

PRACTICAL: 1

AIM:

Scenario:

Frank and Martha are a married team who own and operate a small café business that sells desserts and coffee. Their daughter, Sofía, works at the café. Sofía is pursuing a degree in cloud computing at a local university in the evenings and on the weekends. She has Python development skills and is learning more about how to develop solutions in the cloud. Sofía is eager to start developing a web presence for the café. She thinks that before she starts coding, it would be a good idea to decide on a development environment for developing and running her code. She decides to explore at least two options that are available on AWS.

Lab overview and objectives:

In this lab, you will take on the role of Sofía. You will connect to an AWS CloudShell environment and explore its capabilities. You will also launch an instance of AWS Cloud9, connect to it, and explore the layout and functionality of its integrated development environment (IDE). In addition, you will use Amazon CodeWhisperer inside the AWS Cloud9 IDE to generate a Python script.

After completing this lab, you should be able to do the following:

- Connect to AWS CloudShell and run AWS Command Line Interface (AWS CLI) commands and AWS SDK code from it.
- Create an AWS Cloud9 development environment and connect to the browser-based IDE.
- Copy files to and from Amazon Simple Storage Service (Amazon S3), CloudShell, and AWS Cloud9.
- Install the AWS SDK for Python (Boto3) on an AWS Cloud9 instance.
- Use the AWS Cloud9 development environment to create files and run code files.
- Use Amazon CodeWhisperer in AWS Cloud9 to generate code to interact with AWS services.

THEORY:

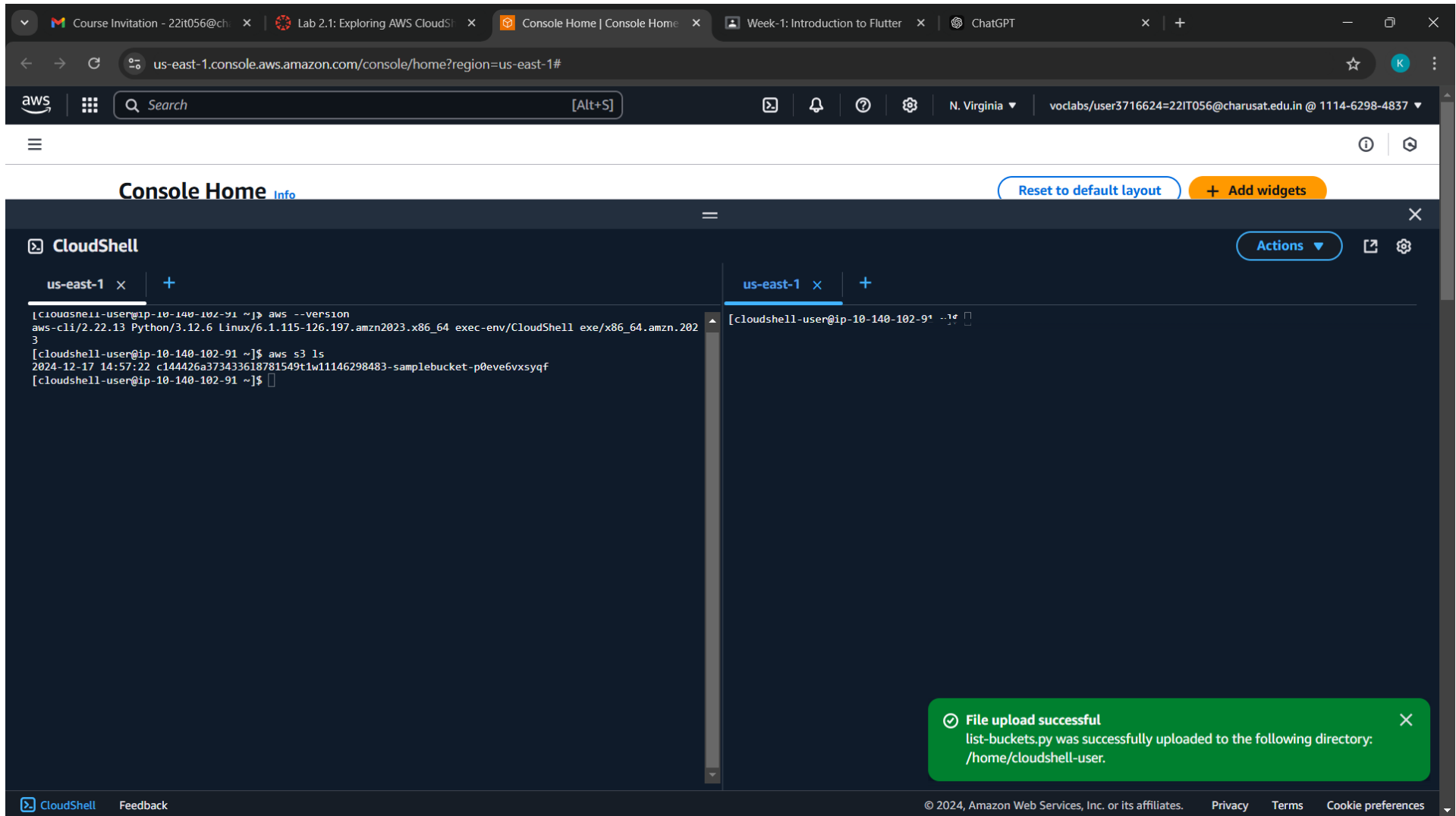
This practical focus on utilizing AWS tools such as CloudShell, Cloud9, and CodeWhisperer to establish a cloud-based development environment. AWS CloudShell is a web-based command-line interface that enables you to execute AWS commands and Python scripts directly, without requiring a local setup. It also allows seamless file transfers to and from Amazon S3. AWS Cloud9, a web-based integrated development environment (IDE), lets you write, execute, and debug Python code. It offers flexibility with tools like Boto3 for interacting with AWS services. Amazon CodeWhisperer, embedded within Cloud9, is an AI-driven tool that provides Python code suggestions for AWS tasks, enhancing development speed and efficiency. The workflow includes performing basic command-line tasks using CloudShell, configuring Cloud9 as the primary coding platform, utilizing CodeWhisperer for automated code suggestions, and employing S3 for file management to optimize the overall process.

