

Hindi Vidya Prachar Samiti's
RAMNIRANJAN JHUNJHUNWALA COLLEGE
OF ARTS, SCIENCE & COMMERCE
(EMPOWERED AUTONOMOUS)

Cloud Computing



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Roll No.: 711

Class: MSc Data Science and Artificial Intelligence Part-I



Hindi Vidya Prachar Samiti's Ramniranjan Jhunjhunwala College of Arts, Science and Commerce

Department of Data Science and Artificial Intelligence

CERTIFICATE

This is to certify Ms. Siddhi Shashikant Chavan of Msc. Data Science and Artificial Intelligence Roll No 711 has successfully completed the practical of Cloud Computing during the Academic Year 2023-2024.

Date :

(Prof. Sujata Kotian)

Prof-In-Charge

External Examiner

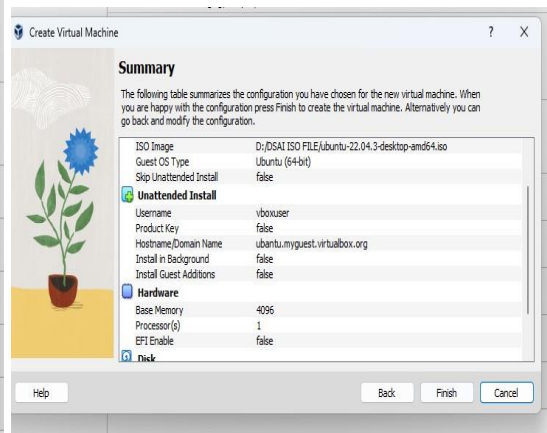
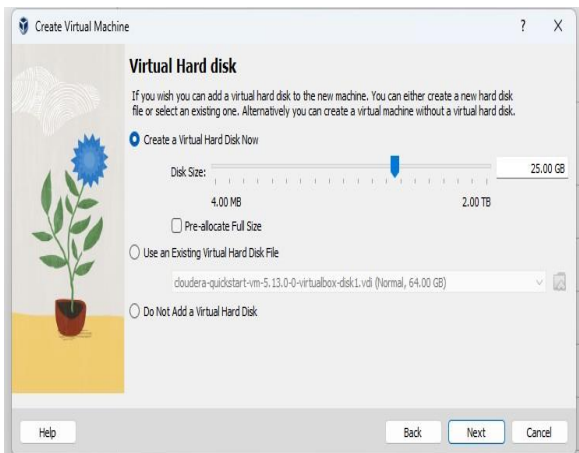
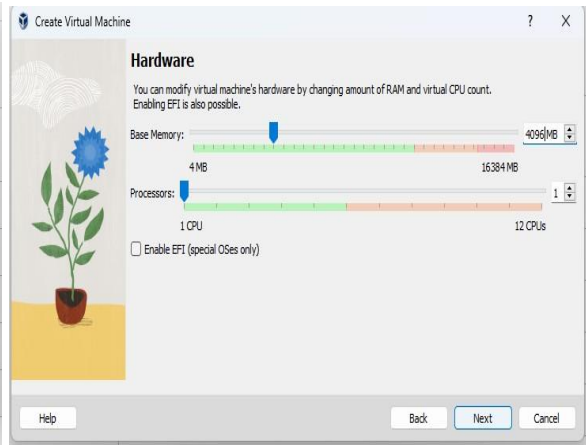
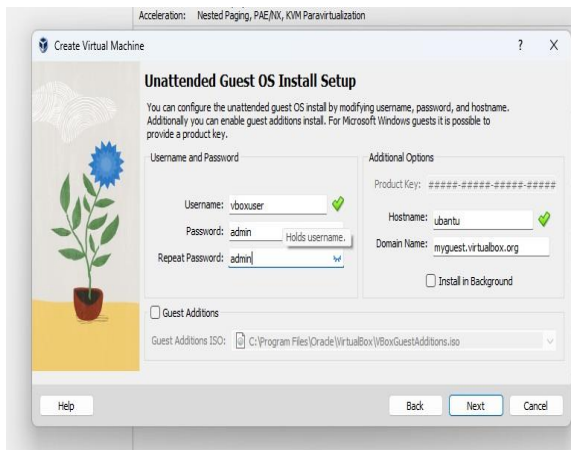
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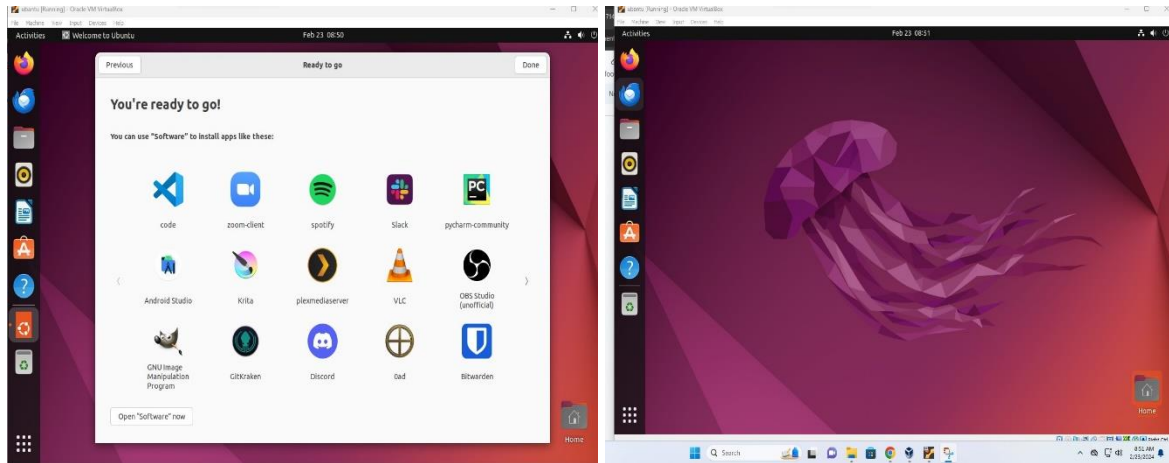
Practical 1 - Install virtualbox/ VMware Workstation with different flavours of linux or windows OS on top of Windows.

