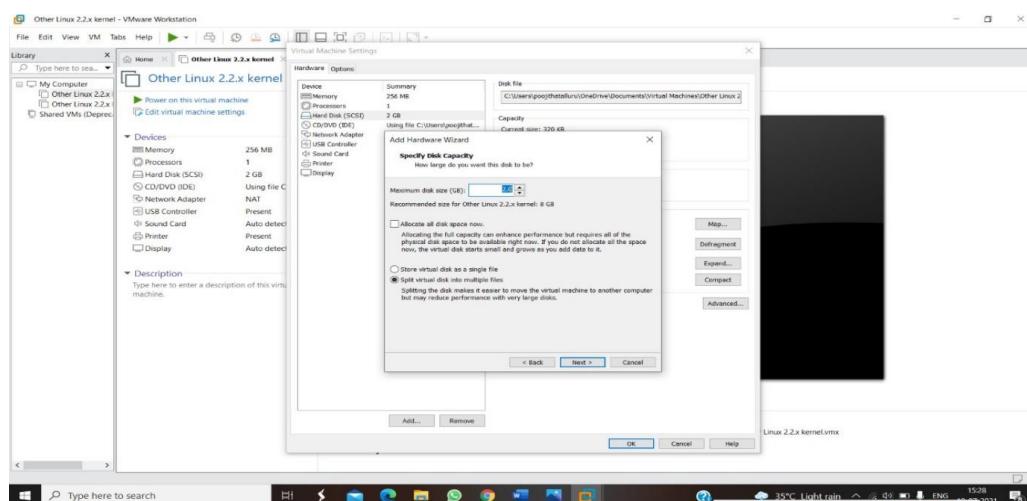


STEP 4: CREATE NEW VIRTUAL DISK

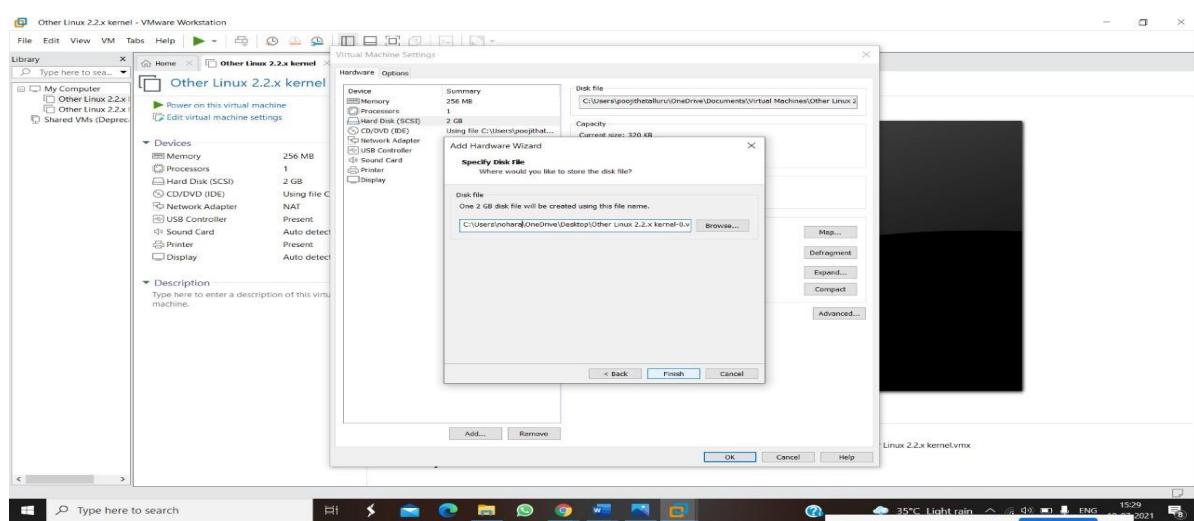


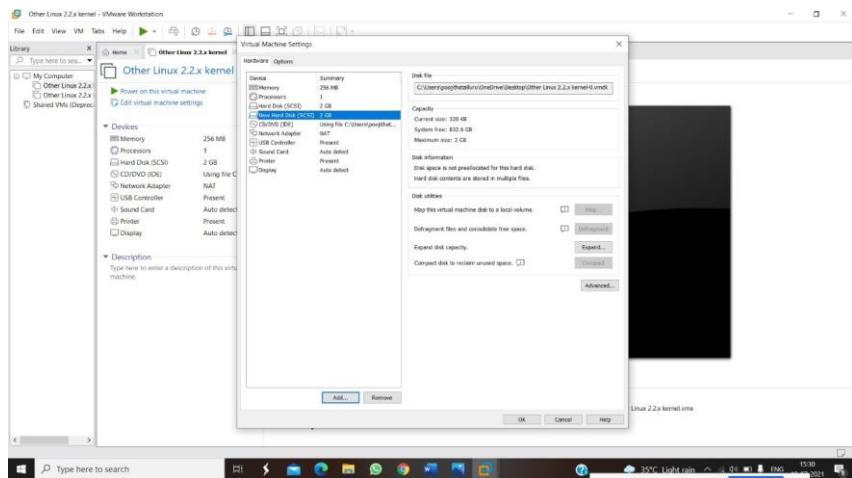


STEP 5: SELECT THE DISK SIZE AS 2.0. AND SELECT SPLIT VIRTUAL DISK INTO MULTIFILES.



STEP 6: GIVE NAME AND CLICK THE FINISH





EXPNO 10: CREATE A SNAPSHOT OF A VM AND TEST IT BY LOADING THE PREVIOUS VERSION/CLONED VM

DATE:

AIM:

To create a snapshot of a vm and test it by loading the previous version/cloned vm

PROCEDURE:

STEP 1: GOTO VMWARE WORKSTATION.

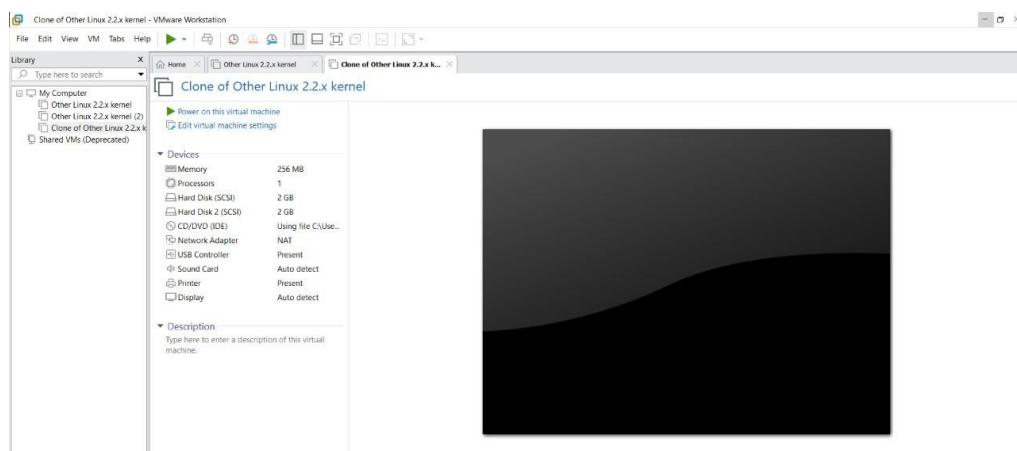
STEP 2: CREATE FILES ON DESKTOP.

STEP 3: CLICK ON VM AND SELECTS SNAPSHOT-> TAKE SNAPSHOT.

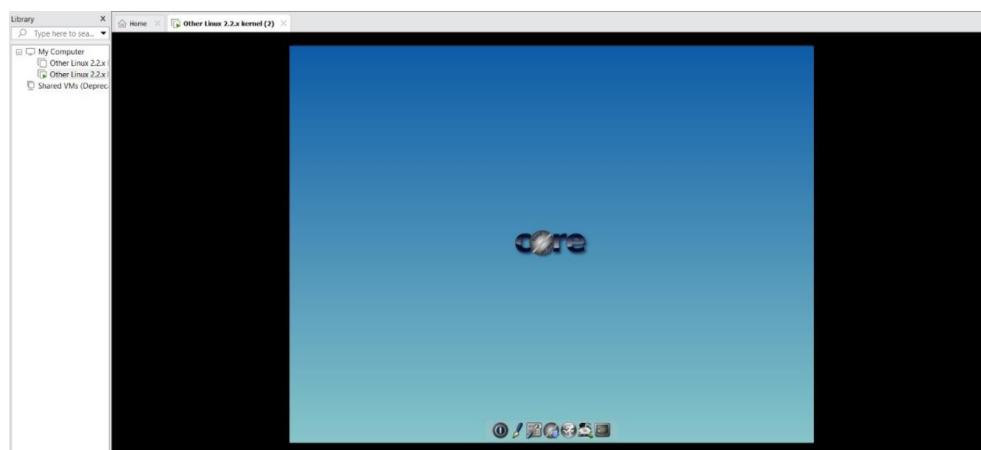
STEP 4: SNAPSHOT IS BEING DONE

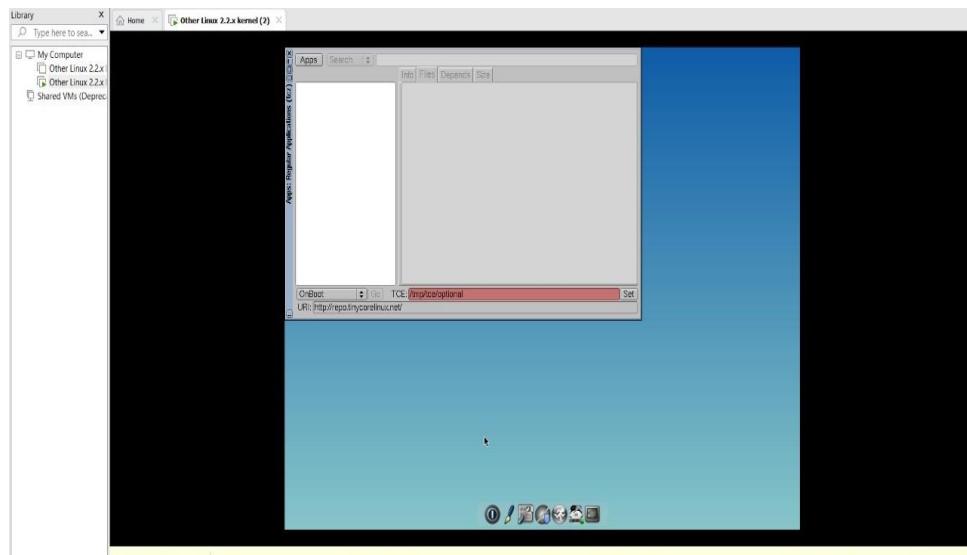
IMPLEMENTATION:

STEP 1: GOTO VMWARE WORKSTATION

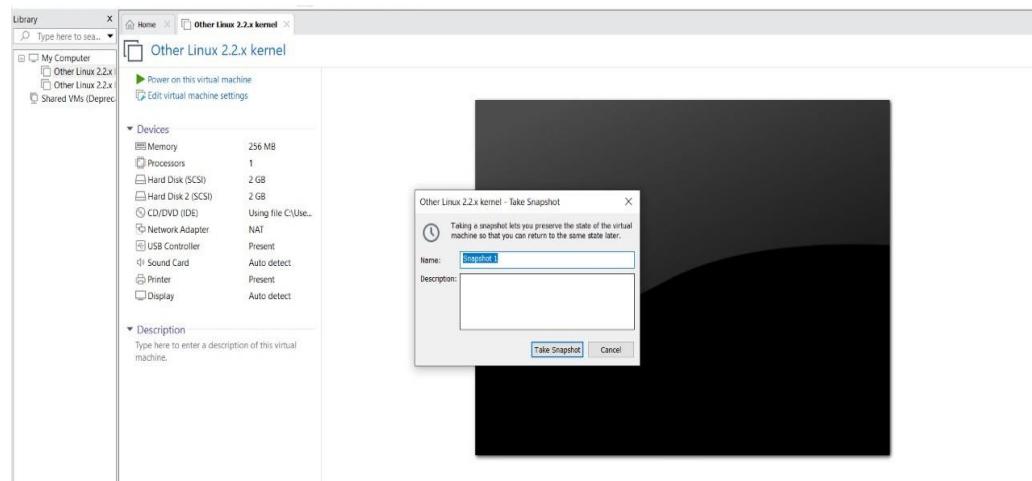
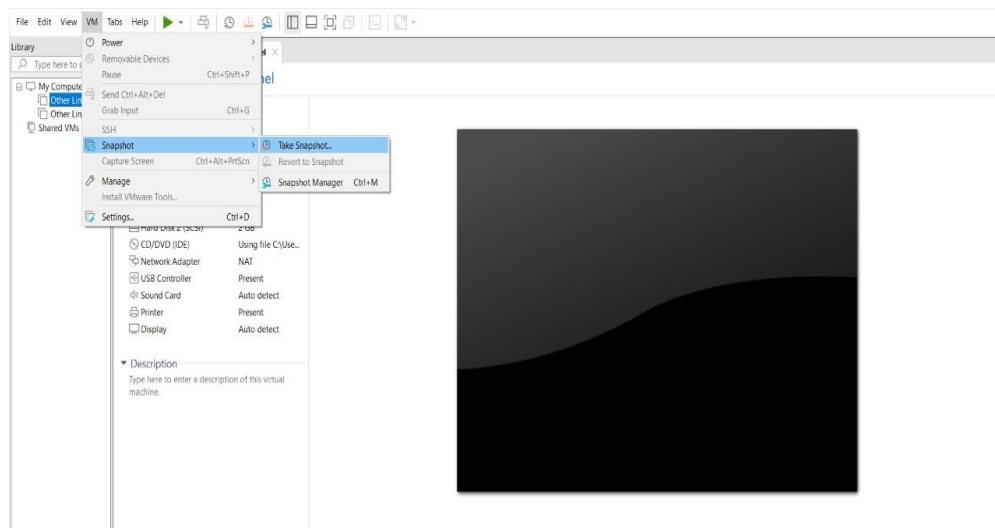


