

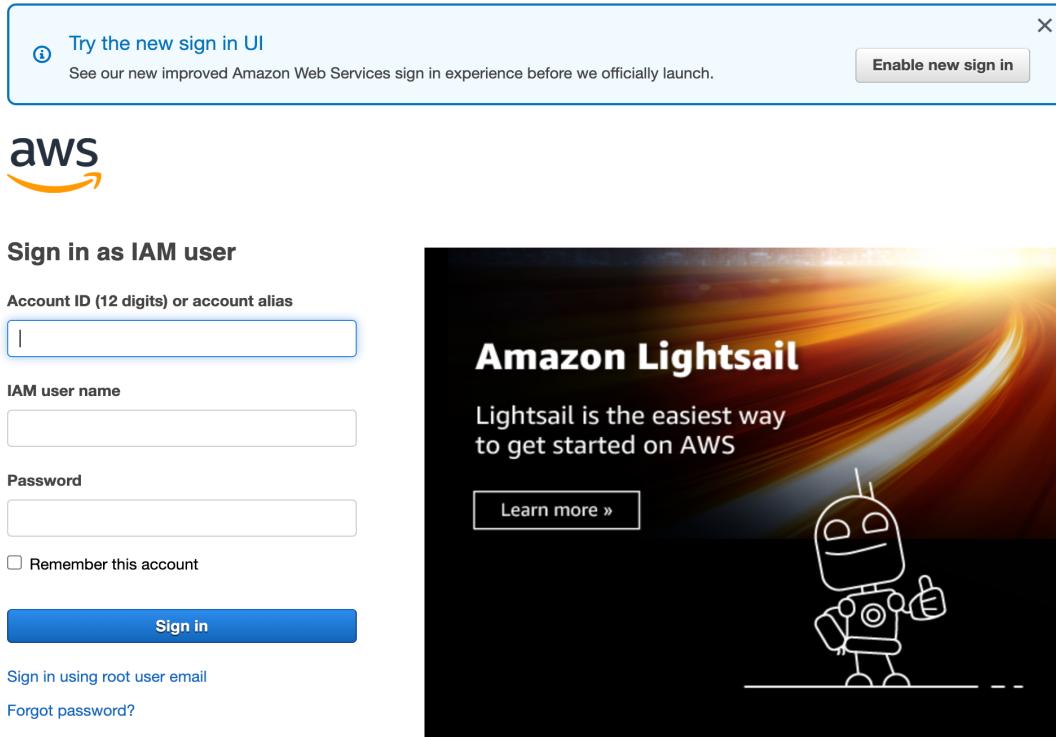
# Practical 1: Infrastructure as a service using AWS