CODE:**list-buckets.py:**

```
import boto3
session = boto3.Session()
s3_client = session.client('s3')
b = s3_client.list_buckets()
for item in b['Buckets']:
    print(item['Name'])
```

index.html:

```
<html>
<head>
    <title> </title>
</head>
<body>
Hello World.
</body>
</html>
```

OUTPUT:

The screenshot shows the AWS Management Console interface. The top navigation bar includes the AWS logo, a search bar, and the region 'N. Virginia'. The main content area is titled 'Console Home' and features a 'Reset to default layout' button and an 'Add widgets' button. Below this, the 'CloudShell' widget is displayed, showing a terminal window for the 'us-east-1' region. The terminal output is as follows:

```
[cloudshell-user@ip-10-140-102-91 ~]$ aws --version
aws-cli/2.22.13 Python/3.12.6 Linux/6.1.115-126.197.amzn2023.x86_64 exec-env/CloudShell exe/x86_64.amzn.2023
[cloudshell-user@ip-10-140-102-91 ~]$ aws s3 ls
2024-12-17 14:57:22 c144426a373433618781549t1w11146298483-samplebucket-p0eve6vxxyqf
[cloudshell-user@ip-10-140-102-91 ~]$
```

A green notification box at the bottom right of the terminal area indicates a successful file upload:

```
✔ File upload successful
list-buckets.py was successfully uploaded to the following directory:
/home/cloudshell-user.
```

Figure 1: check the version, list s3 and after that successfully upload a list-buckets.py python file into a directory