STEP 2: CREATE FILES ON DESKTOP

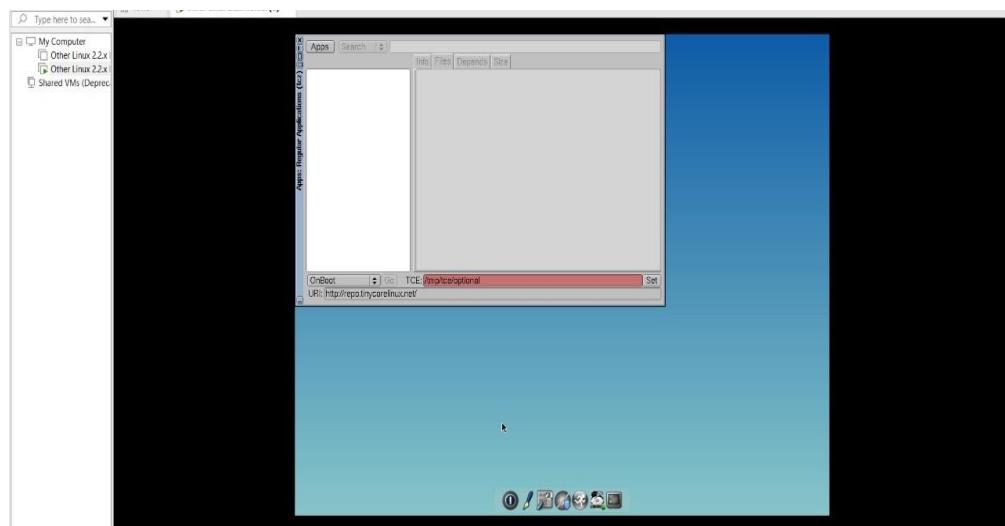




STEP 3: CLICK ON VM AND SELECTS SNAPSHOT-> TAKE SNAPSHOT.



STEP 4: SNAPSHOT IS BEING DONE



EXPNO 11: CREATE A CLONING OF A VM AND TEST IT BY LOADING THE PREVIOUS VERSION/CLONED VM.

DATE:

AIM:

To create a cloning of a vm and test it by loading the previous version/cloned vm.

PROCEDURE:

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

STEP 2: CLICK CLONE

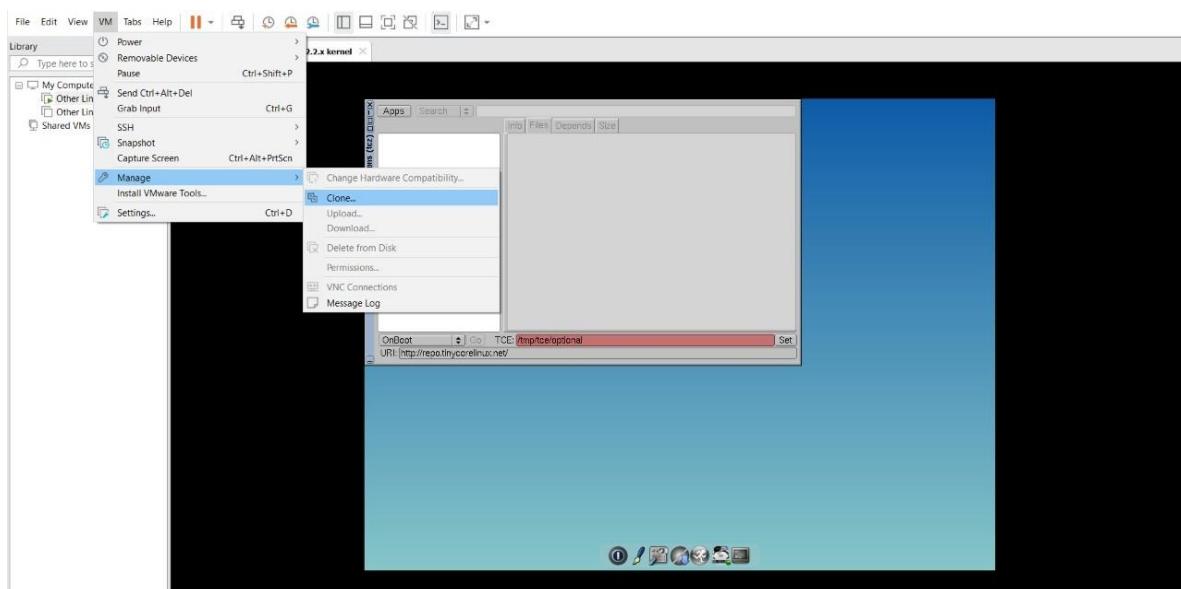
STEP 3: SELECT THE FULL CLONE

STEP 4: AFTER CLONE AGAIN OR VM IS OPENED.

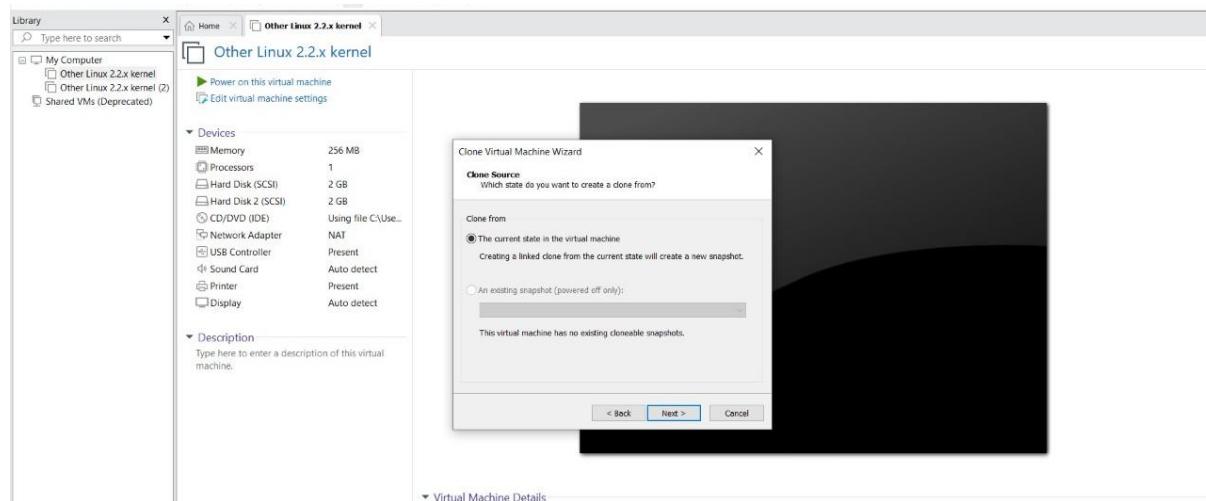
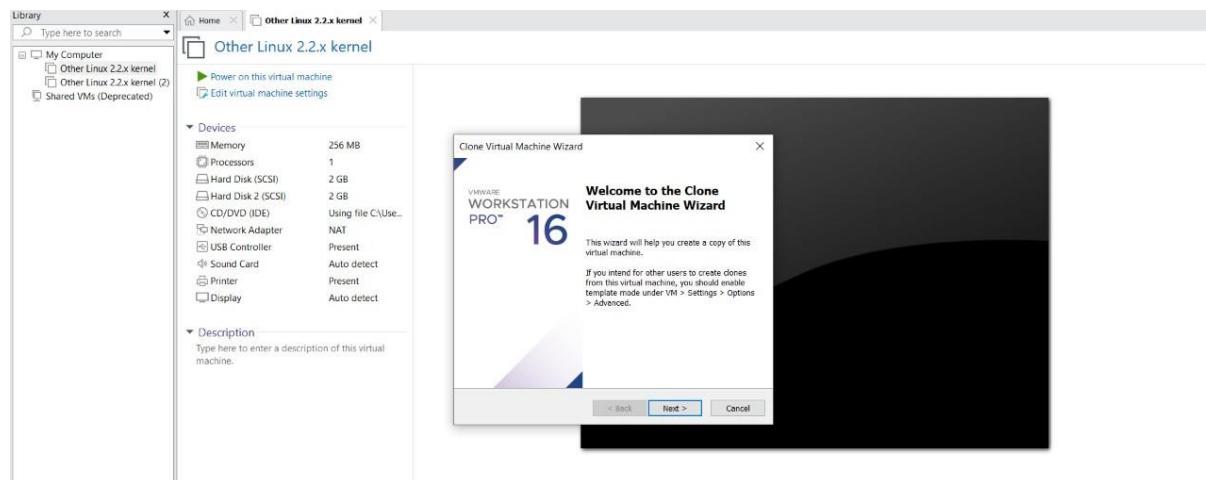
IMPLEMENTATION:

CLONING OF A VM

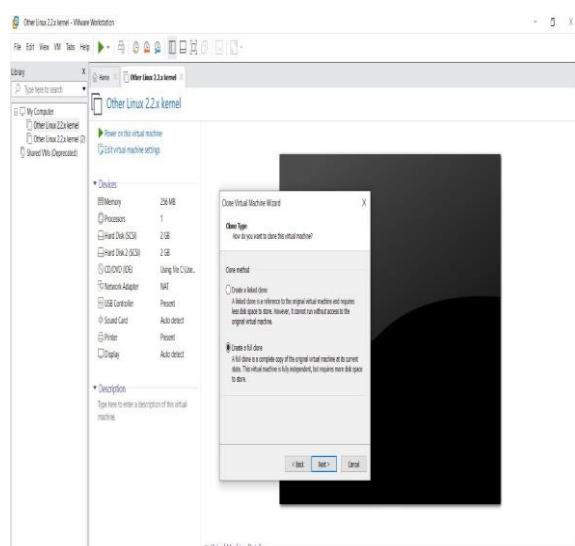
STEP 1: GO TO VM AND GOTO MANAGE AND CLICK CLONE

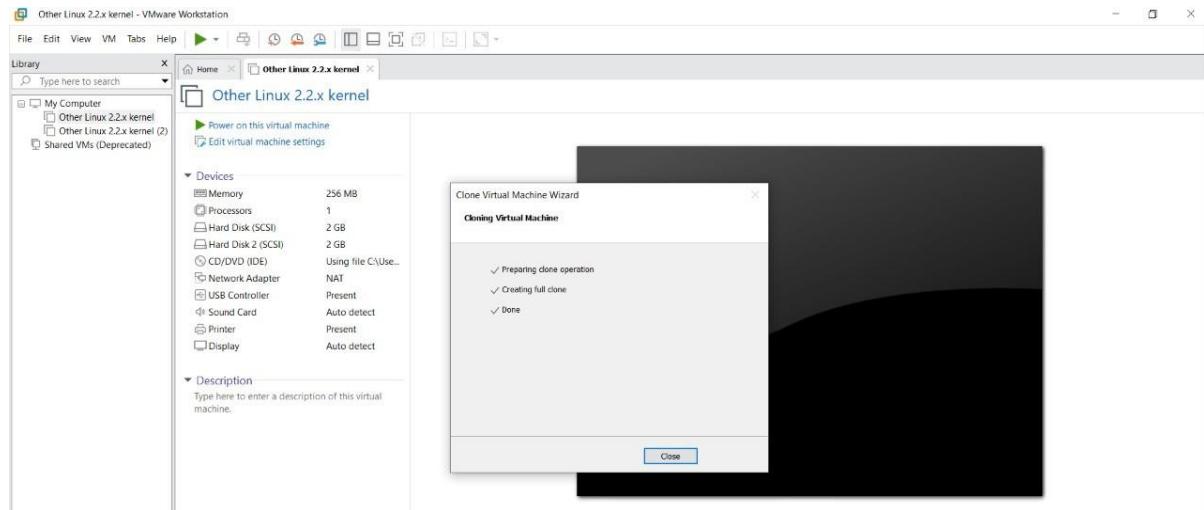


STEP 2: CLICK CLONE

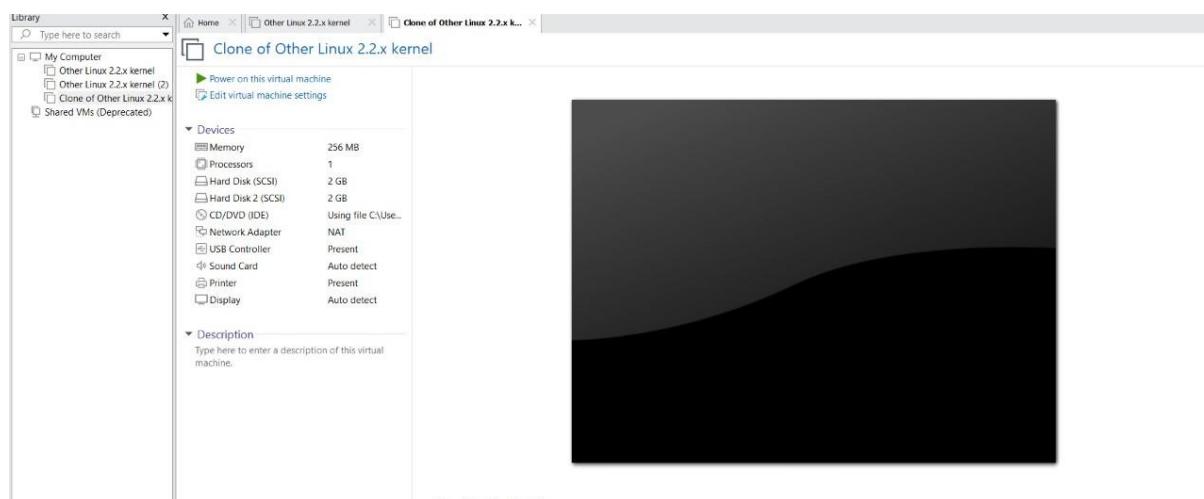


STEP 3: SELECT THE FULL CLONE





STEP 4: AFTER CLONE AGAIN OR VM IS OPENED.