Name: Khushi

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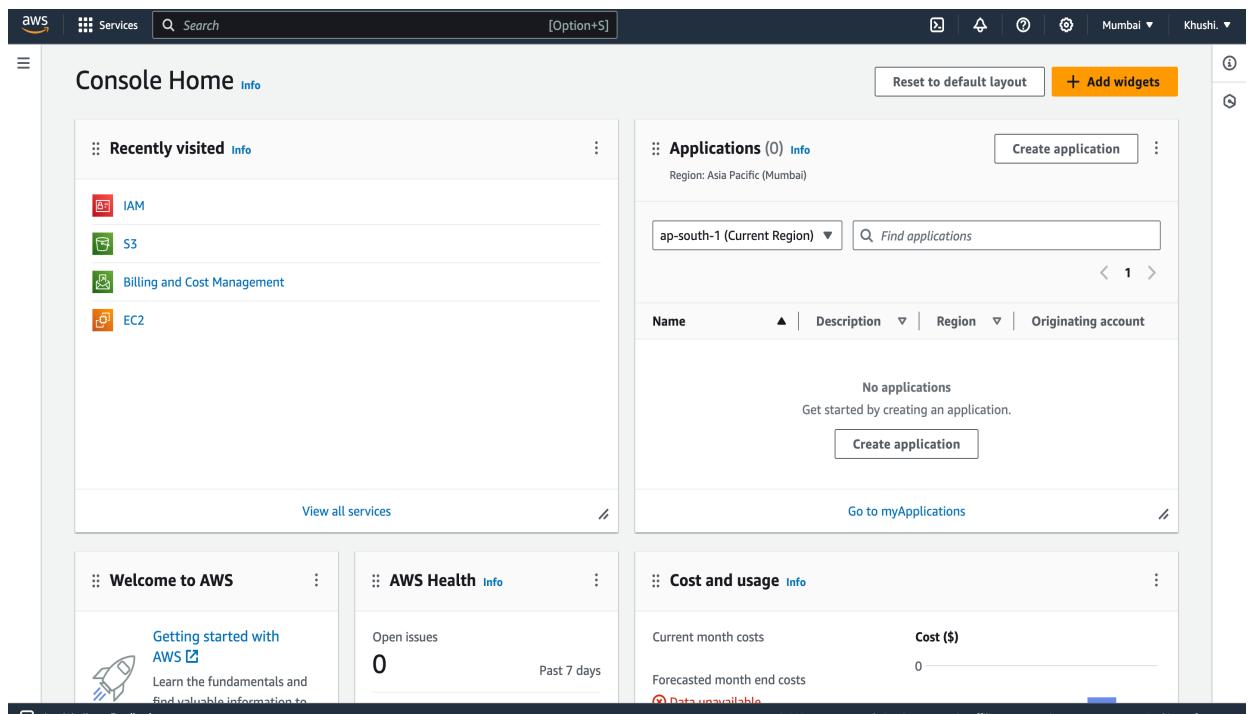
## 1. Log in to AWS Management Console:

- o Go to [AWS Management Console](#).
- o Sign in with your credentials.



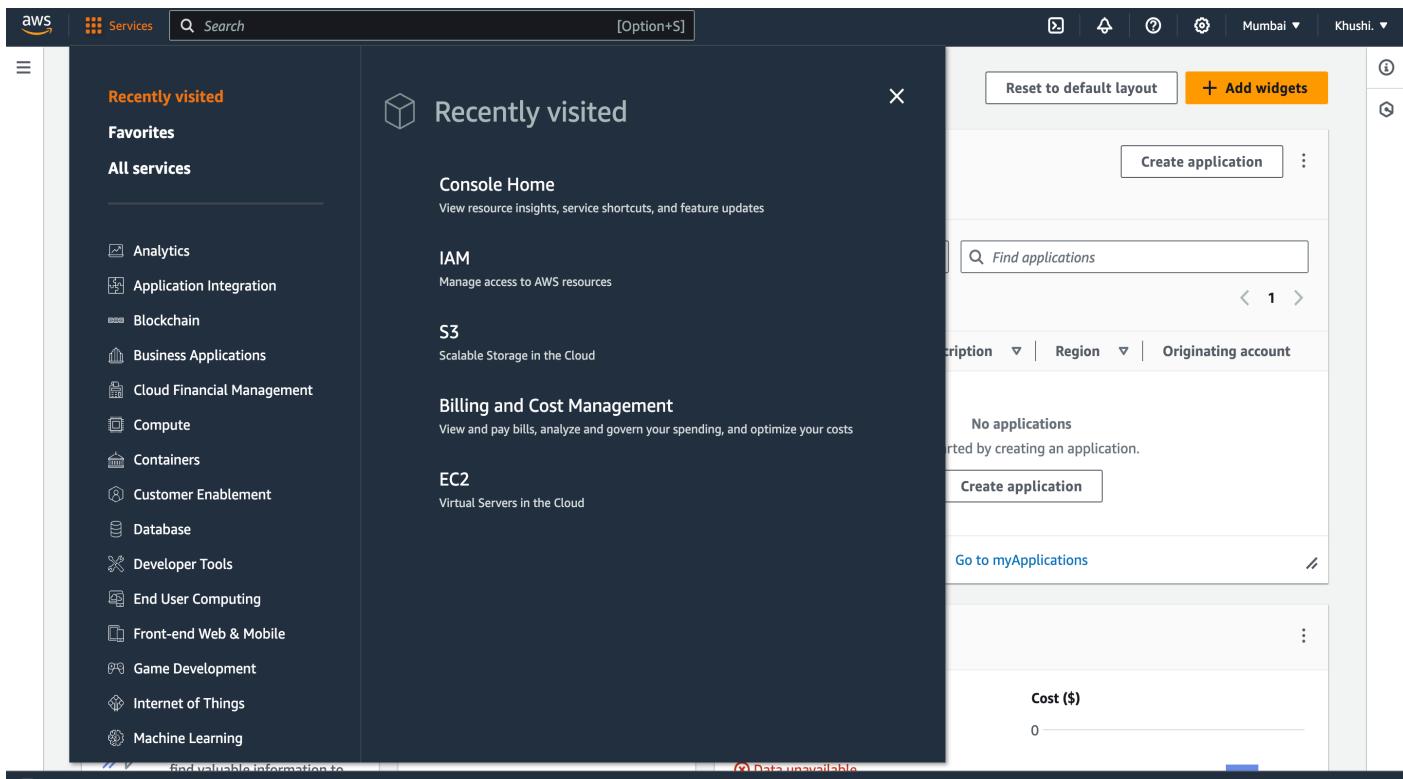
## 2. Navigate to EC2 Dashboard:

