

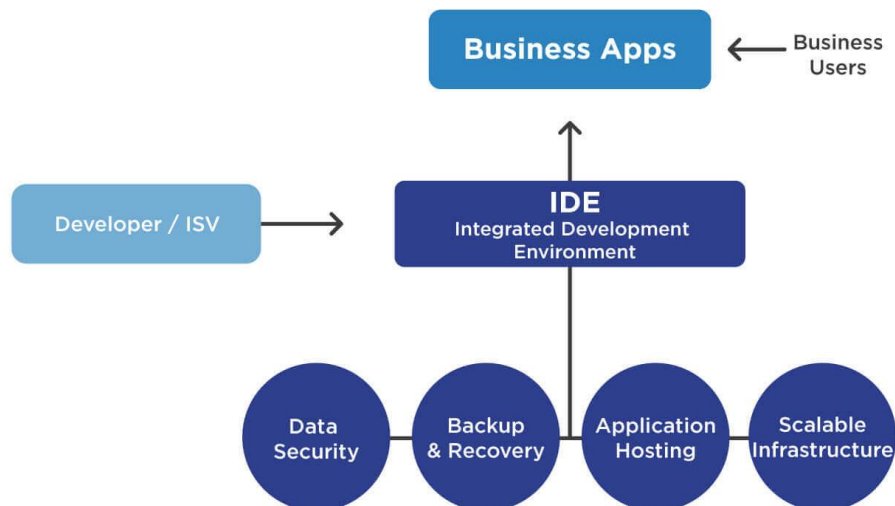
Experiment No. 5

Aim: To study and Implement Platform as a Service using AWS Elastic Beanstalk/ Microsoft Azure App Service.

Requirements: Windows/Mac/Linux O.S, AWS/Azure account and compatible version of python.

Theory:

Platform as a Service: Platform as a Service is software that provides access to development tools, APIs, and deployment instruments. Users receive access to virtual development environments and Cloud storage, where they can build, test, and run applications. In PaaS, users are billed only for the platforms that they use for the time when the services were used. There is no need to pay for excessive functionality, like in desktop solutions.



Examples of PaaS:

AWS Elastic Beanstalk: a web platform for software deployment and management, powered by the AWS Cloud. Users upload their applications to the service, and it automatically monitors the performance, load capacity, and checks for deployment errors.

Apache Stratos: the Cloud computing platform for arranging PHP and MySQL. The PaaS provides users with ready-to-use tools for database development and testing, performance monitoring, integration, and billing.

Magento Commerce Cloud: Magento Cloud offers tools for e-commerce development, testing, deployment, and maintenance. The Cloud environment allows accessing the store settings anytime and anywhere as well as automates the key processes.

Implementation:

1) Cloning sample project of Azure to deploy it using Azure App service

```
Activities Terminal Mar 20 13:20
slowgamer@adnan-System-Product-Name: ~/Desktop/College/same/CCL/EXPS/msdocs-python-django-webapp-quickstart

slowgamer@adnan-System-Product-Name: ~/Desktop/College/same/CCL/EXPS$ git clone https://github.com/Azure-Samples/msdocs-python-django-webapp-quickstart
Cloning into 'msdocs-python-django-webapp-quickstart'...
remote: Enumerating objects: 144, done.
remote: Counting objects: 100% (144/144), done.
remote: Compressing objects: 100% (96/96), done.
remote: Total 144 (delta 27), reused 95 (delta 18), pack-reused 0
Receiving objects: 100% (144/144), 701.45 KiB | 2.42 MiB/s, done.
Resolving deltas: 100% (67/67), done.
slowgamer@adnan-System-Product-Name: ~/Desktop/College/same/CCL/EXPS$ python3 -m venv env
The virtual environment was not created successfully because ensurepip is not
available. On Debian/Ubuntu systems, you need to install the python3-venv
package using the following command.

    apt install python3.8-venv

You may need to use sudo with that command. After installing the python3-venv
package, recreate your virtual environment.

falling command: ['/home/slowgamer/Desktop/College/same/CCL/EXPS/env/bin/python3', '-in', 'ensurepip', '--upgrade', '--default-pip']

slowgamer@adnan-System-Product-Name: ~/Desktop/College/same/CCL/EXPS$ sudo apt install python3.8-venv
[sudo] password for slowgamer:
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
libfreetype6
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
python-pip-whl python3-distutils
The following NEW packages will be installed:
python-pip-whl python3-distutils python3.8-venv
0 upgraded, 3 newly installed, 0 to remove and 3 not upgraded.
Need to get 1,952 Kb of archives.
After this operation, 3,755 Kb of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:1 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 python-pip-whl all 20.0.2-Subuntul.6 [1,805 Kb]
Get:2 http://in.archive.ubuntu.com/ubuntu focal-updates/main amd64 python3-distutils all 3.8.10-0ubuntu1-20.04 [141 Kb]
Get:3 http://in.archive.ubuntu.com/ubuntu focal-updates/universe amd64 python3.8-venv amd64 3.8.10-0ubuntu1-20.04.2 [5,444 B]
Fetched 1,952 Kb in 1s (1,300 KiB/s)
Selecting previously unselected package python-pip-whl.
(Reading database ... 20133 files and directories currently installed.)
Preparing to unpack .../python-pip-whl-20.0.2-Subuntul.6-all.deb ...
Unpacking python-pip-whl (20.0.2-Subuntul.6) ...
Selecting previously unselected package python3-distutils.
Preparing to unpack .../python3-distutils-3.8.10-0ubuntu1-20.04-all.deb ...
Unpacking python3-distutils (3.8.10-0ubuntu1-20.04) ...
Selecting previously unselected package python3.8-venv.
Preparing to unpack .../python3.8-venv-3.8.10-0ubuntu1-20.04.2-und64.deb ...
Unpacking python3.8-venv (3.8.10-0ubuntu1-20.04.2) ...
Setting up python3-distutils (3.8.10-0ubuntu1-20.04) ...
Setting up python-pip-whl (20.0.2-Subuntul.6) ...
Setting up python3.8-venv (3.8.10-0ubuntu1-20.04.2) ...
slowgamer@adnan-System-Product-Name: ~/Desktop/College/same/CCL/EXPS$ python3 -m venv env
slowgamer@adnan-System-Product-Name: ~/Desktop/College/same/CCL/EXPS$ env/bin/activate
bash: env/bin/activate: Permission denied
```

```
Activities Terminal Mar 20 13:20
slowgamer@adnan-System-Product-Name: ~/Desktop/College/same/CCL/EXPS/msdocs-python-django-webapp-quickstart

Preparing to unpack .../python3-distutils-3.8.10-0ubuntu1-20.04-all.deb ...
Unpacking python3-distutils (3.8.10-0ubuntu1-20.04) ...
Selecting previously unselected package python3.8-venv.
Preparing to unpack .../python3.8-venv-3.8.10-0ubuntu1-20.04.2-und64.deb ...
Unpacking python3.8-venv (3.8.10-0ubuntu1-20.04.2) ...
Setting up python3-distutils (3.8.10-0ubuntu1-20.04) ...
Setting up python-pip-whl (20.0.2-Subuntul.6) ...
Setting up python3.8-venv (3.8.10-0ubuntu1-20.04.2) ...
slowgamer@adnan-System-Product-Name: ~/Desktop/College/same/CCL/EXPS$ python3 -m venv env
slowgamer@adnan-System-Product-Name: ~/Desktop/College/same/CCL/EXPS$ env/bin/activate
bash: env/bin/activate: Permission denied
slowgamer@adnan-System-Product-Name: ~/Desktop/College/same/CCL/EXPS$ sudo env/bin/activate
sudo: env/bin/activate: command not found
slowgamer@adnan-System-Product-Name: ~/Desktop/College/same/CCL/EXPS$ source env/bin/activate
(env) slowgamer@adnan-System-Product-Name: ~/Desktop/College/same/CCL/EXPS$ pip install -r requirements.txt
Collecting Django==4.0.3
  Downloading Django-4.0.3-py3-none-any.whl (8.0 MB)
Collecting whitenoise
  Downloading whitenoise-6.0.0-py3-none-any.whl (19 KB)
Collecting backports.zoneinfo; python_version < '3.9'
  Downloading backports.zoneinfo-0.2.1-cp38-cp38-manylinux1_x86_64.whl (74 KB)
Collecting asgiref<4.0,>=3.4.1
  Downloading asgiref-3.5.0-py3-none-any.whl (22 KB)
Collecting sqlparse==0.2.2
  Downloading sqlparse-0.4.2-py3-none-any.whl (42 KB)
Installing collected packages: backports.zoneinfo, asgiref, sqlparse, Django, whitenoise
Successfully installed Django-4.0.3 asgiref-3.5.0 backports.zoneinfo-0.2.1 sqlparse-0.4.2 whitenoise-6.0.0
(env) slowgamer@adnan-System-Product-Name: ~/Desktop/College/same/CCL/EXPS/msdocs-python-django-webapp-quickstart$ python manage.py runserver
Watching for file changes with StatReloader
Performing system checks...

System check identified no issues (0 silenced).

You have 15 unapplied migrations! Your project may not work properly until you apply the migrations for app(s): admin, auth, contenttypes, sessions.
Run 'python manage.py migrate' to apply them.

March 20, 2022 - 07:40:36
Django version 4.0.3, using settings 'quickstartproject.settings'
Starting development server at http://127.0.0.1:8000/
Quit the server with CONTROL-C.

Request for index page received
[20/Mar/2022 07:50:02] "GET / HTTP/1.1" 200 1535
[20/Mar/2022 07:50:02] "GET /static/bootstrap/css/bootstrap.min.css HTTP/1.1" 200 163873
[20/Mar/2022 07:50:02] "GET /static/images/azure-icon.svg HTTP/1.1" 200 2243
[20/Mar/2022 07:50:02] "GET /favicon.ico HTTP/1.1" 404 2448
```

