Experiment No. 1

Aim: To study and implement Infrastructure as a Service using AWS

Objective: To demonstrate the steps to create and run virtual machines inside Amazon EC2

Theory:

IAAS: Infrastructure as a service (IaaS) is a type of cloud computing service that offers essential compute, storage, and networking resources on demand, on a pay-as-you-go basis. IaaS is one of the four types of cloud services, along with software as a service (SaaS), platform as a service (PaaS), and serverless.

In an IaaS service model, a cloud provider hosts the infrastructure components that are traditionally present in an on-premises data center. This includes servers, storage and networking hardware, as well as the virtualization or hypervisor layer.

IaaS providers also supply a range of services to accompany those infrastructure components.

IaaS customers access resources and services through a wide area network (WAN), such as the internet, and can use the cloud provider's services to install the remaining elements of an application stack. For example, the user can log in to the IaaS platform to create virtual machines (VMs); install operating systems in each VM; deploy middleware, such as databases; create storage buckets for workloads and backups; and install the enterprise workload into that VM. Customers can then use the provider's services to track costs, monitor performance, balance network traffic, troubleshoot application issues and manage disaster recovery.

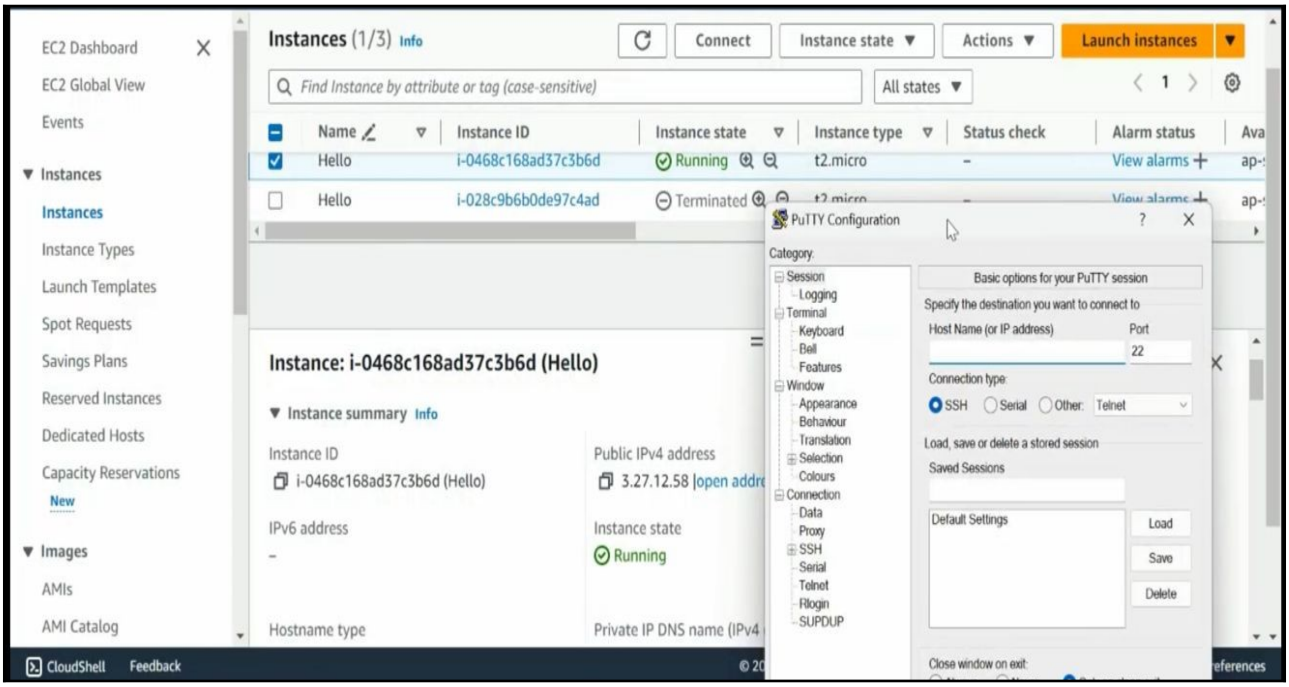
AWS: AWS enables you to select the operating system, programming language, web application platform, database, and other services you need. With AWS, you receive a virtual environment that lets you load the software and services your application requires. This eases the migration process for existing applications while preserving options for building new solutions.

You pay only for the compute power, storage, and other resources you use, with no long-term contracts or up-front commitments.

AWS is designed to allow application providers, ISVs, and vendors to quickly and securely host your applications – whether an existing application or a new SaaS-based application.