- o In the AWS Management Console, search for "EC2."



The screenshot shows the AWS Console Home dashboard. On the left, there's a sidebar with 'Recently visited' services: IAM, S3, Billing and Cost Management, and EC2. Below it are sections for 'Welcome to AWS' (Getting started with AWS) and 'AWS Health'. The main area has four main panels: 'Applications (0)', 'Cost and usage', and two smaller panels for 'Console Home' and 'EC2'.

- Click on "EC2" to open the EC2 Dashboard.



This screenshot is similar to the previous one, but the 'EC2' service in the sidebar is highlighted with a blue border. The main content area shows the 'Recently visited' section with 'EC2' listed first.

### 3. Launch Instance:

- Click on “Launch Instance” from the EC2 Dashboard.

S | Services | Search | [Option+S] | Mumbai | Khushi

**EC2 Dashboard**

- EC2 Global View
- Events
- Instances**
  - Instances
  - Instance Types
  - Launch Templates
  - Spot Requests
  - Savings Plans
  - Reserved Instances
  - Dedicated Hosts
  - Capacity Reservations [New](#)
- Images**
  - AMIs
  - AMI Catalog
- Elastic Block Store**
  - Volumes
  - Snapshots
  - Lifecycle Manager
- Network & Security**
  - Security Groups

**Resources**

You are using the following Amazon EC2 resources in the Asia Pacific (Mumbai) Region:

Instances (running)	0	Auto Scaling Groups	0
Capacity Reservations	0	Dedicated Hosts	0
Elastic IPs	0	Instances	0
Key pairs	1	Load balancers	0
Placement groups	0	Security groups	2
Snapshots	0	Volumes	0

**EC2 Free Tier** [Info](#)

Offers for all AWS Regions.

**0 EC2 free tier offers in use**

End of month forecast  
⚠ 0 offers forecasted to exceed free tier limit.

Exceeds free tier  
⚠ 0 offers exceeded and is now pay-as-you-go pricing.

[View Global EC2 resources](#)

[View all AWS Free Tier offers](#)

**Account attributes**

**Default VPC** [Info](#)  
vpc-087feed2be2ce7ea1

**Settings**

- Data protection and security
- Zones
- EC2 Serial Console
- Default credit specification

- After clicking on “Launch Instance” this interface will appear.
- Write the name of the Instance you want to create

aws | Services | Search | [Option+S] | Mumbai | Khushi

**Launch an instance** [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

**Name and tags** [Info](#)

Name: Ec2ccprac1 | Add additional tags

**Application and OS Images (Amazon Machine Image)** [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below.

Search our full catalog including 1000s of application and OS images

Recents | Quick Start

Amazon Linux, macOS, Ubuntu, Windows, Red Hat, SUSE, Browse more AMIs

Including AMIs from AWS, Marketplace and the Community

**Summary**

Number of instances: 1

Software Image (AMI): Amazon Linux 2023 AMI 2023.5.2...read more  
ami-02b49a24cfb95941c

Virtual server type (instance type): t2.micro

Firewall (security group): New security group

Storage (volumes): 1 volume(s) ~ 8 GiB

Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month

Cancel | Launch instance | Review commands

## Steps for Ubuntu Instance

- Choose an Amazon Machine Image (AMI):
  - Select an Ubuntu AMI, such as "Ubuntu Server 22.04 LTS."

