

The screenshot shows a Visual Studio Code interface with the following details:

- File Explorer:** On the left, it shows a tree view of files and folders. The current file, `main.tf`, is highlighted.
- Code Editor:** The main area displays the `main.tf` Terraform configuration file. The code defines an AWS provider, creates an EC2 instance with specific parameters like AMI, instance type, security group, and key pair, and outputs the public IP of the instance.
- Terminal:** At the bottom, there is a terminal window titled "bash - terraform_e9" showing the Terraform command and its output.
- Status Bar:** The status bar at the bottom right indicates "Ln 16, Col 40" and "Terraform".

The screenshot shows the Visual Studio Code interface with the following details:

- File Explorer:** Shows a tree view of the project structure under "UBUNTU (SSH: UBUNTU)". The "terraform_e9" folder is expanded, showing "main.tf", ".bash_history", ".bash_logout", ".profile", ".sudo_as_admin_successful", and ".wget-hsts".
- Editor:** The main editor area displays the "main.tf" file content. It includes provider configuration for AWS and a "aws_instance" resource block. The "aws_instance" block contains various attributes like "ami", "cpu_core_count", "cpu_threads_per_core", "disable_api_stop", "enable_ip_forwarding", etc.
- Terminal:** A terminal window titled "bash - terraform_e9" is open at the bottom, showing the command "terraform plan" being run.
- Status Bar:** The status bar at the bottom indicates "Ln 16 Col 40 Spaces: 2 UTF-8 LF Terraform".

The screenshot shows the VS Code interface with the terminal tab active, displaying the output of a Terraform plan. The terminal window title is 'ubuntu [SSH: Ubuntu]'. The terminal content shows the provider block and a note about the lack of -out option.

```
File Edit Selection View Go Run Terminal Help ← → ○ ubuntu [SSH: Ubuntu]
EXPLORER ... main.tf
terraform_e9 > main.tf
  1 provider "aws" {
  2   region = "ap-south-1" # Change to your desired region
  3 }
  4
  5 # Create EC2 instance
  6 resource "aws_instance" "http_service_instance" {
  7   ami           = "ami-0e2c8caa4b6378d8c" # Replace with the desired AMI
  8   instance_type = "t2.micro" # Adjust instance type as needed
  9
 10  # Optionally add tags to the instance
 11  tags = {
 12    Name = "HTTP-Service-Instance"
 13  }
 14
 15  # Output the public IP of the EC2 instance
 16  output "instance_ip" {
 17    value = aws_instance.http_service_instance.public_ip
 18  }
 19
 20
 21
```

OUTPUT DEBUG CONSOLE TERMINAL PROBLEMS PORTS

```
+ user_data = (known after apply)
+ user_data_base64 = (known after apply)
+ user_data_replace_on_change = false
+ vpc_security_group_ids = (known after apply)

+ capacity_reservation_specification (known after apply)
+ cpu_options (known after apply)
+ ebs_block_device (known after apply)
+ enclave_options (known after apply)
+ ephemeral_block_device (known after apply)
+ instance_market_options (known after apply)
+ maintenance_options (known after apply)
+ metadata_options (known after apply)
+ network_interface (known after apply)
+ private_dns_name_options (known after apply)
+ root_block_device (known after apply)

}
Plan: 1 to add, 0 to change, 0 to destroy.

Changes to Outputs:
+ instance_ip = (known after apply)

Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run "terraform apply" now.

ubuntu@ip-172-31-24-64:~/terraform_e9$
```

The screenshot shows the VS Code interface with the terminal tab active, displaying the output of a Terraform plan. The terminal window title is 'ubuntu [SSH: Ubuntu]'. The terminal content shows the provider block and a note about the lack of -out option.

```
File Edit Selection View Go Run Terminal Help ← → ○ ubuntu [SSH: Ubuntu]
EXPLORER ... main.tf
terraform_e9 > main.tf
  1 provider "aws" {
  2   region = "ap-south-1" # Change to your desired region
  3 }
  4
  5 # Create EC2 instance
  6 resource "aws_instance" "http_service_instance" {
  7   ami           = "ami-0e2c8caa4b6378d8c" # Replace with the desired AMI
  8   instance_type = "t2.micro" # Adjust instance type as needed
  9
 10  # Optionally add tags to the instance
 11  tags = {
 12    Name = "HTTP-Service-Instance"
 13  }
 14
 15  # Output the public IP of the EC2 instance
 16  output "instance_ip" {
 17    value = aws_instance.http_service_instance.public_ip
 18  }
 19
 20
 21
```

```

ubuntu@ip-172-31-24-64:~/terraform_e9$ terraform plan

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
+ create

Terraform will perform the following actions:

# aws_instance.http_service_instance will be created
+ resource "aws_instance" "http_service_instance" {
    + ami                               = "ami-0e2c8caa4b6378d8c"
    + arn                             = (known after apply)
    + associate_public_ip_address      = (known after apply)
    + availability_zone                = (known after apply)
    + cpu_core_count                  = (known after apply)
    + cpu_threads_per_core            = (known after apply)
    + disable_api_stop                = (known after apply)
    + disable_api_termination         = (known after apply)
    + ebs_optimized                   = (known after apply)
    + enable_primary_ipv6             = (known after apply)
    + get_password_data               = false
    + host_id                         = (known after apply)
    + host_resource_group_arn          = (known after apply)
    + iam_instance_profile             = (known after apply)
    + id                             = (known after apply)
    + instance_initiated_shutdown_behavior = (known after apply)
    + instance_lifecycle              = (known after apply)
    + instance_state                  = (known after apply)
    + instance_type                   = "t2.micro"
    + ipv4_address_count              = (known after apply)
    + ipv6_addresses                  = (known after apply)
    + key_name                        = (known after apply)
    + monitoring                      = (known after apply)
    + outpost_arn                     = (known after apply)
    + password_data                  = (known after apply)
    + placement_group                 = (known after apply)
    + placement_partition_number       = (known after apply)
    + primary_network_interface_id    = (known after apply)
    + private_dns                     = (known after apply)
    + private_ip                      = (known after apply)
    + public_dns                      = (known after apply)
}

```

Ln 12, 13

```

ubuntu@ip-172-31-24-64:~/terraform_e9$ terraform plan

Plan: 1 to add, 0 to change, 0 to destroy.

Changes to outputs:
+ instance_ip = (known after apply)

Note: You didn't use the -out option to save this plan, so Terraform can't guarantee to take exactly these actions if you run "terraform apply" now.

ubuntu@ip-172-31-24-64:~/terraform_e9$ 

```

The screenshot shows the AWS S3 console with the following details:

- Account snapshot - updated every 24 hours**: Storage lens provides visibility into storage usage and activity trends. Metrics don't include directory buckets. [Learn more](#)
- General purpose buckets**: Bucket count: 3. Buckets are containers for data stored in S3.
- Buckets List:**

