Microservice Architecture

Certified Journal

Submitted in partial fulfilment of the

Requirements for the award of the Degree of

MASTER OF SCIENCE

(INFORMATION_TECHNOLOGY)

By

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DEPARTMENT OF INFORMATION TECHNOLOGY

KERALEEYA SAMAJAM (REGD.) DOMBIVLI'S
MODEL COLLEGE (AUTONOMOUS)
Re-Accredited 'A' Grade by NAAC

(Affiliated to University of Mumbai)

FOR THE YEAR

(2022-23)

Keraleeya Samajam(Regd.) Dombivli's

MODEL COLLEGE

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DEPARTMENT OF INFORMATION TECHNOLOGY AND COMPUTER SCIENCE

CERTIFICATE

This is to certify that Mr. /Miss _____

*Studying in Class*_____ *Seat No.* _____

*Has completed the prescribed practicals in the subject*_____

*During the academic year*_____

Date : _____

External Examiner

Internal Examiner
M.Sc. Information Technology

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Practical No.1:
Installation of .Net SDK and Building first console App

Overview of .Net SDK

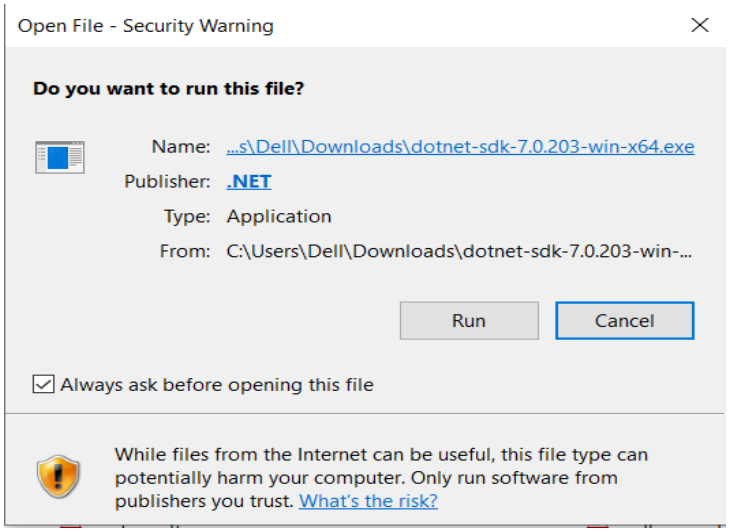
The .NET SDK(Software Development Kit)

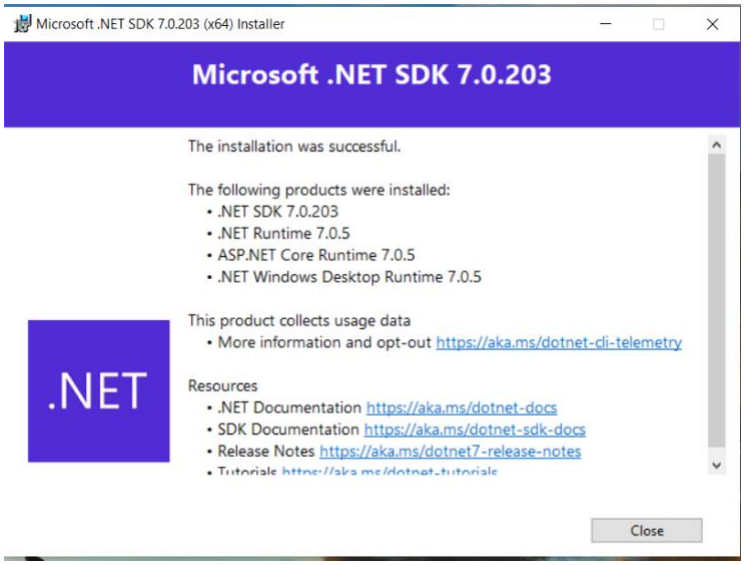
1. The. NET SDK is a set of libraries and tools that allow developers to create .NET applications and libraries.
2. It contains the following components that are used to build and run applications.
    - The. NET CLI
    - . NET libraries and runtime
    - The dotnet driver

STEPS:

Step 1: Download and install

To start building. NET apps download and install the .NET SDK (SOFTWARE DEVELOPMENT KIT).



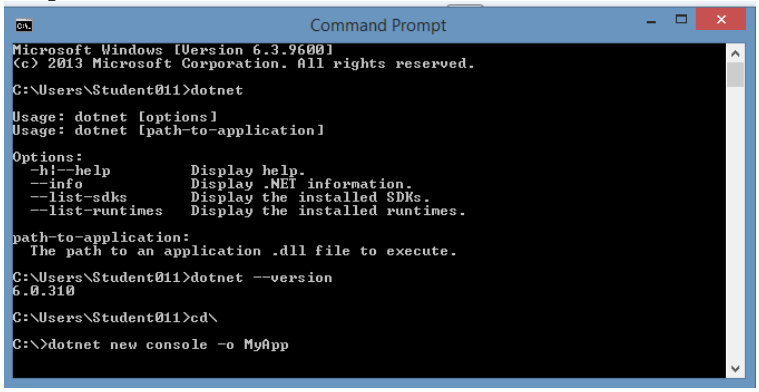


Step 2: Checking everything installed correctly

After installation is done open a new terminal and type the

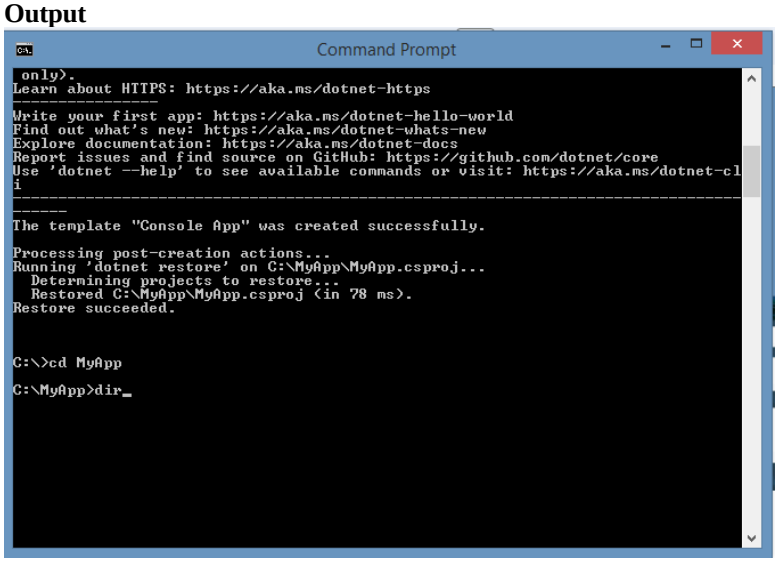
Command : dotnet

Output



Step 3: Change the working directory and create the console app with name MyApp.

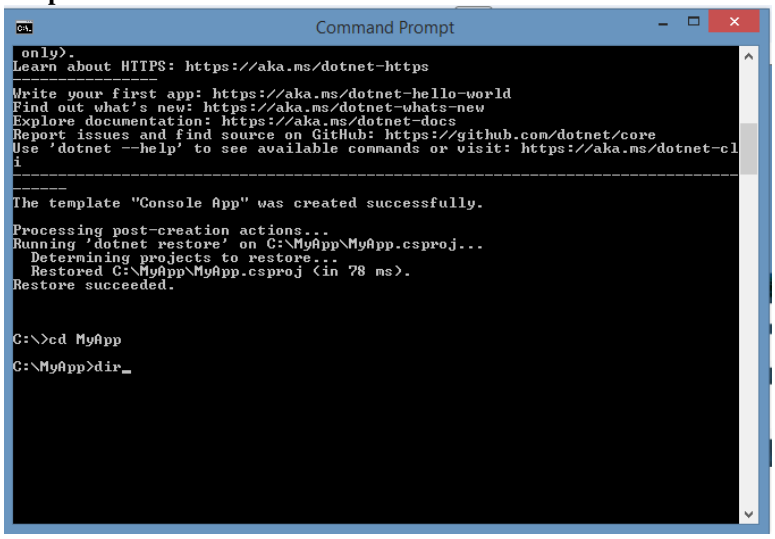
Output



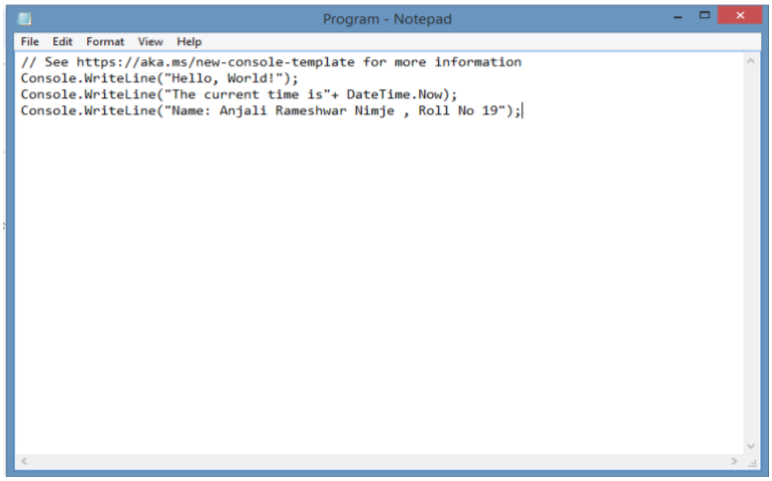
Step 4: Changing the directory MyApp

Command : cd MyApp

Output



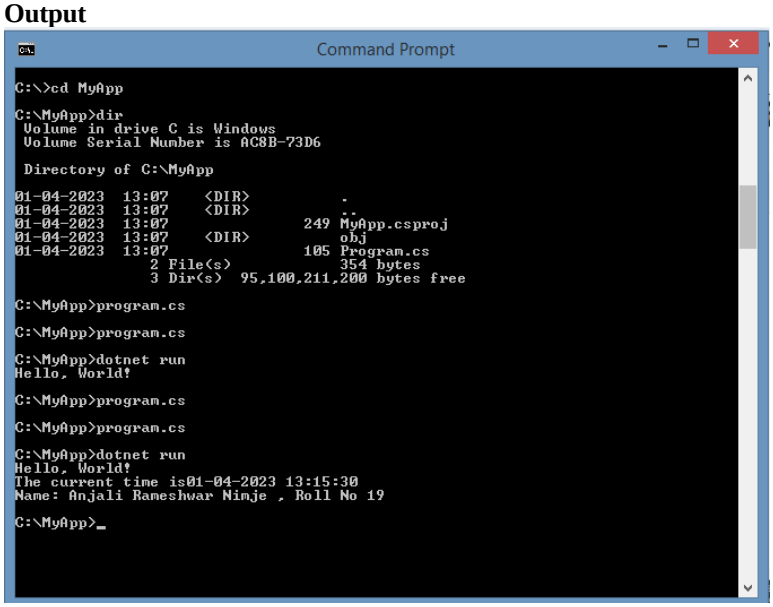
Step 5: Write code in program.cs file



Step 6 : Run the program by typing
Command : C:\MyApp>dotnet run

Step 7 : Output of the program.cs file

Output



Practical No.2:
Building ASP.NET core MVC Application

Overview of MVC

The Model-View-Controller (MVC) architectural pattern separates an application into three main components: the model, the view, and the controller. The ASP.NET MVC framework provides an alternative to the ASP.NET Web Forms pattern for creating MVC-based Web applications. The ASP.NET MVC framework is a lightweight, highly testable presentation framework that (as with Web Forms-based applications) is integrated with existing ASP.NET features, such as master pages and membership- based authentication. The MVC framework is defined in the System.Web.Mvc namespace and is a fundamental, supported part of the System. Web namespace.

MVC is a standard design pattern that many developers are familiar with. Some types of Web applications will benefit from the MVC framework. Others will continue to use the traditional ASP.NET application pattern that is based on Web Forms and post backs. Other types of Web applications will combine the two approaches; neither approach excludes the other.

The MVC framework includes the following components:-

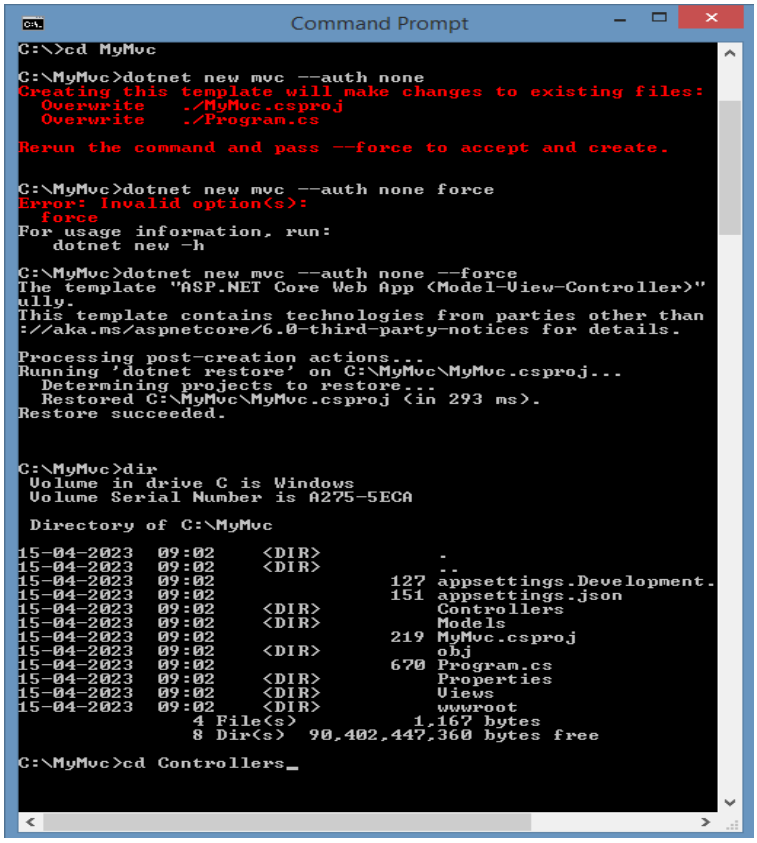
Models :- Model objects are the parts of the application that implement the logic for the applications data domain. Often, model objects retrieve and store model state in a database. For example, a Product object might retrieve information from a database, operate on it, and then write updated information back to a Products table in SQL Server.