EXP 12: CHANGE HARDWARE COMPATIBILITY OF A VM (EITHER BY CLONE/CREATE NEW ONE) WHICH IS ALREADY CREATED AND CONFIGURED.

DATE:

AIM:

To Change Hardware compatibility of a VM (Either by clone/create new one) which is already created and configured.

PROCEDURE:

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.

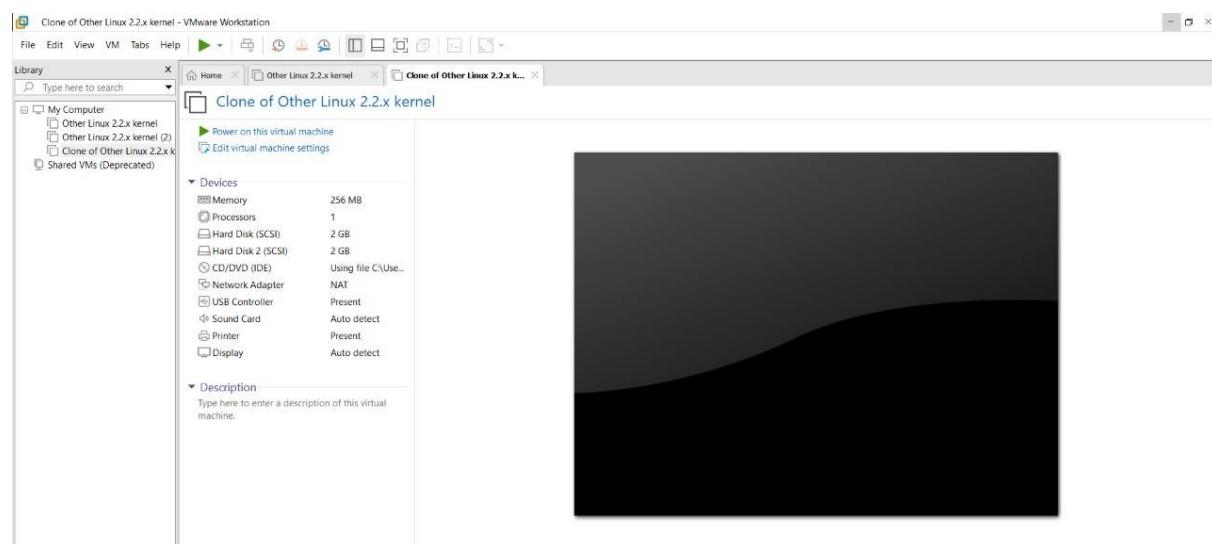
STEP 4: CREATE NEW VIRTUAL DISK.

STEP 5: SELCT THE DISK SIZE AS 2.0. AND SELCT SPLIT VIRTUAL DISK INTOMULTIFILES.

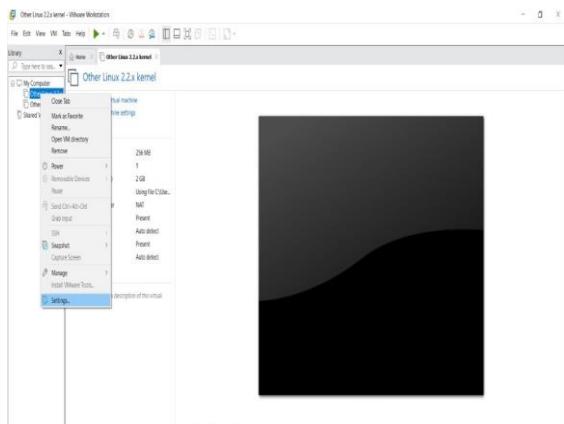
STEP 6: GIVE NAME AND CLICK THE FINISH.

IMPLEMENTATION:

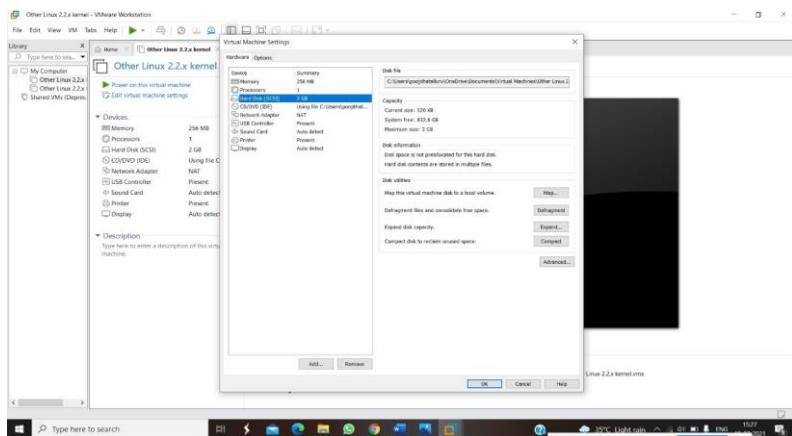
STEP 1:GOTO VM WARE WORKSTATION



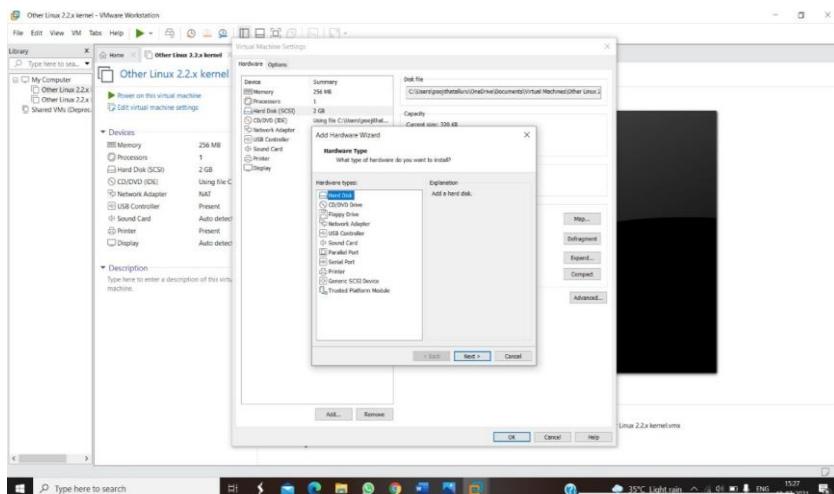
STEP2: RIGHT CLICK THE VM AND GOTO THE SETTINGS

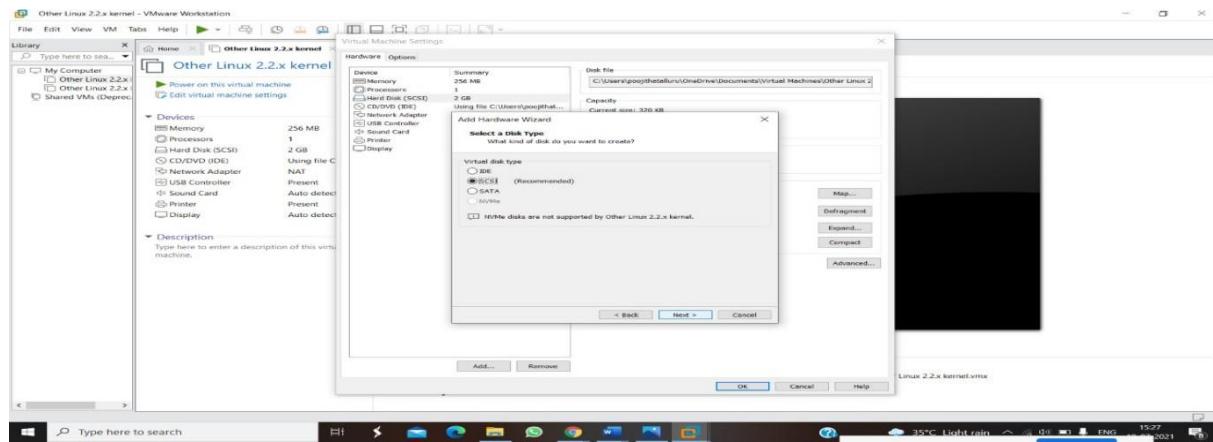


STEP 3: ADD HARDWARE WIZARD AND SELECT SCSI AND CLICK NEXT

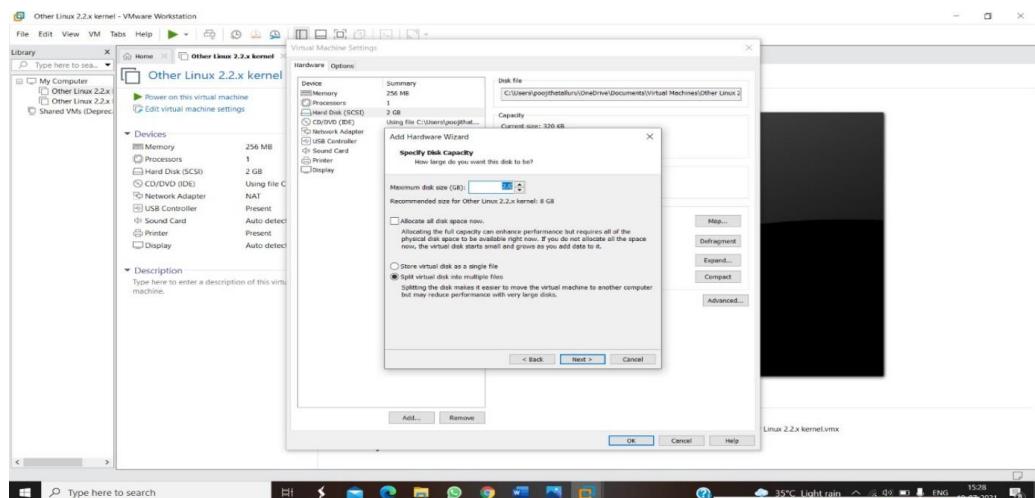


STEP 4: CREATE NEW VIRTUAL DISK

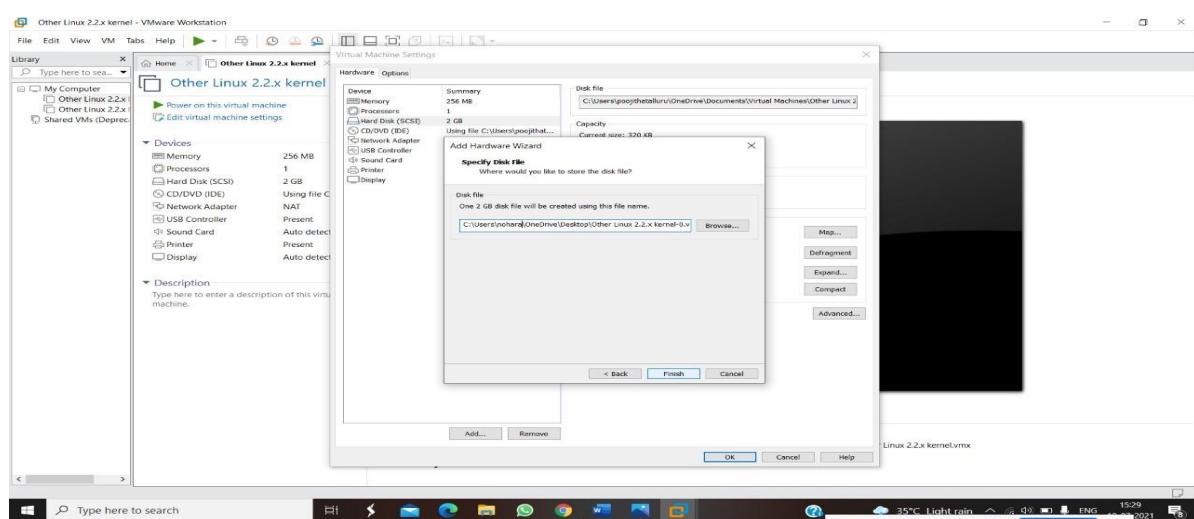


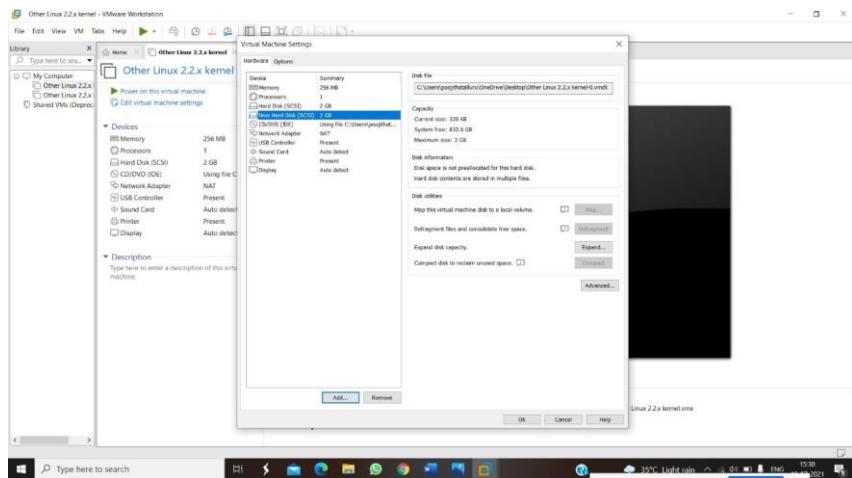


STEP 5: SELECT THE DISK SIZE AS 2.0. AND SELECT SPLIT VIRTUAL DISK INTO MULTIFILES.