- Ubuntu is a popular choice for Linux-based operations.

The screenshot shows the AWS Lambda console. A new function named "HelloWorld" is being created. The "Code" tab is selected, displaying the Lambda@Edge code. The "Handler" dropdown is set to "index.handler". The "Runtime" dropdown is set to "Node.js 14.x". The "Memory size" dropdown is set to "128 MB". The "Timeout" dropdown is set to "3 seconds". The "Layers" section shows a single layer named "HelloWorldLayer" with version "1". The "Environment variables" section contains two variables: "AWS\_LAMBDA\_FUNCTION\_NAME" with value "HelloWorld" and "AWS\_LAMBDA\_FUNCTION\_MEMORY\_SIZE" with value "128". The "Triggers" section lists a CloudFront trigger named "HelloWorldFunction". The "Logs" section shows a log entry for the function's first execution. The "Metrics" section shows a metric named "HelloWorld". The "Logs" tab is selected, showing the logs for the function's execution.

## 5. Choose an Instance Type:

- Select **t2.micro** (free-tier eligible) or another instance type that suits your needs.

The screenshot shows the AWS Lambda console. A new function named "HelloWorld" is being created. The "Code" tab is selected, displaying the Lambda@Edge code. The "Handler" dropdown is set to "index.handler". The "Runtime" dropdown is set to "Node.js 14.x". The "Memory size" dropdown is set to "128 MB". The "Timeout" dropdown is set to "3 seconds". The "Layers" section shows a single layer named "HelloWorldLayer" with version "1". The "Environment variables" section contains two variables: "AWS\_LAMBDA\_FUNCTION\_NAME" with value "HelloWorld" and "AWS\_Lambda\_Function\_Memory\_Size" with value "128". The "Triggers" section lists a CloudFront trigger named "HelloWorldFunction". The "Logs" section shows a log entry for the function's first execution. The "Metrics" section shows a metric named "HelloWorld". The "Logs" tab is selected, showing the logs for the function's execution.

## 6. Create a New Key Pair:

- Click on the “Create key pair” button by selecting RSA and .pem

- Create or select an existing key pair. Download the private key (.pem file).

**Create key pair**

**Key pair name**  
Key pairs allow you to connect to your instance securely.

**Key pair type**  
 RSA RSA encrypted private and public key pair  
 ED25519 ED25519 encrypted private and public key pair

**Private key file format**  
 .pem For use with OpenSSH  
 .ppk For use with PuTTY

**Note:** When prompted, store the private key in a secure and accessible location on your computer. You will need it later to connect to your instance. [Learn more](#)

**Create key pair**

## 7. Configure Security Group:

- Create or select a security group.
- Allow SSH traffic (port 22) from your IP address.
- Allow HTTPS traffic from the internet

**Key pair name - required**

**Network settings**

**Summary**

Number of instances | [Info](#)  
1

Software Image (AMI)  
Canonical, Ubuntu, 24.04, amd64...[read more](#)  
ami-0522ab6e1ddcc705

Virtual server type (instance type)  
t2.micro

Firewall (security group)  
New security group

Storage (volumes)  
1 volume(s) - 8 GiB

**Note:** Free tier: In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month.

**Create new key pair**

## 8. Add Storage:

- The default is usually 8 GB for the root volume. Increase it if necessary.