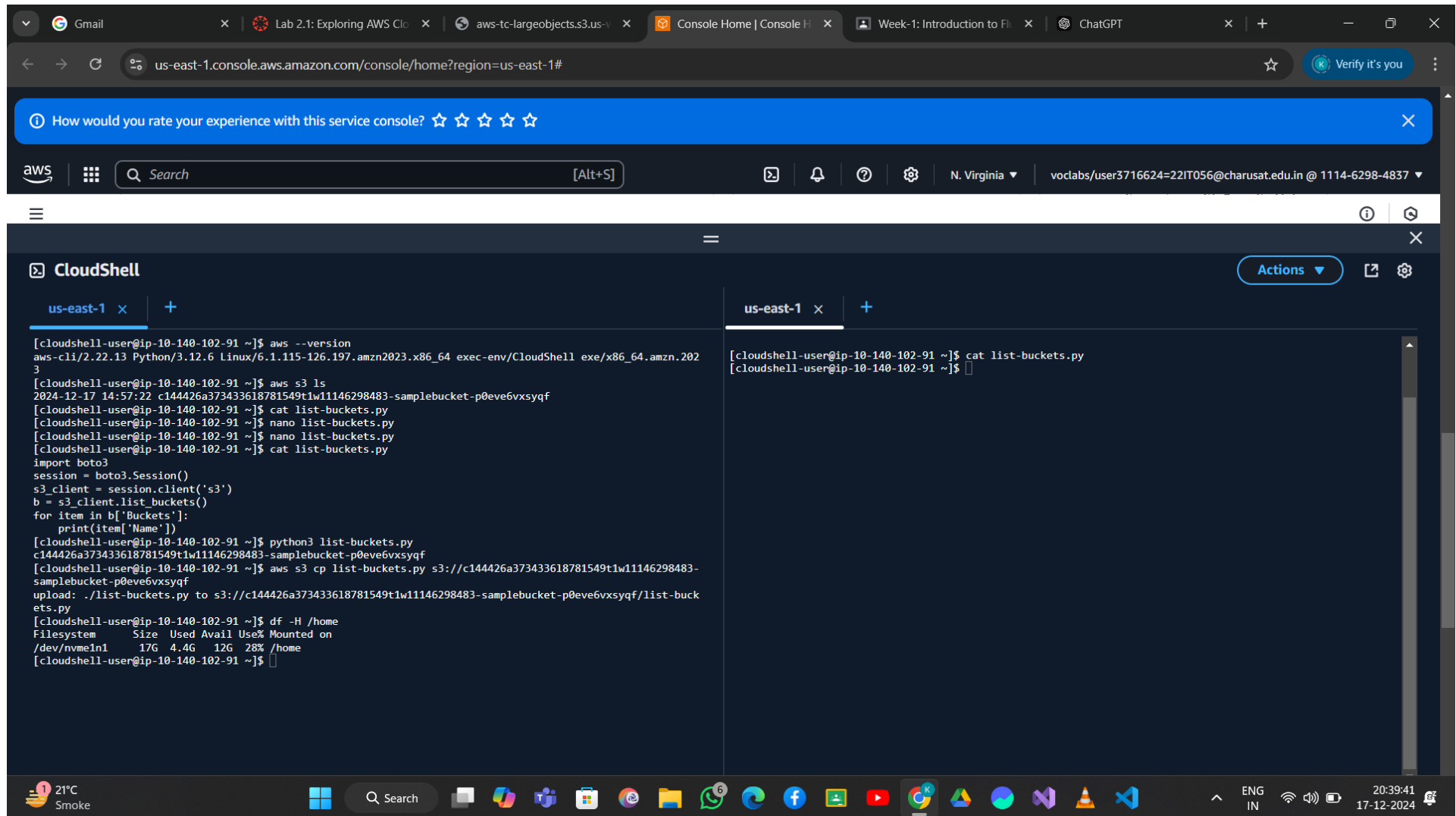


Figure 2: Show the content of list-bucket.py file and check the bucket name and check the information of home directory.

The screenshot shows the AWS Cloud9 console in the us-east-1 region. The left sidebar contains navigation links for AWS Cloud9, Environments, My environments, Shared with me, All account environments, and Documentation. The main content area shows a notification that 'MyCloud9' is being created. Below this, a table lists the environments:

Name	Cloud9 IDE	Environment type	Connection	Permission	Owner ARN
MyCloud9	Open	EC2 instance	Secure Shell (SSH)	Owner	arn:aws:sts::111462984837:assumed-role/voclabs/user3716624=22IT056@charusat.edu.in

Below the console, a CloudShell terminal window is open, showing the command 'cat list-buckets.py' and its output:

```
[cloudshell-user@ip-10-140-102-91 ~]$ cat list-buckets.py
[cloudshell-user@ip-10-140-102-91 ~]$
```

Figure 3: set instance network settings and create new Cloud9 instance is created with the name MyCloud9.

