

CAP 376

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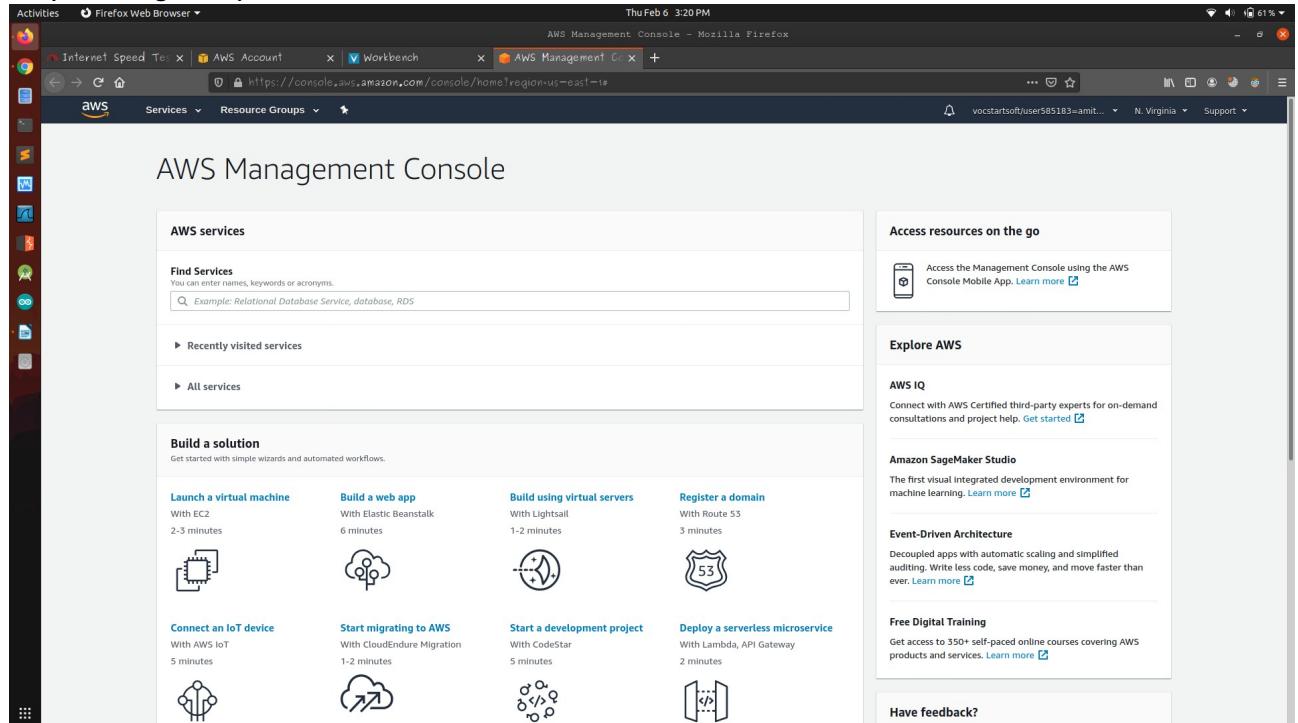
Roll no : - A 18

Set B

1. Create a EC2 instance running Linux AMI on AWS EC2 console and connect to it using SSH Client? 10 marks
2. Illustrate the creation of AWS developer environment & make use of it? 10 marks
3. Create a EC2 instance running Linux AMI on AWS EC2 console and connect to it using command prompt? 5 marks

Question 1

Step 1 :- Login to your aws console



Step 2 :- Hear choose launch a virtual machine or in services choose ec2 option

The screenshot shows the AWS Management Console homepage. The left sidebar lists various service categories: History, Compute (including EC2, Lightsail, ECR, ECS, EKS, Lambda, Batch, Elastic Beanstalk, Serverless Application Repository, AWS Outposts, and EC2 Image Builder), Storage (S3, EFS, FSx, S3 Glacier, Storage Gateway, and AWS Backup), Database (RDS, DynamoDB, ElastiCache, Neptune, Amazon Redshift, and Amazon QLDB), and Amazon DocumentDB. The main content area displays a grid of services under different categories: Customer Enablement (AWS IQ, Support, Managed Services), Machine Learning (Amazon SageMaker, Amazon CodeGuru, Amazon Comprehend, Amazon Forecast, Amazon Fraud Detector, Amazon Kendra, Amazon Lex, Amazon Machine Learning, Amazon Personalize, Amazon Polly, Amazon Rekognition, Amazon Textract, Amazon Transcribe, Amazon Translate, AWS DeepLens, AWS DeepRacer, Amazon Augmented AI), Application Integration (Step Functions, Amazon EventBridge, Amazon MQ, Simple Notification Service, Simple Queue Service, SWF), AWS Cost Management (AWS Cost Explorer, AWS Budgets, AWS Marketplace Subscriptions), Management & Governance (AWS Organizations, CloudWatch, AWS Auto Scaling, CloudFormation, CloudTrail, Config, OpsWorks, Service Catalog, Systems Manager, AWS AppConfig, Trusted Advisor, Control Tower), Analytics (Athena, EMR, CloudSearch, Elasticsearch Service, Kinesis, QuickSight, Data Pipeline, AWS Data Exchange, AWS Glue), Business Applications (Alexa for Business, Amazon Chime, WorkMail), Customer Engagement (Amazon Connect, Pinpoint, Simple Email Service), End User Computing (WorkSpaces, AppStream 2.0, WorkDocs), and Business Applications (Alexa for Business, Amazon Chime, WorkMail). A sidebar on the right provides links to the AWS DevOps Guru console, developer experts for on-demand support, and online courses covering AWS.