The screenshot shows the 'Configure storage' section of the EC2 instance creation wizard. It specifies 1x 8 GiB gp3 Root volume (Not encrypted). A note indicates that free-tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. Below this, a message states that the selected AMI contains more instance store volumes than the instance allows, and only the first 0 instance store volumes from the AMI will be accessible from the instance. Another note says to click refresh to view backup information. The storage summary on the right shows 1 volume(s) - 8 GiB. The interface includes 'Launch instance' and 'Review commands' buttons.

## 9. Review and Launch:

- Review all settings and click "Launch."
- After launching the instance this interface will appear.

The screenshot shows the 'Success' message: 'Successfully initiated launch of instance (i-01a1d8bf42f021f59)'. Below this, the 'Next Steps' section lists several actions: 'Create billing and free tier usage alerts', 'Connect to your instance', 'Connect an RDS database', 'Create EBS snapshot policy', 'Manage detailed monitoring', 'Create Load Balancer', 'Create Auto Scaling group', and 'Manage CloudWatch alarms'. A search bar and a navigation menu are also visible.

## 10. Connect to Your Ubuntu Instance:

- Once the instance is running, click “Connect.”

The screenshot shows the AWS EC2 Instances page. On the left, there's a sidebar with options like EC2 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), Elastic Block Store (Volumes, Snapshots, Lifecycle Manager), and Network & Security (Security Groups). The main area shows a table with one row for 'Ec2ccprac1' (Instance ID: i-01a1d8bf42f021f59). The instance is listed as 'Running' with an 't2.micro' instance type, an 'Initializing' status check, and located in the 'ap-south-1a' availability zone. Below the table, a detailed view for 'i-01a1d8bf42f021f59 (Ec2ccprac1)' is shown with tabs for Details, Status and alarms, Monitoring, Security, Networking, Storage, and Tags. Under 'Details', there's an 'Instance summary' section with fields for Instance ID (i-01a1d8bf42f021f59 (Ec2ccprac1)), Public IPv4 address (13.232.44.104), Private IPv4 addresses (172.31.33.136), Instance state (Running), and Public IPv4 DNS (ec2-13-232-44-104.ap-south-1.compute.amazonaws.com). A tooltip at the bottom says 'meet.google.com is sharing your screen.' and has buttons for 'Stop sharing' and 'Hide'.

## 11. Once you click on connect this interface will appear.

- Click on “connect using EC2 instance connect”

The screenshot shows the 'EC2 Instance Connect' interface. At the top, there are tabs for EC2 Instance Connect, Session Manager, SSH client, and EC2 serial console. The 'EC2 Instance Connect' tab is selected. A warning message box states: "Port 22 (SSH) is open to all IPv4 addresses. Port 22 (SSH) is currently open to all IPv4 addresses, indicated by 0.0.0.0/0 in the inbound rule in your security group. For increased security, consider restricting access to only the EC2 Instance Connect service. IP addresses for your Region: 13.233.177.0/29. [Learn more](#)." Below this, there are fields for 'Instance ID' (i-01a1d8bf42f021f59 (Ec2ccprac1)), 'Connection Type' (radio buttons for 'Connect using EC2 Instance Connect' and 'Connect using EC2 Instance Connect Endpoint'), 'Public IP address' (13.232.44.104), 'Username' (ubuntu), and a note: "Note: In most cases, the default username, ubuntu, is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI username." At the bottom right are 'Cancel' and 'Connect' buttons.

## 12. Ubuntu interface will appear

- Now you are ready to code on ubuntu.
- We will write 5 code on ubuntu

```

AWS Services Search [Option+S] Mumbai Khushi.

* Support: https://ubuntu.com/pro

System information as of Fri Aug 30 14:18:55 UTC 2024

System load: 0.0 Processes: 104
Usage of /: 22.8% of 6.71GB Users logged in: 0
Memory usage: 20% IPv4 address for enx0: 172.31.33.136
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-33-136:~$
```

i-01a1d8bf42f021f59 (Ec2ccprac1)  
PublicIPs: 13.232.44.104 PrivateIPs: 172.31.33.136

### 13. df -h

The **df -h** command in Linux is used to display information about disk space usage in a human-readable format.

```

AWS Services Search [Option+S] Mumbai Khushi.

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-33-136:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root       6.8G  1.6G  5.2G  23% /
tmpfs          479M    0  479M   0% /dev/shm
tmpfs          192M  868K  191M   1% /run
tmpfs          5.0M    0   5.0M   0% /run/lock
/dev/xvda16     881M   76M  744M  10% /boot
/dev/xvda15    105M   6.1M  99M   6% /boot/efi
tmpfs          96M   12K   96M   1% /run/user/1000
```

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### 14. du -h

The `du -h` command in Linux is used to display the disk usage of files and directories in a human-readable format.