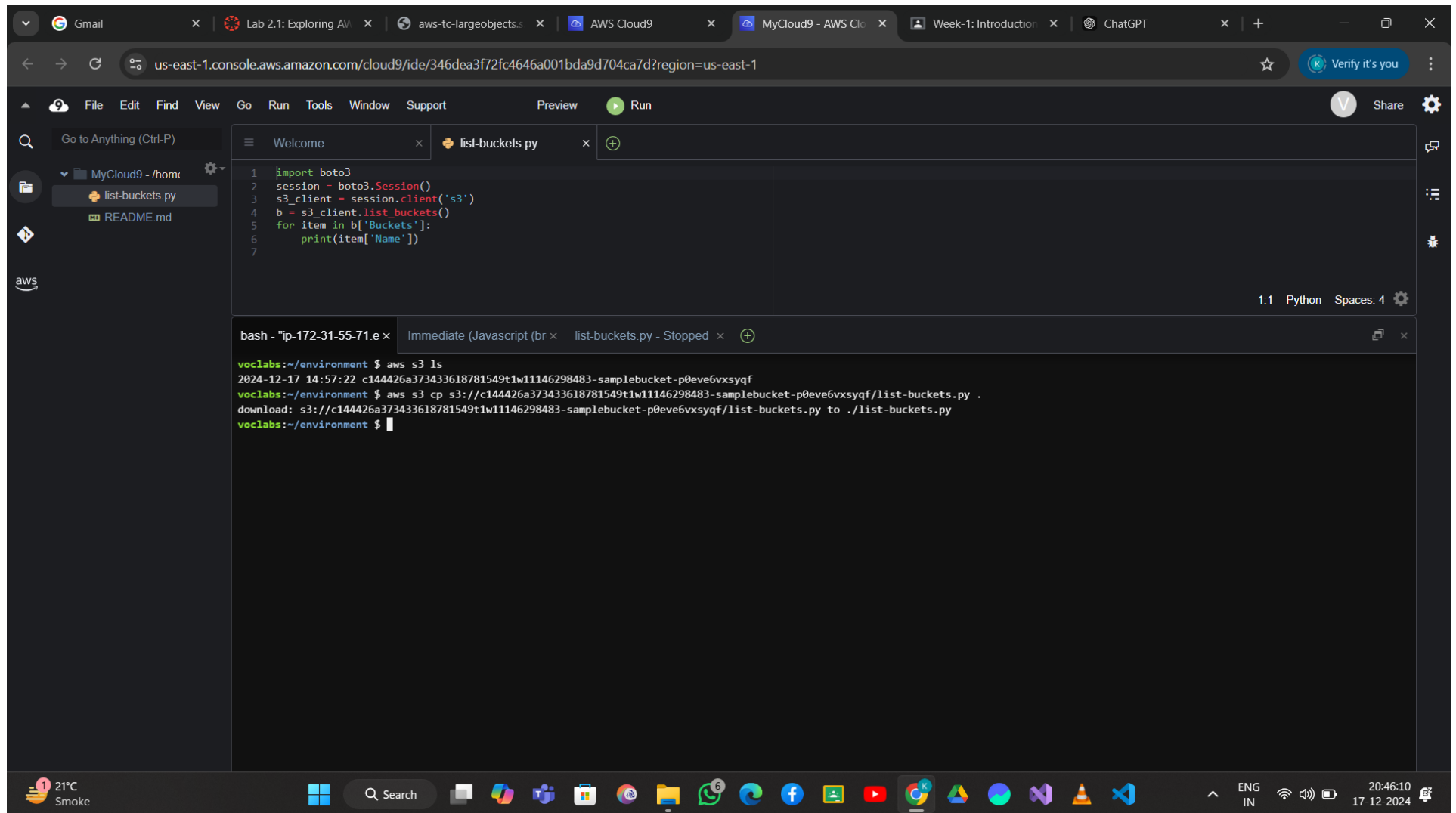


Figure 4: Check out a list using `ls` in AWS Cloud9

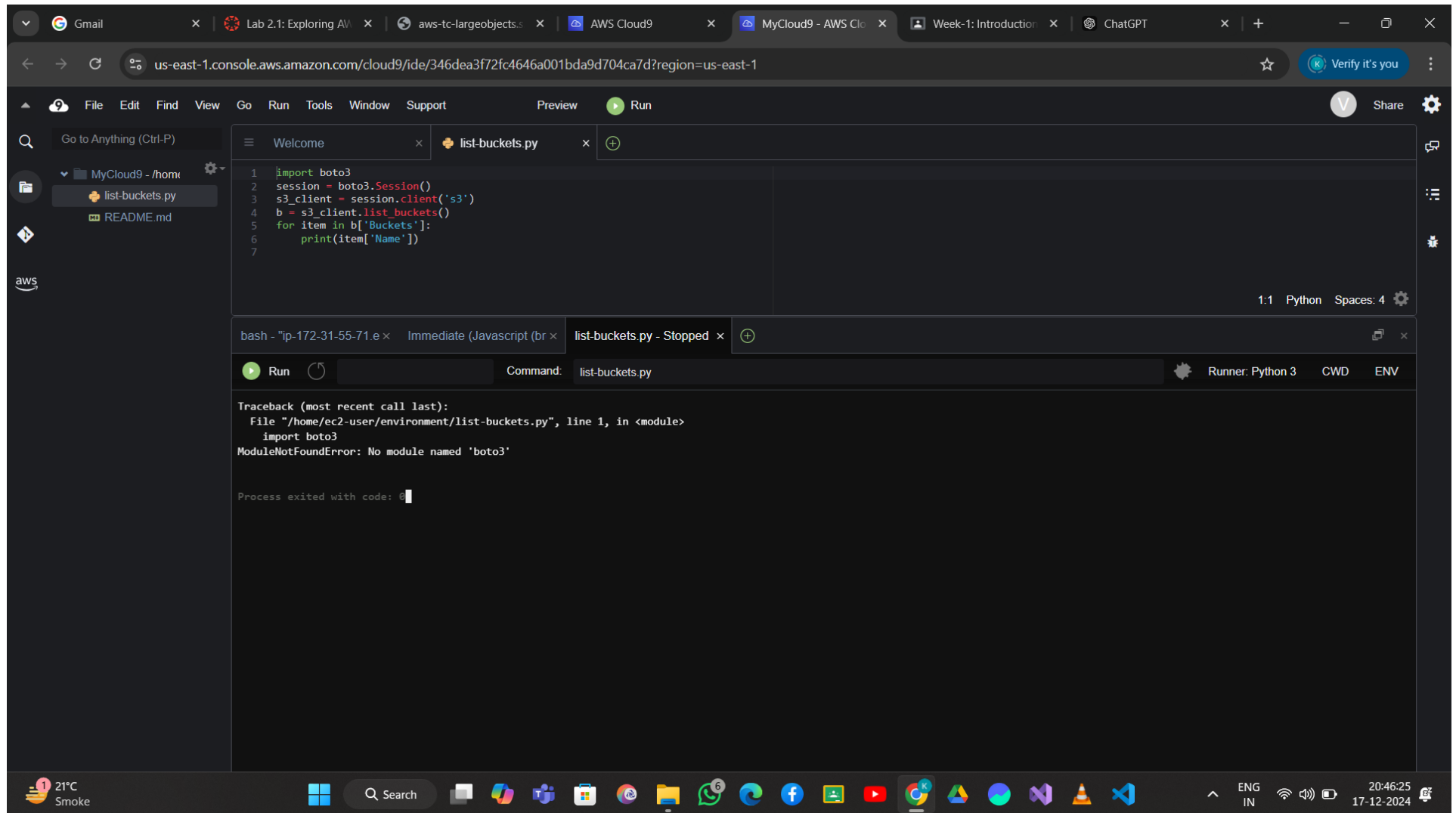


Figure 5: Run a `list-buckets.py` file but raise a error because `boto3` library is not installed