Views :- Views are the components that display the applications user interface (UI). Typically, this UI is created from the model data. An example would be an edit view of a Products table that displays text boxes, drop-down lists, and check boxes based on the current state of a Products object.

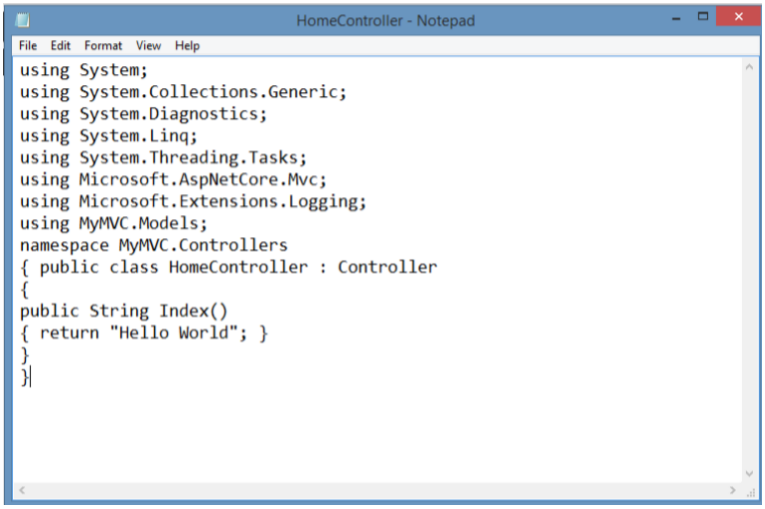
Controllers :- Controllers are the components that handle user interaction, work with the model, and ultimately select a view to render that displays UI. In an MVC application, the view only displays information; the controller handles and responds to user input and interaction. For example, the controller handles query-string values, and passes these values to the model, which in turn queries the database by using the values.

1.Install.NetCoreSDK.
2.Create Folder MyMVC folder in d:drive or any other drive.
3.Open command prompt and perform the following operations. Command:-to create mvc project.
Command :dotnet new mvc–auth none

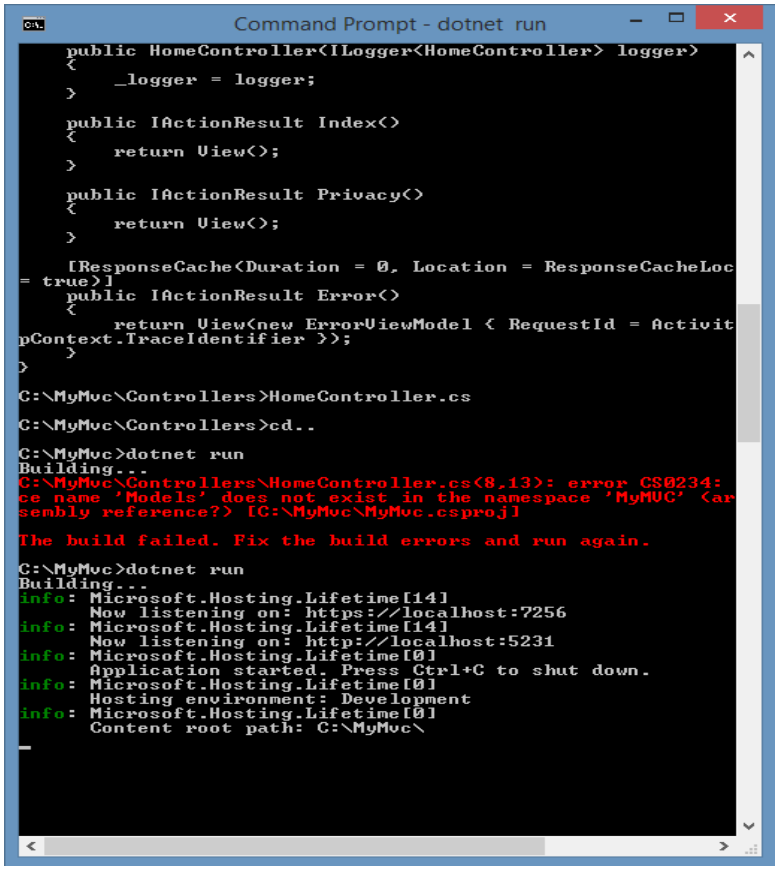
Output

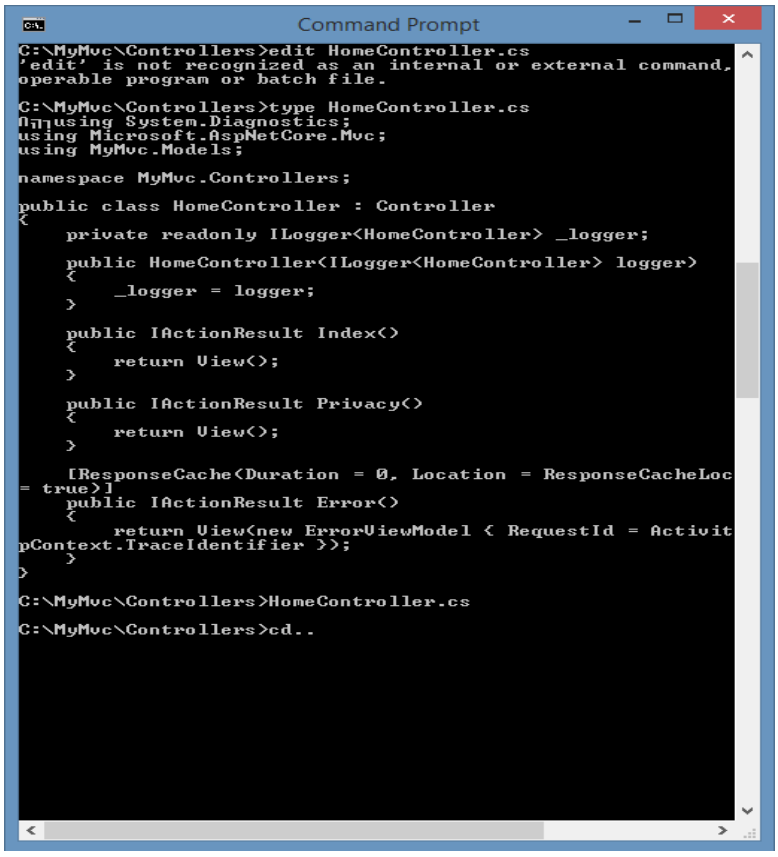


4: go to controlleres folder and modify HomeController.cs file to match following



Output


Command Prompt - dotnet run
public HomeController(ILogger<HomeController> logger)
{
_logger = logger;
}
public IActionResult Index()
{
return View();
}
public IActionResult Privacy()
{
return View();
}
[ResponseCache(Duration = 0, Location = ResponseCacheLoc
= true)]
public IActionResult Error()
{
return View(new ErrorViewModel { RequestId = Activit
pContext.TraceIdentifier });
}
}
C:\MyMvc\Controllers>HomeController.cs
C:\MyMvc\Controllers>cd..
C:\MyMvc>dotnet run
Building...
C:\MyMvc\Controllers\HomeController.cs(8,13): error CS0234:
ce name 'Models' does not exist in the namespace 'MyMVC' (ar
sembly reference?) [C:\MyMvc\MyMvc.csproj]
The build failed. Fix the build errors and run again.
C:\MyMvc>dotnet run
Building...
info: Microsoft.Hosting.Lifetime[14]
Now listening on: https://localhost:7256
info: Microsoft.Hosting.Lifetime[14]
Now listening on: http://localhost:5231
info: Microsoft.Hosting.Lifetime[0]
Application started. Press Ctrl+C to shut down.
info: Microsoft.Hosting.Lifetime[0]
Hosting environment: Development
info: Microsoft.Hosting.Lifetime[0]
Content root path: C:\MyMvc\


Command Prompt
C:\MyMvc\Controllers>edit HomeController.cs
'edit' is not recognized as an internal or external command,
operable program or batch file.
C:\MyMvc\Controllers>type HomeController.cs
using System.Diagnostics;
using Microsoft.AspNetCore.Mvc;
using MyMvc.Models;
namespace MyMvc.Controllers;
public class HomeController : Controller
{
private readonly ILogger<HomeController> _logger;
public HomeController(ILogger<HomeController> logger)
{
_logger = logger;
}
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{
return View();
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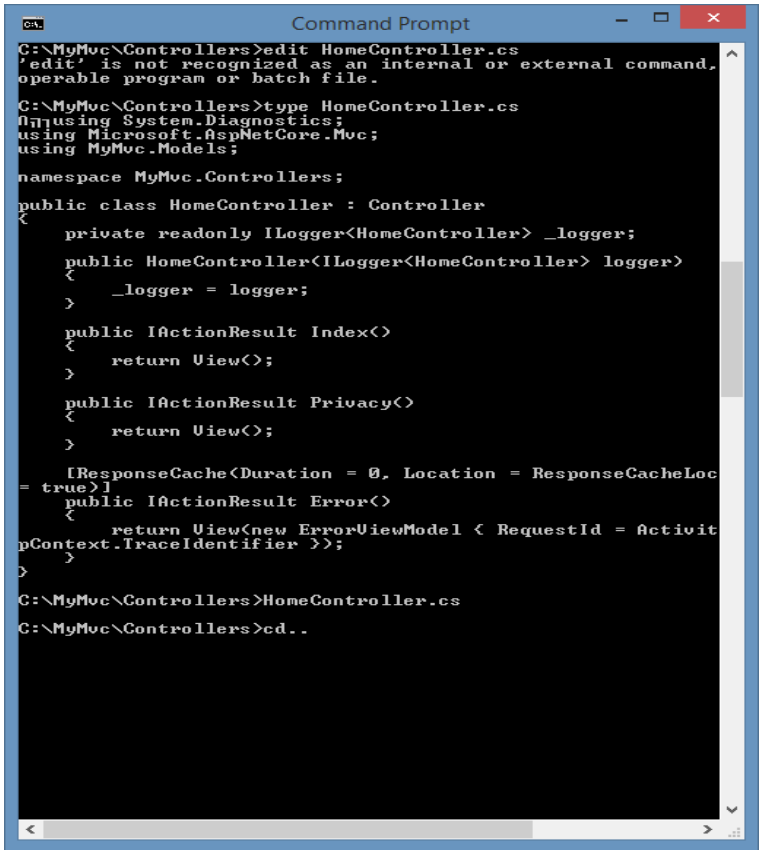
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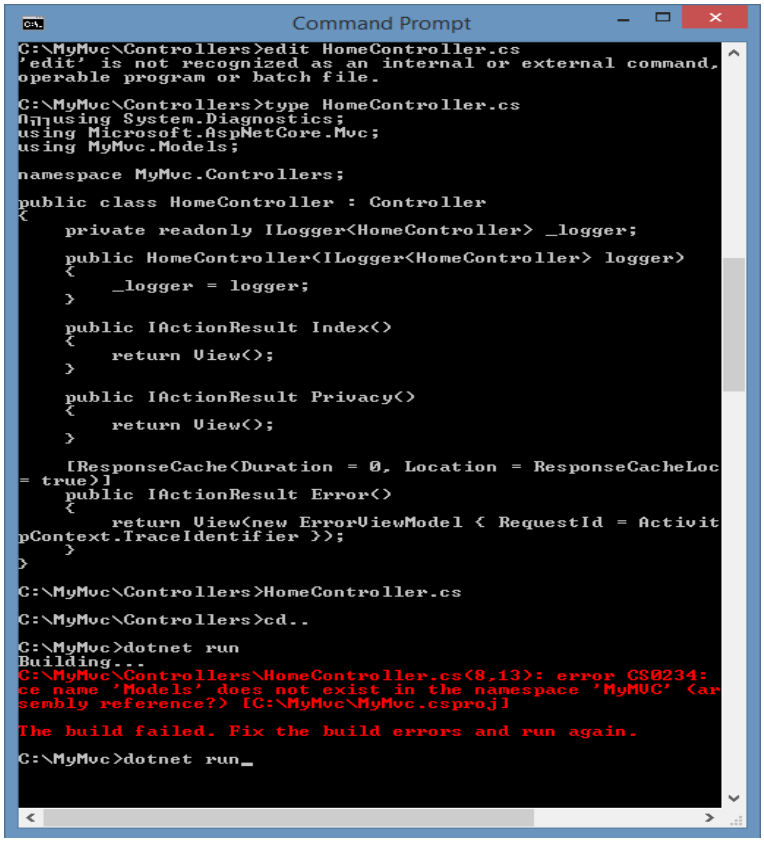
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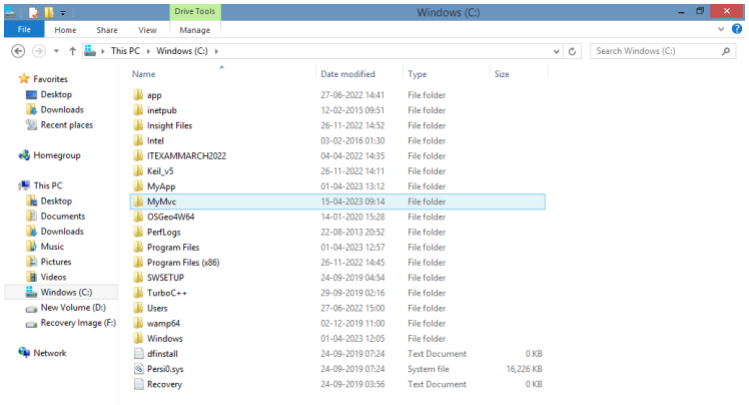
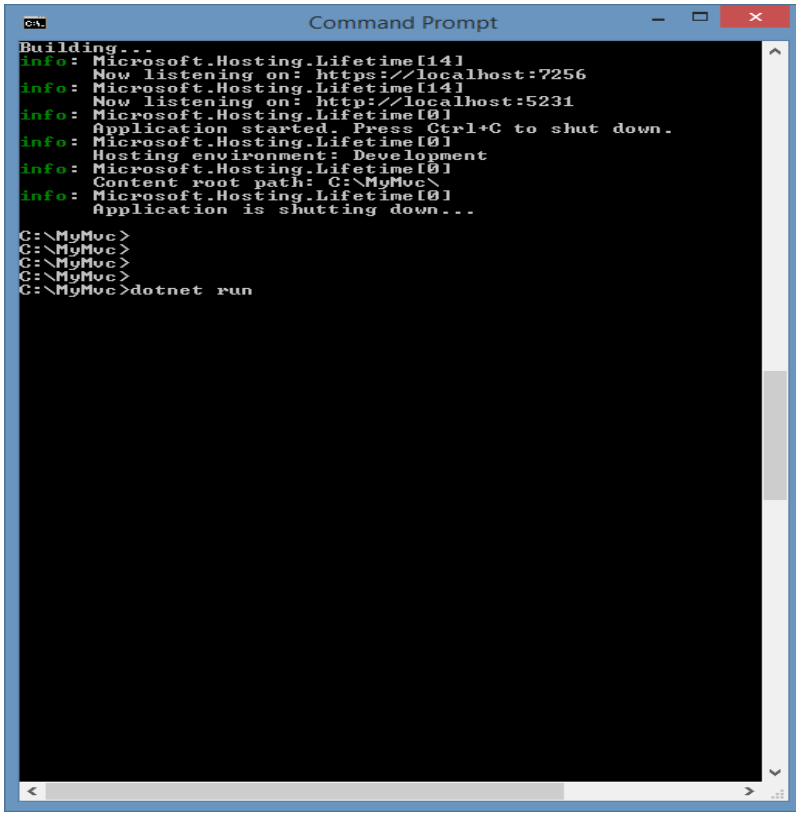