Name	AWS Region	IAM Access Analyzer	Creation date
e9-http-service-bucket	Asia Pacific (Mumbai) ap-south-1	View analyzer for ap-south-1	December 13, 2024, 23:54:17 (UTC+05:30)
my360a	US East (N. Virginia) us-east-1	View analyzer for us-east-1	October 14, 2024, 14:31:37 (UTC-05:30)
yashwant	US East (N. Virginia) us-east-1	View analyzer for us-east-1	October 14, 2024, 16:08:20 (UTC+05:30)

The screenshot shows the VS Code terminal window running on an SSH session to an Ubuntu host. The terminal output shows the execution of a Terraform apply command:

```
main.tf
...
resource "aws_instance" "http_service_instance" {
  ...
}

# Output the public IP of the EC2 instance
output "instance_ip" {
  value = aws_instance.http_service_instance.public_ip
}

# Output the instance name
output "instance_name" {
  value = aws_instance.http_service_instance.tags["Name"]
}

Do you want to perform these actions?
Terraform will perform the actions described above.
Only 'yes' will be accepted to approve.

Enter a value: yes

aws_instance.http_service_instance: Creating...
aws_s3_bucket.http_service_bucket: Creating...
aws_s3_bucket.http_service_bucket: Creation complete after 5s [id=e9-http-service-bucket]
aws_instance.http_service_instance: Still creating... [10s elapsed]
aws_instance.http_service_instance: Creation complete after 15s [id=1-08ef47779040fb4cc]

Apply complete! Resources: 2 added, 0 changed, 0 destroyed.

Outputs:
instance_ip = "15.207.249.176"
instance_name = "HTTP-Service-Instance"
s3_bucket_name = "e9-http-service-bucket"
ubuntu@ip-172-31-24-64:~/terraform_e9$
```

The terminal also displays the system status bar at the bottom, including the date and time (13-12-2024), battery level (17%), and network connection (Partly cloudy).

The screenshot shows the AWS EC2 Instances page. On the left, a sidebar lists navigation options: Dashboard, EC2 Global View, Events, Instances (selected), Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Images (AMIs, AMI Catalog), and Elastic Block Store (Volumes, Snapshots). The main content area displays the 'Instances (1/1) Info' section. A search bar at the top allows filtering by attribute or tag. Below it, a table lists one instance: 'HTTP-Service-Instance' (Instance ID: i-084fb5936cce9a6b6, State: Running, Type: t2.micro, Status: 2/2 checks passed, Availability Zone: ap-south-1b). The table includes columns for Name, Instance ID, Instance state, Instance type, Status check, Alarm status, and Availability Zone. At the bottom of the page, there are tabs for Details, Status and alarms, Monitoring, Security, Networking, Storage, and Tags. The 'Details' tab is selected. Under the 'Instance summary' heading, details for the instance are shown: Instance ID (i-084fb5936cce9a6b6), Public IPv4 address (13.126.254.187), Private IPv4 addresses (172.31.6.144), Instance state (Running), and Public IPv4 DNS (ec2-13-126-254-187.ap-south-1.compute.amazonaws.com).

Screenshot of the AWS Management Console showing the EC2 Instances details for instance i-084fb5936cce9a6b6.

Instance summary for i-084fb5936cce9a6b6 (HTTP-Service-Instance)

Attribute	Value
Instance ID	i-084fb5936cce9a6b6
IPv6 address	-
Hostname type	IP name: ip-172-31-6-144.ap-south-1.compute.internal
Answer private resource DNS name	-
Auto-assigned IP address	13.126.254.187 [Public IP]
IAM Role	-
IMDSv2	Required
Public IPv4 address	13.126.254.187 open address
Instance state	Running
Private IP DNS name (IPv4 only)	ip-172-31-6-144.ap-south-1.compute.internal
Instance type	t2.micro
VPC ID	vpc-0b008eda7de415f9f
Subnet ID	subnet-0bed7bcf154cf0b66
Instance ARN	arn:aws:ec2:ap-south-1:337909784263:instance/i-084fb5936cce9a6b6
Private IPv4 addresses	172.31.6.144
Public IPv4 DNS	ec2-13-126-254-187.ap-south-1.compute.amazonaws.com open address
Elastic IP addresses	-
AWS Compute Optimizer finding	Opt-in to AWS Compute Optimizer for recommendations. Learn more
Auto Scaling Group name	-
Managed	false

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Screenshot of the AWS Management Console showing the S3 buckets details.

Amazon S3

Account snapshot - updated every 24 hours (All AWS Regions)

Storage lens provides visibility into storage usage and activity trends. Metrics don't include directory buckets. [Learn more](#)

[View Storage Lens dashboard](#)

General purpose buckets | **Directory buckets**

General purpose buckets (3) (Info All AWS Regions)

Name	AWS Region	IAM Access Analyzer	Creation date
e9-http-service-bucket	Asia Pacific (Mumbai) ap-south-1	View analyzer for ap-south-1	December 14, 2024, 00:28:17 (UTC+05:30)
my360a	US East (N. Virginia) us-east-1	View analyzer for us-east-1	October 14, 2024, 14:31:37 (UTC+05:30)
yashwant	US East (N. Virginia) us-east-1	View analyzer for us-east-1	October 14, 2024, 16:08:20 (UTC+05:30)

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```
File Edit Selection View Go Run Terminal Help < - > ubuntu [SSH: Ubuntu]
EXPLORER ... add_file.py
> .aws
> .cache
> .local
> .ssh
> .terraform.d
> .vscode-server
> snap
> terraform_e9
> .terraform
> .terraform.lock.hcl
> add_file.py
main.tf
{>} terraform.tfstate
E terraform.tfstate.bac...
E .bash_history
$ .bash_logout
$ .bashrc
$ .profile
E sudo_as_admin_succ...
E wget-hsts
OUTPUT DEBUG CONSOLE TERMINAL PROBLEMS PORTS
● ubuntu@ip-172-31-24-64:~/terraform_e9$ python3 add_file.py
Available S3 Buckets:
- e9-http-service-bucket
- my360a
- yashwant
Enter the name of the bucket you want to use: e9-http-service-bucket
No folders found under ''
Enter the name of the new folder to create in ': dir1'
Folder 'dir1' created in bucket 'e9-http-service-bucket'.
Do you want to create another folder in ''? (Enter 'yes' or 'no'): yes
Enter the name of the new folder to create in ': dir2'
Folder 'dir2' created in bucket 'e9-http-service-bucket'.
Do you want to create another folder in ''? (Enter 'yes' or 'no'): no
● ubuntu@ip-172-31-24-64:~/terraform_e9$
```

Ln 119, Col 1 Spaces: 4 UTF-8 LF Python

17°C Partly cloudy