1. Linux

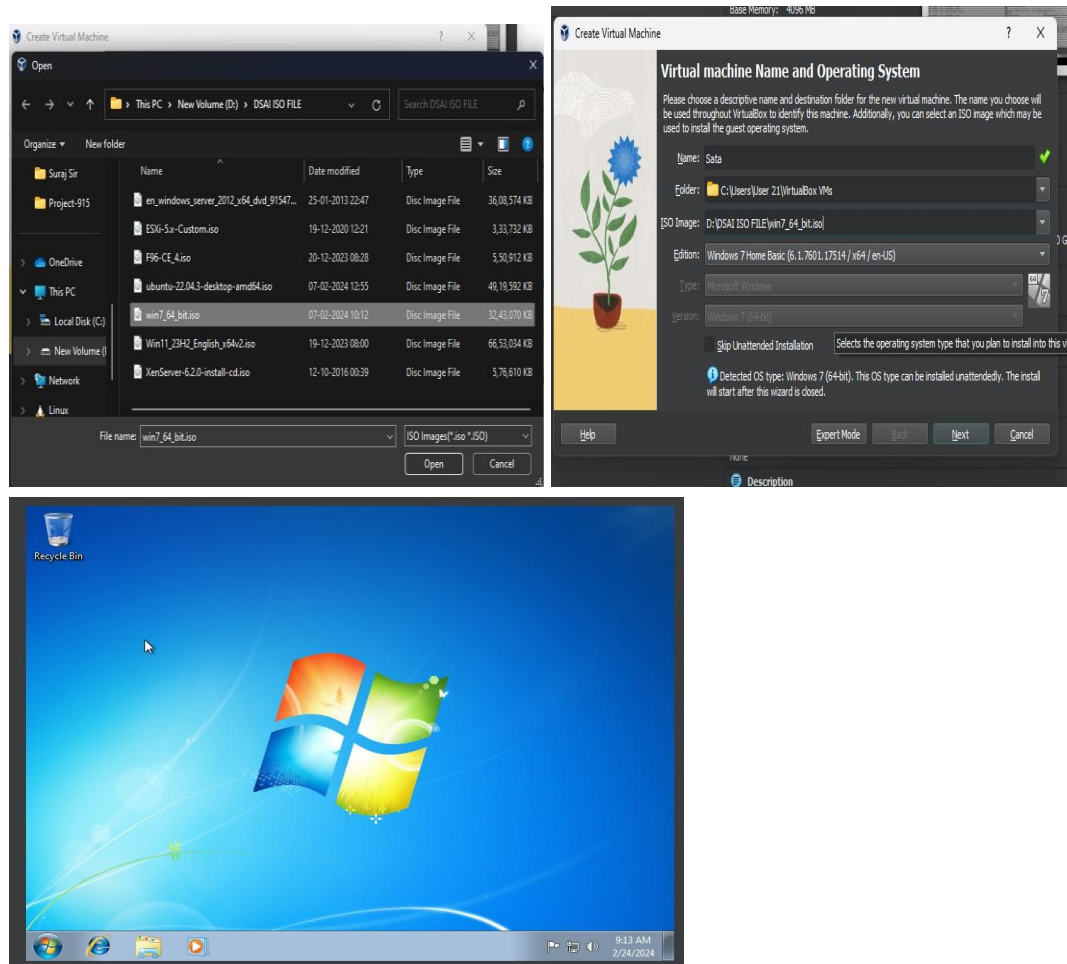
VirtualBox-New -Write Name & Iso Image -Other -DSAI ISO File - Select Ubuntu File - Next
Change Password - Next
Change Base Memory to 4GB - Next - Next -Finish



Skip - Next - Next - Next - Done



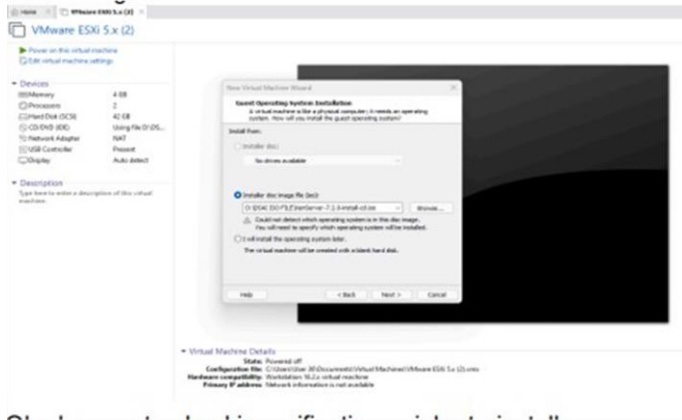
2. Windows



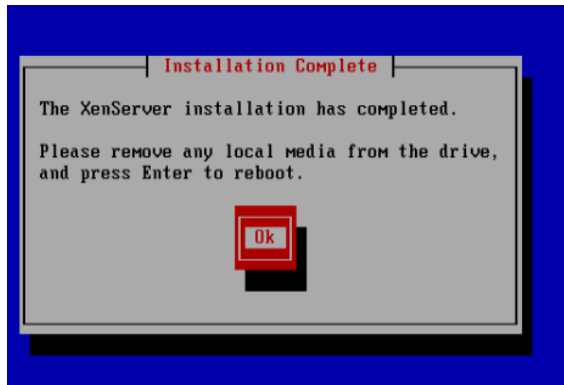
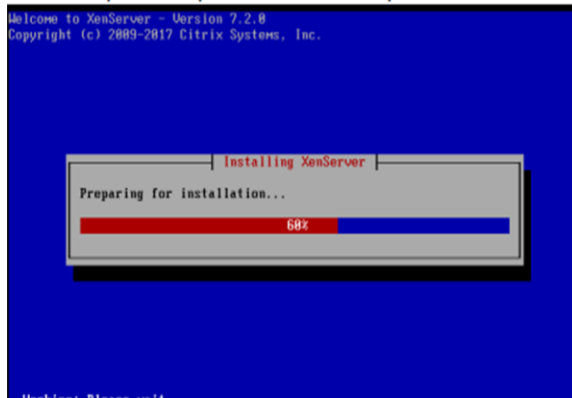
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Practical 2 - Install Xen server and connect with Xen Client.

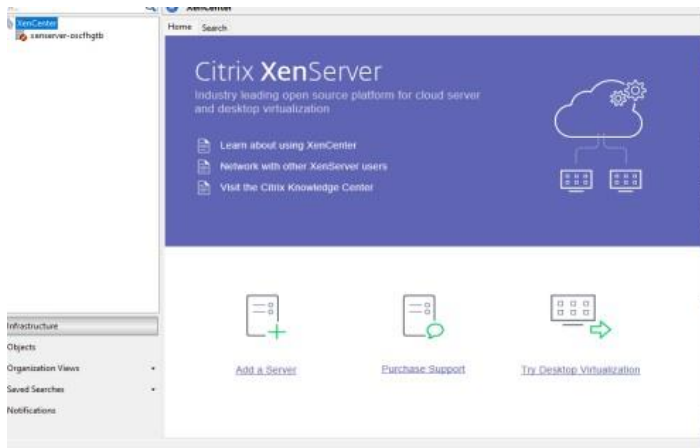
File -New virtual machine-Browser-xenserver7-other -other64.-maximum
disksize-60-single file-finish



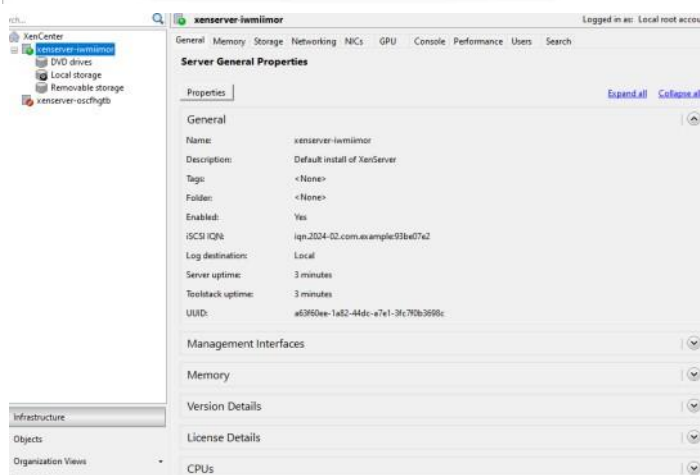
Ok-ok-accept eula-skip verification-usinh ntp-install xenserver



Copy IP address



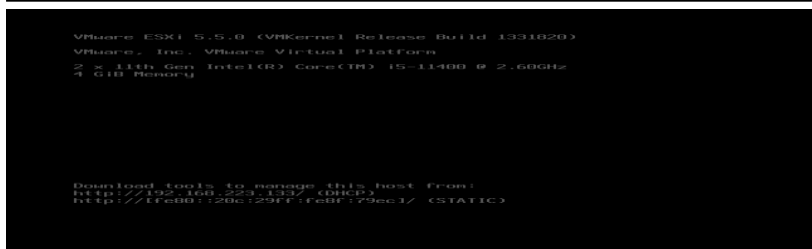
Add a server



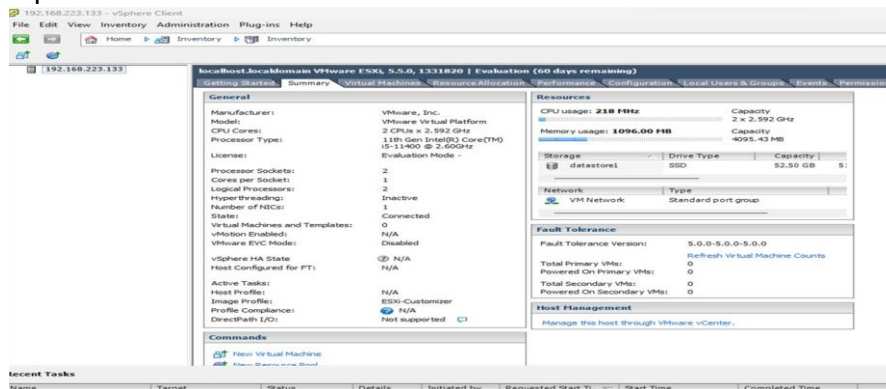
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Practical 3 - Install ExSi server and connect with VSphere.