Windows (C:)
Drive Tools
File
Home
Share
View
Manage
This PC
Windows (C:)
Search Windows (C:)
Favorites
Desktop
Downloads
Recent places
Homegroup
This PC
Desktop
Documents
Downloads
Music
Pictures
Videos
Windows (C:)
New Volume (D:)
Recovery Image (F:)
Network
Name
Date modified
Type
Size
app
inetpub
Insight Files
Intel
ITEXAMMARCH2022
Keil_v5
MyApp
MyMvc
OSGeo4W64
PerfLogs
Program Files
Program Files (x86)
SWSETUP
TurboC++
Users
wamp64
Windows
dfinstall
Persi0.sys
Recovery


Command Prompt
Building...
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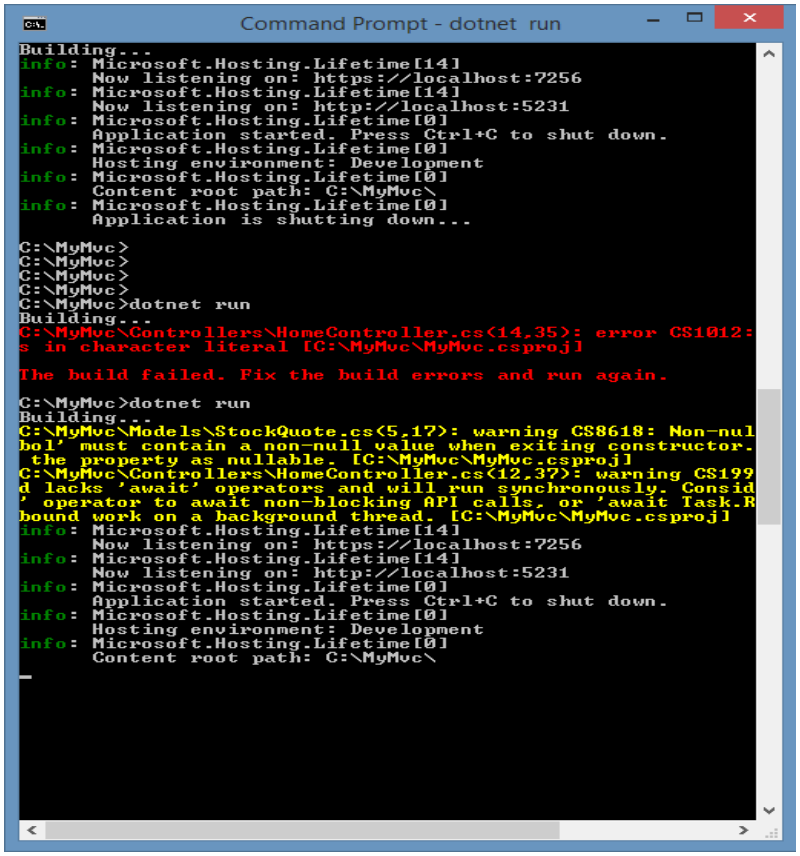
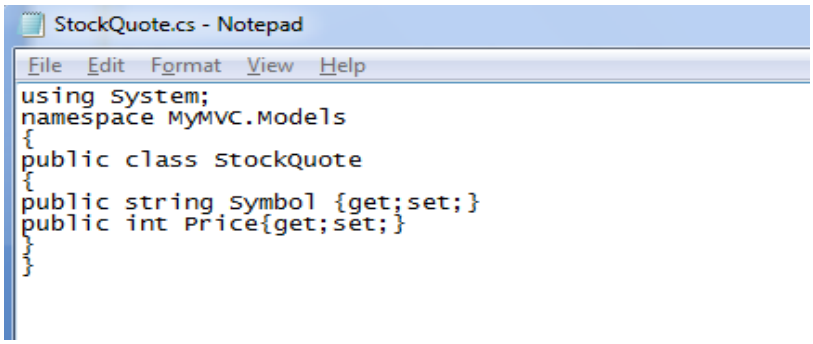
Now listening on: http://localhost:5231
info: Microsoft.Hosting.Lifetime[0]
Application started. Press Ctrl+C to shut down.
info: Microsoft.Hosting.Lifetime[0]
Hosting environment: Development
info: Microsoft.Hosting.Lifetime[0]
Content root path: C:\MyMvc\
info: Microsoft.Hosting.Lifetime[0]
Application is shutting down...
C:\MyMvc>
C:\MyMvc>
C:\MyMvc>
C:\MyMvc>
C:\MyMvc>dotnet run

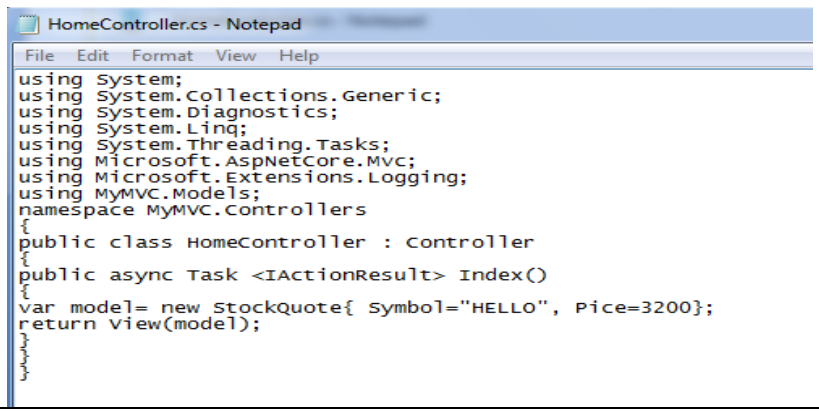
Output



5.Create one notepad and save the file name as StockQuote.cs and make some changes.Save that file into Models folder. Make some changes in Index.cshtml file. This file is being located at-("D:\MyMVC\Views\Home"



6.Again go to controllers folder and modify Home Controller.cd file to match following

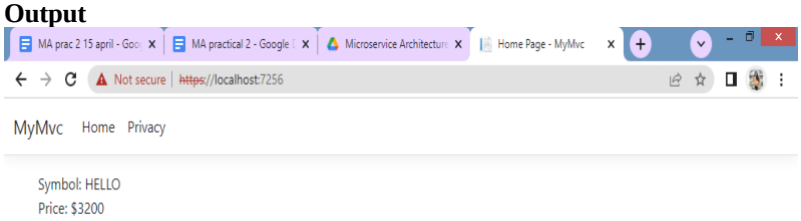


Index.cshtml - Notepad

File Edit Format View Help

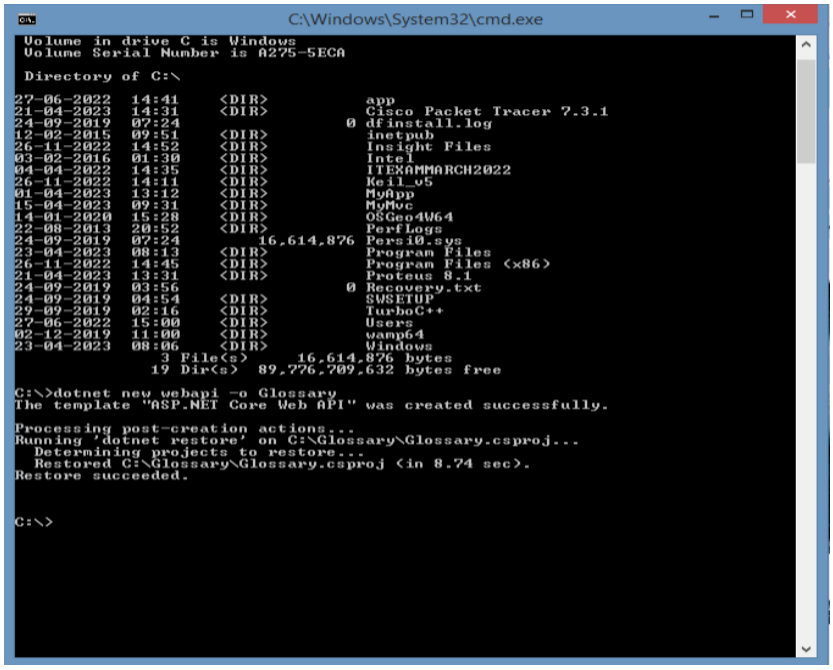
```
@{
        ViewData["Title"] = "Home Page";
}

<div>
Symbol: @Model.Symbol <br/>
Price: $@Model.Price <br/>
</div>
```

Output



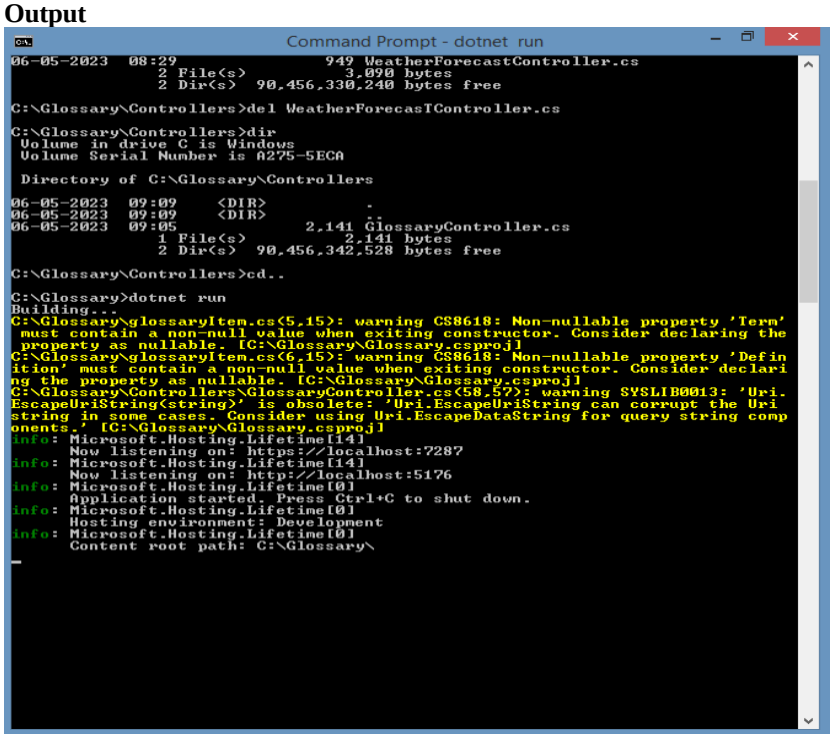
Practical No. 3:
Building asp .net core rest API