2) Creating App service

Microsoft Azure

Home > App Services

Default Directory

+ Create Manage view Refresh Export to CSV Open query Assign tags Start Restart Stop Delete Feedback

Filter for any field... Subscription == all Resource group == all Location == all Add filter

Showing 0 to 0 of 0 records.

No grouping List view

Name Status Location Pricing Tier App Service Plan Subscription App Type

No app services to display

Create, build, deploy, and manage powerful web, mobile, and API apps for employees or customers using a single back-end. Build standards-based web apps and APIs using .NET, Java, Node.js, PHP, and Python.

Create app service

Learn more about App Service

Selecting plan

Microsoft Azure

Home > App Services > Create Web App

Default Directory

Filter for any field... Name

No app services to display

Create, build, deploy, and manage powerful web, mobile, and API apps for employees or customers using a single back-end. Build standards-based web apps and APIs using .NET, Java, Node.js, PHP, and Python.

Create app service

Learn more about App Service

Create Web App

Subscription: Azure for Students

Resource Group: (New) msdocs-python-webapp-quickstart

Instance Details

Need a database? Try the new Web + Database experience.

Name: msdocs-python-webapp-quickstart-URT

Publish: Code

Runtime stack: Python 3.9

Operating System: Linux

Region: Central India

App Service Plan

Linux Plan (Central India): (New) ASP-msdocspythonwebappquickstart-bb11

Sku and size: Premium V2 P1v2

Zone redundancy: Enabled

Spec Picker

Dev / Test For less demanding workloads

Production For most production workloads

Isolated Advanced networking and scale

The first Basic (B1) core for Linux is free for the first 30 days!

Recommended pricing tiers

F1 Free SKU is not supported for Linux in the selected region.

B1 100 MB ACU, 1.75 GB memory, A-Series compute equivalent, 946.67 INR/Month (Estimated)

Set additional options

Included features

Every app hosted on this App Service plan will have access to these features:

Custom domains / SSL Configure and purchase custom domains with SNI SSL bindings

Manual scale Up to 3 instances. Subject to availability.

Included hardware

Every instance of your App Service plan will include the following hardware configuration:

Azure Compute Units (ACU) Dedicated compute resources used to run applications deployed in the App Service Plan. Learn more

Memory Memory per instance available to run applications deployed and running in the App Service plan.

Storage 10 GB disk storage shared by all apps deployed in the App Service plan.

Apply

Configuration and specs

Microsoft Azure

Home > App Services >

App Services

Default Directory

+ Create Manage view

Filter for any field...

Name ↑

No app services to display

Create, build, deploy, and manage powerful web, mobile, and API apps for employees or customers using a single back-end. Build standards-based web apps and APIs using .NET, Java, Node.js, PHP, and Python.