#open VMware workstation pro
Install exsi server



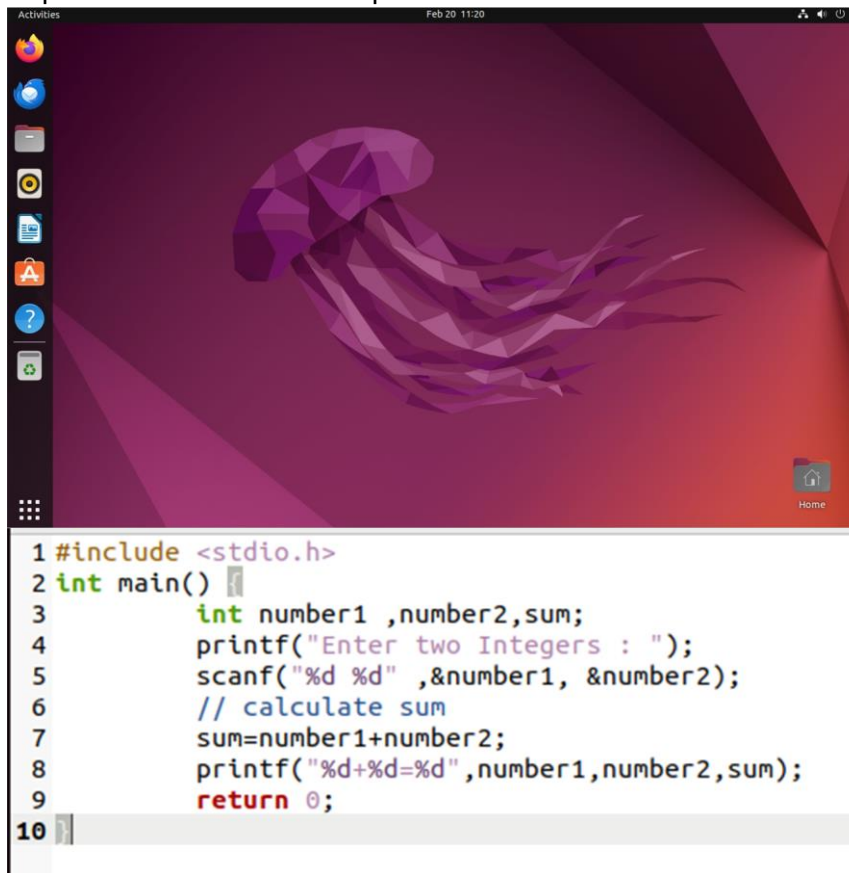
IP Address 192.168.223.133
vsphere.....



Signature:- _____

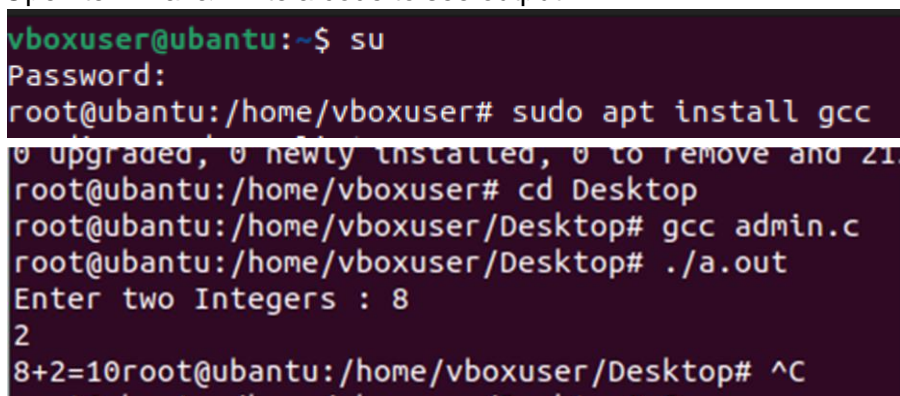
Practical 4 - Install a C compiler in virtual machine created using virtual box and execute a simple program.

#Open vmware workstation pro

A screenshot of a virtual machine desktop environment. The desktop has a purple and red geometric background with a jellyfish-like shape. A vertical dock on the left contains icons for various applications. A code editor window is open, displaying a C program that takes two integers as input and prints their sum. The code is as follows:

```
1 #include <stdio.h>
2 int main()
3 {
4     int number1 ,number2,sum;
5     printf("Enter two Integers : ");
6     scanf("%d %d" ,&number1, &number2);
7     // calculate sum
8     sum=number1+number2;
9     printf("%d+%d=%d",number1,number2,sum);
10    return 0;
}
```

Open terminal & Write a code to see output

A screenshot of a terminal window showing the installation and execution of a C program. The terminal output is as follows:

```
vboxuser@ubuntu:~$ su
Password:
root@ubuntu:/home/vboxuser# sudo apt install gcc
0 upgraded, 0 newly installed, 0 to remove and 21.
root@ubuntu:/home/vboxuser# cd Desktop
root@ubuntu:/home/vboxuser/Desktop# gcc admin.c
root@ubuntu:/home/vboxuser/Desktop# ./a.out
Enter two Integers : 8
2
8+2=10root@ubuntu:/home/vboxuser/Desktop# ^C
```

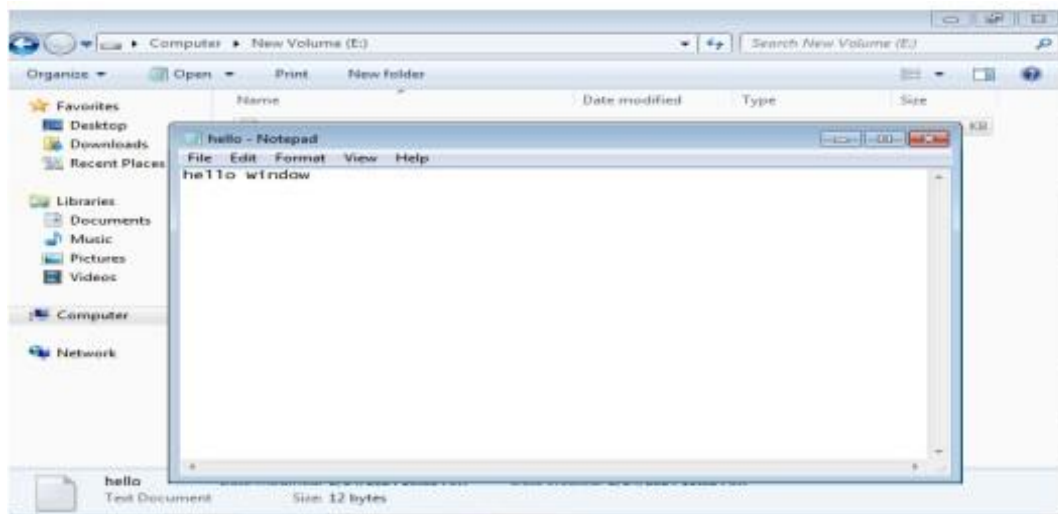
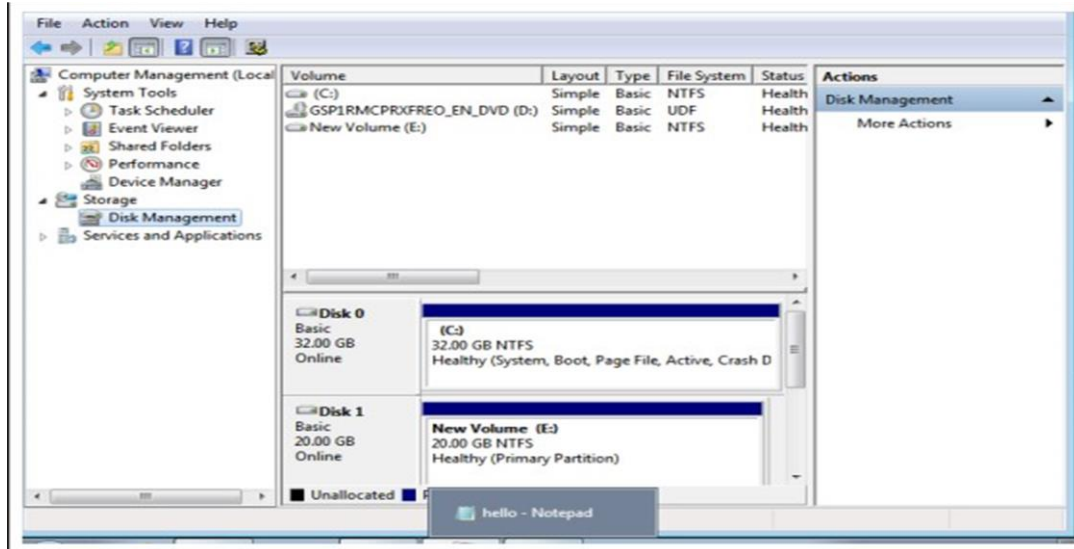
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Practical 5 - To attach virtual block to virtual machine and check whether it holds the data even after the release of virtual machine.