Step1:(If Dot net is already installed) Open Command Prompt and run
Command: 'dotnet new web api -o Glossary'



Step 2:open the glossary folder command: 'cd glossary' then run
Command:'dotnet run

Output

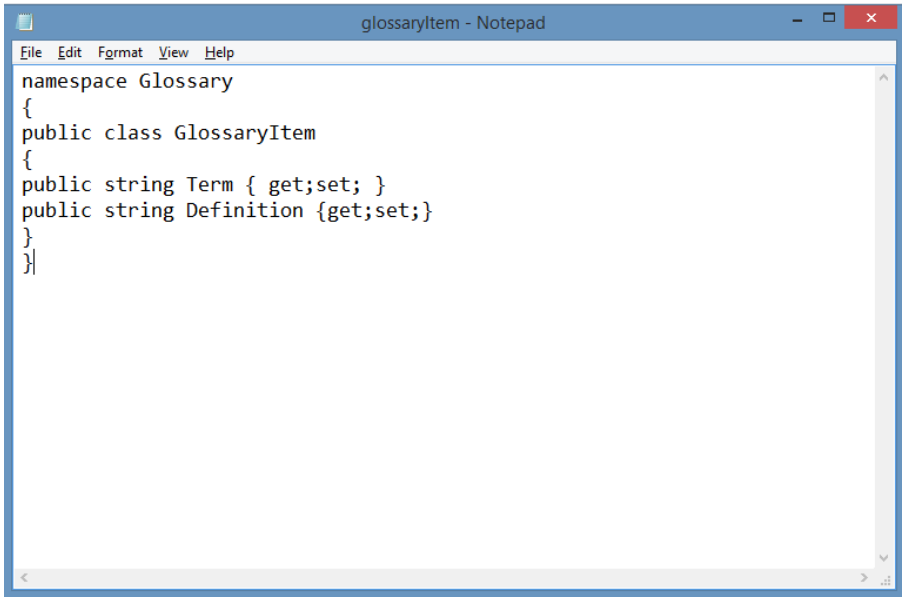


Step3:test weatherForecast class

Step4: Delete WeatherForecast.cs and WeatherForecastController.cs file, create a new file glossaryitem.cs file and edit it.

Code:

```
namespace Glossary
{
public class GlossaryItem
{
public string Term { get;set; }
public string Definition {get;set;}
}
}
```



Step5: Edit the Glossary Controller.cs file in Controller folder

Code:

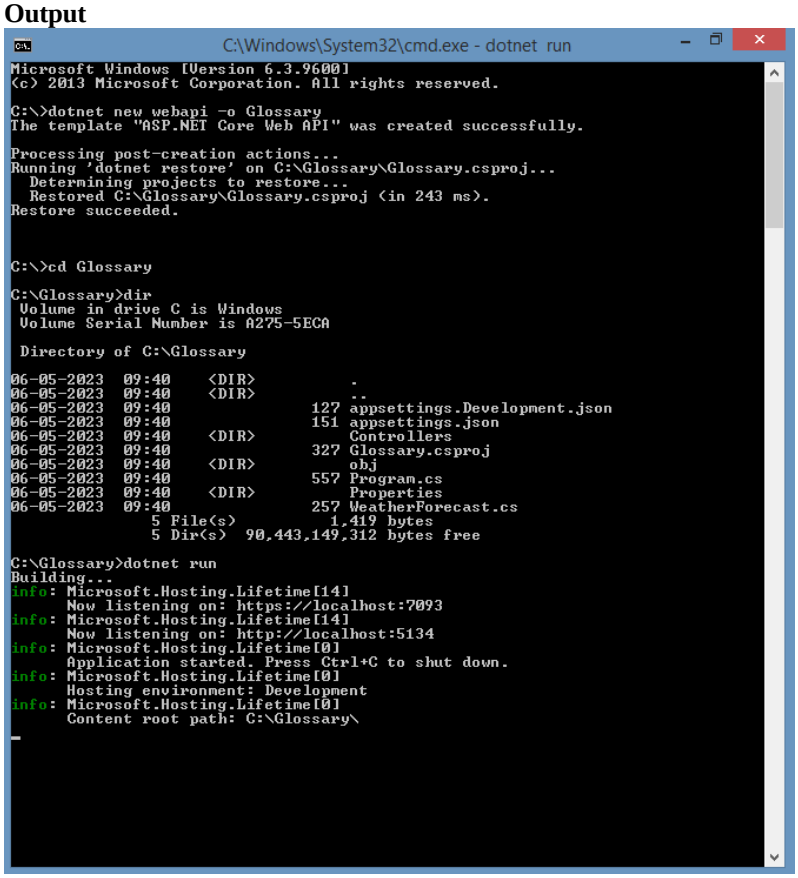
```
using System;
using System.Collections.Generic;
using Microsoft.AspNetCore.Mvc;
using System.IO;
namespace Glossary.Controllers
{
[ApiController]
[Route("api/[controller]")]
public class GlossaryController: ControllerBase
{
private static List<GlossaryItem> Glossary = new List<GlossaryItem> {
new GlossaryItem
{
Term= "HTML",
Definition = "Hypertext Markup Language"
},

new GlossaryItem
{
Term= "MVC",
Definition = "Model View Controller"
},
```

```
new GlossaryItem
{
Term= "OpenID",
Definition = "An open standard for authentication"
}
};
[HttpGet]
public ActionResult<List<GlossaryItem>> Get()
{ return Ok(Glossary);
}
[HttpGet]
[Route("{term}")]
public ActionResult<GlossaryItem> Get(string term)
{
var glossaryItem = Glossary.Find(item =>
item.Term.Equals(term, StringComparison.InvariantCultureIgnoreCase));
if (glossaryItem == null)
{ return NotFound();
} else
{
return Ok(glossaryItem);
}
}
[HttpPost]
public ActionResult Post(GlossaryItem glossaryItem)
{
var existingGlossaryItem = Glossary.Find(item =>
item.Term.Equals(glossaryItem.Term, StringComparison.InvariantCultureIgnoreCase));
if (existingGlossaryItem != null)
{
return Conflict("Cannot create the term because it already exists.");
}
else
{
Glossary.Add(glossaryItem);
var resourceUrl = Path.Combine(Request.Path.ToString(), Uri.EscapeUriString(glossaryItem.Term));
return Created(resourceUrl, glossaryItem);
}
}

[HttpPut]
public ActionResult Put(GlossaryItem glossaryItem)
{
var existingGlossaryItem = Glossary.Find(item =>
item.Term.Equals(glossaryItem.Term, StringComparison.InvariantCultureIgnoreCase));
if (existingGlossaryItem == null)
{
return BadRequest("Cannot update a nont existing term.");
} else
{
existingGlossaryItem.Definition = glossaryItem.Definition;
return Ok();
}
}
[HttpDelete]
[Route("{term}")]
public ActionResult Delete(string term)
{
var glossaryItem = Glossary.Find(item =>
item.Term.Equals(term, StringComparison.InvariantCultureIgnoreCase));
```

```
if (glossaryItem == null)
{ return NotFound();
}
else
{ Glossary.Remove(glossaryItem);
return NoContent();
}
}
}
}
```

Step 6: Now again run
Command: dotnet run in Glossary folder

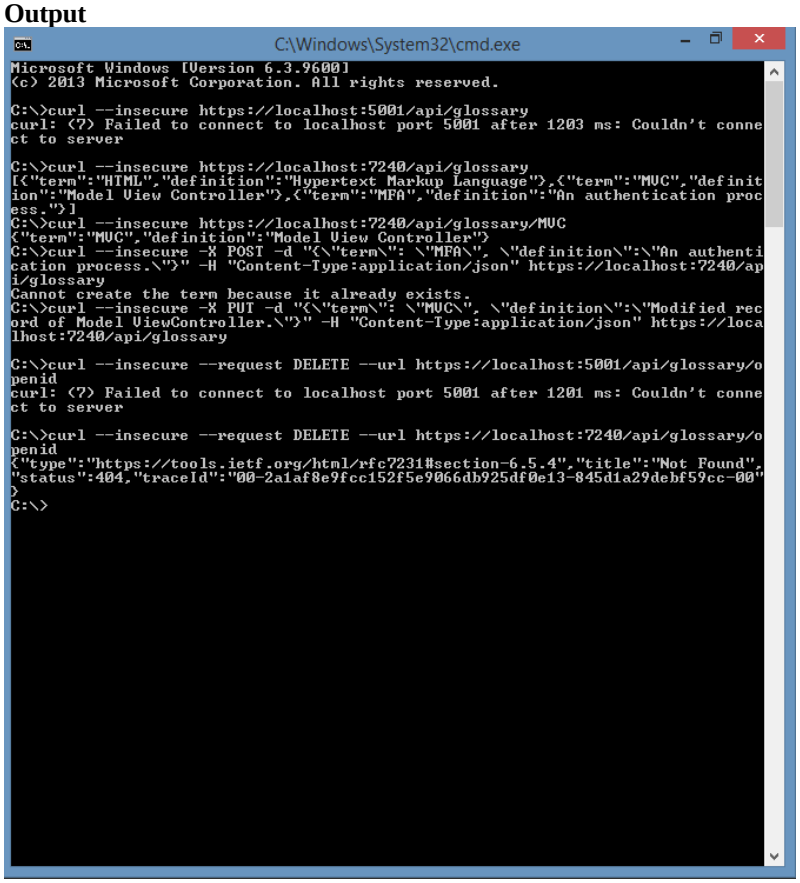
Output



Step 7 :
1)Getting a list of items:
2)Getting a single item
3)Creating an item
4)Update Item
5)Delete Item

Each new command is followed respectively

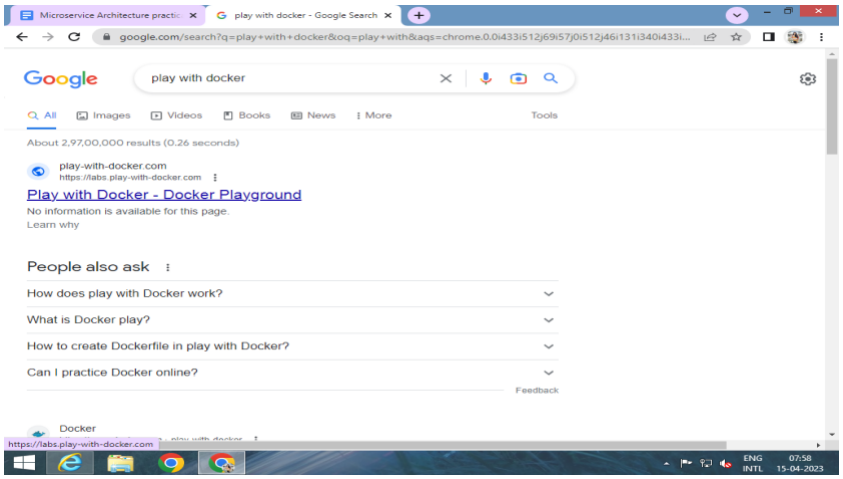
Output


C:\Windows\System32\cmd.exe
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.
C:\>curl --insecure https://localhost:5001/api/glossary
curl: (7) Failed to connect to localhost port 5001 after 1203 ms: Couldn't connect to server
C:\>curl --insecure https://localhost:7240/api/glossary
[{"term":"HTML","definition":"Hypertext Markup Language"},{"term":"MVC","definition":"Model View Controller"},{"term":"MFA","definition":"An authentication process."}]
C:\>curl --insecure https://localhost:7240/api/glossary/MVC
{"term":"MVC","definition":"Model View Controller"}
C:\>curl --insecure -X POST -d "{\"term\": \"MFA\", \"definition\":\"An authentication process.\"}" -H "Content-Type:application/json" https://localhost:7240/api/glossary
Cannot create the term because it already exists.
C:\>curl --insecure -X PUT -d "{\"term\": \"MVC\", \"definition\":\"Modified record of Model ViewController.\"}" -H "Content-Type:application/json" https://localhost:7240/api/glossary
C:\>curl --insecure --request DELETE --url https://localhost:5001/api/glossary/openid
curl: (7) Failed to connect to localhost port 5001 after 1201 ms: Couldn't connect to server
C:\>curl --insecure --request DELETE --url https://localhost:7240/api/glossary/openid
{"type":"https://tools.ietf.org/html/rfc7231#section-6.5.4","title":"Not Found","status":404,"traceId":"00-2a1af8e9fcc152f5e9066db925df0e13-845d1a29debf59cc-00"}
C:\>