EC2: Amazon Elastic Compute Cloud (Amazon EC2) provides on-demand, scalable computing capacity in the Amazon Web Services (AWS) Cloud. Using Amazon EC2 reduces hardware costs so you can develop and deploy applications faster. You can use Amazon EC2 to launch as many or as few virtual servers as you need, configure security and networking, and manage storage. You can add capacity (scale up) to handle compute-heavy tasks, such as monthly or yearly processes, or spikes in website traffic. When usage decreases, you can reduce capacity (scale down) again.

Output:



Instances (1/3) Info

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Ava
☑ Hello	i-0468c168ad37c3b6d	Running	t2.micro	-	View alarms +	ap-
□ Hello	i-028c9b6b0de97c4ad	Terminated	t2.micro	-	View alarms +	ap-

Instance: i-0468c168ad37c3b6d (Hello)

Instance summary Info

Instance ID: i-0468c168ad37c3b6d (Hello)

Public IPv4 address: 3.27.12.58 | open addr

IPv6 address: -

Instance state: Running

PuTTY Configuration — Basic options for your PuTTY session

Specify the destination you want to connect to

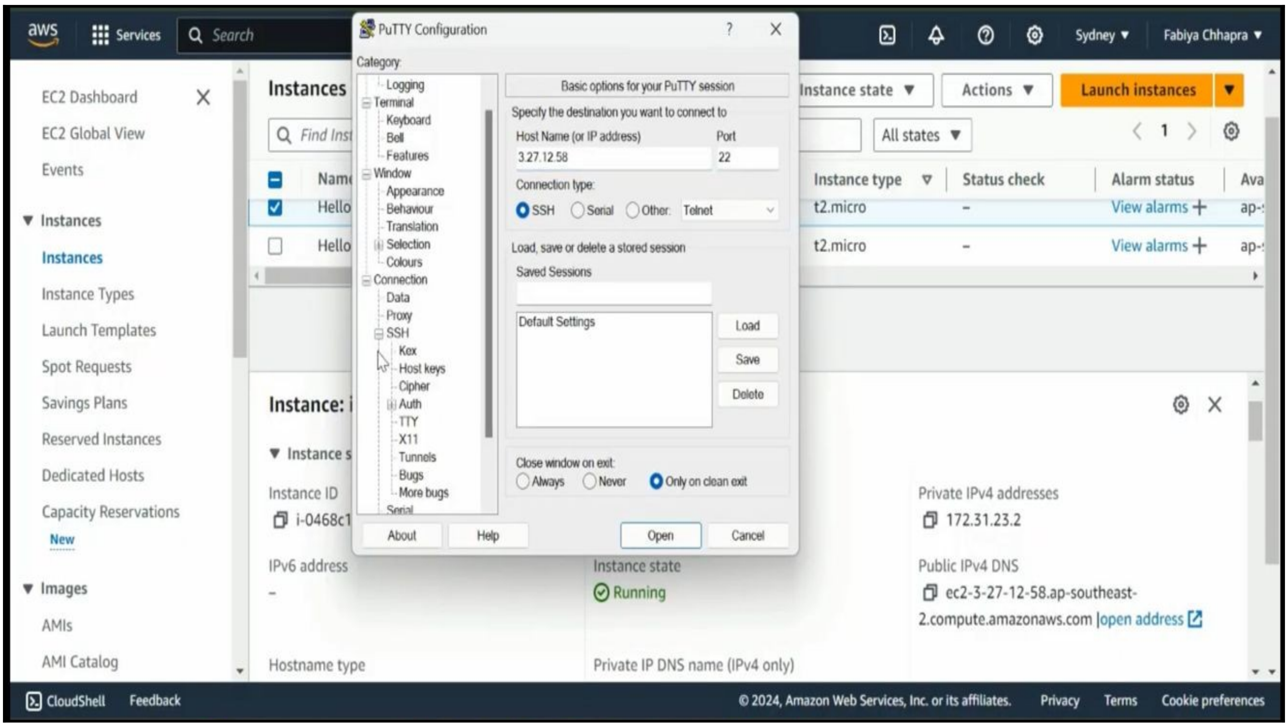
Host Name (or IP address):

Port: 22

Connection type: ● SSH ○ Serial ○ Other: Telnet

Load, save or delete a stored session

Saved Sessions: Default Settings



PuTTY Configuration — Basic options for your PuTTY session

Specify the destination you want to connect to

Host Name (or IP address): 3.27.12.58

Port: 22

Connection type: ● SSH ○ Serial ○ Other: Telnet

Load, save or delete a stored session

Saved Sessions: Default Settings

Close window on exit: ○ Always ○ Never ● Only on clean exit

Name	Instance type	Status check	Alarm status	Ava
☑ Hello	t2.micro	-	View alarms +	ap-
□ Hello	t2.micro	-	View alarms +	ap-