STEP 6: GIVE NAME AND CLICK THE FINISH





EXP13. DEMONSTRATE INFRASTRUCTURE AS A SERVICE (IAAS) BY CREATING A VIRTUAL MACHINE USING A PUBLIC CLOUD SERVICE PROVIDER (AZURE), CONFIGURE WITH REQUIRED MEMORY AND CPU.

AIM:

To demonstrate infrastructure as a service (iaas) by creating a virtual machine using a public cloud service provider (azure), configure with required memory and cpu.

PROCEDURE:

STEP1: CREATE AN ACCOUNT IN MICROSOFT AZURE.

STEP2: GOTO RESOURCE GROUP AND CREATE A RESOURCE GROUP.

STEP3: GIVE NECESSARY THINGS FOR RESOURCE GROUP.

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

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

STEP6: AND YOUR VIRTUAL MACHINE IS DEPLOYED.

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

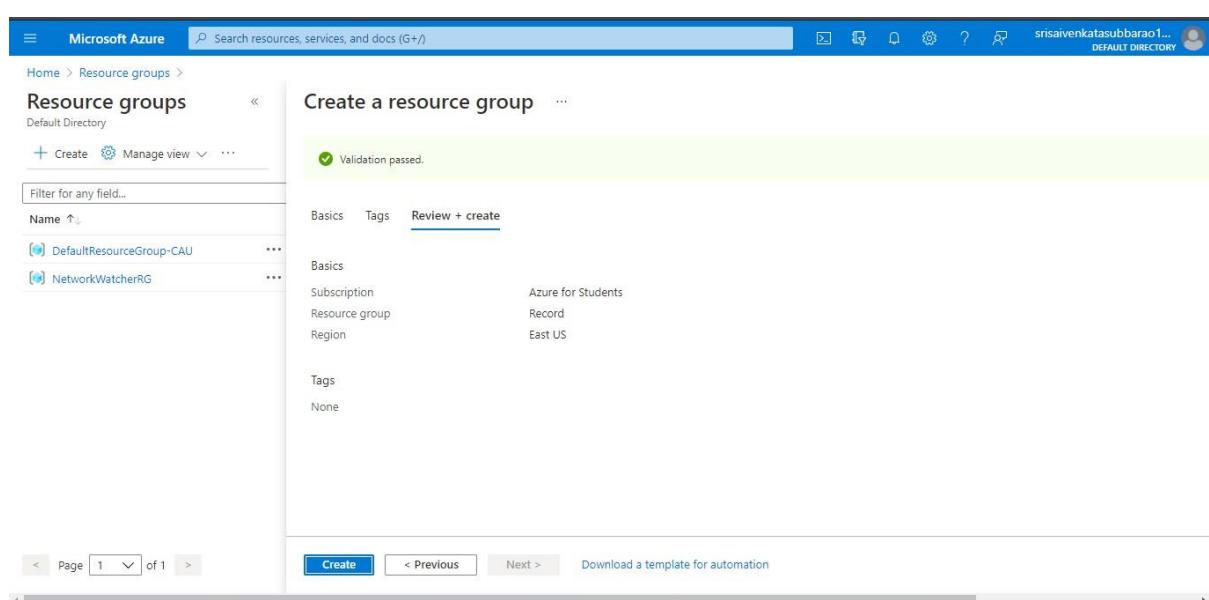
STEP8: NOW RESIZE THE VIRTUAL MACHINE SIZE.

STEP9: CREATED A NEW WINDOWS VIRTUAL MACHINE

IMPLEMENTATION:

STEP1:CREATE AN ACCOUNT IN MICROSOFT AZURE.

STEP2: GOTO RESOURCE GROUP AND CREATE A RESOURCE GROUP.



STEP3: GIVE NECESSARY THINGS FOR RESOURCE GROUP.

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

<img alt="Screenshot of the Microsoft Azure portal showing the 'Resource groups' list. It displays three resource groups: 'DefaultResourceGroup-CAU', 'NetworkWatcherRG', and 'Record'. Each group is associated with 'Azure for Students' subscription and different locations: 'Australia Central', 'East US', and 'East US' respectively. The URL in the address bar is https://portal.azure.com/#

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

STEP6: AND YOUR VIRTUAL MACHINE IS DEPLOYED.

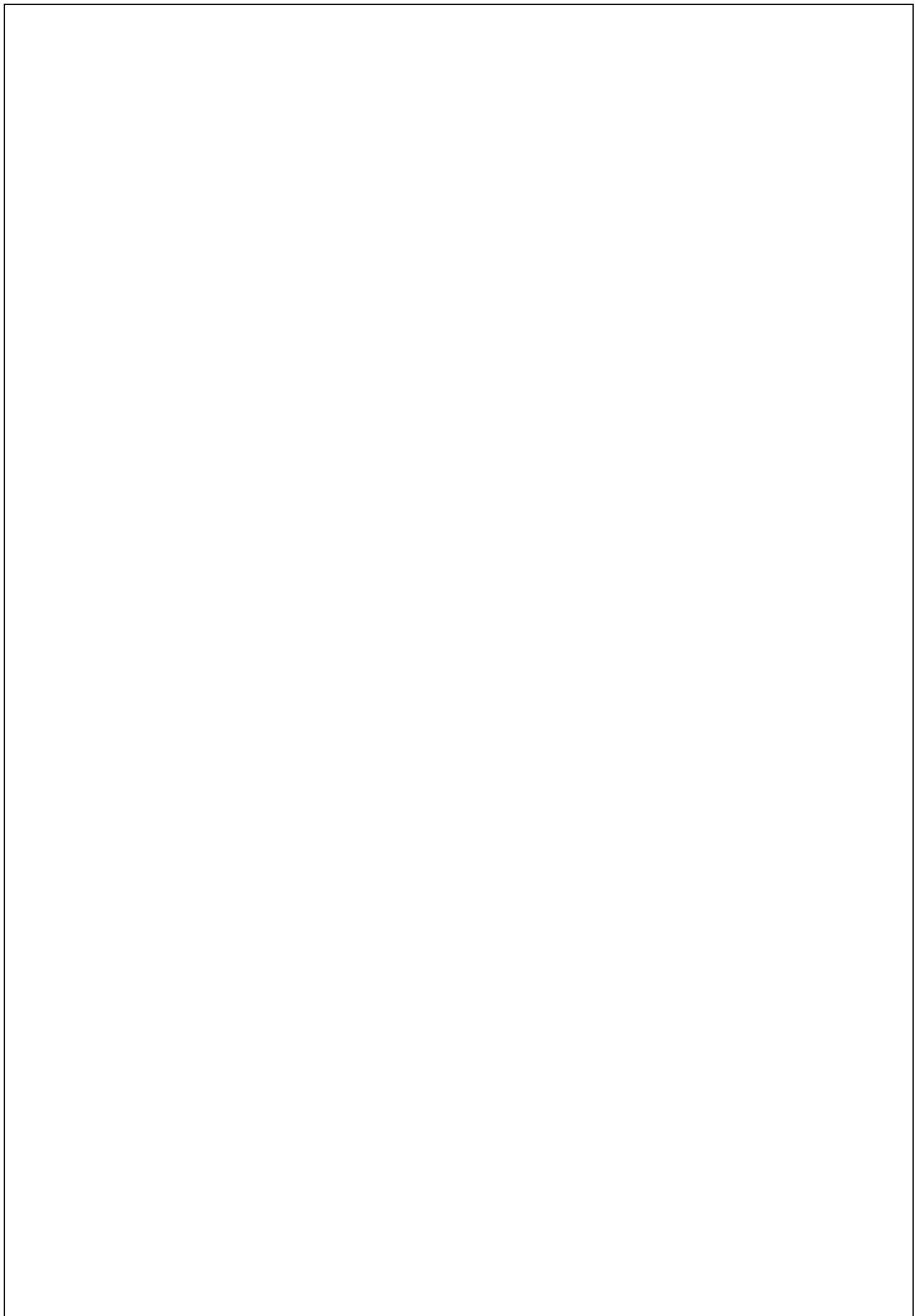
The screenshot shows the Microsoft Azure portal interface for a virtual machine named 'CreateVm-MicrosoftWindowsServer.WindowsServer-201-20210721104828'. The 'Overview' tab is selected, displaying a green checkmark indicating 'Your deployment is complete'. Below this, deployment details are listed: Deployment name: CreateVm-MicrosoftWindowsServer.WindowsSe... Start time: 7/21/2021, 10:52:14 AM; Subscription: Azure for Students; Correlation ID: a0f40b35-8270-49dc-bcf7-42eec66e5c61; Resource group: Record. Under 'Deployment details', there are three recommended actions: 'Setup auto-shutdown' (Recommended), 'Monitor VM health, performance and network dependencies' (Recommended), and 'Run a script inside the virtual machine' (Recommended). At the bottom of the main pane are two buttons: 'Go to resource' and 'Create another VM'. To the right of the main content area, there is a sidebar with links to '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.

The screenshot shows the Microsoft Azure portal interface for the same virtual machine ('Record-virtual'). The 'Virtual machine' tab is selected. On the left, a navigation menu includes 'Overview', 'Activity log', 'Access control (IAM)', 'Tags', 'Diagnose and solve problems', 'Settings', 'Networking', 'Connect', 'Windows Admin Center (preview)', 'Disks', 'Size', 'Security', 'Advisor recommendations', and 'Extensions'. The main pane displays the 'Essentials' section with details like Resource group (change): Record, Status: Running, Location: East US, Subscription (change): Azure for Students, Subscription ID: db4ee0b-1e34-4be0-9c9c-65cc8d398405, and Tags (change): Click here to add tags. Below this is the 'Properties' section, which is currently active, showing information such as Computer name: Record-virtual, Operating system: Windows (Windows Server 2019 Datacenter), Publisher: MicrosoftWindowsServer, Offer: WindowsServer, Plan: 2019-Datacenter, VM generation: V1, and Agent status: Ready. To the right of the properties, there is a 'Networking' section listing Public IP address: 23.96.9.147, Private IP address: 10.0.0.4, Virtual network/subnet: Record-vnet/default, and DNS name: Not configured. There is also a 'JSON View' button at the top right of the essentials section.

STEP8: CREATED A NEW WINDOWS VIRTUAL MACHINE.





EXP 17 .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.

AIM:

To 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.

PROCEDURE:

STEP1: CREATE AN ACCOUNT IN MICROSOFT AZURE.

STEP2: GOTO RESOURCE GROUP AND CREATE A RESOURCE GROUP.

STEP3: GIVE NECESSARY THINGS FOR RESOURCE GROUP.

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

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.

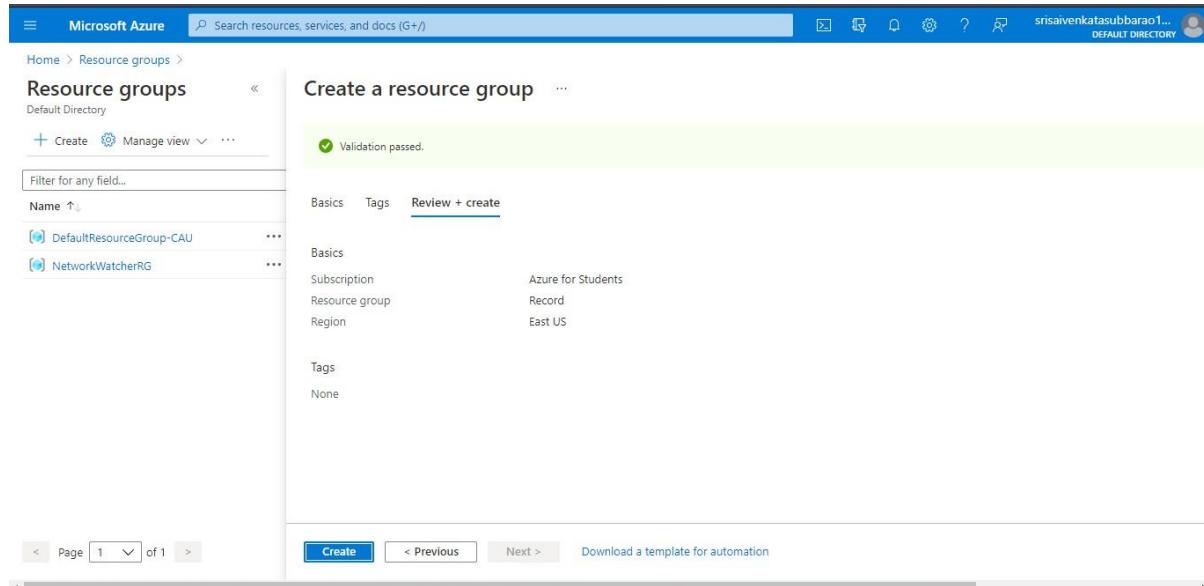
STEP7: NOW CONNECT THE VIRTUAL MACHINE AND DOWNLOAD THE RDP FILE TO OPEN YOUR WINDOWS VIRTUAL MACHINE.