```
File Edit Selection View Go Run Terminal Help < - > ubuntu [SSH: Ubuntu]
EXPLORER ... add_file.py
> .aws
> .cache
> .local
> .ssh
> .terraform.d
> .vscode-server
> snap
> terraform_e9
> .terraform
> .terraform.lock.hcl
> add_file.py
main.tf
{>} terraform.tfstate
E terraform.tfstate.bac...
E .bash_history
$ .bash_logout
$ .bashrc
$ .profile
E sudo_as_admin_succ...
E wget-hsts
OUTPUT DEBUG CONSOLE TERMINAL PROBLEMS PORTS
● ubuntu@ip-172-31-24-64:~/terraform_e9$ python3 add_file.py
Available S3 Buckets:
- e9-http-service-bucket
- my360a
- yashwant
Enter the name of the bucket you want to use: e9-http-service-bucket
Folders under '':
1. dir1/
2. dir2/
Do you want to go into a folder? (Enter the folder number, 'back' to go up a level, or 'no' to stop): 2
Entering folder: dir2/
No folders found under 'dir2/'
Enter the name of the new folder to create in 'dir2/': file1
Folder 'dir2/file1' created in bucket 'e9-http-service-bucket'.
Do you want to create another folder in 'dir2/'? (Enter 'yes' or 'no'): yes
Enter the name of the new folder to create in 'dir2/': file2
Folder 'dir2/file2' created in bucket 'e9-http-service-bucket'.
Do you want to create another folder in 'dir2/'? (Enter 'yes' or 'no'): no
● ubuntu@ip-172-31-24-64:~/terraform_e9$
```

Ln 119, Col 1 Spaces: 4 UTF-8 LF Python

17°C Partly cloudy

The screenshot shows a terminal session on an Ubuntu system (SSH: Ubuntu) with the following command history:

```
ubuntu@ip-172-31-24-64:~/terraform_e9$ python3 add_file.py
Available S3 Buckets:
- e9-http-service-bucket
- my360a
- yashwant

Enter the name of the bucket you want to use: e9-http-service-bucket
No folders found under ''

Enter the name of the new folder to create in :: dir1
Folder 'dir1' created in bucket 'e9-http-service-bucket'.
Do you want to create another folder in ''? (Enter 'yes' or 'no'): yes
Enter the name of the new folder to create in :: dir2
Folder 'dir2' created in bucket 'e9-http-service-bucket'.
Do you want to create another folder in ''? (Enter 'yes' or 'no'): no
ubuntu@ip-172-31-24-64:~/terraform_e9$ python3 add_file.py
Available S3 Buckets:
- e9-http-service-bucket
- my360a
- yashwant

Enter the name of the bucket you want to use: e9-http-service-bucket
Folders under '':
1. dir1/
2. dir2/

Do you want to go into a folder? (Enter the folder number, 'back' to go up a level, or 'no' to stop): 2
Entering folder: dir2/
No folders found under 'dir2/'
Enter the name of the new folder to create in 'dir2/': file1
Folder 'dir2/file1' created in bucket 'e9-http-service-bucket'.
Do you want to create another folder in 'dir2/'? (Enter 'yes' or 'no'): yes
Enter the name of the new folder to create in 'dir2/': file2
Folder 'dir2/file2' created in bucket 'e9-http-service-bucket'.
Do you want to create another folder in 'dir2/'? (Enter 'yes' or 'no'): no
```

The screenshot shows the AWS S3 console interface. The top navigation bar includes tabs for 'Create access key | IAM | Global' (highlighted), 'e9-http-service-bucket - S3 bu...', 'AWS Assignment.pdf', and 'Download Zoom for Windows'. Below the navigation bar is a toolbar with icons for Microsoft Learn, Learning Future Re..., Gmail, and Untitled document... A green status bar at the top right indicates 'You are screen sharing' with a 'Stop share' button.

The main header shows 'aws' and 'Amazon S3 > Buckets > e9-http-service-bucket'. On the left sidebar, under 'Amazon S3', there are sections for 'General purpose buckets' (listing 'Directory buckets', 'Table buckets' with a 'New' button, 'Access Grants', 'Access Points', 'Object Lambda Access Points', 'Multi-Region Access Points', 'Batch Operations', and 'IAM Access Analyzer for S3'), 'Storage Lens' (listing 'Dashboards', 'Storage Lens groups', and 'AWS Organizations settings'), and 'CloudShell' and 'Feedback' buttons. The status bar at the bottom right shows the date as '14-12-2024'.

The central content area displays the 'e9-http-service-bucket' details page. The top navigation bar for this page includes 'Objects' (selected), 'Properties', 'Permissions', 'Metrics', 'Management', and 'Access Points'. Below this, the 'Objects (2) info' section shows two items: 'dir1/' (Folder) and 'dir2/' (Folder). A search bar at the top of the object list allows filtering by prefix ('Find objects by prefix'). The object list table has columns for Name, Type, Last modified, Size, and Storage class. The 'Actions' button in the top right of the object list provides options like Copy S3 URI, Download, Open, Delete, Create folder, and Upload.

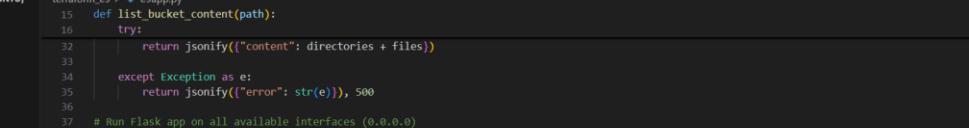
The screenshot shows the AWS S3 console interface. The left sidebar includes sections for General purpose buckets, Storage Lens, and CloudShell. The main content area displays the 'dir1/' folder under the 'Objects' tab. A message states 'No objects' and 'You don't have any objects in this folder.' There is a blue 'Upload' button at the bottom.

The screenshot shows the AWS S3 console interface. The left sidebar includes sections for General purpose buckets, Storage Lens, and CloudShell. The main content area displays the 'dir2/' folder under the 'Objects' tab. It lists two sub-folders: 'file1/' and 'file2/'. Both are marked as 'Folder' type with '-' for last modified and size. There is a blue 'Upload' button at the bottom.