open virtual box

Select sata > storage > create a new volume

Control Panel-System and security-Administrative Tools-Computer Manager-Storage -Disk management -Initialize-New simple Volume
Type on NoteBook and Save it to the created Drive



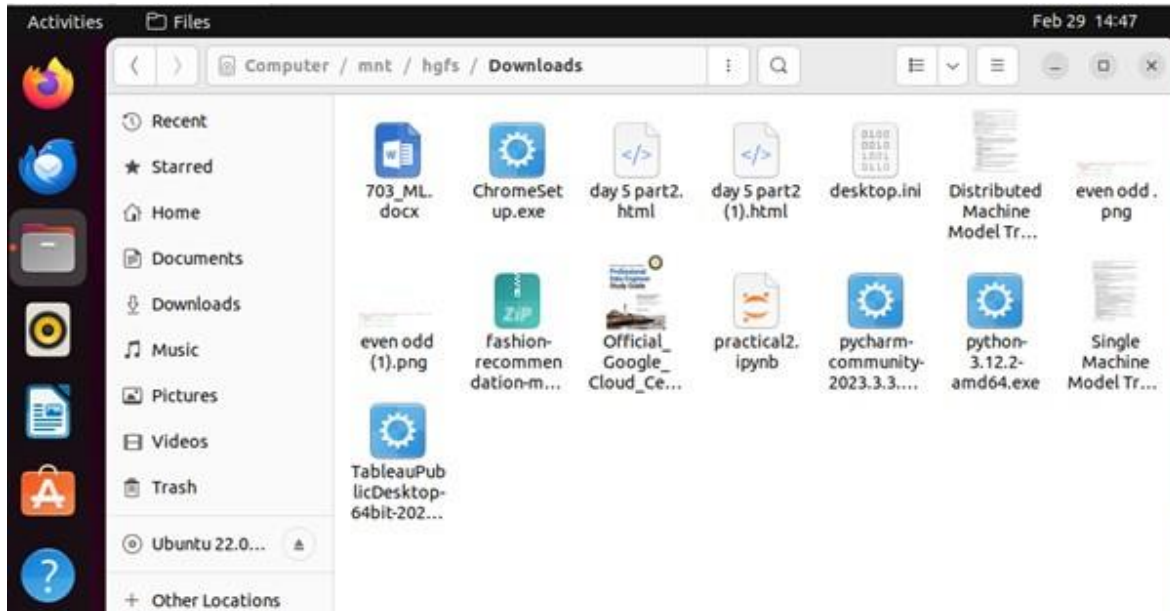
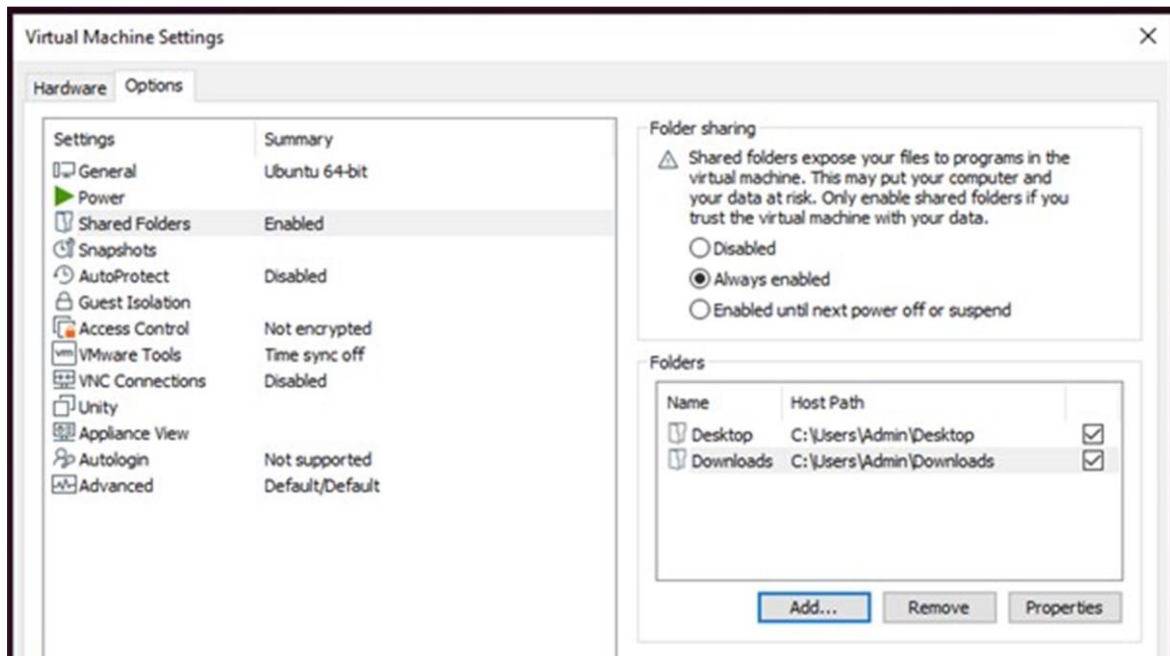
Signature:- _____

Practical 6 - Transfer files from one host machine to another virtual machine.