The screenshot shows a terminal window within the AWS CloudShell interface. The terminal displays the output of several commands:

```
ubuntu@ip-172-31-33-136:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root       6.8G  1.6G  5.2G  23% /
tmpfs          479M    0  479M   0% /dev/shm
tmpfs          192M  868K  191M   1% /run
tmpfs          5.0M    0  5.0M   0% /run/lock
/dev/xvda16     881M   76M  744M  10% /boot
/dev/xvda15     105M   6.1M  99M   6% /boot/efi
tmpfs          96M   12K  96M   1% /run/user/1000
ubuntu@ip-172-31-33-136:~$ du -h
8.0K  ./ssh
4.0K  ./cache
28K  .
```

At the bottom of the terminal, there is a footer bar with links for CloudShell, Feedback, Privacy, Terms, and Cookie preferences. The footer also includes a copyright notice: "© 2024, Amazon Web Services, Inc. or its affiliates."

## 15. htop

1. `htop` is an interactive process viewer for Unix systems (like Linux). It provides a dynamic, real-time view of the running processes on your system, similar to what `top` does but with a more user-friendly and visually appealing interface.
2. `htop` is a powerful and convenient tool for monitoring system performance and managing processes on Unix-like operating systems.

The programs included with the Ubuntu system are free software; the exact distribution terms for each program are described in the individual files in /usr/share/doc/\*/\*copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by applicable law.

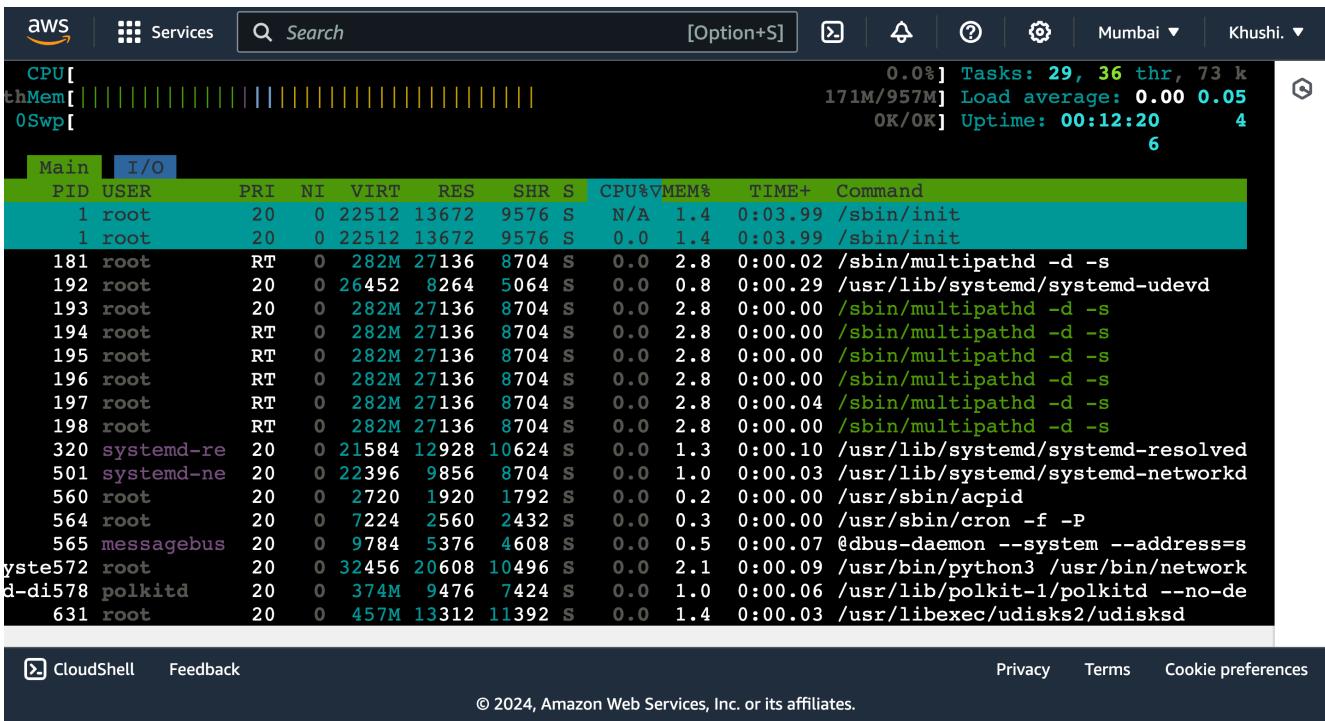
To run a command as administrator (user "root"), use "sudo <command>". See "man sudo\_root" for details.

```
ubuntu@ip-172-31-33-136:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root       6.8G  1.6G  5.2G  23% /
tmpfs          479M    0  479M   0% /dev/shm
tmpfs          192M  868K  191M   1% /run
tmpfs          5.0M    0  5.0M   0% /run/lock
/dev/xvda16     881M   76M  744M  10% /boot
/dev/xvda15     105M   6.1M  99M   6% /boot/efi
tmpfs          96M   12K  96M   1% /run/user/1000
ubuntu@ip-172-31-33-136:~$ du -h
8.0K  ./ssh
4.0K  ./cache
28K  .
ubuntu@ip-172-31-33-136:~$ htop
```