```
File Edit Selection View Go Run Terminal Help ← → ○ ubuntu [SSH: Ubuntu] 08 - ... EXPLORER ... V UBUNTU [SSH: UBUNTU] > .aws > .cache > .local > .ssh > .terraform.d > vscode-server > snap > terraform_e9 > .terraform > .terraform.lock.hcl & add_file.py & e9app.py & main.tf & terraform.state & terraform.state.bac... & bash_history & .bash_logout & $ bashrc & $ profile & sudo_as_admin_succ... & wget-hists Running kernel seems to be up-to-date. Restarting services... Service restarts being deferred: /etc/needrestart/restart.d/dbus.service systemctl restart networkd-dispatcher.service systemctl restart unattended-upgrades.service No containers need to be restarted. User sessions running outdated binaries: ubuntu @ user manager service: systemd[825] * ubuntu@ip-172-31-24-64:~$ python3 e9app.py python3: can't open file '/home/ubuntu/e9app.py': [Errno 2] No such file or directory * ubuntu@ip-172-31-24-64:~$ cd terraform_e9/* * ubuntu@ip-172-31-24-64:~/terraform_e9$ python3 e9app.py * Serving Flask app 'e9app' * Debug mode: off WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead. * Running on all addresses (0.0.0.0) * Running on http://127.0.0.1:5000 * Running on http://172.31.24.64:5000 Press CTRL+C to quit ○ ^Cubuntu@ip-172-31-24-64:~/terraform_e9$
```

curl: (7) Failed to connect to localhost port 5000 after 0 ms: Couldn't connect to server

```
ubuntu@ip-172-31-24-64:~/terraform_e9$ python3 e9app.py
 * Serving Flask app 'e9app'
 * Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on all addresses (0.0.0.0)
 * Running on http://127.0.0.1:5000
 * Running on http://172.31.24.64:5000
Press CTRL+C to quit
```



```
File Edit Selection View Go Run Terminal Help ← → ubuntu [SSH: Ubuntu] █ EXPLORER ... add_file.py e9app.py
UBUNTU [SSH: UBUNTU]
> .aws
> .cache
> local
> ssh
> .terraform.d
> vscode-server
> snap
> terraform_e9
> terraform
E terraform.lock.hcl
� add_file.py
� e9app.py
▼ main.tf
{ terraform.tfstate
E terraform.state.bac...
E .bash_history
$ .bash_logout
$ .bashrc
$ .profile
E sudo_as_admin.succ...
E wget-hsts
OUTPUT DEBUG CONSOLE TERMINAL PROBLEMS PORTS 1
● ubuntu@ip-172-31-24-64:~$ sudo lsof -i -p -n | grep LISTEN
systemd 1 root 20/u IPv6 9963 0t0 TCP *:22 ((LISTEN))
systemd-r 308 systemd-resolve 1su IPv4 4412 0t0 TCP 127.0.0.53:53 ((LISTEN))
systemd-r 308 systemd-resolve 1tu IPv4 4414 0t0 TCP 127.0.0.54:53 ((LISTEN))
ssh 818 root 3u IPv6 9963 0t0 TCP *:22 ((LISTEN))
code-38C 9106 ubuntu 11u IPv4 56291 0t0 TCP 127.0.0.1:35353 ((LISTEN))
python3 17536 ubuntu 3u IPv4 88067 0t0 TCP *:5000 ((LISTEN))
● ubuntu@ip-172-31-24-64:~$ curl http://localhost:5000/list-bucket-content
```

The screenshot shows the VS Code interface on an Ubuntu system. The Explorer sidebar shows files like .aws, .cache, .local, .ssh, .terraform.d, .vscode-server, snap, and a folder named terraform_e9 containing add_file.py, e9app.py, and main.tf. The Terminal tab shows the command curl http://localhost:5000/list-bucket-content returning a JSON object with content: ["dir1/", "dir2/"]. A status bar at the bottom indicates the application is running on port 5000.

```
15 def list_bucket_content(path):
16     try:
17         return jsonify({"content": directories + files})
18     except Exception as e:
19         return jsonify({"error": str(e)}), 500
20
21 # Run Flask app on all available interfaces (0.0.0.0)
22 if __name__ == '__main__':
23     app.run(host='0.0.0.0', port=5000)
```

This screenshot shows the same VS Code setup, but the code in e9app.py has a syntax error: 'SyntaxError: invalid syntax'. The terminal output shows multiple curl requests to localhost:5000/list-bucket-content failing with an error message: "An error occurred (AllAccessDisabled) when calling the ListObjectsV2 operation: All access to this object has been disabled". The status bar at the bottom shows the error count as 1287.

```
1 from flask import Flask, jsonify
2 import boto3
3
4 app = Flask(__name__)
5
6 # S3 client
7 s3_client = boto3.client('s3')
8
9 # Replace with your actual bucket name
10 bucket_name = 'e9-http-service-bucket'
11
12 @app.route('/list-bucket-content<path:prefix>', methods=['GET'])
13 @app.route('/list-bucket-content', methods=['GET'])
14 def list_bucket_content(prefix=''):
15     try:
16         # If prefix is empty, list top-level objects (files and directories)
```

The screenshot shows a VS Code interface connected to an SSH session on an Ubuntu machine. The Explorer sidebar lists files like `add_file.py`, `e9app.py`, and `main.tf`. The `e9app.py` file contains code for a Flask application that lists objects in an S3 bucket. The terminal window shows curl commands being run against the local host to verify the application's functionality.

```
from flask import Flask, jsonify
import boto3
app = Flask(__name__)
# S3 client
s3_client = boto3.client('s3')
# Replace with your actual bucket name
bucket_name = 'e9-http-service-bucket'
@app.route('/list-bucket-content/<path:prefix>', methods=['GET'])
@app.route('/list-bucket-content', methods=['GET'])
def list_bucket_content(prefix=''):
    try:
        # If prefix is empty, list top-level objects (files and directories)
        if prefix == '':
            return jsonify([{"content": ""}])
        else:
            return jsonify([{"content": f"dir{prefix[1:]}"}
                           for prefix in s3_client.list_objects(Bucket=bucket_name).get("Contents", [])]))
    except Exception as e:
        return jsonify({"error": str(e)}), 500
# Run Flask app on all available interfaces (0.0.0.0)
if __name__ == '__main__':
    app.run(host='0.0.0.0', port=5000)
```

This screenshot shows the same VS Code environment after the Python extension has been installed. A message in the bottom right corner indicates that the application is running on port 5000 and provides a link to open it in a browser. The terminal output remains the same as in the previous screenshot.

```
def list_bucket_content(prefix=''):
    try:
        return jsonify([{"content": ""}])
    except Exception as e:
        return jsonify([{"error": str(e)}]), 500
# Run Flask app on all available interfaces (0.0.0.0)
if __name__ == '__main__':
    app.run(host='0.0.0.0', port=5000)
```

The screenshot shows the Visual Studio Code interface connected via SSH to an Ubuntu system. The Explorer sidebar lists files including `add_file.py`, `e9app.py`, `main.tf`, and `terraform.tfstate`. The `e9app.py` file contains code for a Flask application. The Terminal tab shows the output of curl requests to `http://localhost:5000/list-bucket-content` with different prefixes. A tooltip indicates the application is running on port 5000. The status bar at the bottom right shows the date and time as 14-12-2024.

```
14 def list_bucket_content(prefix=''):
15     try:
16         return jsonify({"content": content})
17     except Exception as e:
18         return jsonify({"error": str(e)}), 500
19
20 # Run Flask app on all available interfaces (0.0.0.0)
21 if __name__ == '__main__':
22     app.run(host='0.0.0.0', port=5000)
```

This screenshot is similar to the first one but includes a red warning message in the terminal output: "WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead." The rest of the terminal output and the status bar are identical to the first screenshot.