Practical No.4:
Working with Docker, Docker images and containers

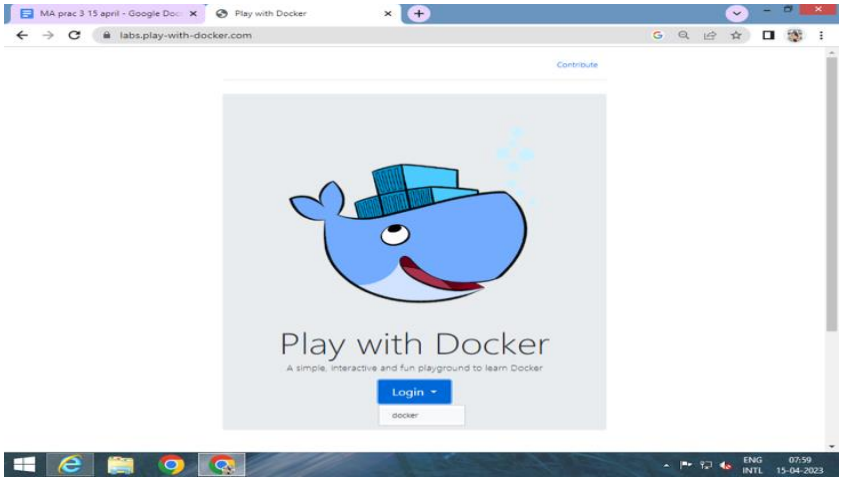
Overview of Docker

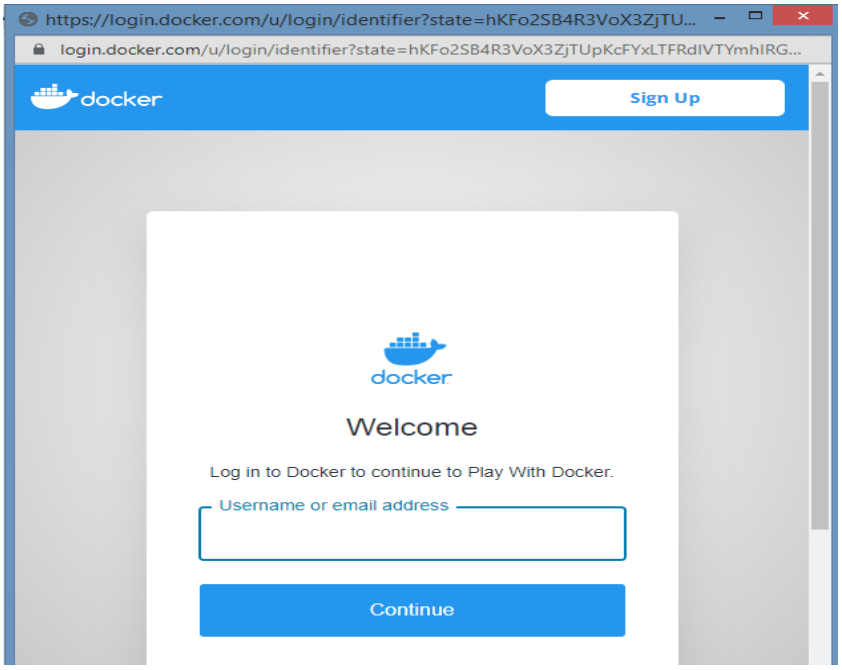
Docker is an open platform for developing ,shipping ,and running applications. Docker enables you to separate your applications from your infrastructure so you can deliver software quickly. With Docker , you can manage your infrastructure in the same ways you manage your applications .By taking advantage of Docker's methodologies for shipping , testing, and deploying code quickly ,you can significantly reduce the delay between writing code and running it in production

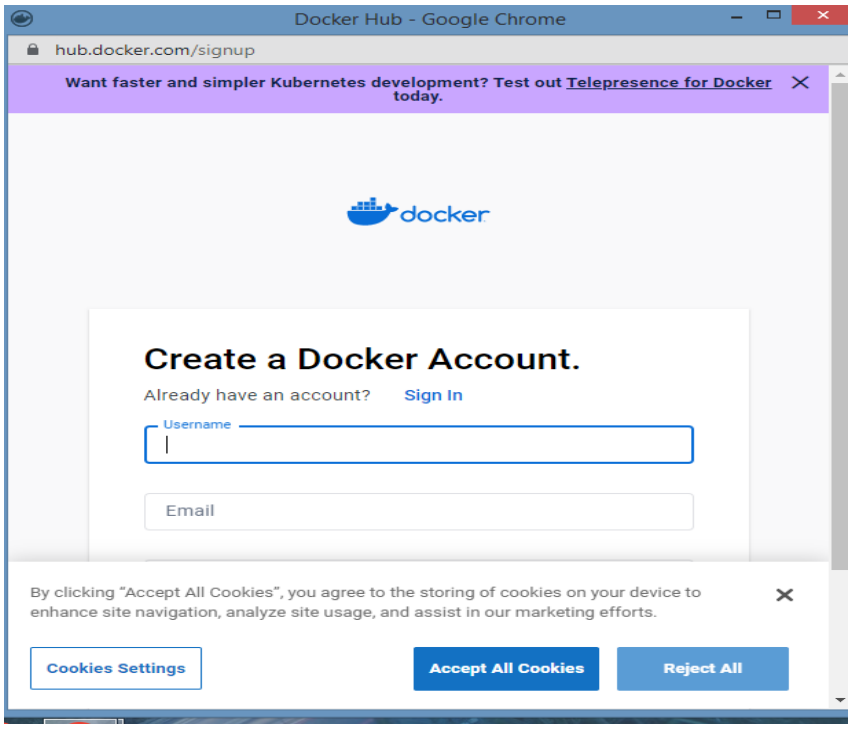


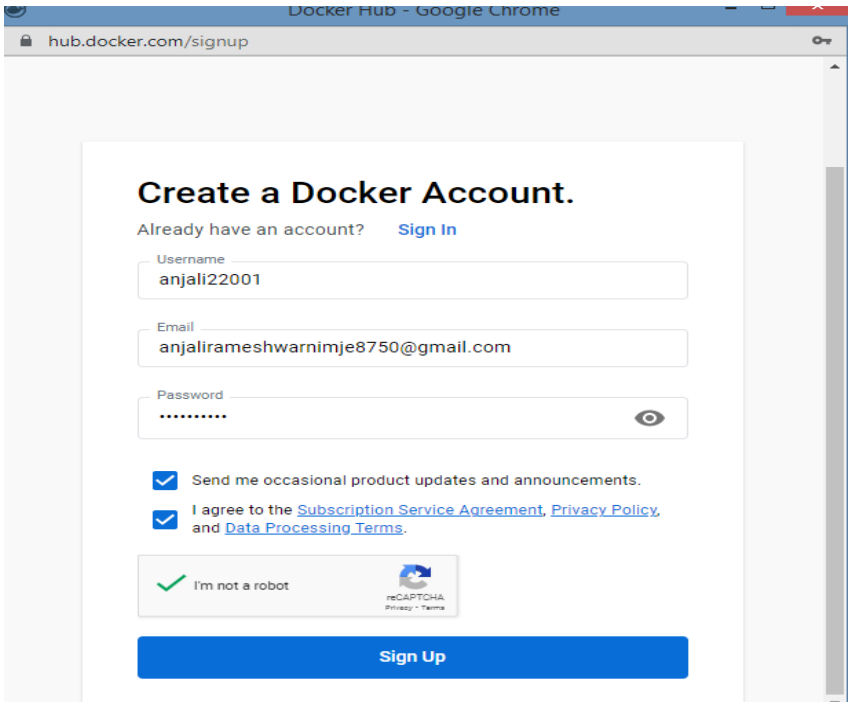
1.Create docker hub account (signup)

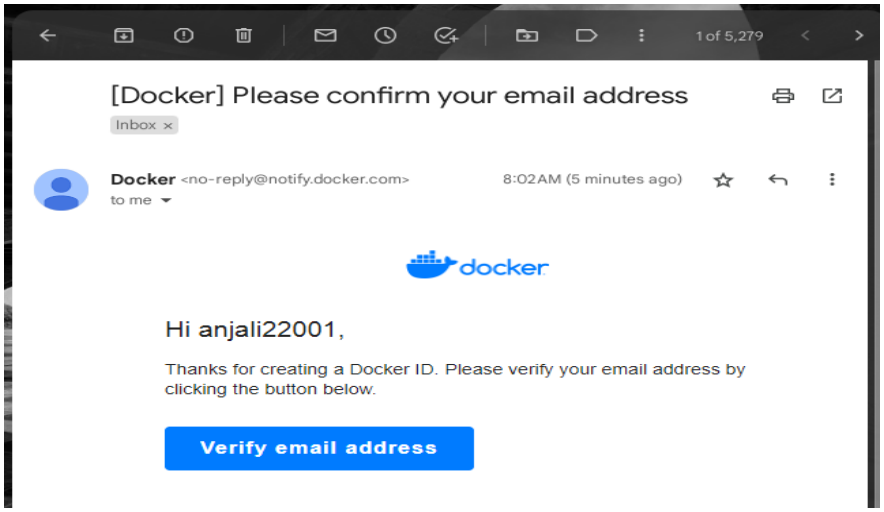
2.Login to https://labs.play-with-docker.com/

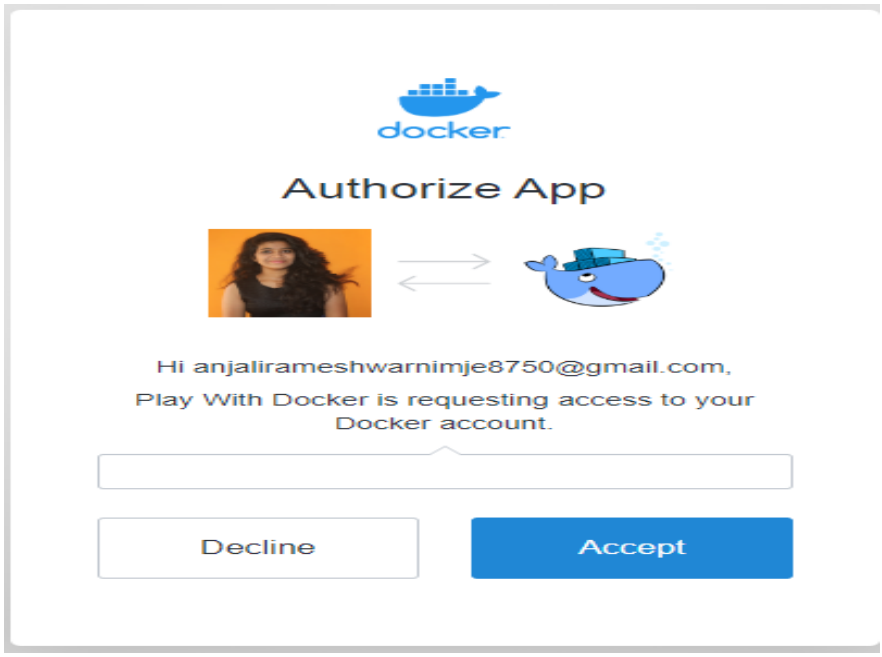



https://login.docker.com/u/login/identifier?state=hKFo2SB4R3VoX3ZjTU...
login.docker.com/u/login/identifier?state=hKFo2SB4R3VoX3ZjTUpKcFYxLTFRdlVTYmhIRG...
docker
Sign Up
docker
Welcome
Log in to Docker to continue to Play With Docker.
Username or email address
Continue


Docker Hub - Google Chrome
hub.docker.com/signup
Want faster and simpler Kubernetes development? Test out Telepresence for Docker today.
docker
Create a Docker Account.
Already have an account? Sign In
Username
Email
By clicking "Accept All Cookies", you agree to the storing of cookies on your device to enhance site navigation, analyze site usage, and assist in our marketing efforts.
Cookies Settings
Accept All Cookies
Reject All

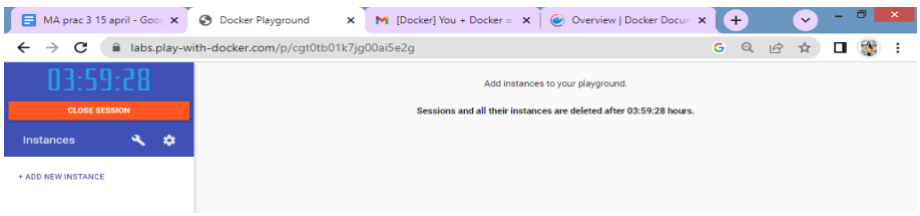

Docker Hub - Google Chrome
hub.docker.com/signup
Create a Docker Account.
Already have an account? Sign In
Username
anjali22001
Email
anjalirameshwarnimje8750@gmail.com
Password
Send me occasional product updates and announcements.
I agree to the Subscription Service Agreement, Privacy Policy, and Data Processing Terms.
I'm not a robot
reCAPTCHA
Sign Up