STEP8: CREATED A NEW WINDOWS VIRTUAL MACHINE

IMPLEMENTATION:

STEP1: CREATE AN ACCOUNT IN MICROSOFT AZURE.

STEP2: GOTO RESOURCE GROUP AND CREATE A RESOURCE GROUP.



STEP3: GIVE NECESSARY THINGS FOR RESOURCE GROUP.

Microsoft Azure

Resource groups

Create a resource group

Basics Tags Review + create

Project details

Subscription * Azure for Students

Resource group * Record

Resource details

Region * (US) East US

Review + create < Previous Next : Tags >

Microsoft Azure

Resource groups

Create a resource group

Basics Tags Review + create

Apply tags to your Azure resources to logically organize them by categories. A tag consists of a key (name) and a value. Tag names are case-insensitive and tag values are case-sensitive. Learn more

Name	Value	Resource
		Resource group

Review + create < Previous Next : Review + create >

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

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

Microsoft Azure

Resource groups

Show 1 to 3 of 3 records.

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

< Previous Page 1 of 1 Next >

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

STEP5: NOW CREATE A VIRTUAL MACHINE WITH UR IPADDRESS ANUSERNAME AND PASSWORD FOR YOUR VIRTUAL MACINE.

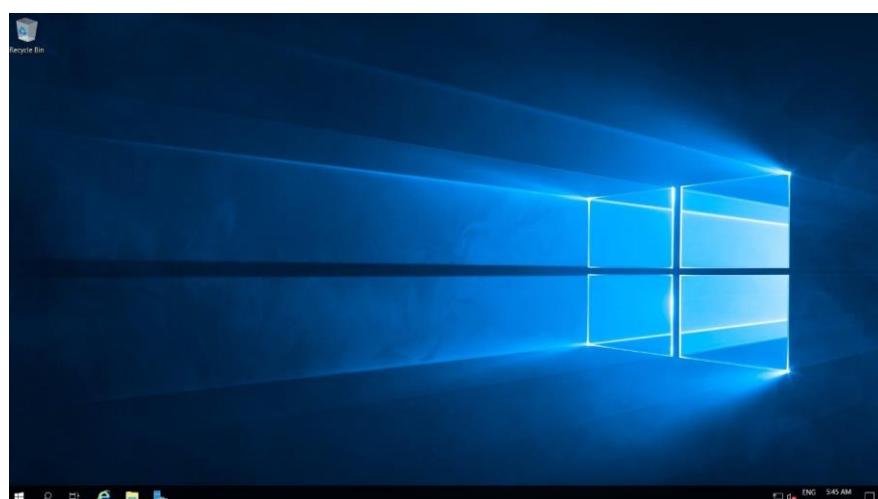
STEP6: AND YOUR VIRTUAL MACHINE IS DEPLOYED.

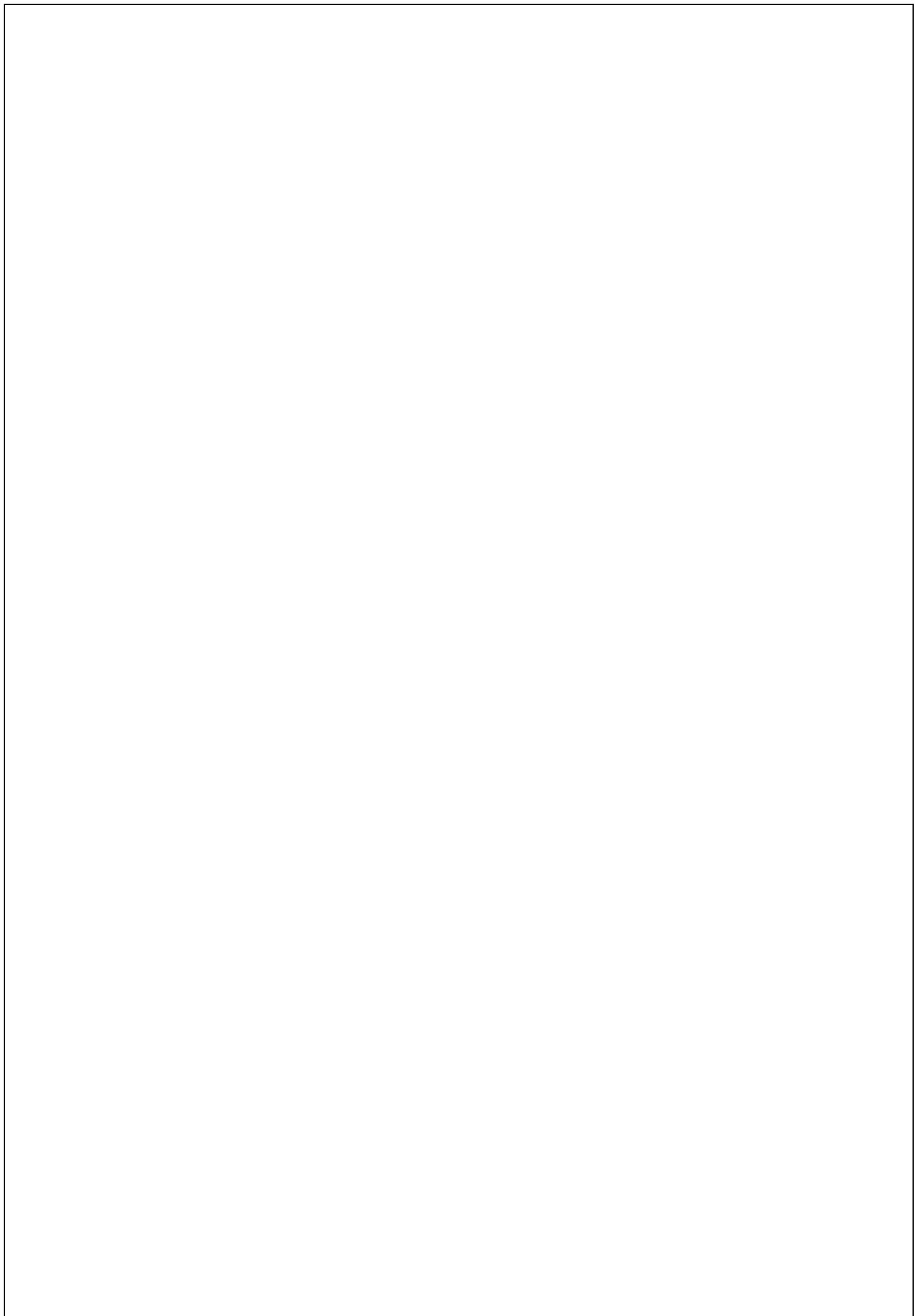
The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes 'Microsoft Azure', a search bar, and user information. Below it, the main title is 'CreateVm-MicrosoftWindowsServer.WindowsServer-201-20210721104828 | Overview'. On the left, there's a sidebar with 'Overview', 'Inputs', 'Outputs', and 'Template' options. The main content area displays a green checkmark icon indicating '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, Resource group: Record. It also lists 'Deployment details' (Download) and 'Next steps' (Setup auto-shutdown, Monitor VM health, performance and network dependencies, Run a script inside the virtual machine). At the bottom are 'Go to resource' and 'Create another VM' buttons. To the right, there are promotional 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.

The screenshot shows the Microsoft Azure portal interface for a specific virtual machine named 'Record-virtual'. The top navigation bar and title are identical to the previous screenshot. The left sidebar includes 'Overview', 'Activity log', 'Access control (IAM)', 'Tags', 'Diagnose and solve problems', 'Networking', 'Connect', 'Windows Admin Center (preview)', 'Disks', 'Size', 'Security', 'Advisor recommendations', and 'Extensions'. The main content area shows the 'Essentials' tab with detailed configuration: Resource group (change) : Record, Status: Running, Location: East US, Subscription (change) : Azure for Students, Subscription ID : db4eeeb0-1e34-4be0-9c9c-65cc8d398405, Tags (change) : Click here to add tags. It also shows the 'Properties' tab with 'Virtual machine' and 'Networking' sections. The 'Virtual machine' section lists Computer name: Record-virtual, Operating system: Windows (Windows Server 2019 Datacenter), Publisher: MicrosoftWindowsServer, Offer: WindowsServer, Plan: 2019-Datacenter, VM generation: V1, Agent status: Ready. The 'Networking' section lists 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: Not configured. There's also a 'JSON View' button at the top right.

STEP8: CREATED A NEW WINDOWS VIRTUAL MACHINE.





EXP15.CREATE A SIMPLE WEB SITE USING ANY PUBLIC CLOUD SERVICE PROVIDER (AZURE/GCP/AWS) AND CHECK THE PUBLIC ACCESSIBILITY OFTHE STORED FILE TO DEMONSTRATE STORAGE AS A SERVICE

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

Procedure:

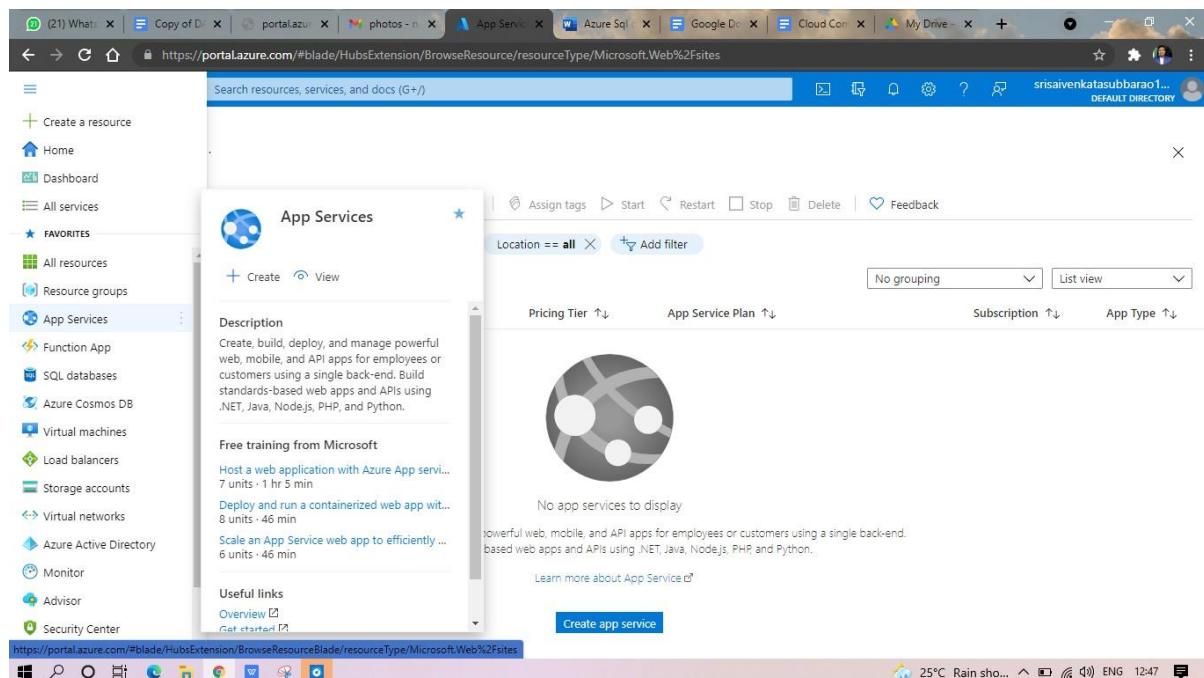
STEP1: FIRSTLY, GO TO APPSERVICE TO CREATE AN WEBAPP.

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

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

IMPLEMENTATION:

STEP1: FIRSTLY, GO TO APPSERVICE TO CREATE AN WEBAPP.



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

App Service Web Apps lets you quickly build, deploy, and scale enterprise-grade web, mobile, and API apps running on any platform. Meet rigorous performance, scalability, security and compliance requirements while using a fully managed platform to perform infrastructure maintenance. [Learn more](#)

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 * Create new

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 THEREVIEW AND CREATE AND CLICK THE CREATE THE 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

The screenshot shows the Microsoft Azure Deployment Overview page for a deployment named "Microsoft.Web-WebApp-Portal-1b6a401b-9ae6". The status is shown as "Your deployment is complete". Deployment details include a start time of 7/21/2021, 12:49:54 PM, and a correlation ID of 76653cd2-c090-4d97-a1e5-2103aa42efc. The page also includes links for "Deployment details (Download)", "Next steps", and "Go to resource". On the right side, there are promotional links for "Security Center", "Free Microsoft tutorials", and "Work with an expert".

STEP4: AND OUR DEPLOYMENT IS COMPLETED.

STEP5: GOTO WEBSITE URL LINK.

The screenshot shows the Microsoft Azure App Service Overview page for an app service named "Record-app". The "Essentials" section displays details such as Resource group (change) : Record, Status : Running, Location : Australia Central, Subscription (change) : Azure for Students, Subscription ID : db4eee0b-1e34-4be0-9c9c-65cc8d398405, URL : https://record-app.azurewebsites.net, App Service Plan : ASP-Record-92e3 (B1: 1), FTP/deployment username : No FTP/deployment user set, FTP hostname : ftp://waws-prod-cbr20-003.ftp.azurewebsites.wind..., and FTPS hostname : https://waws-prod-cbr20-003.ftp.azurewebsites.win.... The page also features sections for "Diagnose and solve problems", "Application Insights", and "App Service Advisor".

STEP6: THIS IS OUR WEBAPP SERVICE.