Instance ID: i-0468c1

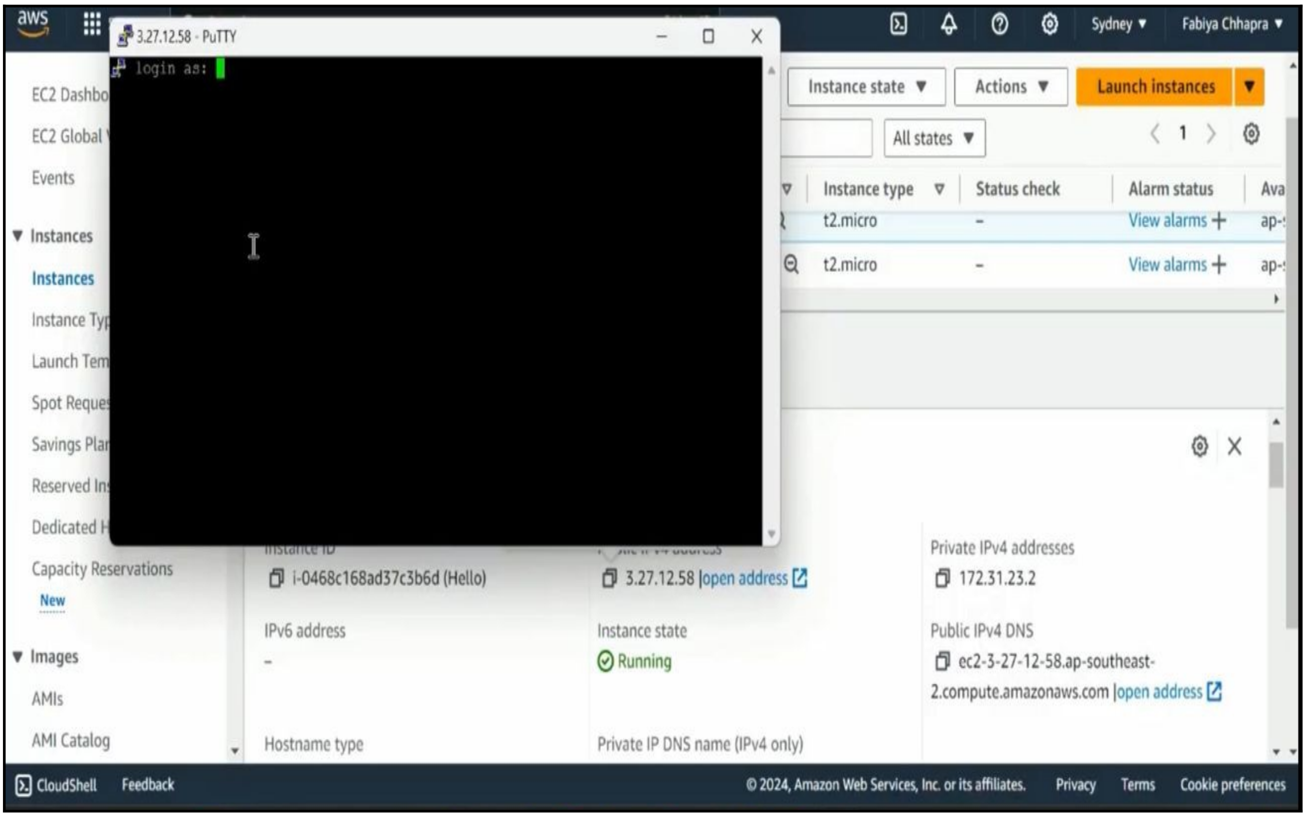
IPv6 address: -

Instance state: Running

Private IPv4 addresses: 172.31.23.2

Public IPv4 DNS: ec2-3-27-12-58.ap-southeast-2.compute.amazonaws.com | open address

© 2024, Amazon Web Services, Inc. or its affiliates.



```
login as: 
```

Instance type	Status check	Alarm status	Ava
t2.micro	-	View alarms +	ap-
t2.micro	-	View alarms +	ap-

Instance ID: i-0468c168ad37c3b6d (Hello)

Public IPv4 address: 3.27.12.58 | open address

Private IPv4 addresses: 172.31.23.2

IPv6 address: –

Instance state: Running

Public IPv4 DNS: ec2-3-27-12-58.ap-southeast-2.compute.amazonaws.com | open address

Hostname type

Private IP DNS name (IPv4 only)

Conclusion:

Comment on the advantages of EC2 for IaaS:

- Scalability and Elasticity: Easily scale compute resources up or down to meet changing demands. You only pay for what you use.
- Flexibility: Wide range of instance types, operating systems, and software packages to choose from.
- Cost-effective: Pay-as-you-go model avoids upfront costs for hardware.
- Reliability: High availability with 99.99% uptime for regions.
- Security: Robust security features and integration with VPC for network isolation.