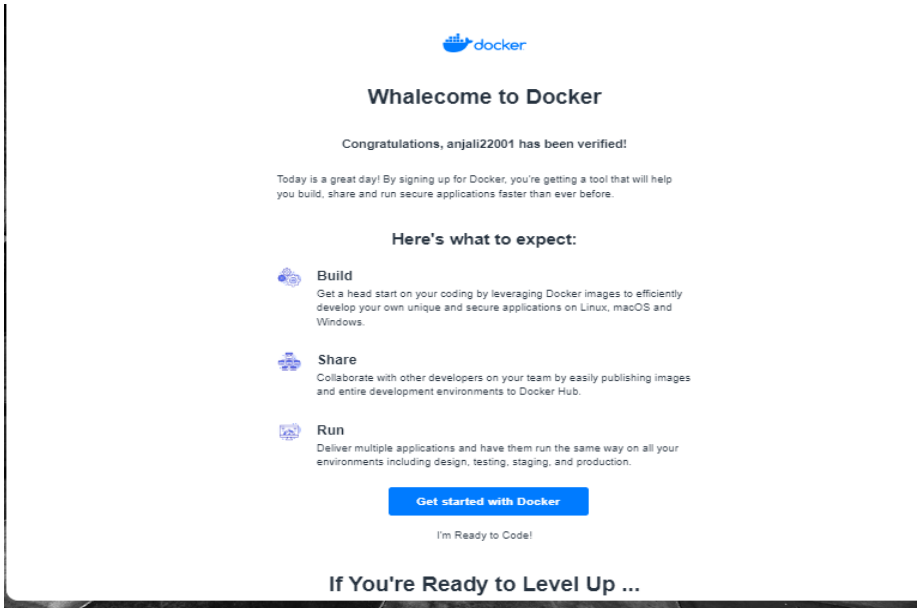

1 of 5,279
[Docker] Please confirm your email address
Inbox ×
Docker <no-reply@notify.docker.com>
8:02AM (5 minutes ago)
to me
docker
Hi anjali22001,
Thanks for creating a Docker ID. Please verify your email address by clicking the button below.
Verify email address



Click on start

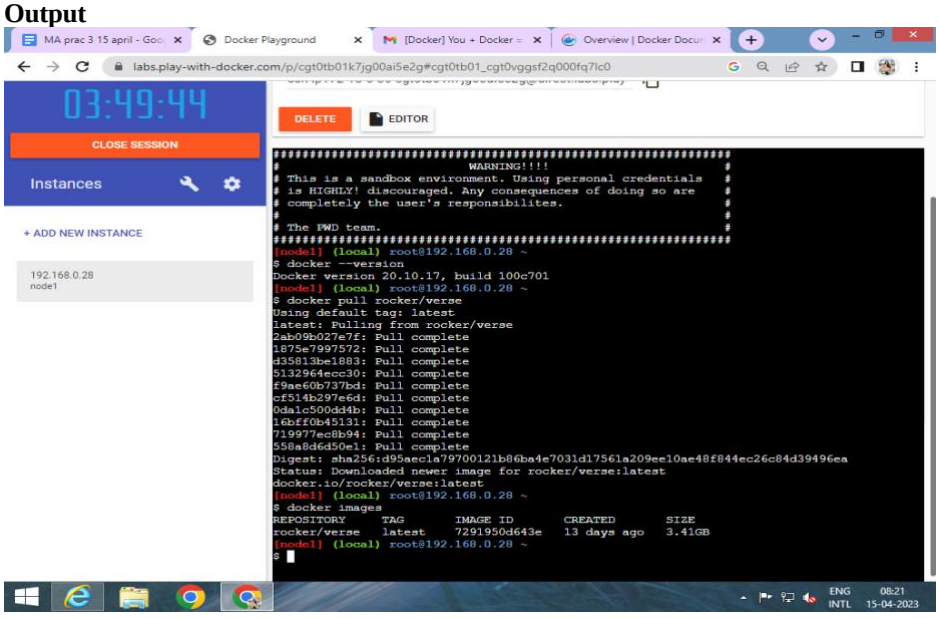
3: Create new instance

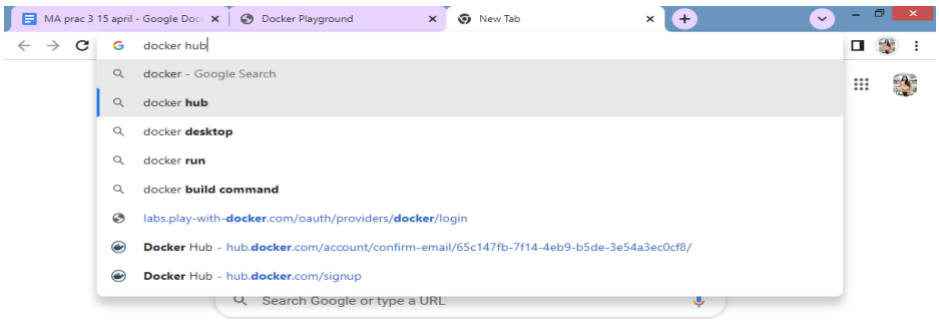


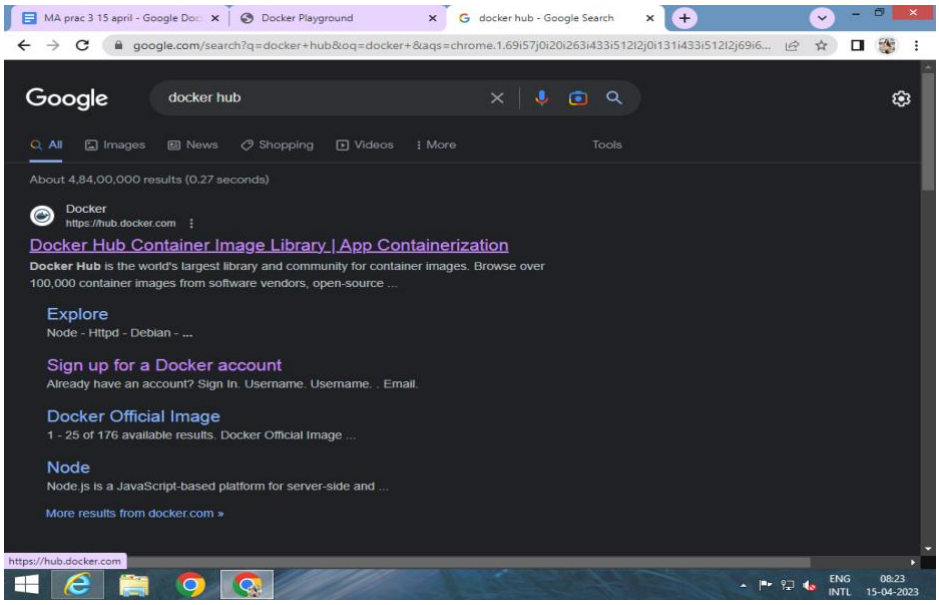


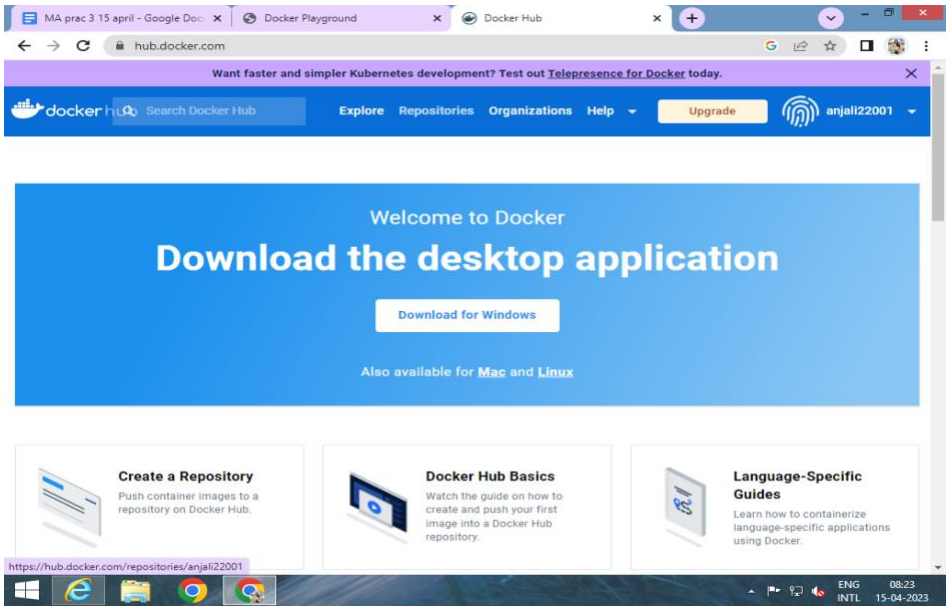
4.Perform following
Method1 :To pull and push images using docker
Command: to check docker version **docker –version**
Command: to pull ready made image **docker pull rocker/verse**
Command: to check images in docker **docker images**

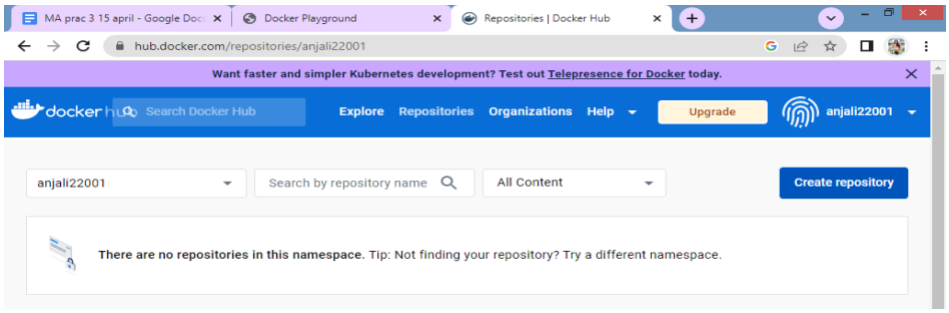
Output



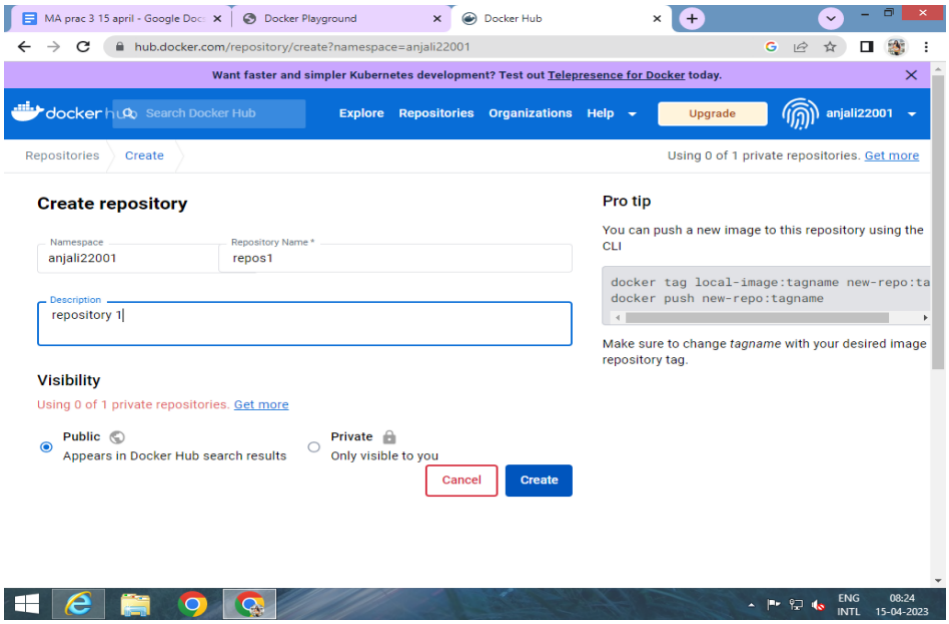



MA prac 3 15 april - Google Doc
Docker Playground
docker hub - Google Search
google.com/search?q=docker+hub&oq=docker+&aqs=chrome.1.69i57j0i20i263i433i512l2j0i131i433i512l2j69i6...
Google
docker hub
All
Images
News
Shopping
Videos
More
Tools
About 4,84,00,000 results (0.27 seconds)
Docker
https://hub.docker.com
Docker Hub Container Image Library | App Containerization
Docker Hub is the world's largest library and community for container images. Browse over 100,000 container images from software vendors, open-source ...
Explore
Node - Httpd - Debian - ...
Sign up for a Docker account
Already have an account? Sign In. Username. Username. . Email.
Docker Official Image
1 - 25 of 176 available results. Docker Official Image ...
Node
Node.js is a JavaScript-based platform for server-side and ...
More results from docker.com »
https://hub.docker.com
ENG
INTL
08:23
15-04-2023