Step 3 : Choose Launch Instance option

The screenshot shows the EC2 Management Console. The left sidebar has sections for New EC2 Experience, EC2 Dashboard (Events, Tags, Reports, Limits, Instances, Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Scheduled Instances, Capacity Reservations), IMAGES (AMIs, Bundle Tasks), ELASTIC BLOCK STORE (Volumes, Snapshots, Lifecycle Manager), and NETWORK & SECURITY (Security Groups, Elastic IPs, Placement Groups, Key Pairs, Network Interfaces). The main content area includes the EC2 dashboard with sections for Resources (Running Instances: 0, Elastic IPs: 0, Dedicated Hosts: 0, Snapshots: 0, Volumes: 1, Key pairs: 0, Load balancers: 0, Security groups: 2, Placement groups: 0), Launch instance (button to start a new instance), Scheduled events (none listed), and Migrate a machine (CloudEndure Migration information). To the right, there are sections for Account attributes (Supported platforms: VPC, Default VPC: vpc-a3aff1d9, Console experiments, Settings), Service health (US East (N. Virginia) region status: operating normally), Availability Zone status (multiple zones listed as operating normally), Explore AWS (third-party AMI products, AMD EPYC-powered instances, spot instances, and cost optimization tips), and Additional Information (links to feedback, English (US) language, and legal notices).

Step 4 :- Choose the machine you want to launch

Step 1: Choose an Amazon Machine Image (AMI)

My AMIs

- Amazon Linux 2 AMI (HVM), SSD Volume Type** - ami-062f7200baef2fa504 (64-bit x86) / ami-0e98cccef552e8a8 (64-bit Arm)

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

 64-bit (x86) 64-bit (Arm)

Select
- Amazon Linux AMI 2018.03.0 (HVM), SSD Volume Type** - ami-09d069a04349dc3cb

The Amazon Linux AMI is an EBS-backed, AWS-supported image. It provides Linux kernel 4.14 tuned for optimal performance on Amazon EC2, systemd 219, GCC 7.3, Glibc 2.26, Binutils 2.29.1, and the latest software packages through extras.

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

 64-bit (x86) 64-bit (Arm)

Select
- Red Hat Enterprise Linux 8 (HVM), SSD Volume Type** - ami-0c322300a1dd5dc79 (64-bit x86) / ami-03587fa4048e9eb92 (64-bit Arm)

Red Hat Enterprise Linux version 8 (HVM), EBS General Purpose (SSD) Volume Type

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

 64-bit (x86) 64-bit (Arm)

Select
- SUSE Linux Enterprise Server 15 SP1 (HVM), SSD Volume Type** - ami-0df6cfabfbe4385b7 (64-bit x86) / ami-0e83525f58b2878f0 (64-bit Arm)

SUSE Linux Enterprise Server 15 Service Pack 1 (HVM), EBS General Purpose (SSD) Volume Type. Public Cloud, Advanced Systems Management, Web and Scripting, and Legacy modules enabled.

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

 64-bit (x86) 64-bit (Arm)

Select
- Ubuntu Server 18.04 LTS (HVM), SSD Volume Type** - ami-07ebfd5b3428b6f4d (64-bit x86) / ami-0400a1104d5b9caa1 (64-bit Arm)

Ubuntu Server 18.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

 64-bit (x86) 64-bit (Arm)

Select
- Amazon RDS**

Are you launching a database instance? Try Amazon RDS.

Amazon Relational Database Service (RDS) makes it easy to set up, operate, and scale your database on AWS by automating time-consuming database management tasks. With RDS, you can easily deploy Amazon Aurora, MariaDB, MySQL, Oracle, PostgreSQL, and SQL Server databases on AWS. Aurora is a MySQL- and PostgreSQL-compatible, enterprise-class database at 1/10th the cost of commercial databases. [Learn more about RDS](#)

Launch a database using RDS

 64-bit (x86) 64-bit (Arm)

Select
- Ubuntu Server 16.04 LTS (HVM), SSD Volume Type** - ami-08bc77a2c7eb2b1da (64-bit x86) / ami-0c37ee902a7924ed2 (64-bit Arm)

Ubuntu Server 16.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical (<http://www.ubuntu.com/cloud/services>).