#open VMware workstation pro

Start ubuntu

vm>setting>optional>shared folder-enable >always enabled>browser>go to mnt folder

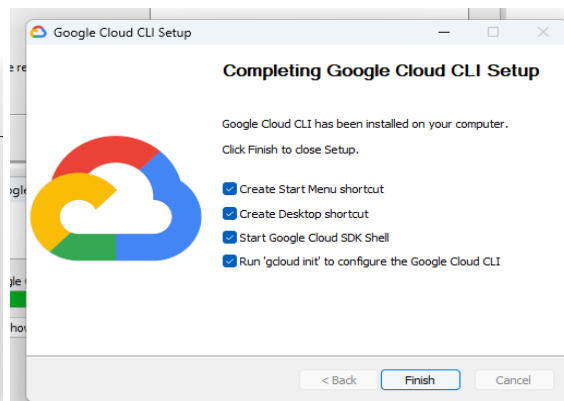
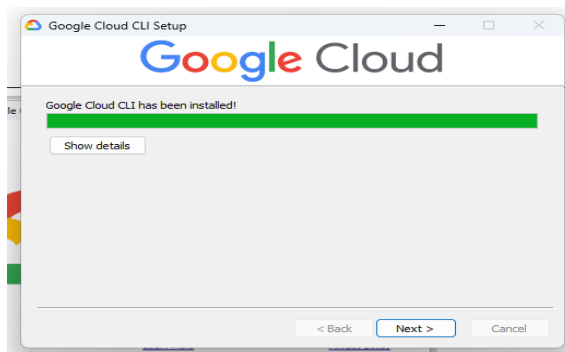
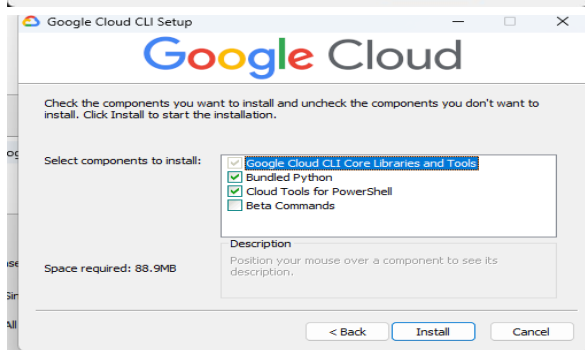
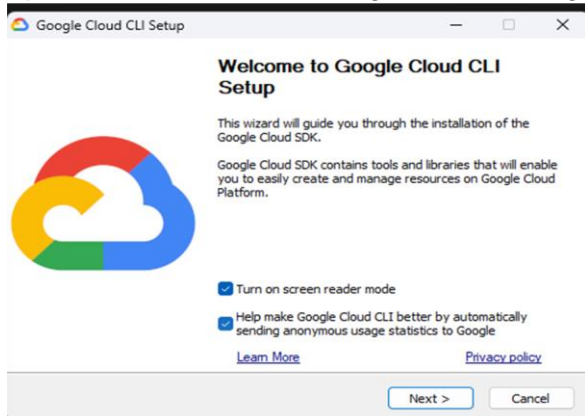


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Practical 7 - Installation of Google app engine. Launch a web application using GAE launcher.

Download CloudSDK installer (Drive -cc prac Folder)

Open CloudSDK - Next _ I Agree - Click SingleUser - Next -Next - Install



Walkthrough in Cloud Shell Editor

```
a= int(input("Enter first number : "))  
b=int(input("Enter second number : "))  
c=a+b  
print(c)
```

```
vy285964@cloudshell:~$ /usr/bin/python /home/vy285964/addition.py  
Enter first number : 10  
Enter second number : 20  
30
```

Signature:- _____

Practical 8 - Using the software like JDK 1.7/1.8. design and develop web application using MVC Framework.

Employee

```
// class that represents model
public class Employee {
// declare the variables
private String EmployeeName;
private String EmployeeID;
private String EmployeeDepartment;
// defining getter and setter methods
public String getID() {
return EmployeeID;
}
public void setID(String ID) {
this.EmployeeID=ID;
}
public String getName() {
return EmployeeName;
}
public void setName(String Name) {
this.EmployeeName=Name;
}
public String getDepartment() {
return EmployeeDepartment;
}
public void setDepartment(String Department) {
this.EmployeeDepartment=Department;
}
}
```

EmployeeController

```
// class which represent the controller
public class EmployeeController {
// declaring the variables model and view
private Employee model;
private EmployeeView view;
// constructor to initialize
public EmployeeController(Employee model,EmployeeView view){
this.model=model;
this.view=view;
}
// getter and setter method
```

```

public void setEmployeeName(String
name){ model.setName(name);
}
public String
getEmployeeName(){ return
model.getName();
}
public void setEmployeeID(String ID){
model.setID(ID);
}
public String
getEmployeeID(){ return
model.getID();
}
public void setEmployeeDepartment(String Department){
model.setDepartment(Department);
}
public String getEmployeeDepartment(){
return model.getDepartment();
}
// method to update view
public void updateview()
{
view.printEmployeeDetails(model.getName(),model.getID(),model.getDepartment());
}
}

```

EmployeeView

// class which represent the

viewpublic class

EmployeeView {

// method to display the Employee details

public void printEmployeeDetails(String EmployeeName,String EmployeeID , String
EmployeeDepartment) {

System.out.println("Employee Details:");

System.out.println("Name:"+EmployeeName);

System.out.println("EmployeeID:"+ EmployeeID);

System.out.println("Employee Department:"+EmployeeDepartment);

}

}

MVCmain

// main class

public class MVCmain {

public static void main(String[] args){

// fetching the employee record based on the employee_id from the database

Employee model = retrieveEmployeeFromDatabase();

// creating a view to write Employee details on console

EmployeeView view = new EmployeeView();

EmployeeController controller = new EmployeeController(model,view);

controller.updateview();

// update the model data

controller.setEmployeeName("Nirnay");

System.out.println("\n Employee Details after updating:");

controller.updateview();

}

private static Employee retrieveEmployeeFromDatabase(){

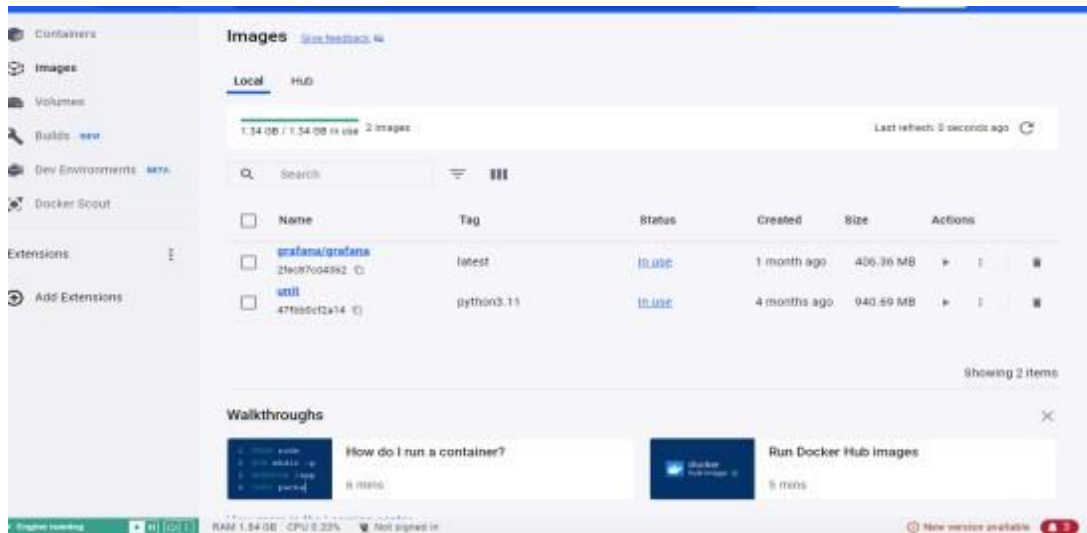
```
Employee abc = new Employee();  
abc.setName("anu");  
abc.setID("11");  
abc.setDepartment("salesforce");return  
abc;  
}  
}
```