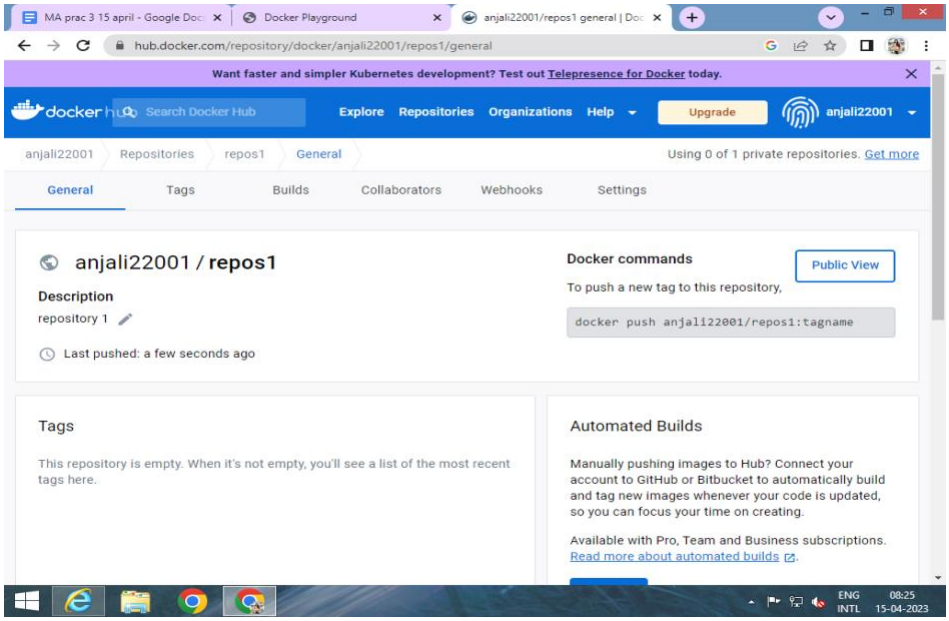

MA prac 3 15 april - Google Doc
Docker Playground
Docker Hub
hub.docker.com
Want faster and simpler Kubernetes development? Test out Telepresence for Docker today.
docker hub
Search Docker Hub
Explore
Repositories
Organizations
Help
Upgrade
anjali22001
Welcome to Docker
Download the desktop application
Download for Windows
Also available for Mac and Linux
Create a Repository
Push container images to a repository on Docker Hub.
Docker Hub Basics
Watch the guide on how to create and push your first image into a Docker Hub repository.
Language-Specific Guides
Learn how to containerize language-specific applications using Docker.
https://hub.docker.com/repositories/anjali22001
ENG
INTL
08:23
15-04-2023


MA prac 3 15 april - Google Doc
Docker Playground
Repositories | Docker Hub
hub.docker.com/repositories/anjali22001
Want faster and simpler Kubernetes development? Test out Telepresence for Docker today.
docker hub
Search Docker Hub
Explore
Repositories
Organizations
Help
Upgrade
anjali22001
anjali22001
Search by repository name
All Content
Create repository
There are no repositories in this namespace. Tip: Not finding your repository? Try a different namespace.

Now Login to docker hub and create repository

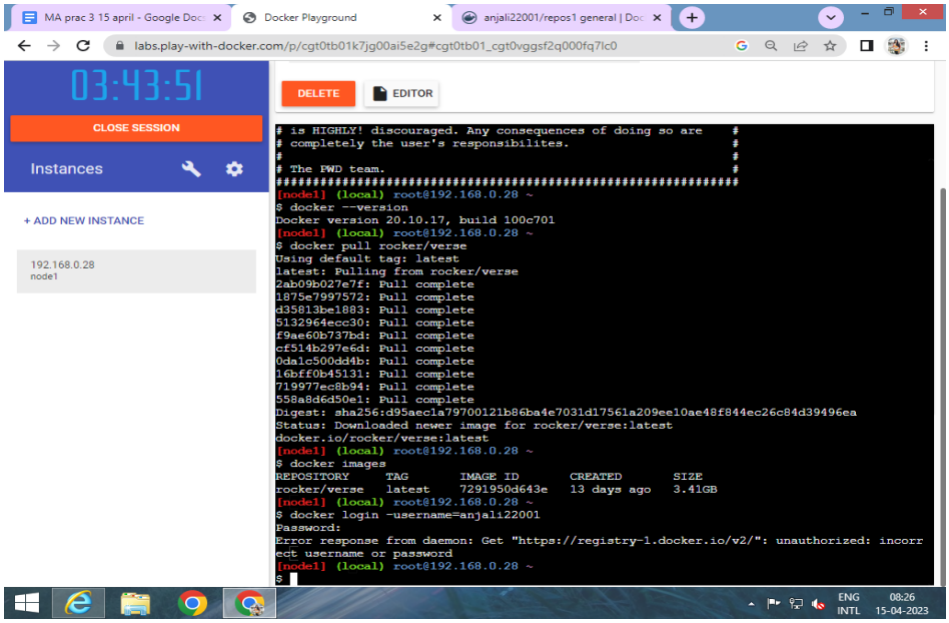


Click on Create button Now check repository created

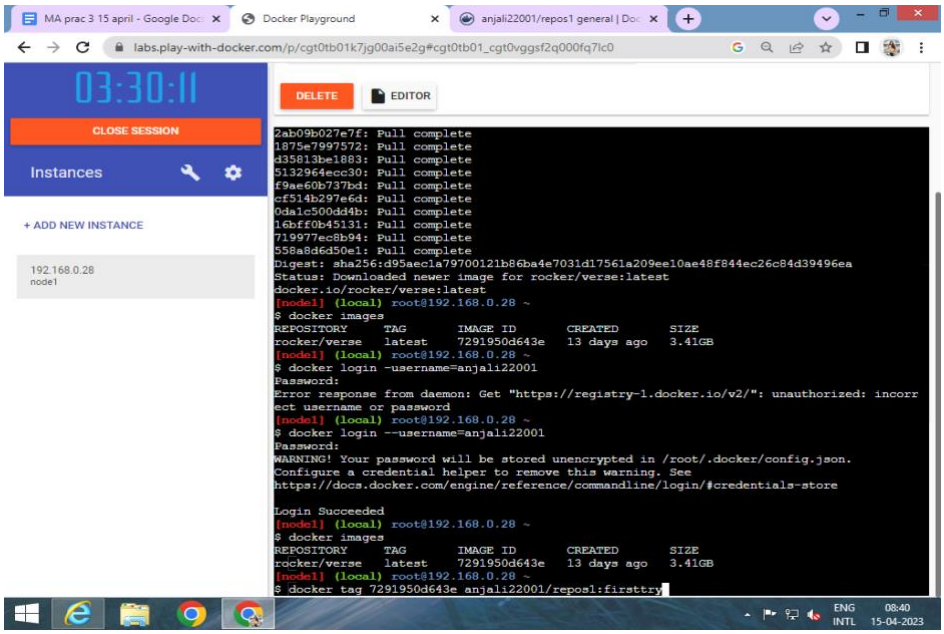


Command: to login to your docker account **docker login–username=anjali22001**
Password:

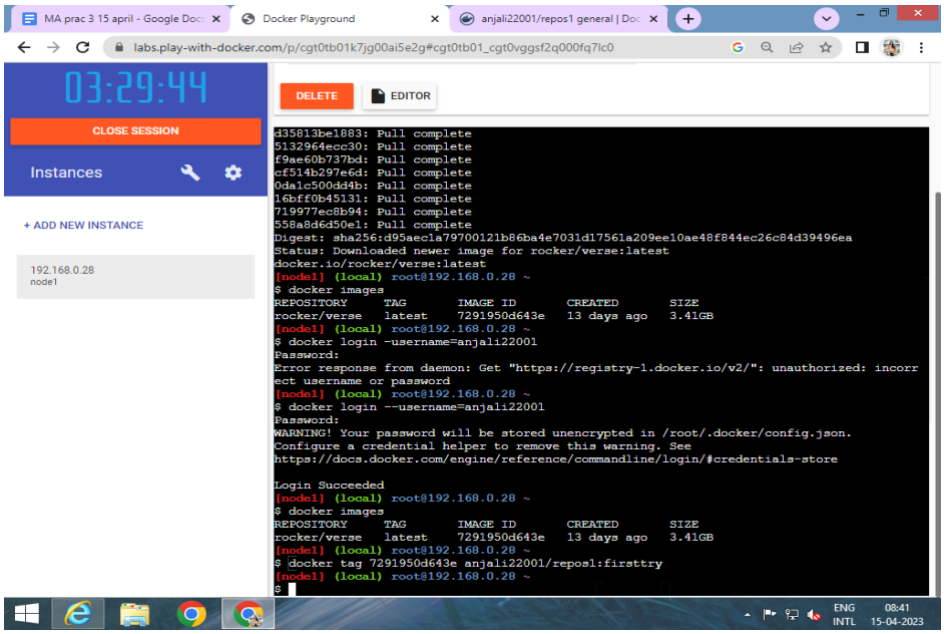
Output



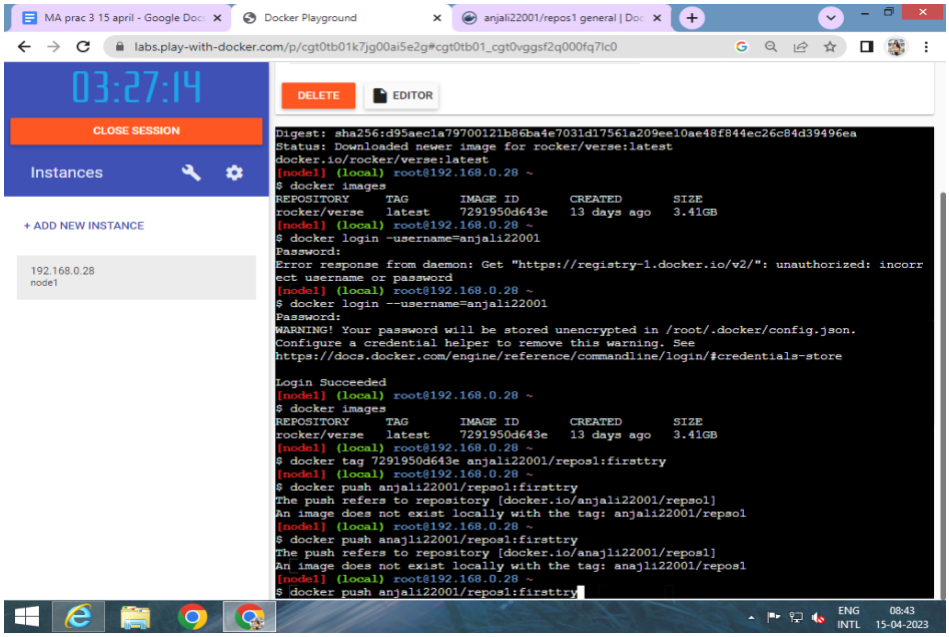
Command :to tag image **docker tag 7291950d643e anjali22001/repos1:firsttry**



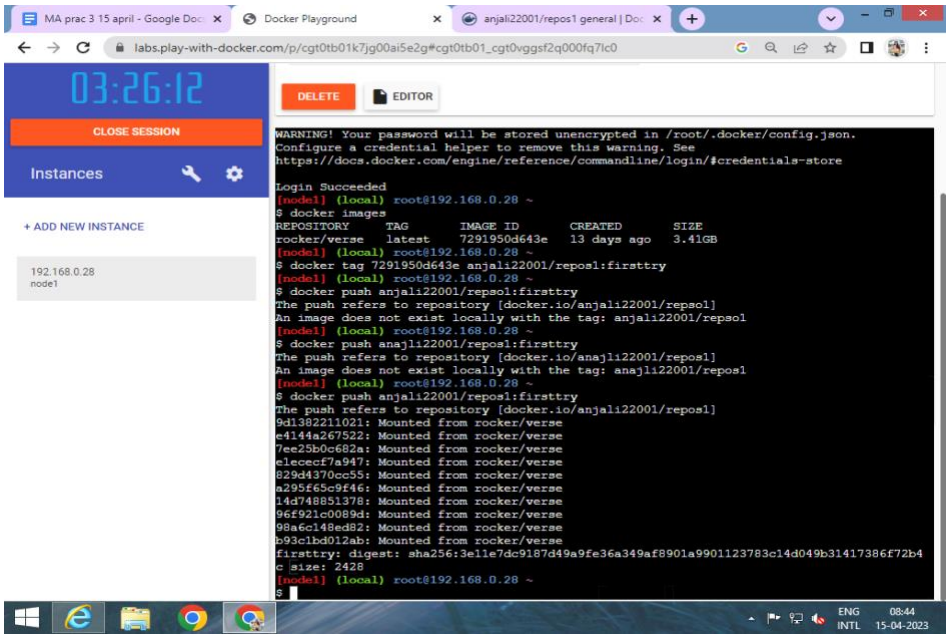
Output



Command:to push image to docker hub account **docker push anjali22001/repos1:firsttry**