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

 64-bit (x86) 64-bit (Arm)

Select

Feedback **English (US)**

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Step 5 :- Select the option for you are eligible for and click review and launch

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

| Filter by: | All instance types | Current generation | Show/Hide Columns | | | | |
|---------------------|---|--------------------|-------------------|-----------------------|-------------------------|---------------------|--------------|
| Currently selected: | t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only) | | | | | | |
| Family | Type | vCPUs | Memory (GiB) | Instance Storage (GB) | EBS-Optimized Available | Network Performance | IPv6 Support |
| General purpose | t2.nano | 1 | 0.5 | EBS only | - | Low to Moderate | Yes |
| General purpose | t2.micro <small>Free tier eligible</small> | 1 | 1 | EBS only | - | Low to Moderate | Yes |
| General purpose | t2.small | 1 | 2 | EBS only | - | Low to Moderate | Yes |
| General purpose | t2.medium | 2 | 4 | EBS only | - | Low to Moderate | Yes |
| General purpose | t2.large | 2 | 8 | EBS only | - | Low to Moderate | Yes |
| General purpose | t2.xlarge | 4 | 16 | EBS only | - | Moderate | Yes |
| General purpose | t2.2xlarge | 8 | 32 | EBS only | - | Moderate | Yes |
| General purpose | t3a.nano | 2 | 0.5 | EBS only | Yes | Up to 5 Gigabit | Yes |
| General purpose | t3a.micro | 2 | 1 | EBS only | Yes | Up to 5 Gigabit | Yes |
| General purpose | t3a.small | 2 | 2 | EBS only | Yes | Up to 5 Gigabit | Yes |
| General purpose | t3a.medium | 2 | 4 | EBS only | Yes | Up to 5 Gigabit | Yes |
| General purpose | t3a.large | 2 | 8 | EBS only | Yes | Up to 5 Gigabit | Yes |

Cancel **Previous** **Review and Launch** **Next: Configure Instance Details**

Feedback **English (US)**

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step 6 :- this is final page hear click launch option

The screenshot shows the AWS Launch Instance Wizard - Step 7: Review Instance Launch. The main content area displays the following sections:

- AMI Details:** Shows an Ubuntu Server 18.04 LTS (HVM) AMI.
- Instance Type:** Shows an i2.micro instance type with 1 vCPU, 1 GB memory, and EBS storage.
- Security Groups:** Shows a single security group named "launch-wizard-2" created on 2020-02-06T15:33:50.886+05:30.
- Instance Details:** Includes links for Storage and Tags.

At the bottom right, there is a modal dialog titled "Select an existing key pair or create a new key pair". It contains the following information:

- A note about key pairs: "A key pair consists of a public key that AWS stores, and a private key file that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance."
- A dropdown menu for "Create a new key pair".
- A text input field for "Key pair name" containing "Amit".
- A "Download Key Pair" button.
- A message box: "You have to download the private key file (*.pem file) before you can continue. Store it in a secure and accessible location. You will not be able to download the file again after it's created."

Below the modal, there are "Cancel", "Previous", and "Launch" buttons.

Step 7 :- create a new key pair and download the key in pem formate

The screenshot shows the AWS Launch Instance Wizard - Step 7: Review Instance Launch. The main content area displays the following sections:

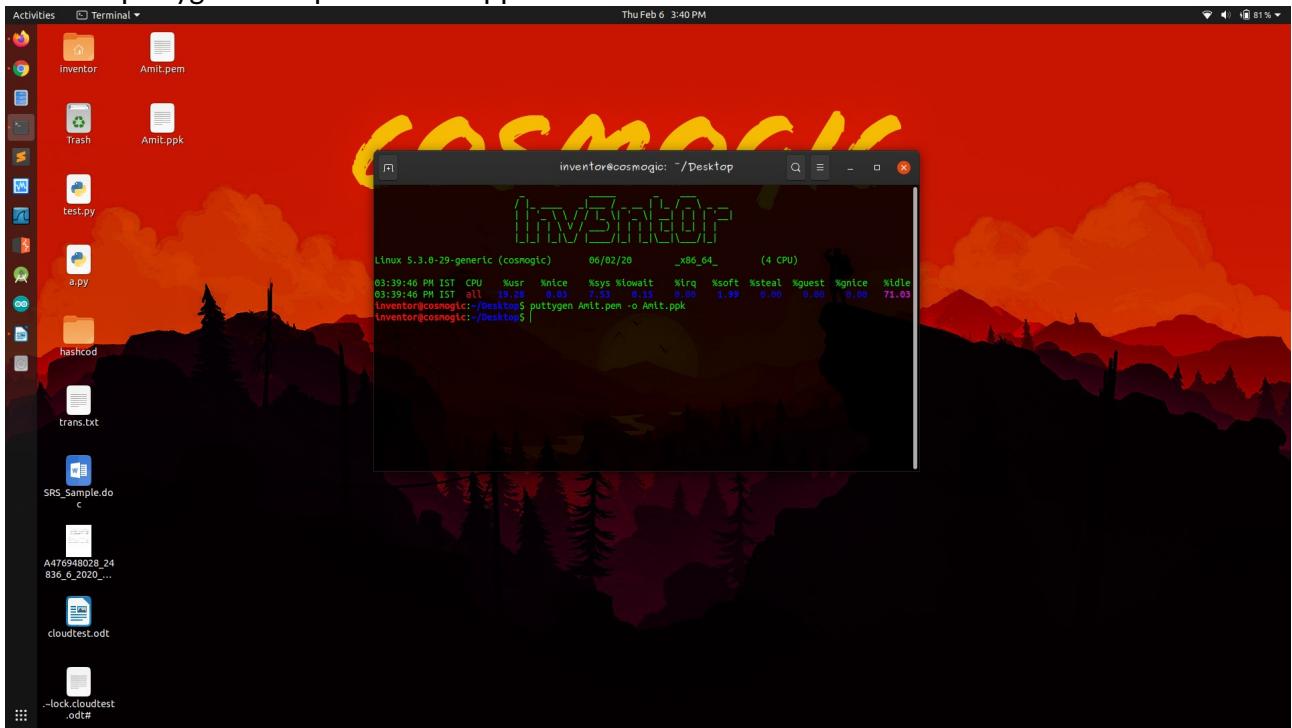
- AMI Details:** Shows an Ubuntu Server 18.04 LTS (HVM) AMI.
- Instance Type:** Shows an i2.micro instance type with 1 vCPU, 1 GB memory.
- Security Groups:** Shows a single security group named "launch-wizard-2" created on 2020-02-06T15:33:50.886+05:30.
- Instance Details:** Includes links for Storage and Tags.

At the bottom right, there is a modal dialog titled "Select an existing key pair or create a new key pair". It contains the following information:

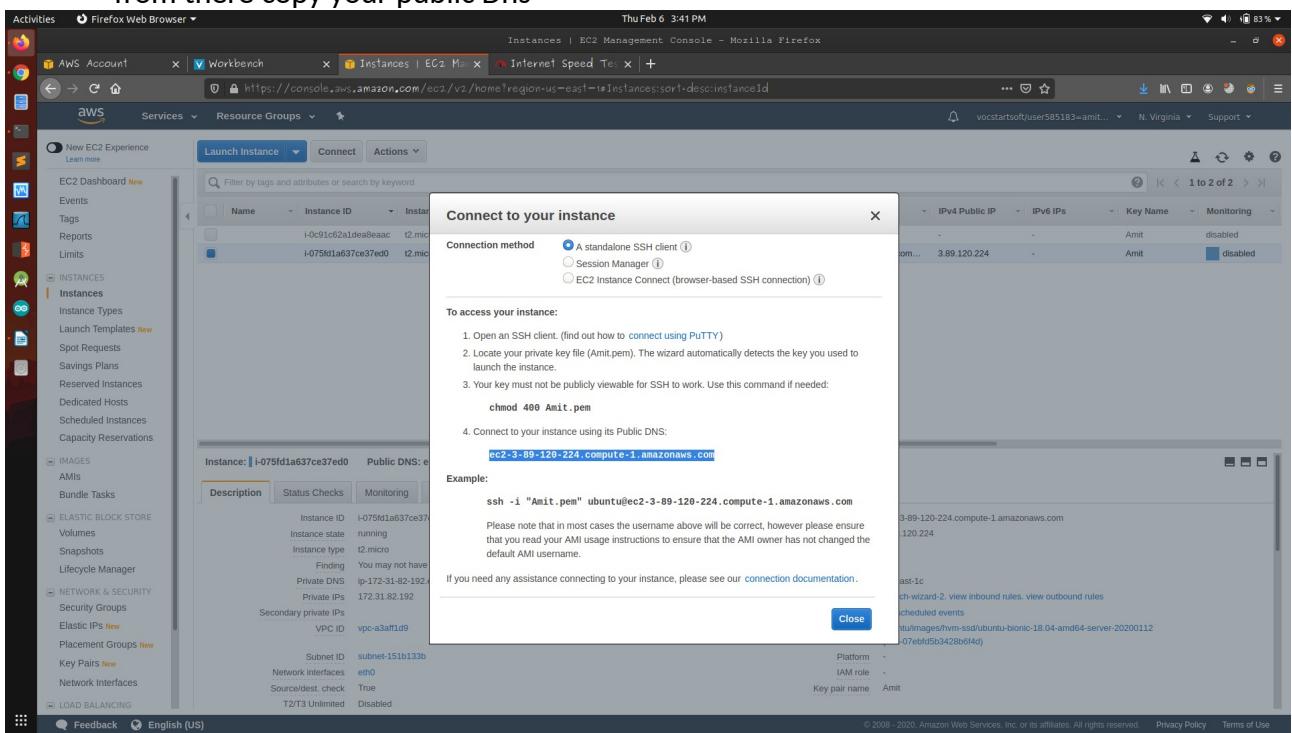
- A note about key pairs: "A key pair consists of a public key that AWS stores, and a private key file that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance."
- A dropdown menu for "Create a new key pair".
- A text input field for "Key pair name" containing "Amit".
- A "Download Key Pair" button.
- A message box: "You have to download the private key file (*.pem file) before you can continue. Store it in a secure and accessible location. You will not be able to download the file again after it's created."