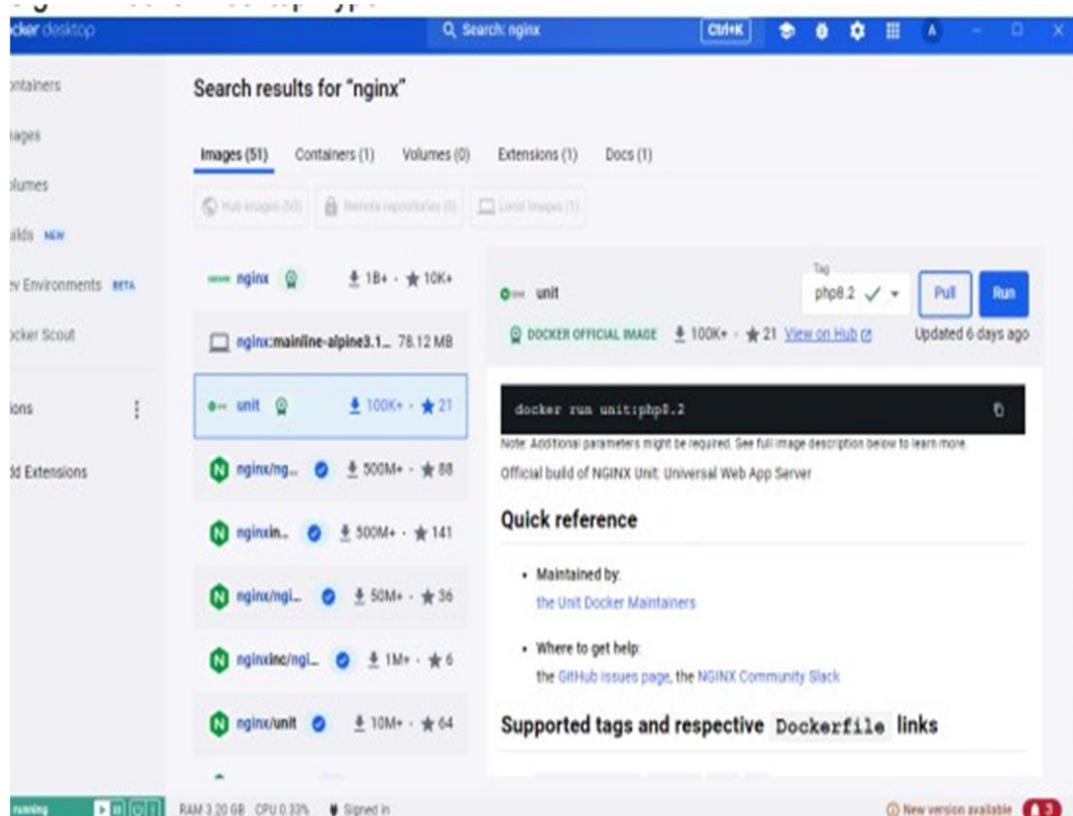
Terminal open cmd on download C:\Users\User38\Downloads>javac
C:\Users\User38\Downloads>javac MVCmain.java
C:\Users\User38\Downloads>java MVCmain

Signature:- _____

Practical 9 - Installing and configuring Dockers in local host and running multiple images on a Docker Platform.

Install Docker > open docker > go without sign in > go to images





Signature:- _____

Practical 10 - Install and Configure Puppet.

Open command line with puppet (Run as administration)

start puppet

puppet config print rundir

```
C:/ProgramData/PuppetLabs/puppet/var/run
```

puppet config set rundir /var/run/puppetlabs/puppet

describe --list

```
These are the types known to puppet:
augeas          - @summary Apply a change or an array of change ...
cron            - @summary Installs and manages cron jobs
exec            - Executes external commands
file            - Manages files, including their content, owner ...
filebucket      - A repository for storing and retrieving file ...
group           - Manage groups
host            - @summary Installs and manages host entries
mount           - @summary Manages mounted filesystems, includi ...
notify          - Sends an arbitrary message, specified as a st ...
package         - Manage packages
resources       - This is a metatype that can manage other reso ...
schedule        - Define schedules for Puppet
scheduled_task  - @summary Installs and manages Windows Schedul ...
selboolean      - @summary Manages SELinux booleans on systems ...
selmodule       - @summary Manages loading and unloading of SEL ...
service         - Manage running services
ssh_authorized_key - @summary Manages SSH authorized keys
sshkey          - @summary Installs and manages ssh host keys
stage           - A resource type for creating new run stages
tidy            - Remove unwanted files based on specific crite ...
user            - Manage users
whit            - Whits are internal artifacts of Puppet's curr ...
yumrepo         - @summary The client-side description of a yum ...
zfs             - @summary Manage zfs
zone            - @summary Manages Solaris zones
zpool           - @summary Manage zpools
```

puppet describe file --provider

```

file
====
Manages files, including their content, ownership, and permissions.
The 'file' type can manage normal files, directories, and symlinks;
type should be specified in the 'ensure' attribute.
File contents can be managed directly with the 'content' attribute,
downloaded from a remote source using the 'source' attribute; the l
can also be used to recursively serve directories (when the 'recurse
attribute is set to 'true' or 'local'). On Windows, note that file
contents are managed in binary mode; Puppet never automatically tra
line endings.
**Autorequires:** If Puppet is managing the user or group that owns
file, the file resource will autorequire them. If Puppet is managin
parent directories of a file, the file resource autorequires them.
Warning: Enabling 'recurse' on directories containing large numbers
files slows agent runs. To manage file attributes for many files,
consider using alternative methods such as the 'chmod_r', 'chown_r'
or 'recursive_file_permissions' modules from the Forge.

Parameters
-----

```

puppet node find somenode.puppetlabs.lan --terminus plain
--render-as yaml

```

--- !ruby/object:Puppet::Node
name: somenode.puppetlabs.lan
environment: production
parameters:
  aio_agent_version: 8.4.0
  dmi:
    manufacturer: ASUSTeK COMPUTER
    product:
      name: ASUS EXPERTCENTER D500TC
      serial_number: N3PFCG00C216118
      uuid: 354C50CA-7318-4642-BA54-4FDEB33896EC
  env_windows_installdir: C:\Program Files\Puppet Labs\Puppet
  facterversion: 4.5.2
  fips_enabled: false
  identity:
    privileged: true
    user: DESKTOP-C5MNMNK\User 21
  is_virtual: false
  kernel: windows
  kernelmajversion: '10.0'
  kernelrelease: 10.0.22621
  kernelversion: 10.0.22621
  memory:
    system:
      available: 10.38 GiB
      available_bytes: 11145252864
      capacity: 34.18%
      total: 15.77 GiB
      total_bytes: 16933945344
      used: 5.39 GiB
      used_bytes: 5788692480
  networking:
    dhcp: 172.16.0.1

```

puppet facts find

```

{
  "name": "desktop-c5mnmnk",
  "values": {
    "aio_agent_version": "8.4.0",
    "dmi": {
      "manufacturer": "ASUSTeK COMPUTER INC.",
      "product": {
        "name": "ASUS EXPERTCENTER D500TC_D500TC",
        "serial_number": "N3PFCG00C216118",
        "uuid": "354C50CA-7318-4642-BA54-4FDEB33896EC"
      }
    },
    "env_windows_installdir": "C:\\Program Files\\Puppet Labs\\Puppet",
    "facterversion": "4.5.2",

```

Signature:- _____

Practical 11 - Install and Configure IBM Bluemix.