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After running the code htop you will see this interface.



## 16. free -h

The `free -h` command in Linux is used to display the system's memory usage, including RAM and swap space, in a human-readable format.

To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo\_root" for details.

```
ubuntu@ip-172-31-33-136:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root       6.8G  1.6G  5.2G  23% /
tmpfs          479M    0  479M   0% /dev/shm
tmpfs          192M  876K 191M   1% /run
tmpfs          5.0M    0  5.0M   0% /run/lock
/dev/xvda16     881M   76M 744M  10% /boot
/dev/xvda15     105M   6.1M 99M   6% /boot/efi
tmpfs          96M   12K  96M   1% /run/user/1000
ubuntu@ip-172-31-33-136:~$ du -h
8.0K  ./ssh
4.0K  ./cache
4.0K  ./config/htop
8.0K  ./config
36K  .
ubuntu@ip-172-31-33-136:~$ htop
ubuntu@ip-172-31-33-136:~$ free -h
              total        used         free      shared  buff/cache   available
Mem:      957Mi       322Mi       482Mi       888Ki       305Mi       635Mi
Swap:          0B          0B          0B
ubuntu@ip-172-31-33-136:~$
```

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## 17. hostname

The **hostname** command in Linux is used to display or set the system's hostname, which is the name assigned to the machine on a network.

```
ubuntu@ip-172-31-33-136:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
/dev/root       6.8G  1.6G  5.2G  23% /
tmpfs          479M    0  479M   0% /dev/shm
tmpfs          192M  876K 191M   1% /run
tmpfs          5.0M    0  5.0M   0% /run/lock
/dev/xvda16     881M   76M 744M  10% /boot
/dev/xvda15     105M   6.1M 99M   6% /boot/efi
tmpfs          96M   12K  96M   1% /run/user/1000
ubuntu@ip-172-31-33-136:~$ du -h
8.0K  ./ssh
4.0K  ./cache
4.0K  ./config/htop
8.0K  ./config
36K  .
ubuntu@ip-172-31-33-136:~$ htop
ubuntu@ip-172-31-33-136:~$ free -h
              total        used         free      shared  buff/cache   available
Mem:      957Mi       322Mi       482Mi       888Ki       305Mi       635Mi
Swap:          0B          0B          0B
ubuntu@ip-172-31-33-136:~$ hostname
ip-172-31-33-136
ubuntu@ip-172-31-33-136:~$
```

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## 18. View Running Instances:

- In the EC2 Dashboard, click on "Instances" in the left-hand menu under the "Instances" section.