```
14 def list_bucket_content(prefix=''):
15     try:
16         return jsonify({"content": content})
17     except Exception as e:
18         return jsonify({"error": str(e)}), 500
19
20 # Run Flask app on all available interfaces (0.0.0.0)
21 if __name__ == '__main__':
22     app.run(host='0.0.0.0', port=5000)
```

The screenshot shows a Microsoft Visual Studio Code (VS Code) interface connected via SSH to an Ubuntu host. The Explorer sidebar lists several files, including `add_file.py`, `e9app.py`, `main.tf`, and `terraform.tfstate`. The `e9app.py` file is currently open in the editor, showing Python code for a Flask application that interacts with AWS S3. The terminal window displays the output of running curl commands to list the contents of an S3 bucket. A status bar at the bottom right indicates that the application is running on port 5000.

```
 1 from flask import Flask, jsonify
 2 import boto3
 3
 4 app = Flask(__name__)
 5
 6 # S3 client with region specified
 7 bucket_name = 'e9-http-service-bucket'
 8 region_name = 'ap-south-1' # Replace with the correct region
 9
10 s3_client = boto3.client('s3', region_name=region_name)
11
12 @app.route('/list-bucket-content</path>', methods=['GET'])
13 @app.route('/list-bucket-content', methods=['GET'])
14 def list_bucket_content(prefix=''):
15     try:
16         if prefix == '':
17             # If prefix is empty, list top-level objects (files and directories)
18             s3_client.list_objects_v2(Bucket=bucket_name)
19             return jsonify([{"content": ""}])
20         else:
21             response = s3_client.list_objects_v2(Bucket=bucket_name, Prefix=prefix)
22             contents = [{"content": item['Key']} for item in response['Contents']]
23             return jsonify(contents)
24     except Exception as e:
25         return str(e)
```

OUTPUT TERMINAL PROBLEMS PORTS ⓘ

bash - ubuntu + ✎

```
● Your application running on port 5000 is available. See all forwarded ports
```

Open in Browser Preview in Editor

Ln 13, Col 52 Spaces: 4 UTF-8 LF Python

SSH: Ubuntu 0 0 0 1

Partly Cloudy ENG IN 02:41 AM 14-12-2024

```
ubuntu@ip-172-31-24-64:~$ git clone https://github.com/yashwantrao432/equip9.git
Cloning into 'equip9'...
remote: Enumerating objects: 3, done.
remote: Counting objects: 100% (3/3), done.
remote: Total 3 (delta 0), reused 0 (delta 0), pack-reused 0 (from 0)
Receiving objects: 100% (3/3), done.
ubuntu@ip-172-31-24-64:~$ ls
equip9 snap test
ubuntu@ip-172-31-24-64:~$ cd equip9
ubuntu@ip-172-31-24-64:~/equip9$ git init
Reinitialized existing Git repository in /home/ubuntu/equip9/.git/
ubuntu@ip-172-31-24-64:~/equip9$ git status
On branch main
Your branch is up to date with 'origin/main'.

Untracked files:
  (use "git add <file>..." to include in what will be committed)
    .gitignore
    http_code/
    terraform_e9/

nothing added to commit but untracked files present (use "git add" to track)
ubuntu@ip-172-31-24-64:~/equip9$
```

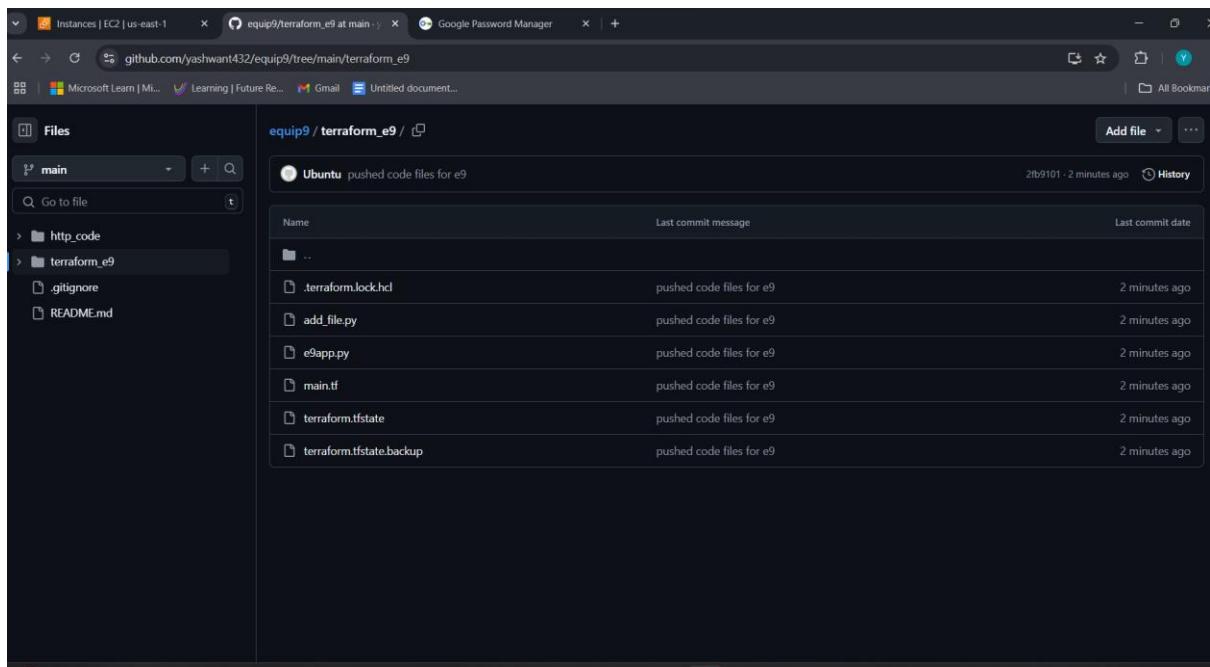
```
ubuntu@ip-172-31-24-64:~/equip9$ git add .
ubuntu@ip-172-31-24-64:~/equip9$ git status
On branch main
Your branch is up to date with 'origin/main'.