Below the modal, there are "Cancel", "Previous", and "Launch Instances" buttons.

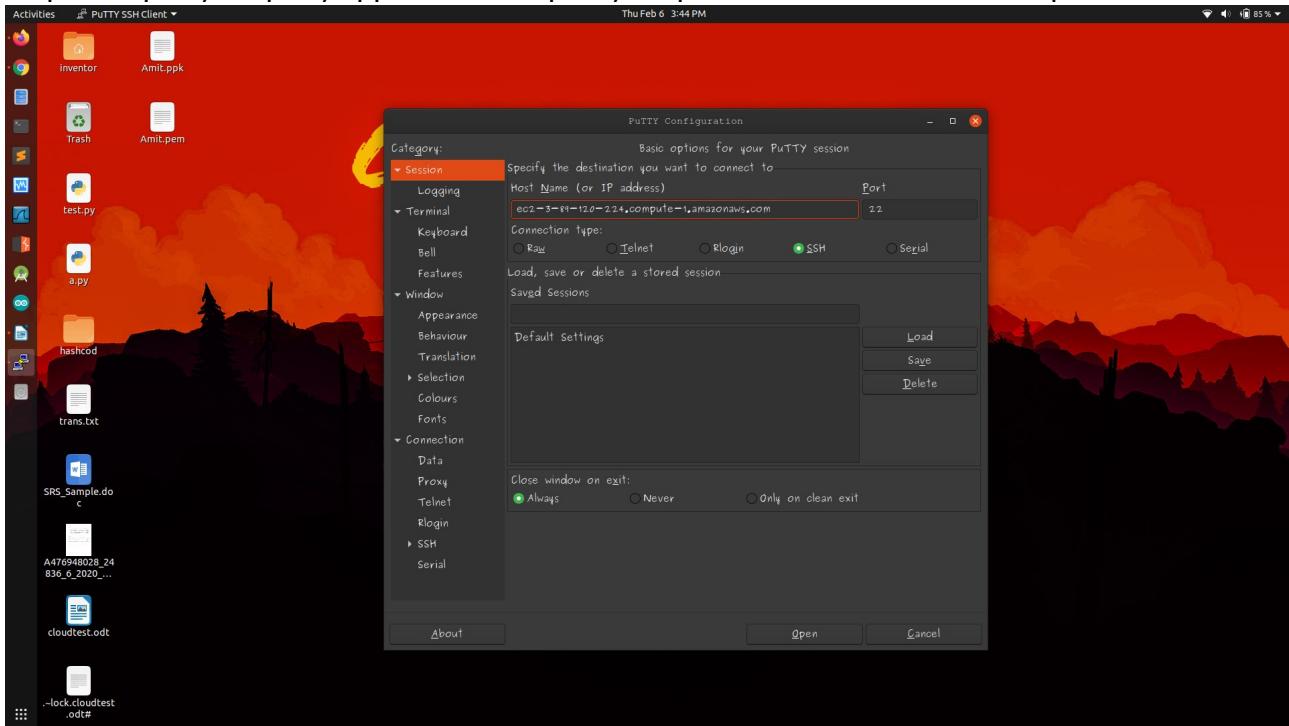
step 8 : convert you downloaded key from pem to ppk format using terminal with command
puttygen Amit.pem -o Amit.ppk