The screenshot shows a browser window displaying the deployed Node.js application at https://record-app.azurewebsites.net. The page features a Microsoft Azure header and a main content area with the heading "Hey, Node developers!". It informs the user that their app service is up and running and encourages them to take the next step and deploy their code. It includes sections for "Deployment Center" and "Quickstart". A cartoon illustration of a person working on a laptop is present on the right.

EXP 17 .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 ANDSTORAGE AND LAUNCH THE VM IMAGE.

AIM:

To 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.

PROCEDURE:

STEP1: CREATE AN ACCOUNT IN MICROSOFT AZURE.

STEP2: GOTO RESOURCE GROUP AND CREATE A RESOURCE GROUP.

STEP3: GIVE NECESSARY THINGS FOR RESOURCE GROUP.

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

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

STEP6: AND YOUR VIRTUAL MACHINE IS DEPLOYED.

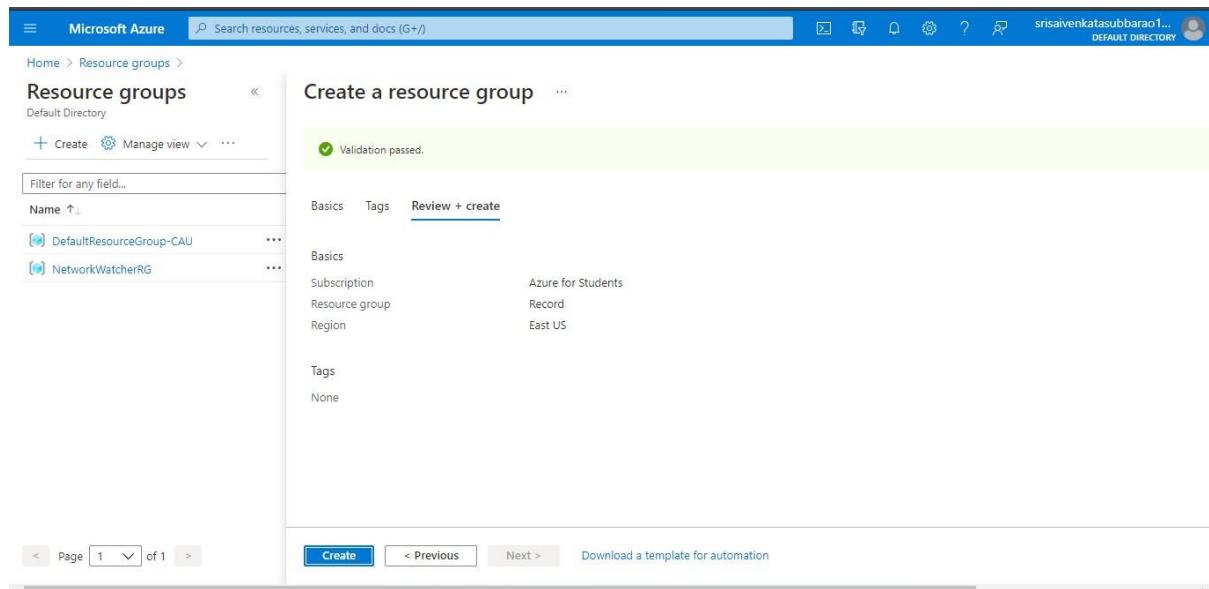
STEP7: NOW CONNECT THE VIRTUAL MACHINE AND DOWNLOAD THE RDP FILETO OPEN YOUR WINDOWS VIRTUAL MACHINE.

STEP8: CREATED A NEW WINDOWS VIRTUAL MACHINE

IMPLEMENTATION:

STEP1: CREATE AN ACCOUNT IN MICROSOFT AZURE.

STEP2: GOTO RESOURCE GROUP AND CREATE A RESOURCE GROUP.



STEP3: GIVE NECESSARY THINGS FOR RESOURCE GROUP.

Microsoft Azure

Resource groups

Create a resource group

Basics Tags Review + create

Project details

Subscription * Azure for Students

Resource group * Record

Resource details

Region * (US) East US

Review + create < Previous Next : Tags >

Microsoft Azure

Resource groups

Create a resource group

Basics Tags Review + create

Apply tags to your Azure resources to logically organize them by categories. A tag consists of a key (name) and a value. Tag names are case-insensitive and tag values are case-sensitive. Learn more

Name	Value	Resource
		Resource group

Review + create < Previous Next : Review + create >

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

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

Microsoft Azure

Resource groups

Show 1 to 3 of 3 records.

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

< Previous Page 1 of 1 Next >

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

STEP5: NOW CREATE A VIRTUAL MACHINE WITH UR IPADDRESS ANUSERNAME AND PASSWORD FOR YOUR VIRTUAL MACINE.

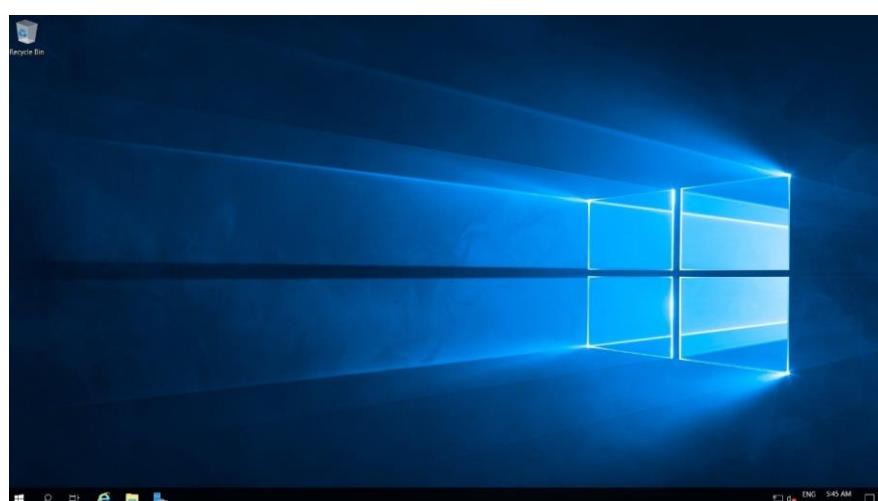
STEP6: AND YOUR VIRTUAL MACHINE IS DEPLOYED.

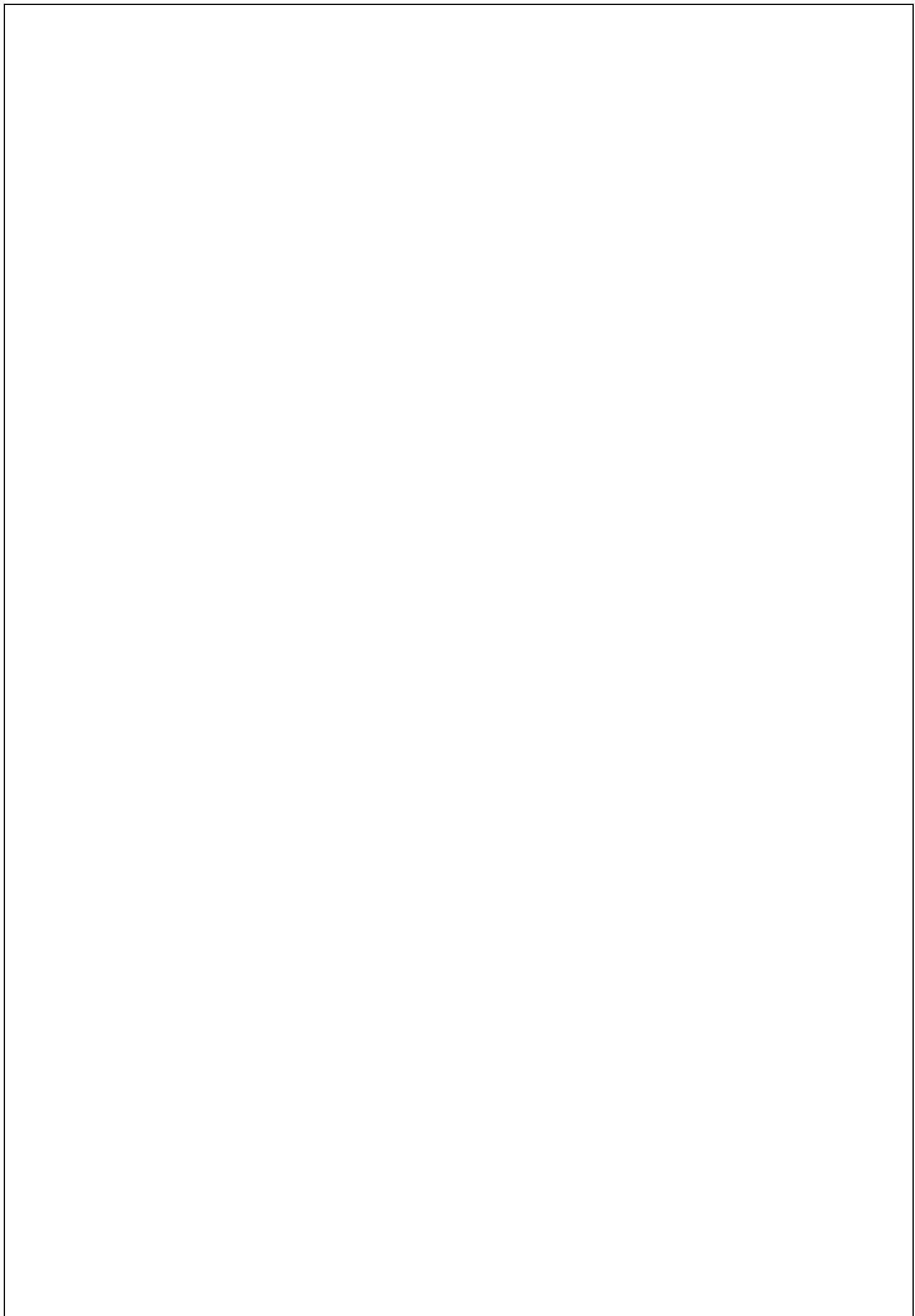
The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes 'Microsoft Azure', a search bar, and user information. Below it, the main title is 'CreateVm-MicrosoftWindowsServer.WindowsServer-201-20210721104828 | Overview'. On the left, there's a sidebar with 'Overview', 'Inputs', 'Outputs', and 'Template' options. The main content area displays 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, Resource group: Record. It also lists 'Deployment details' (Download) and 'Next steps' (Setup auto-shutdown, Monitor VM health, Run a script inside the virtual machine). At the bottom are 'Go to resource' and 'Create another VM' buttons. To the right, there are promotional 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.

The screenshot shows the Microsoft Azure portal interface for a specific virtual machine named 'Record-virtual'. The top navigation bar and title are identical to the previous screenshot. The left sidebar includes 'Overview', 'Activity log', 'Access control (IAM)', 'Tags', 'Diagnose and solve problems', 'Networking', 'Connect', 'Windows Admin Center (preview)', 'Disks', 'Size', 'Security', 'Advisor recommendations', and 'Extensions'. The main content area shows the 'Essentials' tab with detailed configuration: Resource group (change) : Record, Status : Running, Location : East US, Subscription (change) : Azure for Students, Subscription ID : db4eef0b-1e34-4be0-9c9c-65cc8d398405, Tags (change) : Click here to add tags. Below this is the 'Properties' tab, which includes sections for '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) and '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). There's also a 'JSON View' button.

STEP8: CREATED A NEW WINDOWS VIRTUAL MACHINE.





EXP19.CREATE A STORAGE SERVICE USING ANY PUBLIC CLOUD SERVICE PROVIDER (AZURE/GCP/AWS) AND CHECK THE PUBLIC ACCESSIBILITY OFTHE STORED FILE TO DEMONSTRATE STORAGE AS A SERVICE.

AIM:

PROCEDURE:

STEP1: OPEN AZURE AND GOTO STORAGE ACCOUNTS AND CREATESTOROAGE ACCOUNT

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

STEP3: OUR STORAGE ACCOUNT IS CREATED.

STEP4: GOTO STATIC WEBSITE

STEP5: AND ENABLE AND ENTER YOUR INDEX AND ERROR HTML FILES NAMES.

STEP6: AND GOTO STORAGE EXPLORR(REVIEW) AND AND GOTO BLOBCONTAINERS AND WEB AND UPLOAD THE TWO HTML FILES INIT

STEP7: AND AGAIN RETURN TO STATIC WEBSITE AND OPEN THE PRIMARYLINK AND YOUR WEB PAGE IS CREATED

IMPLEMENTATION:

STEP1: OPEN AZURE AND GOTO STORAGE ACCOUNTS AND CREATESTOROAGE ACCOUNT

The screenshot shows the Azure portal interface with the URL <https://portal.azure.com/#blade/HubsExtension/BrowseResourceBlade/resourceType/Microsoft.Storage%2FStorageAccounts>. The left sidebar has 'Storage accounts' selected under 'FAVORITES'. The main area is titled 'Storage accounts' and displays a message: 'No storage accounts to display'. It includes a description of what a storage account is and a 'Create' button.

STEP2: ENTER THE RESOURCE GROUP AND AND STORAGE ACCOUNT NAMEAND 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 is "Deployment succeeded". The deployment was started on 7/21/2021, 1:00:57 PM. The page includes sections for "Deployment details" (with a download link), "Next steps" (with a "Go to resource" button), and a sidebar with links to Security Center, Free Microsoft tutorials, and Work with an expert.

STP3: AND OUR STORAGE ACCOUNT IS CREATED.