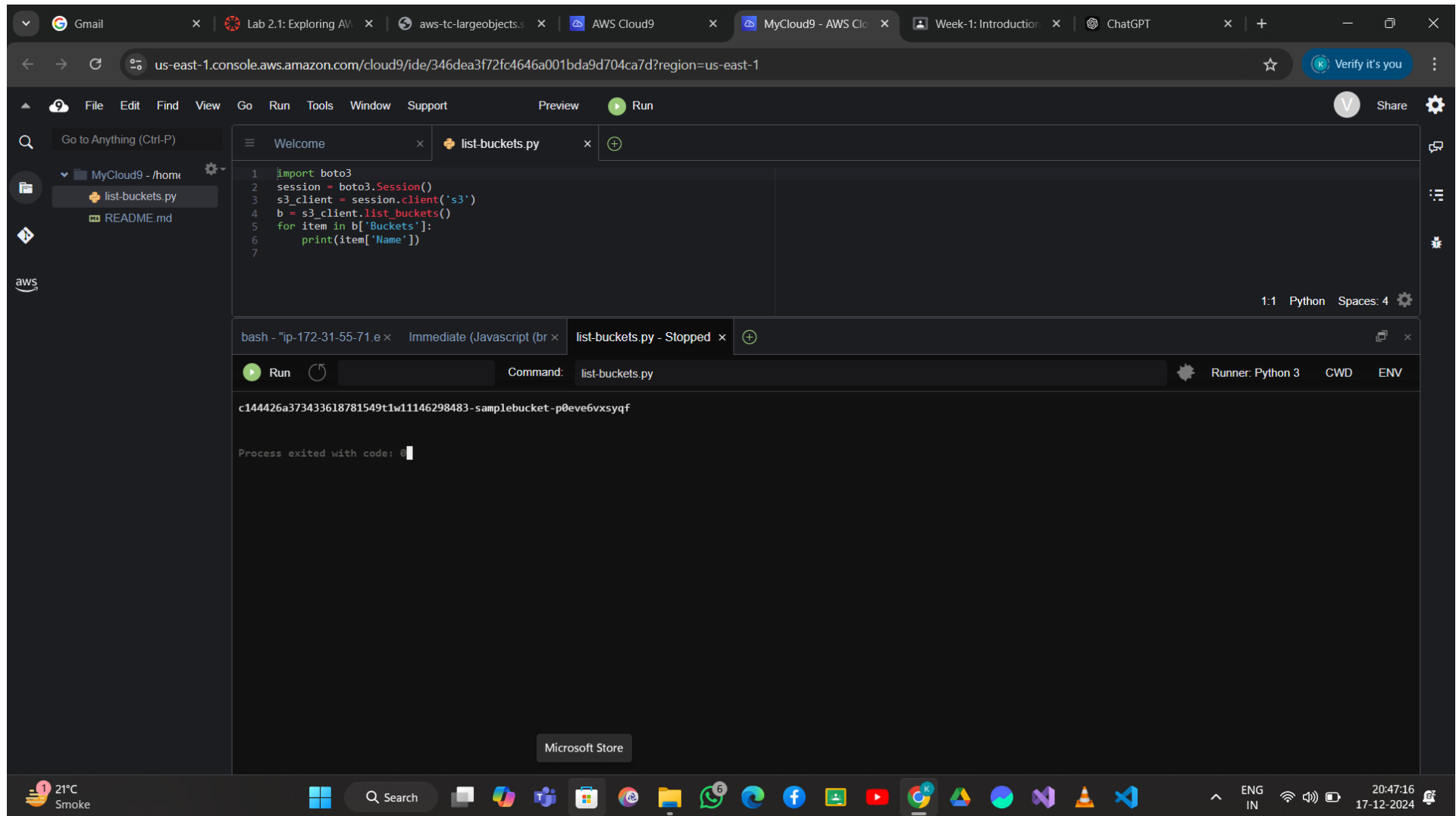


Figure 6: After install a boto3 file in list-buckets.py file and successfully run it.