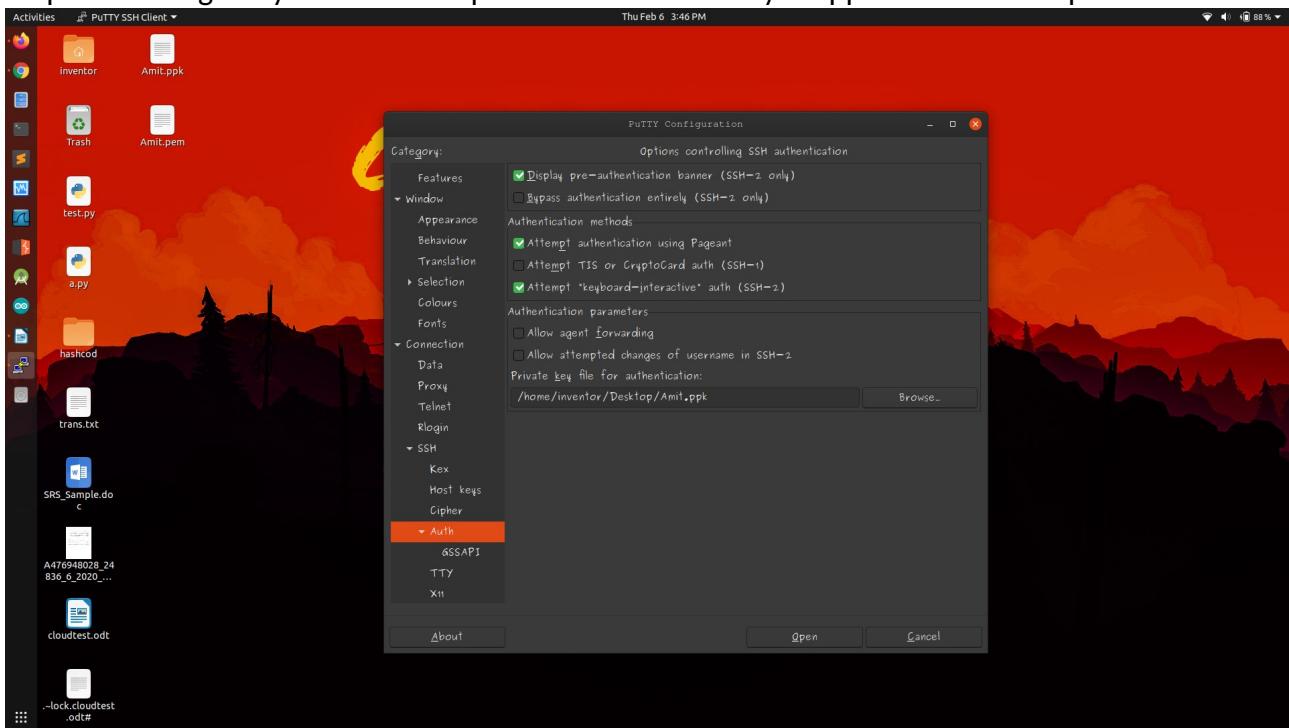
Step 9 : go back to aws console and choose your running machine then click on connect option from there copy your public Dns



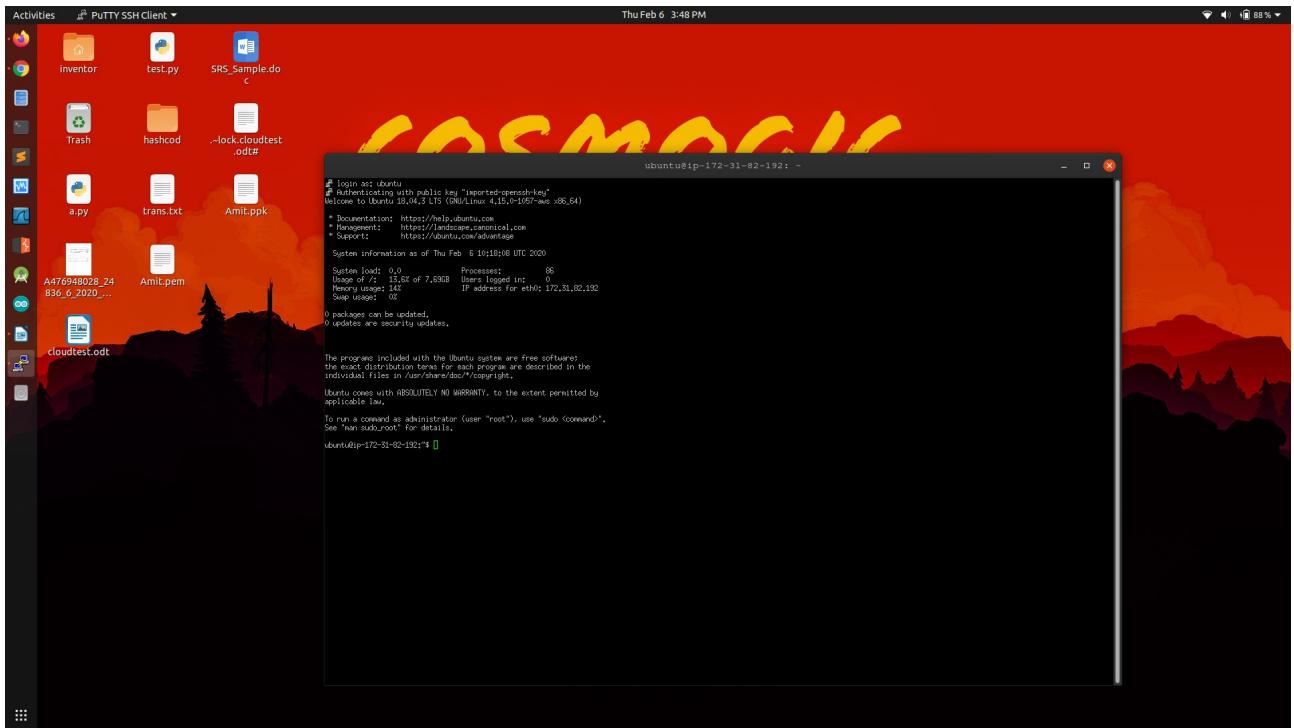
Step 10 : open your putty application and past your public DNS in host name or ip