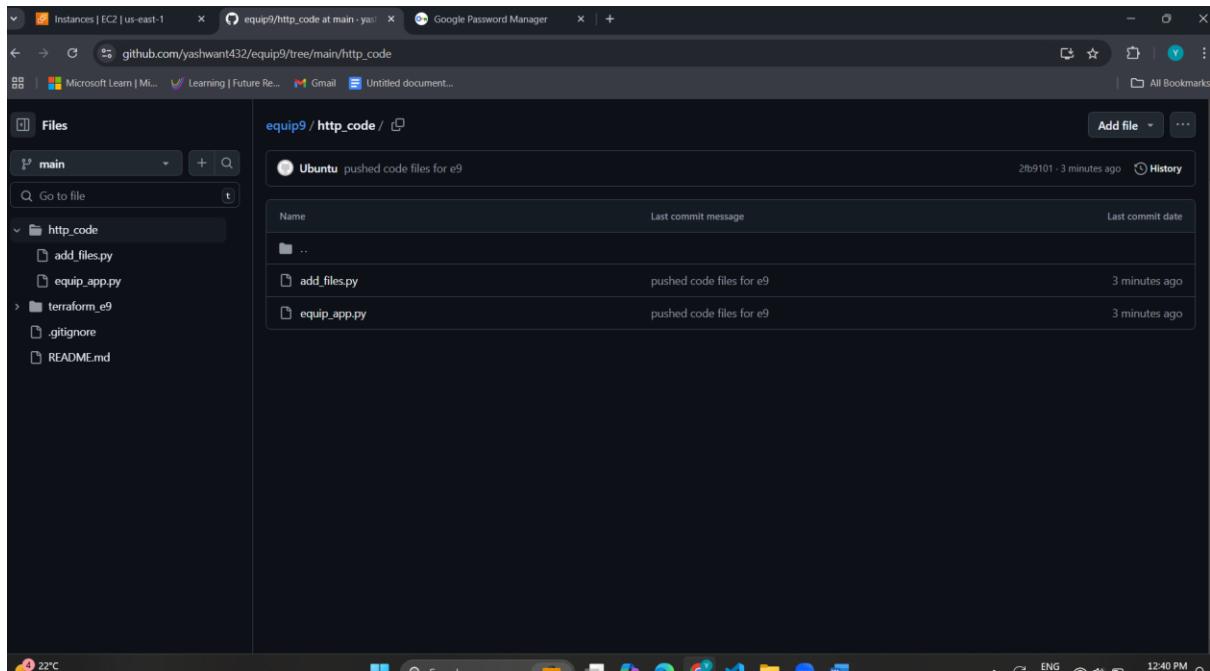
Changes to be committed:
  (use "git restore --staged <file>..." to unstage)
    new file:   .gitignore
    new file:   http_code/add_files.py
    new file:   http_code/equip_app.py
    new file:   terraform_e9/.terraform.lock.hcl
    new file:   terraform_e9/add_file.py
    new file:   terraform_e9/equip.py
    new file:   terraform_e9/main.tf
    new file:   terraform_e9/terraform.tfstate
    new file:   terraform_e9/terraform.tfstate.backup
```

```
File Edit Selection View Go Run Terminal Help ⏎ → 🔍 ubuntu [SSH: UBUNTU]
EXPLORER ...
UBUNTU [SSH: UBUNTU]
> .aws
> .cache
> Local
> ssh
> terraform.d
> .vscode-server
equip9
  > http_code
  > terraform_e9
  > .gitignore
  README.md
  > snap
  > test
  > .bash_history U
  > .bash_logout U
  > .bashrc U
  > .profile U
  > .sudo_as_admin... U
  > .wget-hsts U
OUTLINE ...
TIMELINE ...
SSH: Ubuntu ⌂ master* ⌂ 0 △ 0 ⌂ 1
● ubuntu@ip-172-31-24-64:~/equip9$ git commit -m "pushed code files for e9"
[main 2fb910] pushed code files for e9
  Committer: Ubuntu <ubuntu@ip-172-31-24-64.ec2.internal>
  Your name and email address were configured automatically based
  on your username and hostname. Please check that they are accurate.
  You can suppress this message by setting them explicitly. Run the
  following command and follow the instructions in your editor to edit
  your configuration file:
  git config --global --edit
After doing this, you may fix the identity used for this commit with:
  git commit --amend --reset-author
  9 files changed, 696 insertions(+)
  create mode 100644 .gitignore
  create mode 100644 http_code/add_files.py
  create mode 100644 http_code/eqip_app.py
  create mode 100644 terraform_e9/.terraform.lock.hcl
  create mode 100755 terraform_e9/add_file.py
  create mode 100644 terraform_e9/esapp.py
  create mode 100644 terraform_e9/main.tf
  create mode 100644 terraform_e9/terraform_tfstate
  create mode 100644 terraform_e9/terraform_tfstate.backup
Ln 3, Col 1 Spaces: 4 UTF-8 LF Ignore
```

```
File Edit Selection View Go Run Terminal Help ⏎ → 🔍 ubuntu [SSH: UBUNTU]
EXPLORER ...
UBUNTU [SSH: UBUNTU]
> .aws
> .cache
> Local
> ssh
> terraform.d
> .vscode-server
equip9
  > http_code
  > terraform_e9
  > .gitignore
  README.md
  > snap
  > test
  > .bash_history U
  > .bash_logout U
  > .bashrc U
  > .profile U
  > .sudo_as_admin... U
  > .wget-hsts U
OUTLINE ...
TIMELINE ...
SSH: Ubuntu ⌂ master* ⌂ 0 △ 0 ⌂ 1
● ubuntu@ip-172-31-24-64:~/equip9$ git push -u origin main
Enumerating objects: 12, done.
Counting objects: 100% (12/12), done.
Compressing objects: 100% (11/11), done.
Writing objects: 100% (11/11), 7.12 KiB | 7.12 MiB/s, done.
Total 11 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/yashwant432/equip9.git
  1af27e3..2fb9101 main -> main
branch 'main' set up to track 'origin/main'.
● ubuntu@ip-172-31-24-64:~/equip9$
```

```
File Edit Selection View Go Run Terminal Help ← → ○ ubuntu [SSH: UBUNTU]
EXPLORER ⋮
UBUNTU [SSH: UBUNTU]
> .aws
> .cache
> .local
> .ssh
> .terraform.d
> .vscode-server
equip9
> http_code
> terraform.e9
> .gitignore
@ README.md
> snap
> test
> .bash_history U
$ .bash_logout U
$ .bashrc U
$ .profile U
$ sudo_as_admin_... U
$ wget-hsts U
After doing this, you may fix the identity used for this commit with:
git commit --amend --reset-author
9 files changed, 696 insertions(+)
create mode 100644 .gitignore
create mode 100644 http_code/add_file.py
create mode 100644 terraform_e9/.terraform.lock.hcl
create mode 100755 terraform_e9/add_file.py
create mode 100644 terraform_e9/main.tf
create mode 100644 terraform_e9/.terraform.tfstate
create mode 100644 terraform_e9/.terraform.tfstate.backup
● ubuntu@ip-172-31-24-64:~/equip9$ git push -u origin main
Enumerating objects: 12, done.
Counting objects: 1080 (12/12), done.
Compressing objects: 100% (11/11), done.
Writing objects: 100% (11/11), 7.12 KiB | 7.12 MiB/s, done.
Total 11 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/yashwant432/equip9.git
  1af27e3..2fb9101 main -> main
branch 'main' set up to track 'origin/main'.
● ubuntu@ip-172-31-24-64:~/equip9$ ls
README.md http_code terraform_e9
● ubuntu@ip-172-31-24-64:~/equip9$
```