Create app service

Learn more about App Service

Create Web App

Subscription * Azure for Students

Resource Group * ((New) msdocs-python-webapp-quickstart)

Create new

Instance Details

Need a database? Try the new Web + Database experience.

Name * msdocs-python-webapp-quickstart-URT

Publish * Code Docker Container Static Web App

Runtime stack * Python 3.9

Operating System * Linux Windows

Region * Central India

App Service Plan

App Service plan pricing tier determines the location, features, cost and compute resources associated with your app.

Linux Plan (Central India) * ((New) ASP-msdocspythonwebappquickstart-bb11)

SKU and size * Basic B1

Zone redundancy

Enabled: Your App Service plan and the apps in it will be zone

Review + create

Review and create

Microsoft Azure

Home > App Services >

App Services

Default Directory

+ Create Manage view

Filter for any field...

Name ↑

No app services to display

Create, build, deploy, and manage powerful web, mobile, and API apps for employees or customers using a single back-end. Build standards-based web apps and APIs using .NET, Java, Node.js, PHP, and Python.

Create app service

Learn more about App Service

Create Web App

Basics Deployment Monitoring Tags Review + create

Summary

Web App by Microsoft

Basic (B1) sku

Estimated price - loading ..

Details

Subscription 8cb997b9-3dec-4107-a690-e8159e8a5d22

Resource Group msdocs-python-webapp-quickstart

Name msdocs-python-webapp-quickstart-URT

Publish Code

Runtime stack Python 3.9

App Service Plan (New)