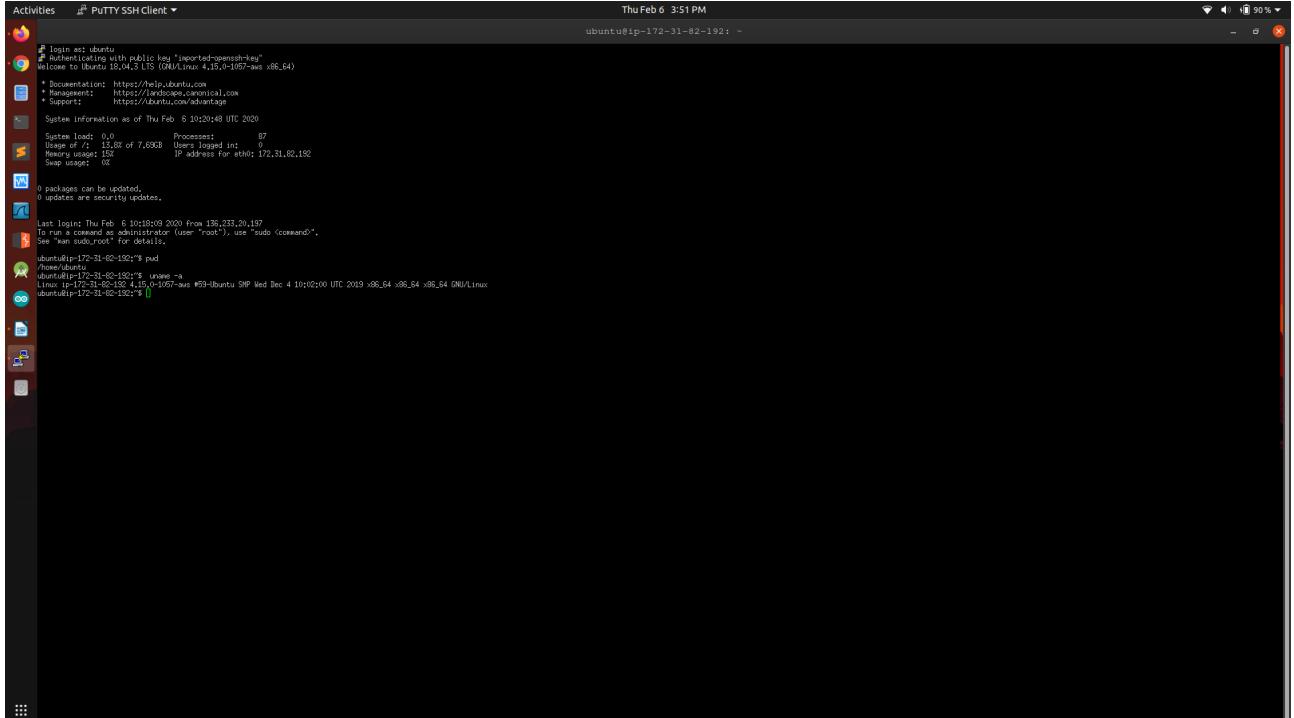
Step 11 : Then go to your ssh auth option and there select your ppk file and click open



Step 12 : Now your machine will get started login with user name ubuntu



Step 13 : Hear we go now we are on your machine



Question 2

Step 1 : Login to your Aws Console

The screenshot shows the AWS Management Console homepage. At the top, there's a search bar with placeholder text "Example: Relational Database Service, database, RDS". Below it, there are sections for "Recently visited services" and "All services". On the left, there's a sidebar titled "AWS services" with various service icons and names like "Launch a virtual machine", "Build a web app", "Register a domain", etc. On the right, there are sections for "Access resources on the go", "Explore AWS", "AWS IQ", "Amazon SageMaker Studio", "Event-Driven Architecture", "Free Digital Training", and "Have feedback?". The URL in the browser is https://console.aws.amazon.com/console/home?region=us-east-1#.