The screenshot shows the Microsoft Azure Storage Account Overview page for a storage account named "recordstoragesubbarao". The account is listed under the "Storage accounts" section. The "Essentials" tab is selected, displaying details such as Resource group (change) : Record, Location : East US, Primary/Secondary Location : Primary: East US, Secondary: West US, Subscription (change) : Azure for Students, Subscription ID : db4eee0b-1e34-4be0-9c9c-65cc8d398405, Disk state : Primary: Available, Secondary: Available, and Tags (change) : . The "Properties" tab is also visible, showing Blob service settings like Hierarchical namespace (Disabled), Default access tier (Hot), Blob public access (Enabled), and Blob soft delete (Enabled (7 days)).

STEP4: GOTO STATIC WEBSITE

Microsoft Azure

Search resources, services, and docs (G+)

deeksha - Storage account

Open in Explorer Delete Move Refresh Feedback

Microsoft recommends upgrading to the new alerts platform to ensure no interruptions in your alerts. Classic alerts will be retired starting in 2021. Upgrade to the new alerts platform. [Learn more](#)

Essentials

Resource group (change) : Gopi

Location : East US

Primary/Secondary Location : Primary: East US, Secondary: West US

Subscription (change) : Azure for Students

Subscription ID : 88bd0e11-e431-4a2a-8040-bdf7d22901aa

Disk state : Primary: Available, Secondary: Available

Tags (change) :

Properties Monitoring Capabilities (?) Recommendations Tutorials Developer Tools

Blob service Security

Hierarchical namespace : Disabled

Default access tier : Hot

Require secure transfer for REST API operations : Enabled

Blob public access : Enabled

Storage account key access : Enabled

Blob soft delete : Enabled (7 days)

Minimum TLS version : Version 1.2

Container soft delete : Enabled (7 days)

Infrastructure encryption : Disabled

Versioning : Disabled

Networking

Type here to search

10:20 22-06-2021

STEP5: AND ENABLE AND ENTER YOUR INDEX AND ERROR HTMLFILESNAMES.

Microsoft Azure

Search resources, services, and docs (G+)

deeksha | Static website

Home > deeksha

Save Discard

Enabling static websites on the blob service allows you to host static content. Webpages may include static content and client-side scripts. Server-side scripting is not supported. As data is replicated asynchronously from primary to secondary regions, files at the secondary endpoint may not be immediately available or in sync with files at the primary endpoint. [Learn more](#)

Static website

Disabled Enabled

An Azure Storage container has been created to host your static website. \$web

Primary endpoint ⓘ https://deeksha.z13.web.core.windows.net/

Secondary endpoint ⓘ https://deeksha-secondary.z13.web.core.windows.net/

Index document name ⓘ index.html

Error document path ⓘ 404.html

Type here to search

33°C 10:23 ENG 22-06-2021

STEP6: AND GOTO STORAGE EXPLORER(Review) AND AND GOTO BLOBCONTAINERS 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 https://portal.azure.com/. The main area is titled "recordstoragesubbarao | Storage Explorer (preview)" and shows a list of blobs in the "\$web" container. The table lists the following files:

NAME	ACCESS TIER	ACCESS TIER LAST MODIFIED	LAST MODIFIED	BLOB TYPE	CONTENT TYPE	SIZE	STATUS	RI
about.jpg	Hot (inferred)		7/21/2021, 1:30:36 PM	Block Blob	image/jpeg	188.6 KB	Active	
hero-bg.png	Hot (inferred)		7/21/2021, 1:30:35 PM	Block Blob	image/png	7.1 KB	Active	
hero-img.png	Hot (inferred)		7/21/2021, 1:30:35 PM	Block Blob	image/png	22.1 KB	Active	
index.html	Hot (inferred)		7/21/2021, 1:30:34 PM	Block Blob	text/html	9.6 KB	Active	
logo.png	Hot (inferred)		7/21/2021, 1:30:34 PM	Block Blob	image/png	1.0 KB	Active	
README.md	Hot (inferred)		7/21/2021, 1:30:34 PM	Block Blob	application/octet-stream	14 B	Active	
script.js	Hot (inferred)		7/21/2021, 1:30:34 PM	Block Blob	text/javascript	447 B	Active	
style.css	Hot (inferred)		7/21/2021, 1:30:34 PM	Block Blob	text/css	3.8 KB	Active	
values-1.png	Hot (inferred)		7/21/2021, 1:30:35 PM	Block Blob	image/png	203 KB	Active	
values-2.png	Hot (inferred)		7/21/2021, 1:30:35 PM	Block Blob	image/png	22.2 KB	Active	
values-3.png	Hot (inferred)		7/21/2021, 1:30:35 PM	Block Blob	image/png	19.6 KB	Active	

Showing 1 to 11 of 11 cached items

STEP7: AND AGAIN RETURN TO STATIC WEBSITE AND OPEN THE PRIMARYLINK AND YOUR WEB PAGE IS CREATED

The screenshot shows a static website page titled "React". The header includes links for Home, About, Services, Testimonials, and Contact. The main content features a large hero section with the text "We offer modern solutions for growing your business" and a subtext "We are team of talented designers making websites with Bootstrap". Below this is a blue "Get Started" button. To the right of the text, there's a 3D isometric illustration of a person working on a large laptop screen, surrounded by server racks and network equipment.

EXP20.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)

AIM: 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)

PROCEDURE:

STEP1: GOTO AZURE AND GOTO SQLDATABASE.

STEP 02: Now Create a Sql Database

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.

STEP6: AND THE SQL DATABASE IS DEPLOYED

TEP7: NOW GOTO QUERY EDITOR.

STEP8: NOW AGAIN LOGIN TO THE SQLDATADATABASE

STEP9: OUR TABLES WILL SHOWN AND TYPE THE QUERY TO EXECUTED

IMPLEMENTATION:

STEP1: GOTO AZURE AND GOTO SQLDATABASE.

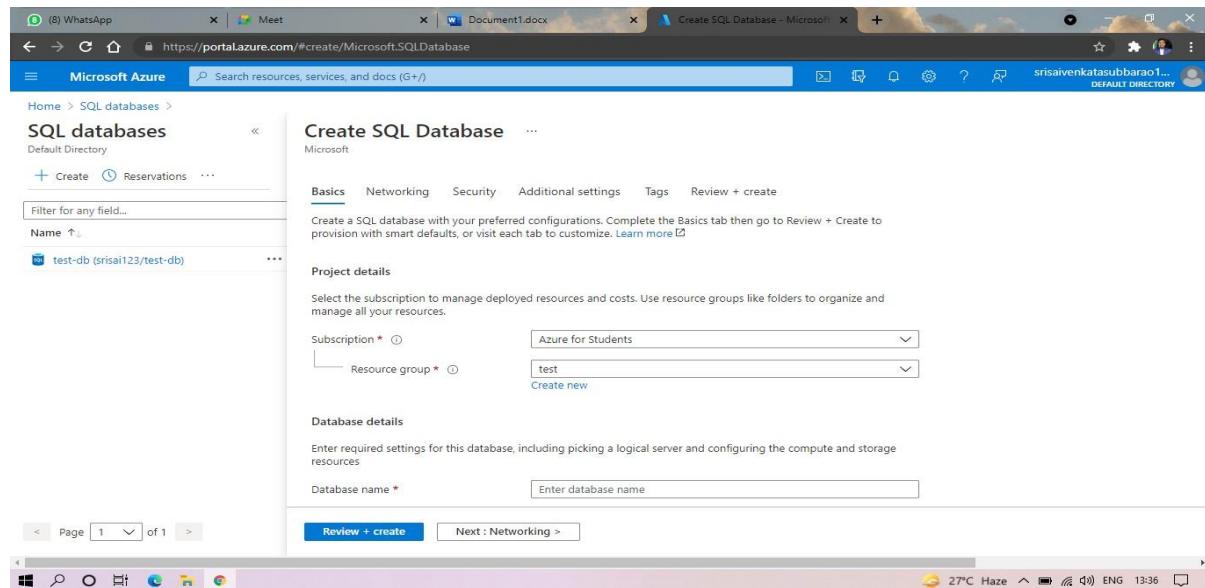
STEP 02:- Now Create a Sql Database

The screenshot shows the Microsoft Azure portal interface. The left sidebar has a 'FAVORITES' section with 'SQL databases' selected. The main content area displays the 'SQL databases' blade with a search bar at the top. Below the search bar are several service icons: SQL databases, Resource groups, All resources, Virtual machines, Storage accounts, App Services, Virtual networks, Help + support, and More services. A large button labeled 'SQL databases' with a star icon is prominently displayed. Below this button is a table showing four items:

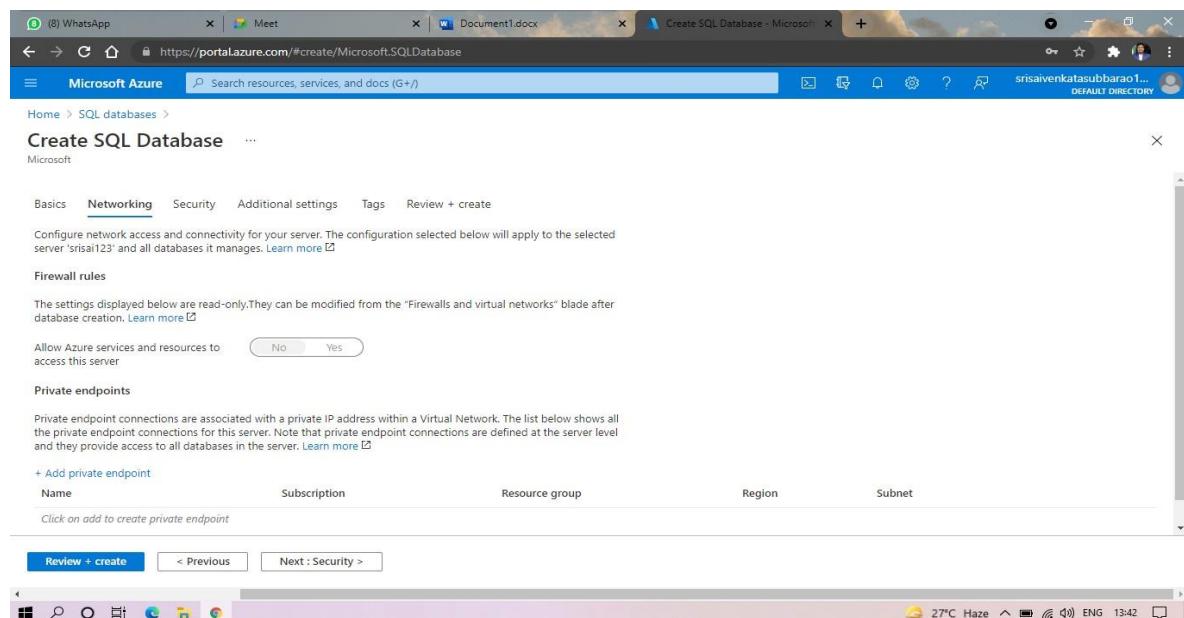
Type	Last Viewed
SQL database	3 hours ago
Resource group	3 hours ago
Resource group	3 hours ago
Resource group	3 hours ago

At the bottom of the blade, there are links for 'Create' and 'View'. The bottom navigation bar includes 'Resource groups', 'All resources', and 'Dashboard'.

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

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

Database collation defines the rules that sort and compare data, and cannot be changed after database creation. The default database collation is SQL_Latin1_General_CI_AS. Learn more [\(L\)](#)

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

Deployment details (Download) Next steps

Go to resource

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

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STEP7:AND NOW GOTO QUERY EDITOR.

The screenshot shows the Microsoft Azure portal interface. The left sidebar navigation includes Home, Overview, Activity log, Tags, Diagnose and solve problems, Quick start, Query editor (preview), Power Platform (Power BI (preview), Power Apps (preview), Power Automate (preview)), Settings (Compute + storage, Connection strings, Properties, Locks), and a search bar. The main content area displays the 'test-db (srisai123/test-db)' resource group details under the 'Essentials' tab. Key information shown includes:

- Resource group (change) : test
- Status : Paused
- Location : West US 3
- Subscription (change) : Azure for Students
- Subscription ID : db4eee0b-1e34-4be0-9c9c-65cc8d398405
- Tags (change) : Click here to add tags
- Server name : srisai123.database.windows.net
- Connection strings : Show database connection strings
- Pricing tier : General Purpose: Serverless, Gen5, 1 vCore
- Auto-pause delay : 1 hour
- Earliest restore point : 2021-06-23 05:19 UTC

Below the essentials section, there is a 'Compute utilization' chart and a 'Show data for last:' dropdown with options for 1 hour, 24 hours, and 7 days. An 'Aggregation type:' dropdown is set to 'Max'. The bottom right corner of the screen shows system status: 27°C Haze, ENG, 13:52.