Name ASP-msdocspythonwebappquickstart-bb11

Operating System Linux

Region Central India

SKU Basic

Size Small

ACU 100 total ACU

Memory 1.75 GB memory

Monitoring

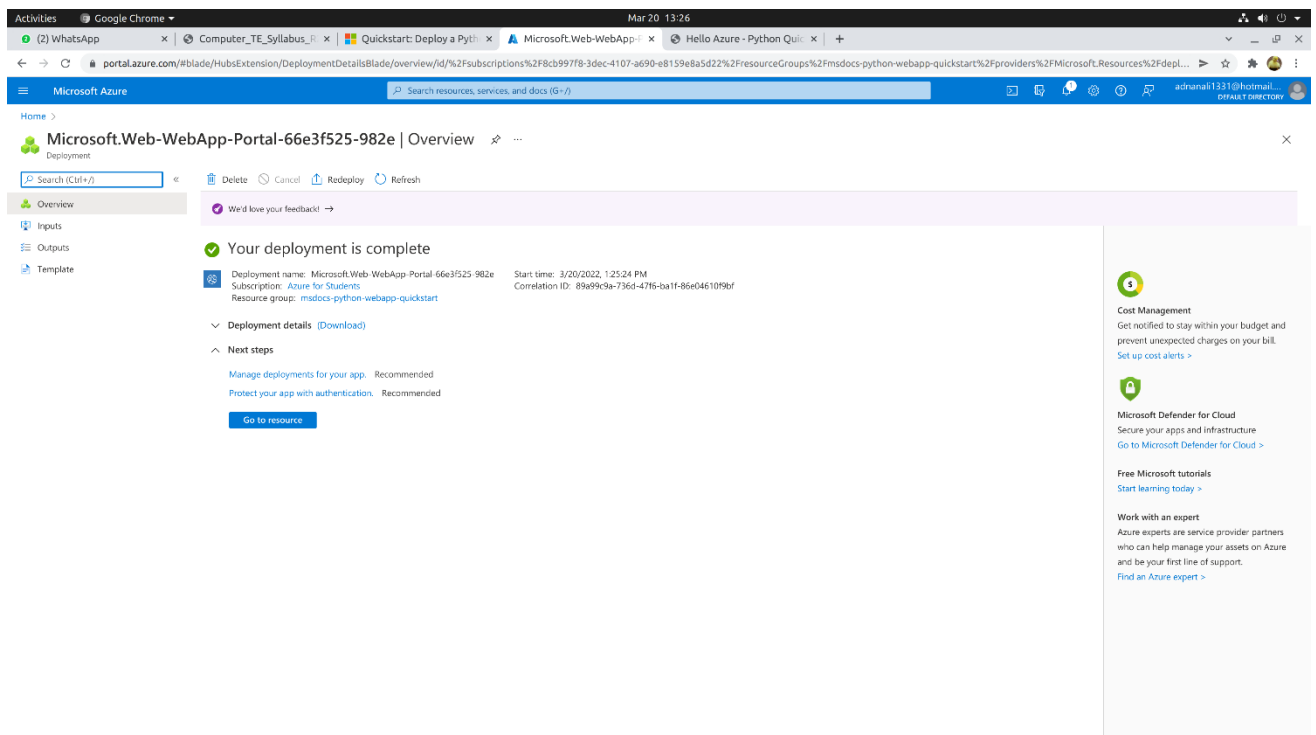
Application Insights Not enabled

Deployment