```
File Edit Selection View Go Run Terminal Help < > ubuntu [SSH: Ubuntu] □ □ □ 08 -
```

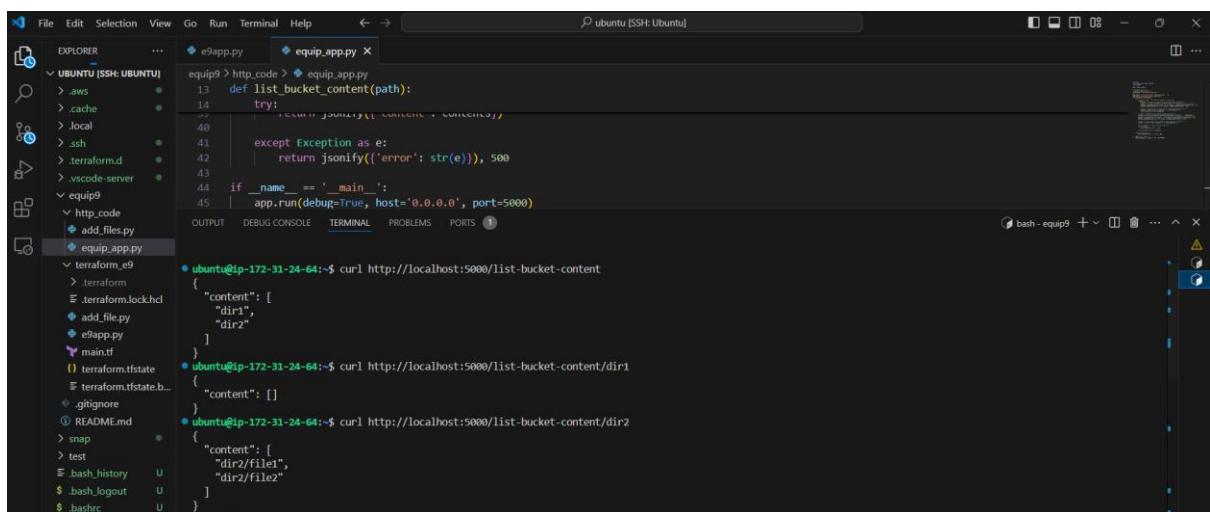
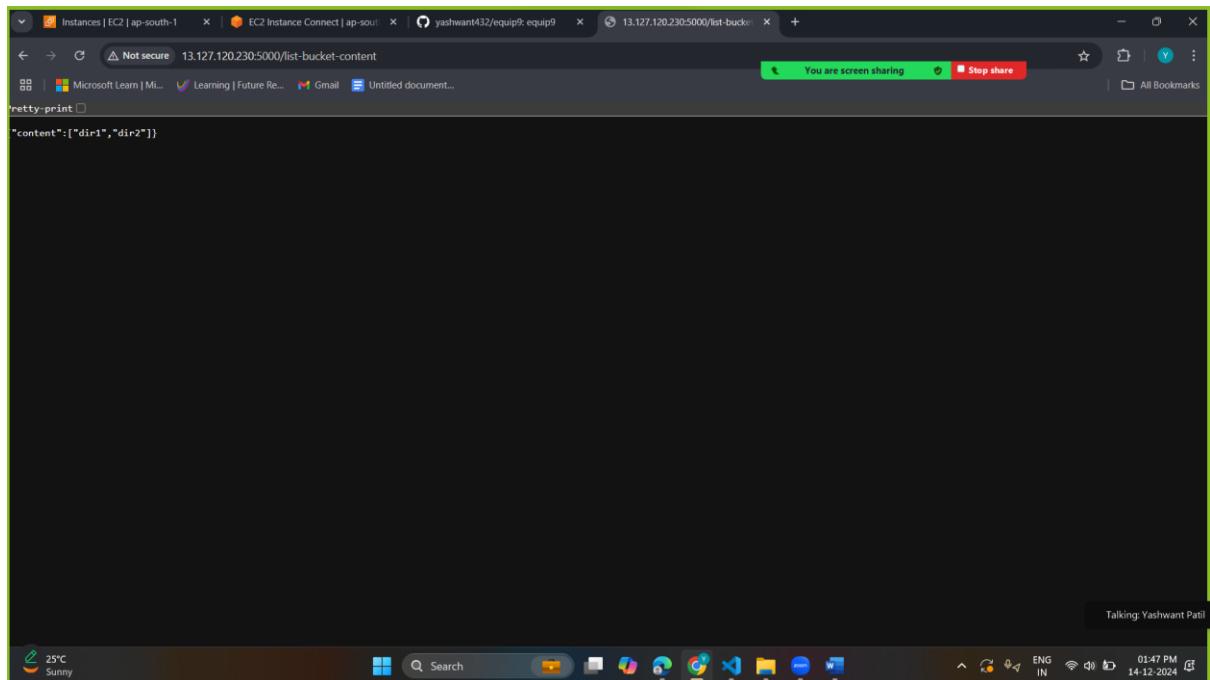
EXPLORER

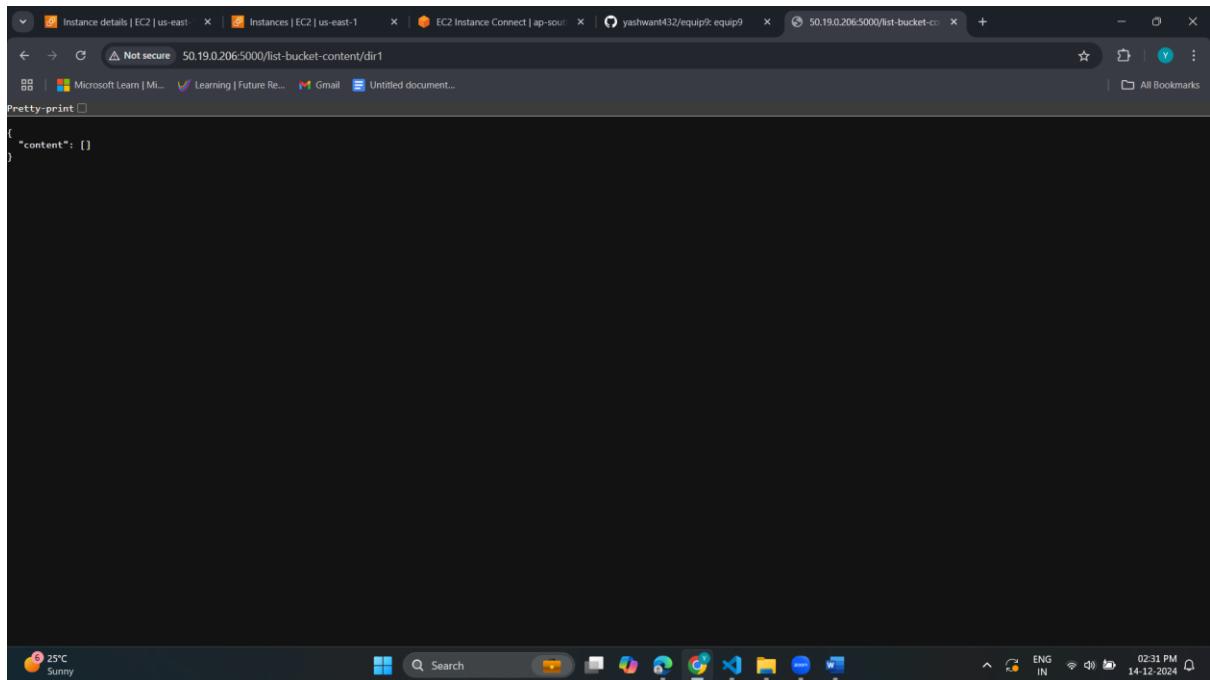
- ✓ UBUNTU [SSH: UBUNTU]
 - > .aws
 - > .cache
 - > .local
 - > .ssh
 - > .terraform.d
 - > .vscode-server
- ✓ equip9
 - > http_code
 - > terraform_e9
 - > .terraform
 - ✗ .terraform.lock.hcl
 - ✗ add_file.py
 - ✗ e9app.py
 - ✗ main.tf
 - ✗ terraform.state
 - ✗ terraform.state.b...
 - ✗ .gitignore
 - ✗ README.md
 - > snap
 - > test
 - ✗ .bash_history U
 - ✗ \$ bash_logout U
 - ✗ \$ bashrc U
 - ✗ \$.profile U
 - ✗ \$ sudo_as_admin_... U
 - ✗ wget-hsts U

OUTPUT DEBUG CONSOLE TERMINAL PROBLEMS PORTS 1

python3 - http_code