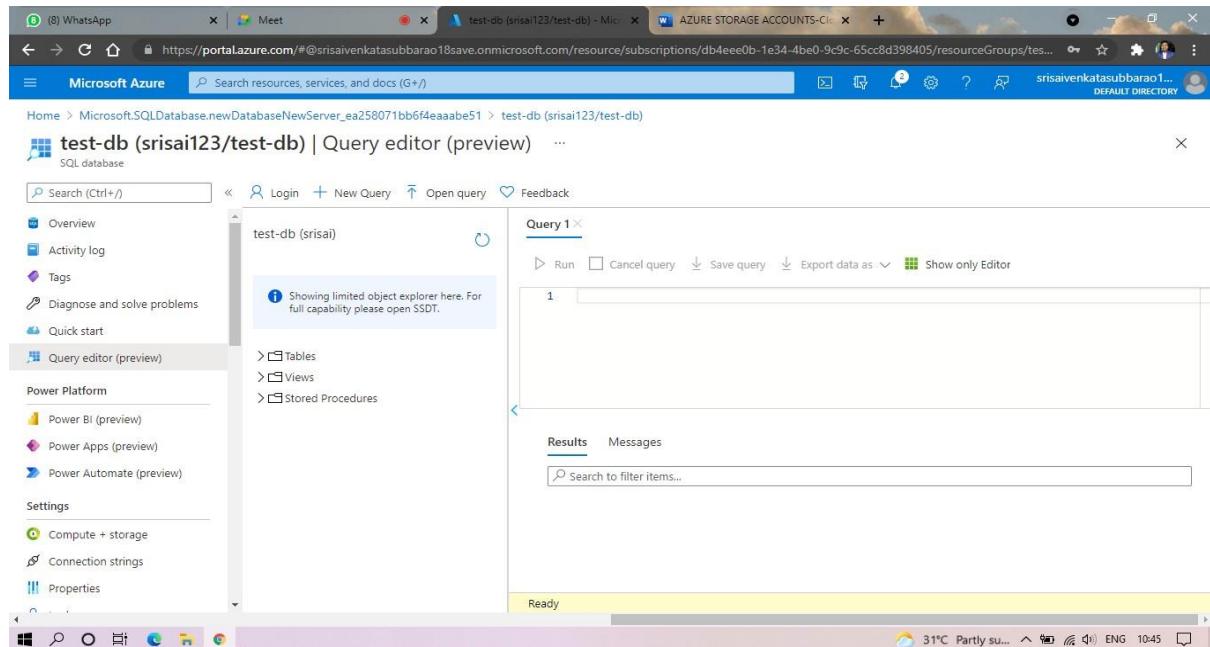
STEP8:AND NOW AGAIN LOGIN TO THE SQLDATADBATABASE

The screenshot shows the Microsoft Azure portal interface, specifically the 'Query editor (preview)' page for the 'test-db (srisai123/test-db)' resource group. The left sidebar navigation is identical to the previous screenshot. The main content area displays the 'Welcome to SQL Database Query Editor' page. It features two authentication methods:

- SQL server authentication:** A 'Login *' field containing 'srisai' and a 'Password *' field containing '*****'. Below these fields is an 'OK' button.
- Active Directory authentication:** A 'Continue as srisaivenkatasubbarao18@...' button.

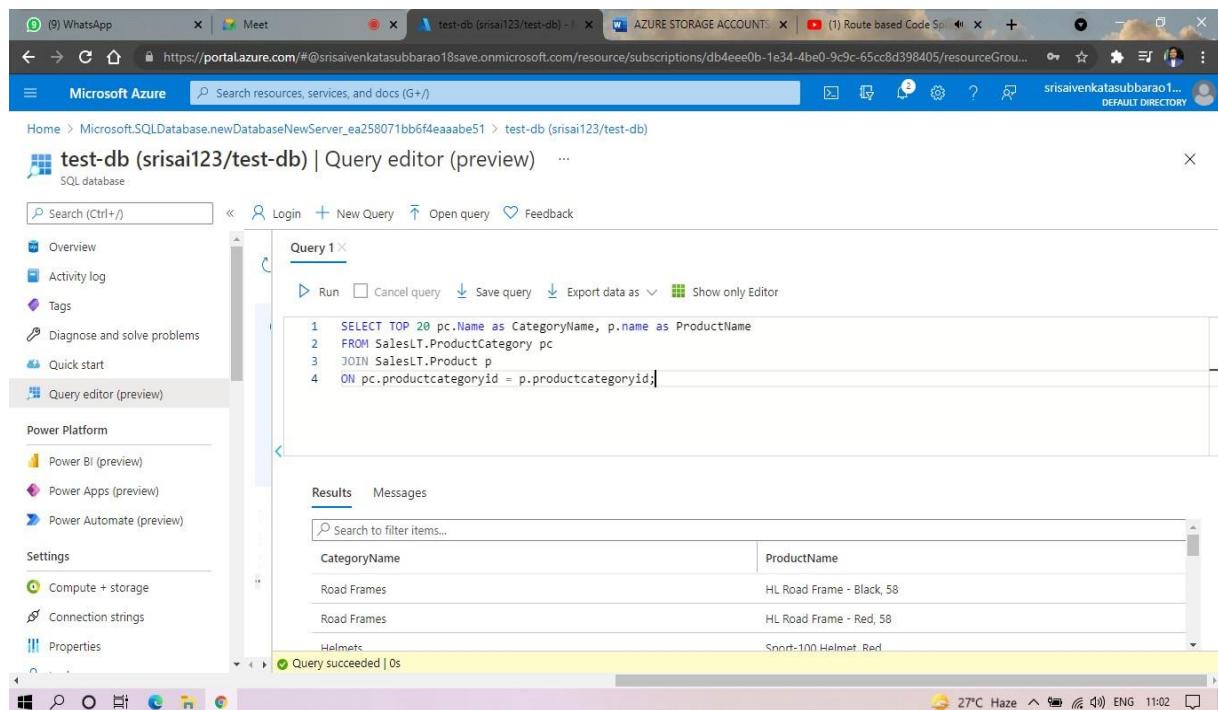
The bottom right corner of the screen shows system status: 27°C Haze, ENG, 13:58.

STEP9: AND OUR TABLES WILL SHOWN AND TYPE THE QUERY TOEXECUTED.



The screenshot shows the Microsoft Azure portal interface. The main title bar reads "test-db (srисai123/test-db) - Microsoft Azure". Below it, the URL is https://portal.azure.com/#@srисaivenkatasubbarao18save.onmicrosoft.com/resource/subscriptions/db4eee0b-1e34-4be0-9c9c-65cc8d398405/resourceGroups/test-db. The left sidebar is titled "test-db (srисai123)" and includes sections for Overview, Activity log, Tags, Diagnose and solve problems, Quick start, and Query editor (preview). The "Query editor (preview)" section is currently selected. The main content area is titled "Query 1" and contains a text input field with the number "1" and a dropdown menu with options Run, Cancel query, Save query, Export data as, and Show only Editor. Below the input field is a "Results" tab and a search bar. At the bottom of the main area, there is a yellow bar with the word "Ready".

STEP10: AND OUR OUTPUT IS READY.



This screenshot shows the same Microsoft Azure portal setup as the previous one, but with a query executed. The "Query 1" text input field now contains the following SQL code:

```
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;
```

The "Results" tab is active, displaying the output of the query. The table has two columns: "CategoryName" and "ProductName". The data is as follows:

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

At the bottom of the results table, there is a yellow bar with the message "Query succeeded | 0s".

EXP. 22: PERFORM THE BASIC CONFIGURATION SETUP FOR INSTALLINGHADOOP 2.X LIKE CREATING THE HDUSER AND SSH LOCALHOST

AIM: PERFORM THE BASIC CONFIGURATION SETUP FOR INSTALLINGHADOOP 2.X LIKE CREATING THE HDUSER AND SSH LOCALHOST

PROCEDURE:

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
```

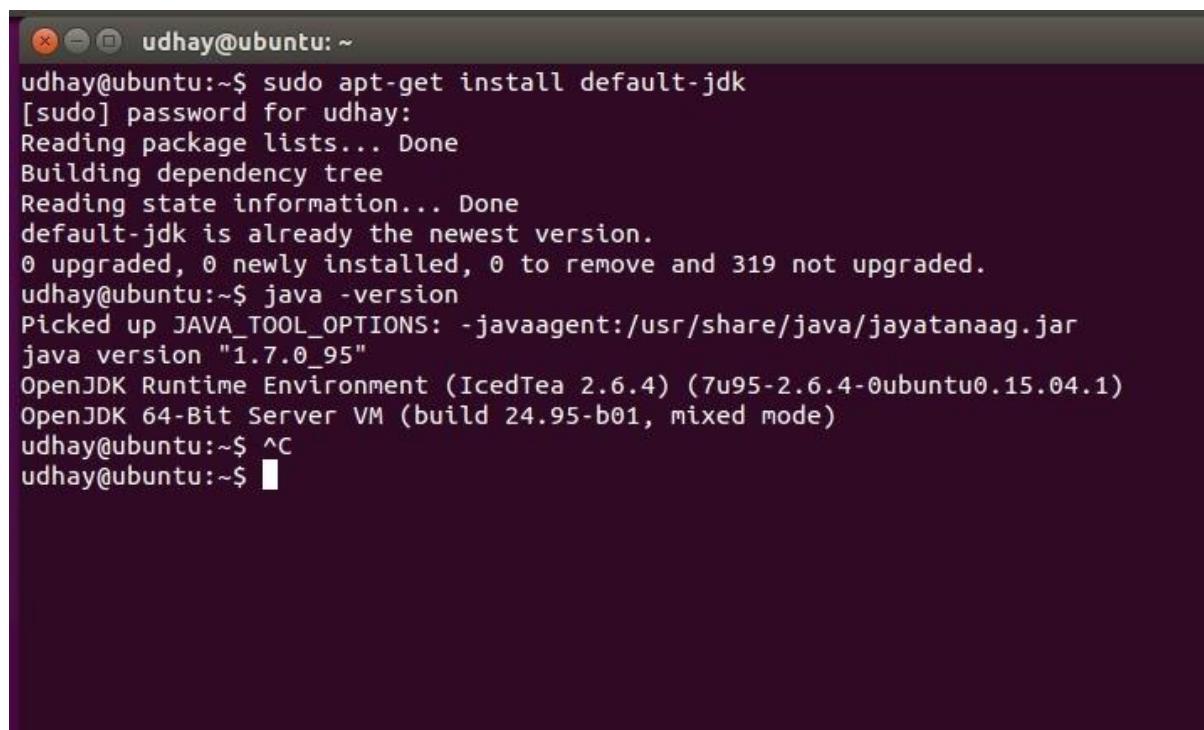
Step 5 – Check if SSH works

```
$ 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 'sudo apt-get install default-jdk' and is prompted for a 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 sees the Java version is 1.7.0_95, along with the OpenJDK Runtime Environment and Server VM details.

```
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	Nodes
Nodes	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

EXP. 23: INSTALL HADOOP 2.X AND CONFIGURE THE NAME NODE AND DATANODE.

AIM: INSTALL HADOOP 2.X AND CONFIGURE THE NAME NODE AND DATANODE.

PROCEDURE:

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:

```
Clone of Ubuntu 64-bit
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
```

```
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

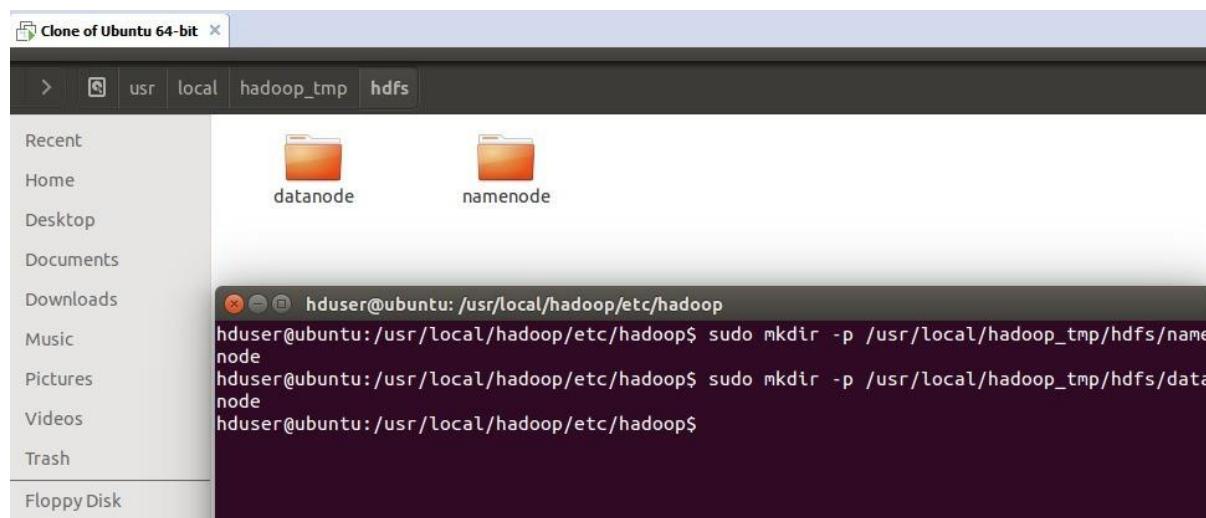
# distributed under the License is distributed on an "AS IS" BASIS,
# WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
# See the License for the specific language governing permissions and
# limitations under the License.

# 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.
```



EXP. 24: LAUNCH THE HADOOP 2.X AND PERFORM MAPREDUCE PROGRAMFOR A WORD COUNT PROBLEM

AIM: LAUNCH THE HADOOP 2.X AND PERFORM MAPREDUCE PROGRAMFOR A WORD COUNT PROBLEM

PROCEDURE:

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
        stubif(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);
    }
}
```

```
    }  
}
```

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)
```

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) {
```

```

}

@Override

    public void reduce(Text arg0, Iterator<IntWritable> arg1, OutputCollector<Text, IntWritable>
arg2, Reporter arg3)

        throws IOException {

    // TODO Auto-generated method
    stubint count=0;

    while(arg1.hasNext())

    {

        IntWritable i=arg1.next();
        count+=i.get();
    }
}

```

Step 9 - Creatr 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 **Permission**stab, Check Allow executingfile 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

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

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

Search

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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
```