Continuous deployment Not enabled / Set up after app creation

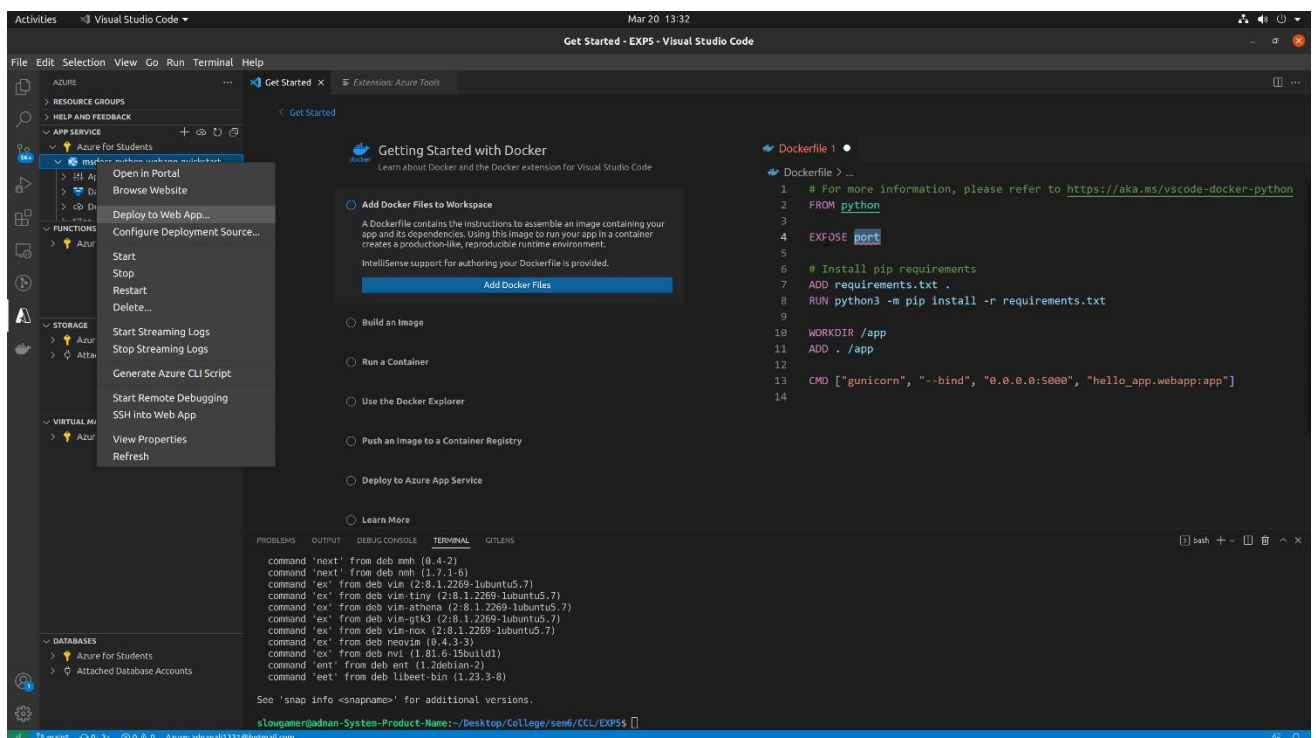
Create

Deployment complete

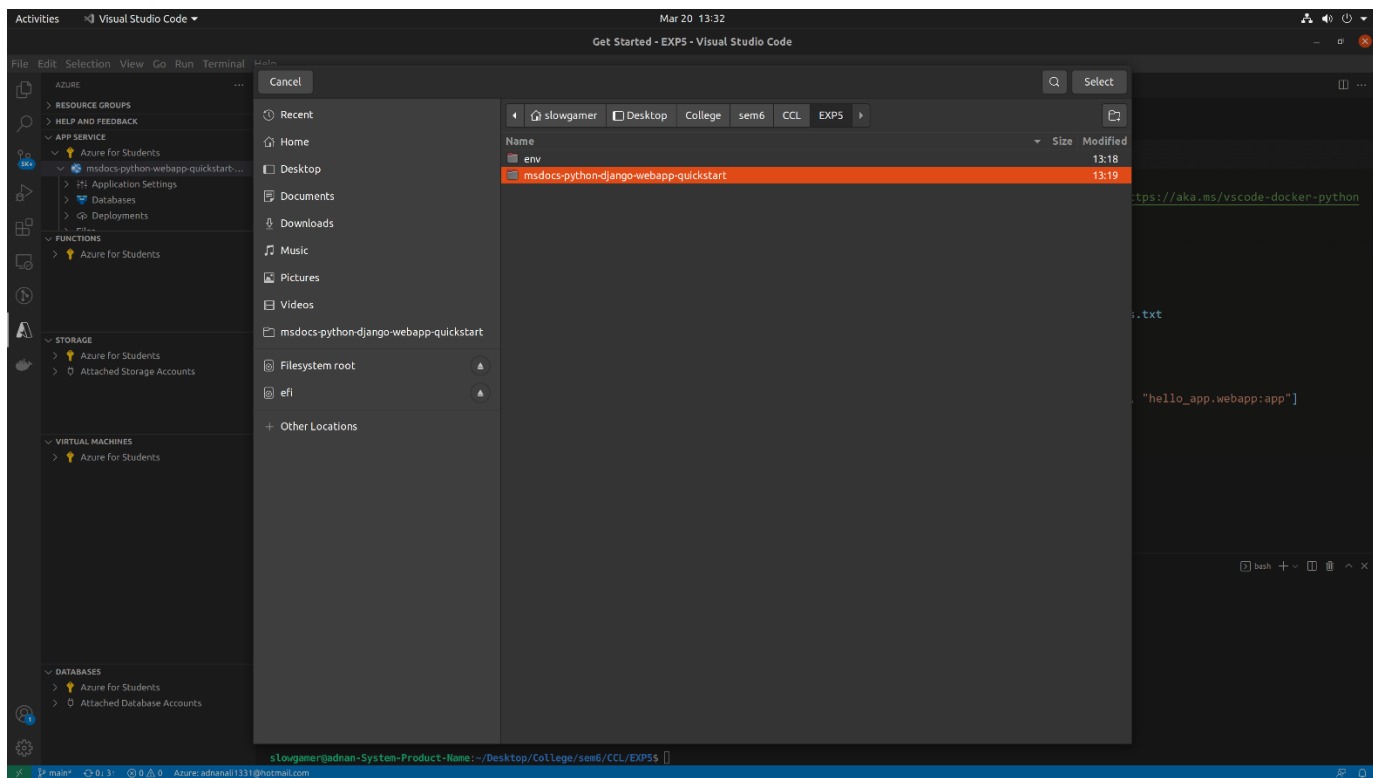


3) Sample App deployment in above app service using Azure tool in VSCode

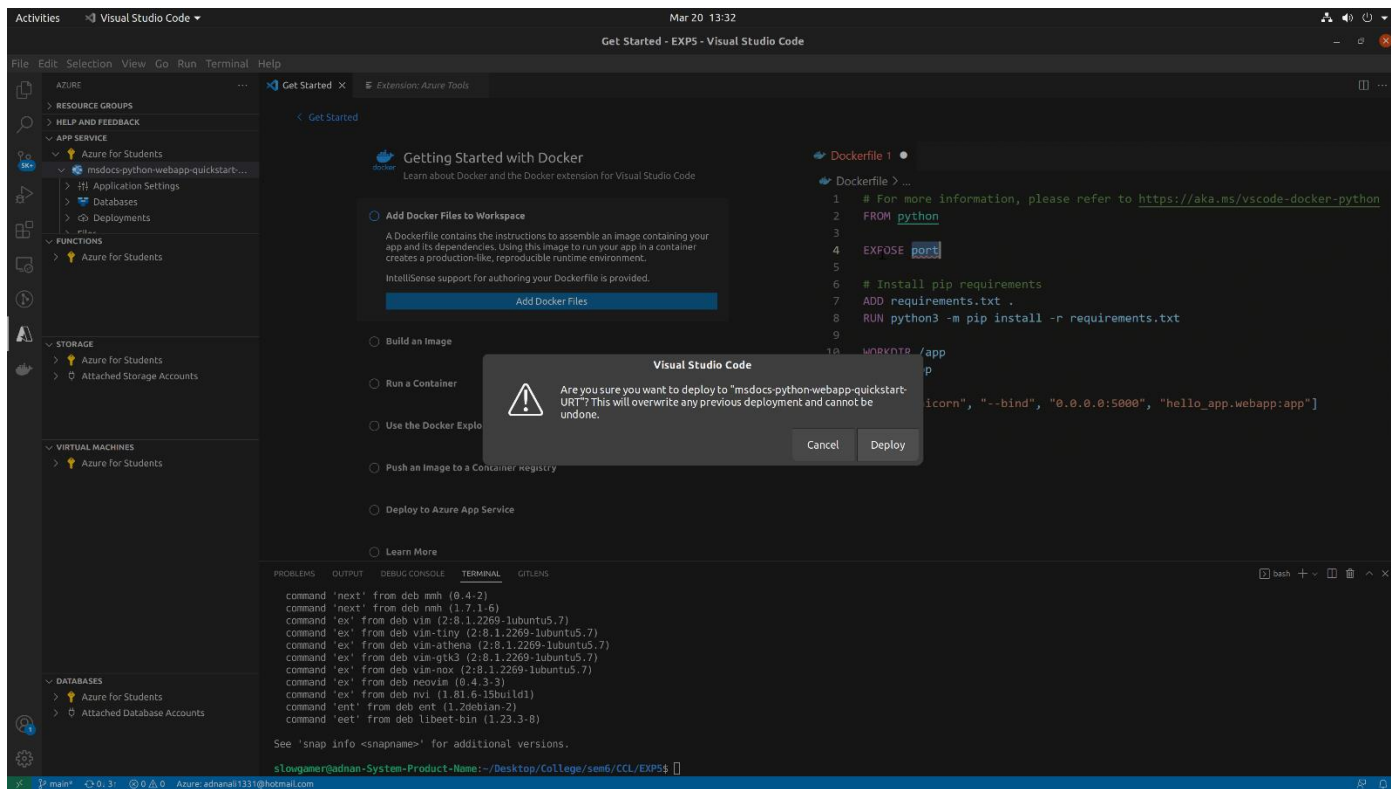