```
create mode 100644 terraform_e9/.terraform.lock.hcl
create mode 100755 terraform_e9/add_file.py
create mode 100644 terraform_e9/e9app.py
create mode 100644 terraform_e9/main.tf
create mode 100644 terraform_e9/terraform.tfstate
create mode 100644 terraform_e9/terraform.tfstate.backup
● ubuntu@ip-172-31-24-64:~/equip9$ git push -u origin main
Enumerating objects: 12, done.
Counting objects: 100% (12/12), done.
Compressing objects: 100% (11/11), done.
Writing objects: 100% (11/11), 7.12 KiB | 7.12 MiB/s, done.
Total 11 (delta 0), reused 0 (delta 0), pack-reused 0
To https://github.com/yashwant432/equip9.git
  1af27e3..2fb9101 main --> main
branch 'main' set up to track 'origin/main'.
● ubuntu@ip-172-31-24-64:~/equip9$ ls
README.md http_code terraform_e9
● ubuntu@ip-172-31-24-64:~/equip9$ cd http_code/
● ubuntu@ip-172-31-24-64:~/equip9/http_code$ ls
add_files.py equip_app.py
○ ubuntu@ip-172-31-24-64:~/equip9/http_code$ python3 equip_app.py
  * Serving Flask app 'equip_app'
  * Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
  * Running on all addresses (0.0.0.0)
  * Running on http://127.0.0.1:5000
  * Running on http://172.31.24.64:5000
Press CTRL+C to quit
```

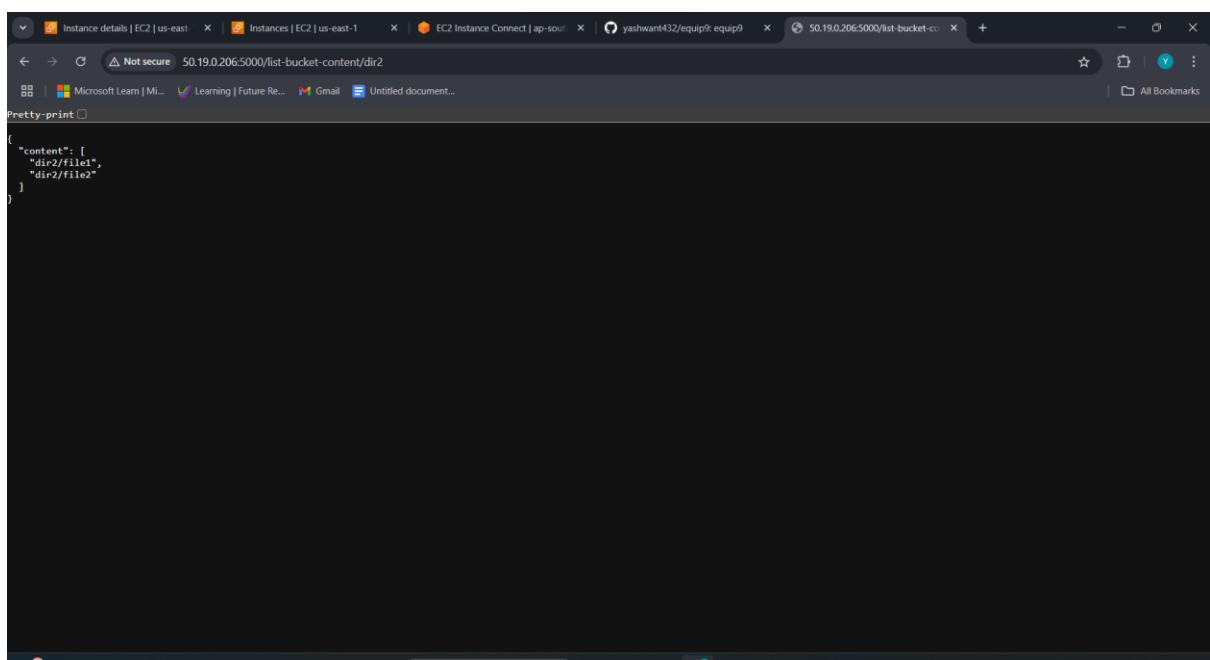




A screenshot of a Windows desktop environment. At the top, there is a taskbar with several pinned icons: Microsoft Learn, Learning, Future Re..., Gmail, and Untitled document... Below the taskbar is a browser window with the following details:

- Address bar: Not secure 50.19.0.206:5000/list-bucket-content/dir1
- Content area:

```
{  
  "content": []  
}
```
- Bottom right corner of the screen shows system status: ENG IN, battery level, and the date/time: 14-12-2024 02:31 PM.



A screenshot of a Windows desktop environment, similar to the one above. The taskbar and browser window are identical, displaying the same JSON response for the URL 50.19.0.206:5000/list-bucket-content/dir1. The content area shows:

```
{  
  "content": []  
}
```