- Select the instance you want to terminate & Click the checkbox next to the instance to select it.
- With the instance selected, click the "Instance state" dropdown button at the top.
- Choose "Terminate instance" from the dropdown menu.

The screenshot shows the AWS EC2 Instances page. On the left, there's a sidebar with various navigation options like EC2 Dashboard, EC2 Global View, Events, Instances (selected), Instances Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations, Images (selected), AMIs, AMI Catalog, Elastic Block Store (selected), Volumes, Snapshots, Lifecycle Manager, Network & Security, and Security Groups. The main content area shows a table with one instance: Name: Ec2ccprac1, Instance ID: i-01a1d8bf42f021f59, Instance state: Running, Instance type: t2.micro. Below the table, a modal window for instance i-01a1d8bf42f021f59 (Ec2ccprac1) is open, showing details like Public IPv4 address (13.232.44.104), Instance state (Running), and Private IP DNS name (ec2-13-232-44-104.ap-south-1.compute.amazonaws.com). At the bottom of the modal, there's a 'Terminate (delete) instance' button.

- **Confirm Termination:**

The screenshot shows the AWS EC2 Instances page with the same instance selected. A confirmation dialog box titled 'Terminate (delete) instance?' is overlaid. The dialog contains a warning message: 'On an EBS-backed instance, the default action is for the root EBS volume to be deleted when the instance is terminated. Storage on any local drives will be lost.' Below this, it asks 'Are you sure you want to terminate these instances?'. A table lists the instance to be terminated: Instance ID: i-01a1d8bf42f021f59 (Ec2ccprac1), Termination protection: Disabled. At the bottom of the dialog, there are 'Cancel' and 'Terminate (delete)' buttons. The background shows the same EC2 Instances table as before.

## 19. Wait for Termination:

- The instance state will change to "shutting-down" and then to "terminated."

- Once terminated, the instance will no longer incur charges, and it will be removed from the list of running instances.

Screenshot of the AWS EC2 Instances page showing the termination of an instance named Ec2ccprac1.

**Instances (1/1) Info**

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
<input checked="" type="checkbox"/> Ec2ccprac1	i-01a1d8bf42f021f59	Shutting-d...	t2.micro	2/2 checks passed	<a href="#">View alarms</a>	ap-south-1a

**i-01a1d8bf42f021f59 (Ec2ccprac1)**

**Details** | Status and alarms | Monitoring | Security | Networking | Storage | Tags

**Instance summary**

Instance ID	i-01a1d8bf42f021f59 (Ec2ccprac1)	Public IPv4 address	Private IPv4 addresses
IPv6 address	-	13.232.44.104   <a href="#">open address</a>	172.31.33.136
Hostname type	IP name: ip-172-31-33-136.ap-south-1.compute.internal	Instance state	Public IPv4 DNS
		Shutting-down	ec2-13-232-44-104.ap-south-1.compute.amazonaws.com   <a href="#">open address</a>

Screenshot of the AWS EC2 Instances page showing the termination of an instance named Ec2ccprac1.

**Instances (1/1) Info**

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
<input checked="" type="checkbox"/> Ec2ccprac1	i-01a1d8bf42f021f59	Terminated	t2.micro	2/2 checks passed	<a href="#">View alarms</a>	ap-south-1a

**i-01a1d8bf42f021f59 (Ec2ccprac1)**

**Details** | Status and alarms | Monitoring | Security | Networking | Storage | Tags

**Instance summary**

Instance ID	i-01a1d8bf42f021f59 (Ec2ccprac1)	Public IPv4 address	Private IPv4 addresses
IPv6 address	-	-	-
Hostname type	Answer private resource DNS name	Instance state	Public IPv4 DNS
		Terminated	-
			Elastic IP addresses