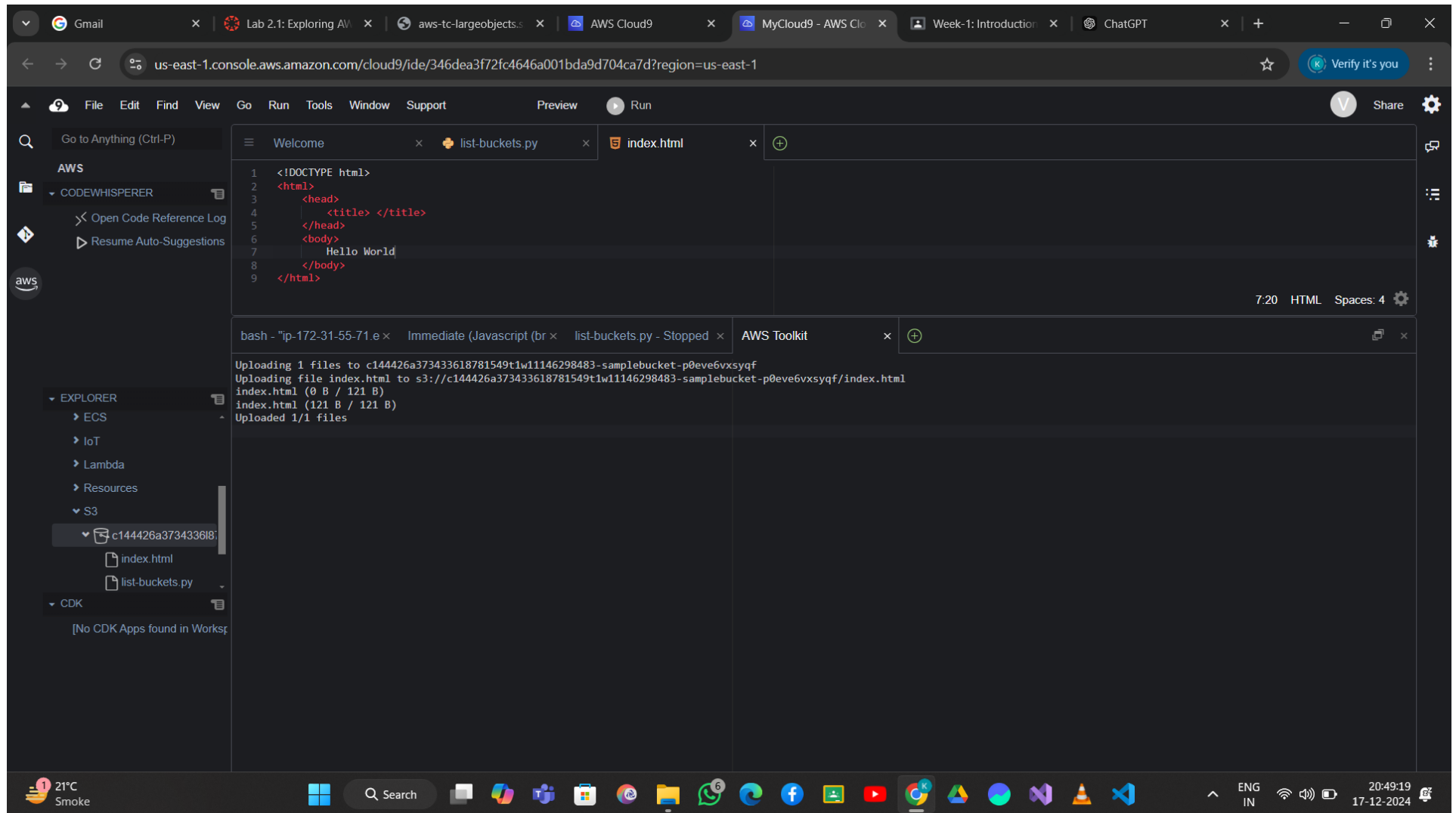


Figure 7: After creating `index.html` file and Upload `index.html` to Amazon S3 by using the AWS Explorer in AWS Cloud9.

LATEST APPLICATIONS:

1. Customer Engagement Platform
2. Inventory Management System
3. Feedback Collection App
4. Loyalty Program
5. Café Analytics Dashboard
6. Employee Scheduling System
7. Smart Menu System
8. Energy Consumption Tracker
9. Weather-Driven Promotions
10. Chatbot for Order Assistance

LEARNING OUTCOME:

In this practical, I gained hands-on experience with AWS CloudShell to execute AWS CLI commands and Python scripts directly from the browser. I successfully set up AWS Cloud9, a web-based IDE, which allowed me to write, execute, and debug Python code. I also practiced transferring files between Amazon S3, CloudShell, and Cloud9, which improved my data management workflow. I installed and used Boto3, the AWS SDK for Python, to interact with AWS services seamlessly. Additionally, I leveraged Amazon CodeWhisperer to automatically generate Python code, boosting my coding productivity. However, I encountered some challenges when trying to upload files into the S3 bucket. Despite these hurdles, the practical enhanced my skills in developing cloud-based applications.

REFERENCE:

1. <https://awsacademy.instructure.com/courses/>