Linking Azure account and selecting Deploy to Web app



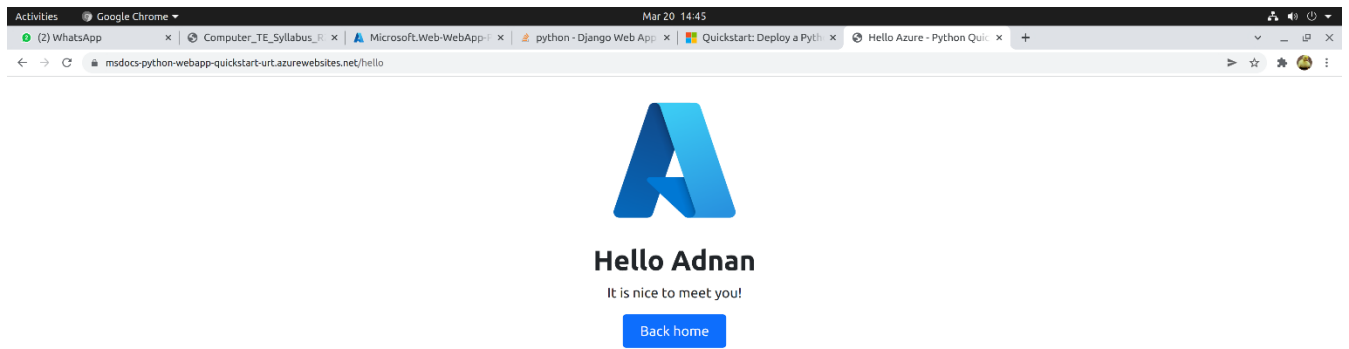
Selecting App to be Deploy



Finalizing Deployment



4) Result:



Conclusion: We have successfully implemented Platform as a Service in Azure.