C:\Users\User 21>ibmcloud help

```
NAME:
  ibmcloud - A command line tool to interact with IBM Cloud
  Find more information at: https://ibm.biz/cli-docs

USAGE:
  [environment variables] ibmcloud [global options] command [arguments...] [command options]

VERSION:
  2.23.0+eca5d10-2024-01-31T20:36:03+00:00
```

C:\Users\User 21>ibmcloud plugin repo-plugins

Status	Name	Versions	Description
Not Installed	container-registry[cr]	1.3.5, 1.3.4, 1.3.1...	Manage IBM Cloud Container Registry content and configuration.
Not Installed	container-service[kubernetes-service/ks]	1.0.597, 1.0.596, 1.0.595...	Manage IBM Cloud Kubernetes Service clusters
Not Installed	cloud-functions[wsk/functions/fn]	1.0.79, 1.0.78, 1.0.76...	Manage IBM Cloud Functions
Not Installed	cloud-internet-services[cis]	1.15.11, 1.15.10, 1.15.8...	Manage IBM Cloud Internet Services

C:\Users\User 21>ibmcloud plugin install code-engine

```
Looking up 'code-engine' from repository 'IBM Cloud'...
Plug-in 'code-engine[ce] 1.49.5' found in repository 'IBM Cloud'
Attempting to download the binary file...
 58.66 MiB / 58.66 MiB [=====] 100.00% 1m24s
61513728 bytes downloaded
Installing binary...
OK
Plug-in 'code-engine 1.49.5' was successfully installed into C:\Users\User 21\.bluemix\plugins\code-engine. Use 'ibmcloud plugin show code-engine' to show its details.
```

C:\Users\User 21>ibmcloud plugin repo-plugins

Installed	code-engine[ce]	1.49.5, 1.49.4, 1.49.3...	Manage code-engine components
-----------	-----------------	---------------------------	-------------------------------

C:\Users\User 21>ibmcloud plugin install -a


```

FAILED
Unable to download the plug-in binary from the URL https://download.clis.cloud.ibm.com/ibm-cloud-cli-plugin/tke/1.4.1/tke-windows-amd64-1.4.1.exe.
Error: Get "https://download.clis.cloud.ibm.com/ibm-cloud-cli-plugin/tke/1.4.1/tke-windows-amd64-1.4.1.exe": dial tcp: lookup download.clis.cloud.ibm.com: no such host
Try again later.

Installing plug-in 'cloud-object-storage[cos] 1.8.0'...
Attempting to download the binary file...
 16.28 MiB / 16.28 MiB [=====] 100.00% 26s
17072640 bytes downloaded
Installing binary...
OK
Plug-in 'cloud-object-storage 1.8.0' was successfully installed into C:\Users\User 21\.bluemix\plugins\cloud-object-storage. Use 'ibmcloud plugin show cloud-object-storage' to show its details.

Installing plug-in 'event-streams[es] 2.5.1'...
Attempting to download the binary file...
 9.87 MiB / 9.87 MiB [=====] 100.00% 14s
10346496 bytes downloaded
Installing binary...
OK
Plug-in 'event-streams 2.5.1' was successfully installed into C:\Users\User 21\.bluemix\plugins\event-streams. Use 'ibmcloud plugin show event-streams' to show its details.

```

C:\Users\User 21>ibmcloud plugin repo-plugins

```

Hyper Protect Virtual Server service
Installed secrets-manager[sm] 2.0.4, 2.0.3, 2.0.2... Manag
BM Cloud Secrets Manager secrets and secret groups.
Installed app-configuration[ac] 1.0.14, 1.0.13, 1.0.12... Inter
with IBM Cloud App Configuration service instance
Installed doi[doi] 0.4.5, 0.4.3, 0.4.2... Integ
e with DevOps Insights service
Installed logging 0.0.8, 0.0.7, 0.0.6... Manag
BM Cloud logging
Installed cloudant[cl] 0.2.0, 0.1.4, 0.1.3... Manag
loudant service
Installed hpcs-cert-mgr[hpcs-cert-mgr] 1.1.0, 1.0.0 Manag
he client certificates for IBM Cloud Hyper Protect Crypto Services
Installed atracker[at] 0.4.9, 0.4.8, 0.4.5... Manag
BM Cloud Activity Tracker Event Routing
Installed analytics-engine-v3[ae-v3] 2.5.0, 2.4.0, 2.3.0... Manag
erverless Spark instances and run applications
Installed cra[cra] 2.1.5, 2.1.4, 2.1.2... Integ
e with Code Risk Analyzer
Installed event-notifications[en] 1.3.1, 1.3.0, 1.2.0... IBM C
d Event Notifications.
Installed dvaas[watson-query] 1.0.2 Manag
ata virtualization as a service
Installed

```

ibmcloud plugin install container-
service@1.0.506secrets-manager@0.1.25

```

Looking up 'container-service' from repository 'IBM Cloud'...
Looking up 'secrets-manager' from repository 'IBM Cloud'...
FAILED

```

ibmcloud plugin list

Listing installed plug-ins:

Plugin Name	Version	Status	Private endpoints supported
analytics-engine-v3[ae-v3]	2.5.0		false
app-configuration	1.0.14		true
atracker	0.4.9		true
catalogs-management	2.3.29		true
cbr	1.6.0		true
cloud-dns-services[dns/dns-svcs]	0.7.3		true
cloud-functions[wsk/functions/fn]	1.0.79		false
cloud-internet-services[cis]	1.15.11		true
cloud-object-storage	1.8.0		false
cloudant[cl]	0.2.0		true
code-engine[ce]	1.49.5		true
container-registry[cr]	1.3.5		true
container-service[kubernetes-service/ks]	1.0.597		false
cra	2.1.5		false
dl-cli	0.5.8		true
doi	0.4.5		false
dvaas	1.0.2		false
event-notifications[en]	1.3.1		false
event-streams[es]	2.5.1		true
hpcs-cert-mgr	1.1.0		false
hpnet	1.0.2		false

ibmcloud plugin update

```
Checking upgrades for all installed plug-ins from repository 'IBM Cloud'...
No updates are available.
```

ibmcloud plugin install container-registry

```
Looking up 'container-registry' from repository 'IBM Cloud'...
Plug-in 'container-registry[cr] 1.3.5' found in repository 'IBM Cloud'
Plug-in 'container-registry[cr] 1.3.5' was already installed. Do you want to re-install it or not? [y/N] > y
Attempting to download the binary file...
12.41 MiB / 12.41 MiB [=====] 100.00% 6s
13015040 bytes downloaded
Installing binary...
OK
Plug-in 'container-registry 1.3.5' was successfully installed into C:\Users\User 21\bluemix\plugins\container-registry. Use 'ibmcloud plugin show container-registry' to show its details.
```

ibmcloud api cloud.ibm.com

```
Setting api endpoint...
OK
API endpoint: https://cloud.ibm.com
```

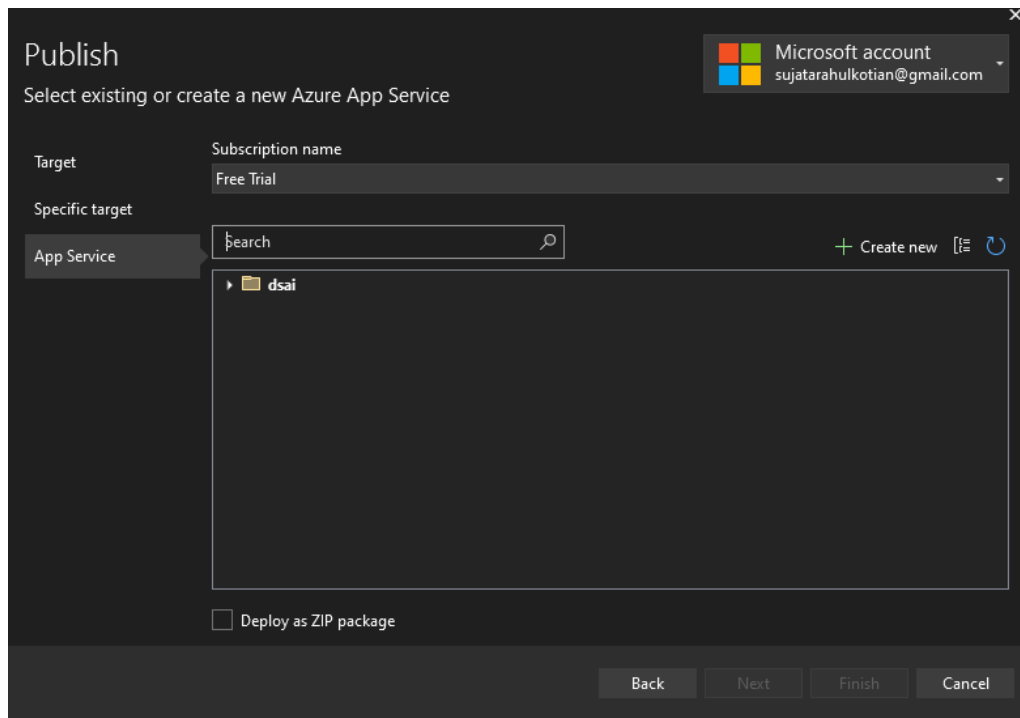
ibmcloud api

```
API endpoint: https://cloud.ibm.com
```