Output


MA prac 3 15 april - Google Doc
Docker Playground
anjali22001/repos1 general | Doc
labs.play-with-docker.com/p/cgt0tb01k7jg00ai5e2g#cgt0tb01_cgt0vggsf2q000fq7lc0
03:26:12
CLOSE SESSION
Instances
+ ADD NEW INSTANCE
192.168.0.28
node1
DELETE
EDITOR
WARNING! Your password will be stored unencrypted in /root/.docker/config.json.
Configure a credential helper to remove this warning. See
https://docs.docker.com/engine/reference/commandline/login/#credentials-store
Login Succeeded
[node1] (local) root@192.168.0.28 ~
$ docker images
REPOSITORY TAG IMAGE ID CREATED SIZE
rocker/verse latest 7291950d643e 13 days ago 3.41GB
[node1] (local) root@192.168.0.28 ~
$ docker tag 7291950d643e anjali22001/repos1:firsttry
[node1] (local) root@192.168.0.28 ~
$ docker push anjali22001/repso1:firsttry
The push refers to repository [docker.io/anjali22001/repso1]
An image does not exist locally with the tag: anjali22001/repso1
[node1] (local) root@192.168.0.28 ~
$ docker push anajli22001/repos1:firsttry
The push refers to repository [docker.io/anajli22001/repos1]
An image does not exist locally with the tag: anajli22001/repos1
[node1] (local) root@192.168.0.28 ~
$ docker push anjali22001/repos1:firsttry
The push refers to repository [docker.io/anjali22001/repos1]
9d1382211021: Mounted from rocker/verse
e4144a267522: Mounted from rocker/verse
7ee25b0c682a: Mounted from rocker/verse
c1ececf7a947: Mounted from rocker/verse
829d4370cc55: Mounted from rocker/verse
a295f65c9f46: Mounted from rocker/verse
14d748851378: Mounted from rocker/verse
96f921c0089d: Mounted from rocker/verse
98a6c148ed82: Mounted from rocker/verse
b93c1bd012ab: Mounted from rocker/verse
firsttry: digest: sha256:3e11e7dc9187d49a9fe36a349af8901a9901123783c14d049b31417386f72b4
c size: 2428
[node1] (local) root@192.168.0.28 ~
$
ENG
INTL
08:44
15-04-2023

Practical No. 5:
Working with docker volume & networks

Working with docker Volumes and Networks.
Perform Following Inside Play-With-Docker
Steps:
1)Pull nginx image into docker
Command: docker pull nginx

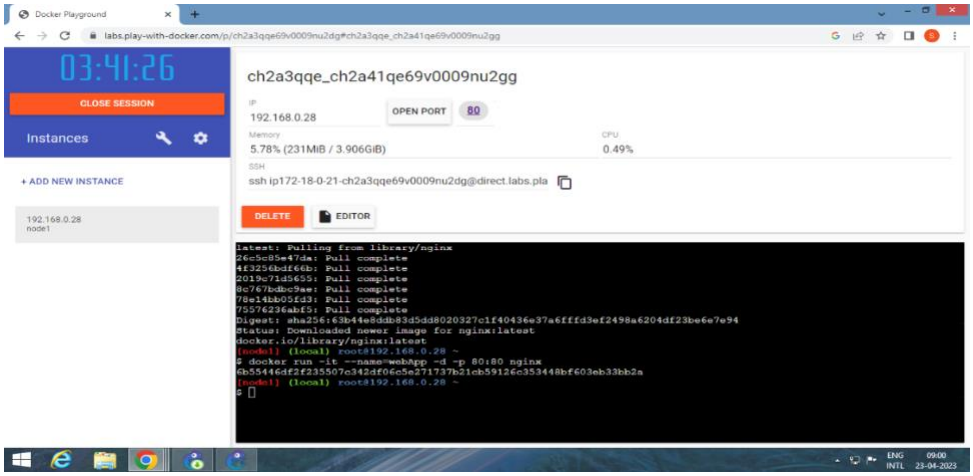
Output

```
[node1] (local) root@192.168.0.28 ~
$ docekr pull nginx
bash: docekr: command not found
[node1] (local) root@192.168.0.28 ~
$ docker pull nginx
Using default tag: latest
latest: Pulling from library/nginx
26c5c85e47da: Pull complete
4f3256bdf66b: Pull complete
2019c71d5655: Pull complete
8c767bdbc9ae: Pull complete
78e14bb05fd3: Pull complete
75576236abf5: Pull complete
Digest: sha256:63b44e8ddb83d5dd8020327c1f40436e37a6fffd3ef2498a6204df23be6e7e94
Status: Downloaded newer image for nginx:latest
```

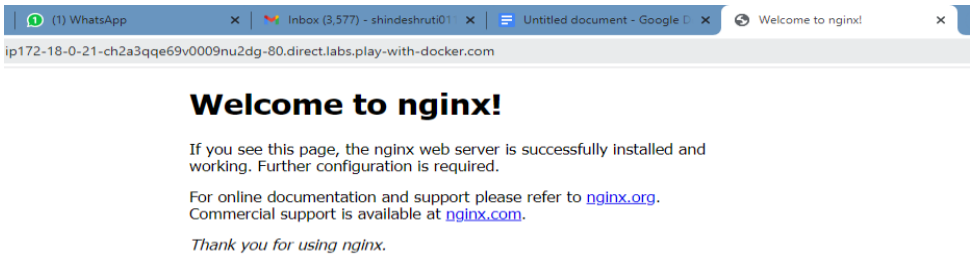
2)Now run the pulled image in Conatiner named “webApp”
Command: docker run -it --name=webApp -d -p 80:80 nginx
Output

```
[node1] (local) root@192.168.0.28 ~
$ docker run -it --name=webApp -d -p 80:80 nginx
6b55446df2f235507c342df06c5e271737b21cb59126c353448bf603eb33bb2a
```

3)Click on port 80 to check output (it shows welcome page)



Output



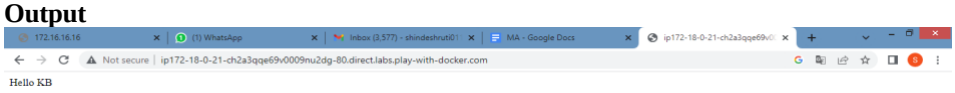
4)We make changes into "index.html" file inside /usr/share/nginx/html folder
Commands:
docker exec -it webApp bash //this command to execute bash shell
cd/usr/share/nginx/html //to go inside html folder
echo "Hello KB">index.html //to change content of index.html file

```
[node1] (local) root@192.168.0.28 ~
$ docker exec -it webApp bash
root@6b55446df2f2:/# cd/usr/share/nginx/html
bash: cd/usr/share/nginx/html: No such file or directory
root@6b55446df2f2:/# cd /usr/share/nginx/html
root@6b55446df2f2:/usr/share/nginx/html# echo "Hello KB">index.html
root@6b55446df2f2:/usr/share/nginx/html# exit
exit
```

5)Type exit to return to docker prompt and check process status using ps option
Commands :Exit Docker ps

```
[node1] (local) root@192.168.0.28 ~
$ docker ps
CONTAINER ID   IMAGE     COMMAND                  CREATED         STATUS         PORTS                NAMES
6b55446df2f2   nginx     "/docker-entrypoint.…"   15 minutes ago  Up 15 minutes  0.0.0.0:80->80/tcp   webApp
[node1] (local) root@192.168.0.28 ~
```

6)Now refresh on port 80 output (you should get modified output)
Output



7)Now stop running container named "webApp" .
Command: docker stop webApp

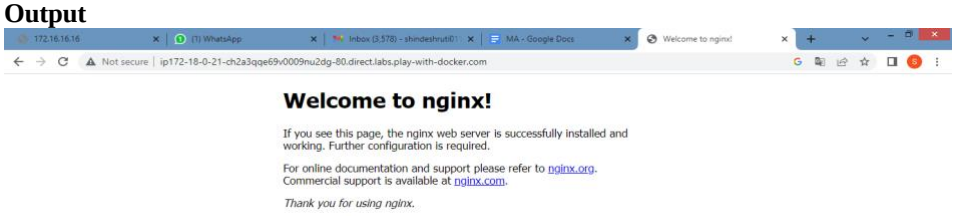
```
[node1] (local) root@192.168.0.28 ~
$ docker stop webApp
webApp
```

8)Start nginx in new container named as"webApp1".
Command: docker run -it --name=webApp1 -d -p 80:80 nginx

```
[node1] (local) root@192.168.0.28 ~
$ docker run -it --name=webApp1 -d -p 80:80 nginx
d83631275f4624e9fe19791b2b4b7eb6f5852e1219f54937cb177b254807838c
```

9)Now Click on port 80 (you will see the welcome page again)

Output



10)To solve this issue we create new volume.
Command: docker volume create MyVolume

```
[node1] (local) root@192.168.0.28 ~
$ docker volume create MyVolume
MyVolume
```

11)Check volume is created
Command: docker volume ls

```
[node1] (local) root@192.168.0.28 ~
$ docker volume ls
DRIVER    VOLUME NAME
local     MyVolume
[node1] (local) root@192.168.0.28 ~
$
```

12)Check details of volume
Command: docker volume inspect MyVolume

```
[node1] (local) root@192.168.0.28 ~
$ docker volume inspect MyVolume
[
    {
        "CreatedAt": "2023-04-23T03:40:19Z",
        "Driver": "local",
        "Labels": {},
        "Mountpoint": "/var/lib/docker/volumes/MyVolume/_data",
        "Name": "MyVolume",
        "Options": {},
        "Scope": "local"
    }
]
[node1] (local) root@192.168.0.28 ~
$
```

13)Mount this volume to nginx new container named “webApp99”
Command: docker run -d --name=webApp99 –mount source=MyVolume, destination=/usr/share/nginx/html -p 81:80 nginx

Output

```
[node1] (local) root@192.168.0.28 ~
$ docker run -d --name=webApp99 --mount source=MyVolume,destination=/usr/share/nginx/html -p 81:80 nginx
4797324086ceb6b10aa1a3607f3f2db50a2e917c99dab342537e77a2ede96c91
```

14)Now keep on doing “ls” and “cd” to go inside_data folder of our volume “MyVolume”

Commands : ls/ cd/var/lib/docker

ls

Output

```
[node1] (local) root@192.168.0.28 ~
$ ls/
bash: ls/: No such file or directory
[node1] (local) root@192.168.0.28 ~
$ ls /
bin         docker.log  lib         mnt         root        srv         usr
certs       etc         lib64       opt         run         sys         var
dev         home        media       proc        sbin        tmp
[node1] (local) root@192.168.0.28 ~
$ cd /var/lib/docker
[node1] (local) root@192.168.0.28 /var/lib/docker
$ ls
buildkit    containers  network     plugins     swarm       trust
containerd  image       overlay2    runtimes    tmp         volumes
[node1] (local) root@192.168.0.28 /var/lib/docker
```

Commands: cd volumes

ls

cd MyVolume

ls

cd_data

ls

Output

```
[node1] (local) root@192.168.0.28 /var/lib/docker
$ cd volumes
[node1] (local) root@192.168.0.28 /var/lib/docker/volumes
$ ls
MyVolume            backingFsBlockDev  metadata.db
[node1] (local) root@192.168.0.28 /var/lib/docker/volumes
$ cd MyVolume
[node1] (local) root@192.168.0.28 /var/lib/docker/volumes/MyVolume
$ ls
 data
[node1] (local) root@192.168.0.28 /var/lib/docker/volumes/MyVolume
$ cd_data
bash: cd_data: command not found
[node1] (local) root@192.168.0.28 /var/lib/docker/volumes/MyVolume
$ cd _data
[node1] (local) root@192.168.0.28 /var/lib/docker/volumes/MyVolume/ data
$ ls
50x.html    index.html
[node1] (local) root@192.168.0.28 /var/lib/docker/volumes/MyVolume/ data
```

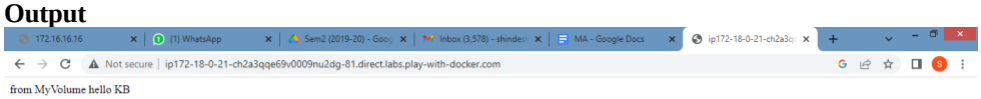
15)Modify contents of index.html file with “from My Volume hello KB”

Command: echo “from My Volume hello KB”> index.html

```
[node1] (local) root@192.168.0.28 /var/lib/docker/volumes/MyVolume/ data
$ echo "from MyVolume hello KB"> index.html
[node1] (local) root@192.168.0.28 /var/lib/docker/volumes/MyVolume/ data
```

16)Now refresh port 80(to get modified output)

Output



17)Now stop this running container named “webApp4”

Command: docker stop webApp99

Output

```
$ docker stop webApp99
webApp99
[node1] (local) root@192.168.0.28 /var/lib/docker/volumes/MyVolume/ data
$
```

18)Now run nginx in new container named“webApp10”

Command: docker run -d --name=webApp10 –mount source=MyVolume,destination=/usr/share/nginx/html -p 81:80 nginx

Output

```
[node1] (local) root@192.168.0.28 /var/lib/docker/volumes/MyVolume/ data
$ docker run -d --name=webApp10 --mount source=MyVolume,destination=/usr/share/nginx/html -p 81:80 nginx
79278dc81df0fd5fbf53eb10e22157d6be45c787c5705334c0571be437db1f1f
[node1] (local) root@192.168.0.28 /var/lib/docker/volumes/MyVolume/ data
```

19)Click on port 80 and refresh the page you should get edited file as output. We can load the page again localhost:80 and still see the html file that we edited in the volume. So, with the help of volumes ,we can easily access the data even we stop the container and it’s very easy to access data and import the data to anywhere.

Output