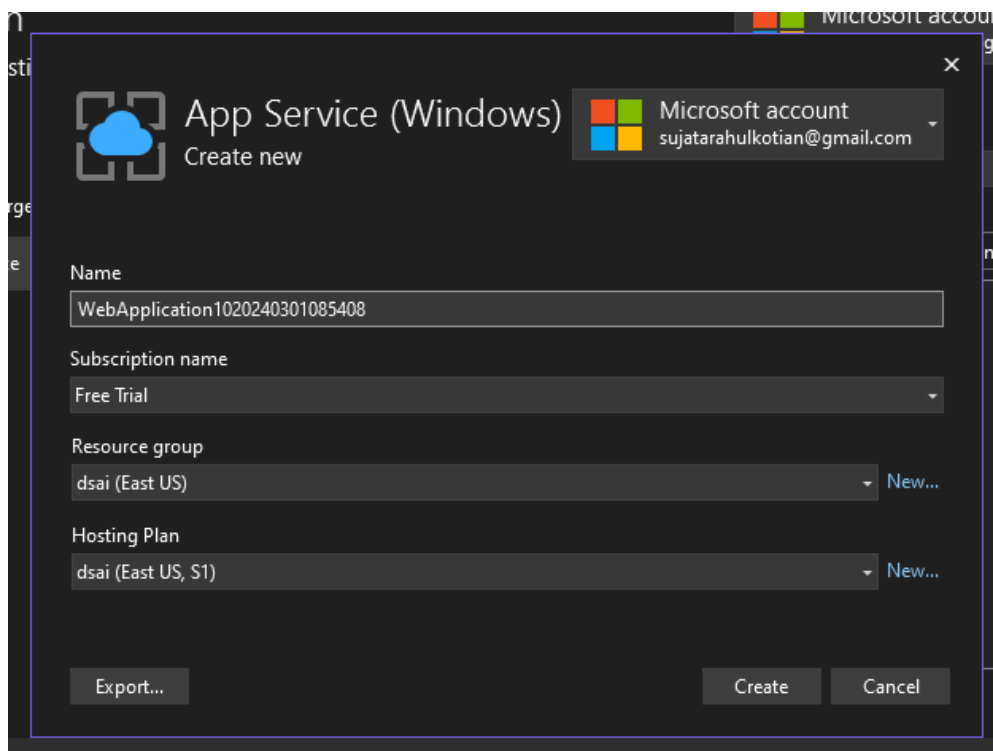
Signature:- _____

Practical 12 - Developing an ASP.NET web based application on the Azure platform

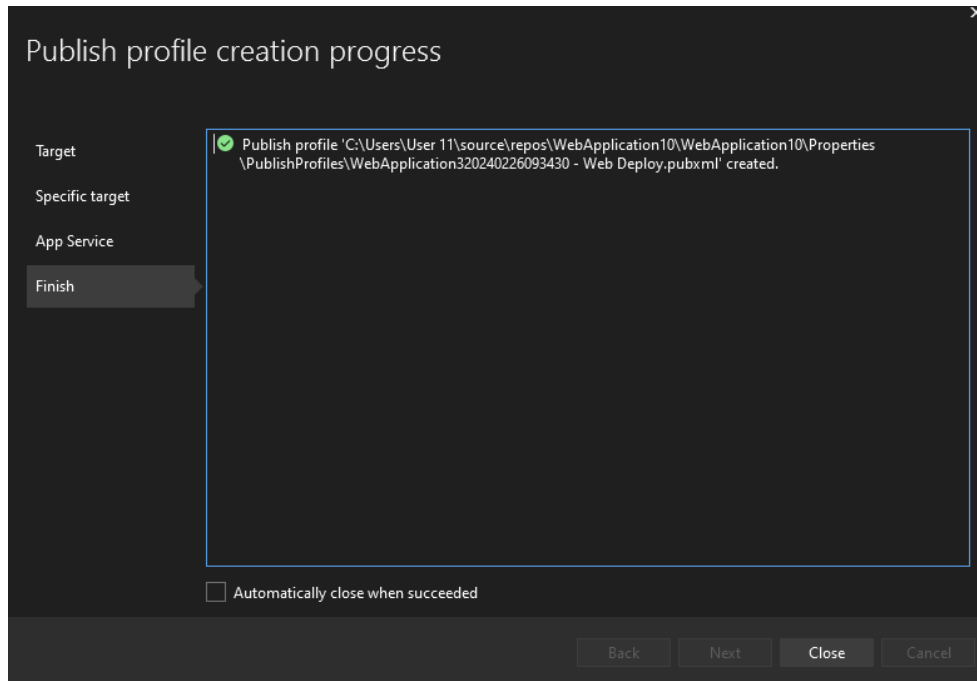
Sign in to your Azure or Microsoft Account



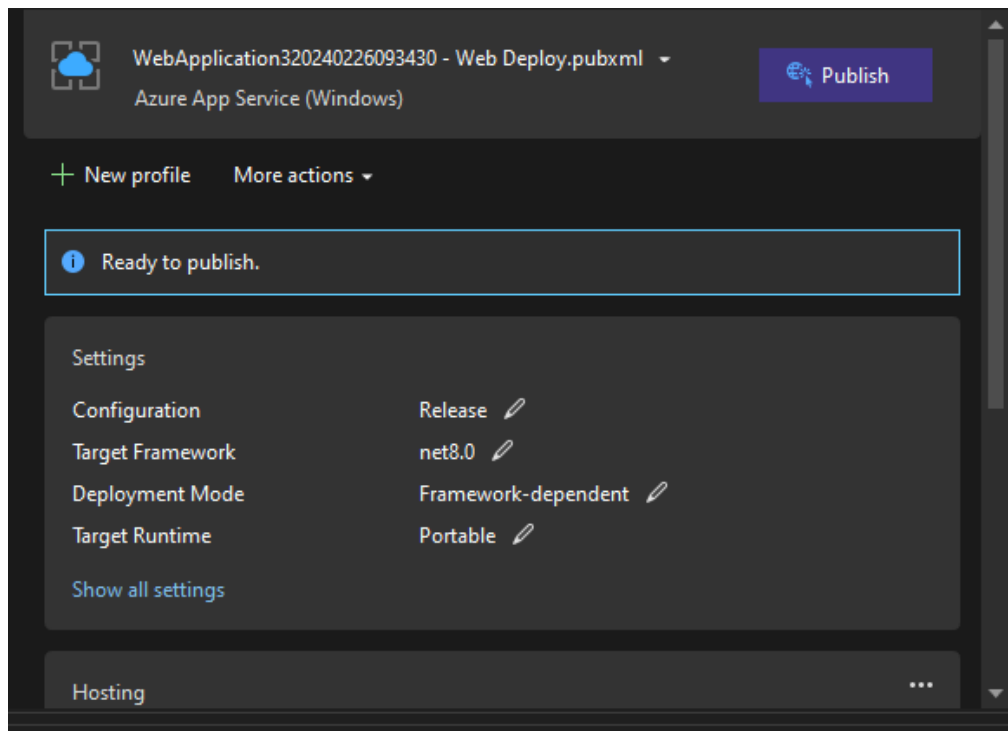
Click on “+Create New” Option



Click on “Create”



Click on Publish



Signature:- _____