Step 2 : navigate to cloude 9

The screenshot shows the AWS Management Console with a search bar containing "cl9". A dropdown menu lists several services starting with "cl9", such as "AWS Cloud Map", "Cloud9", "CloudFormation", "CloudFront", "CloudHSM", "CloudSearch", "CloudTrail", and "CloudWatch". To the right of the search results, there are sections for "Access resources on the go", "Explore AWS", "AWS IQ", "Amazon SageMaker Studio", "Event-Driven Architecture", "Free Digital Training", and "Have feedback?". The URL in the browser is https://console.aws.amazon.com/console/home?region=us-east-1#.

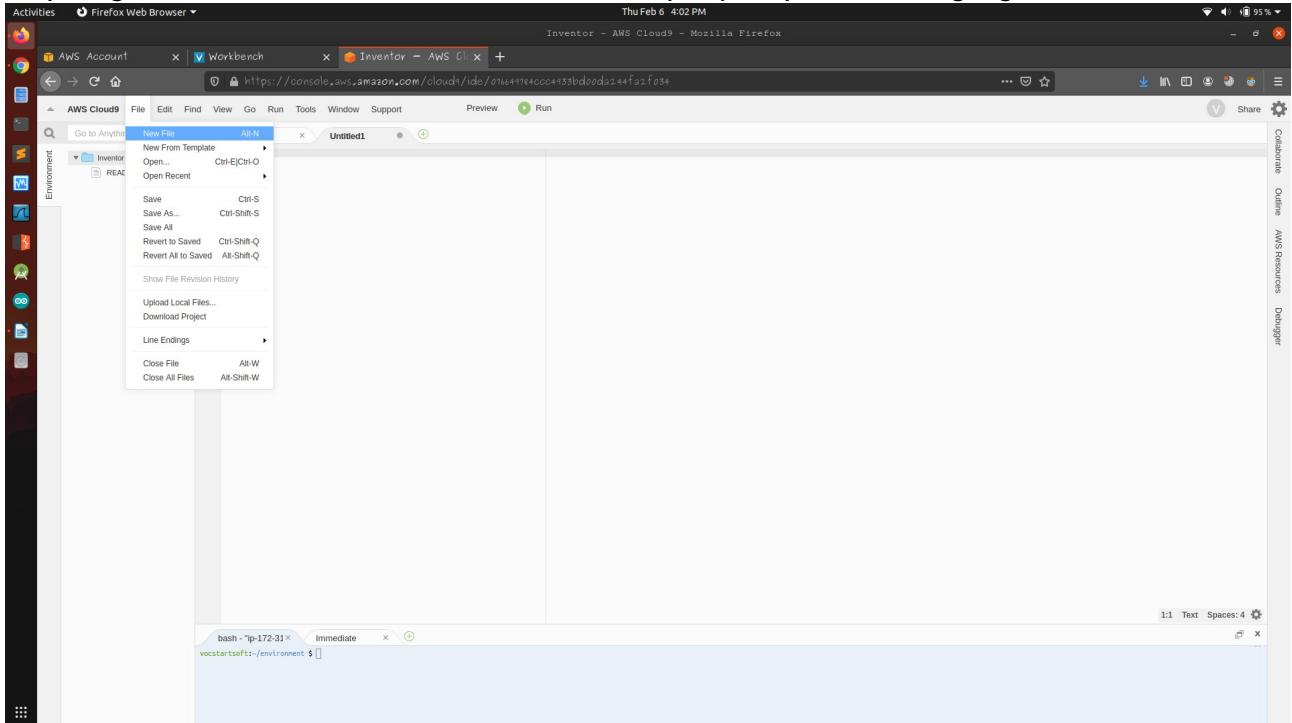
Step 3 : click on create environment

The screenshot shows the AWS Cloud9 homepage in a Mozilla Firefox browser. The title bar reads "Welcome to AWS Cloud9 - Mozilla Firefox" and the address bar shows the URL "https://console.aws.amazon.com/cloud9/home/product". The main content area features the heading "AWS Cloud9" and "A cloud IDE for writing, running, and debugging code". Below this, there's a section titled "How it works" and another titled "Benefits and features". A prominent orange button labeled "Create environment" is located in the top right corner of the main content area. To the right of the main content, there's a sidebar with sections for "Getting started" and "More resources". The sidebar includes links like "Before you start", "Create a environment", "Working with environments", "Working with the IDE", and "Working with AWS Lambda". At the bottom of the page, there are links for "FAQs", "Forum", and "Contact us". The footer contains copyright information and links for "Privacy Policy" and "Terms of Use".

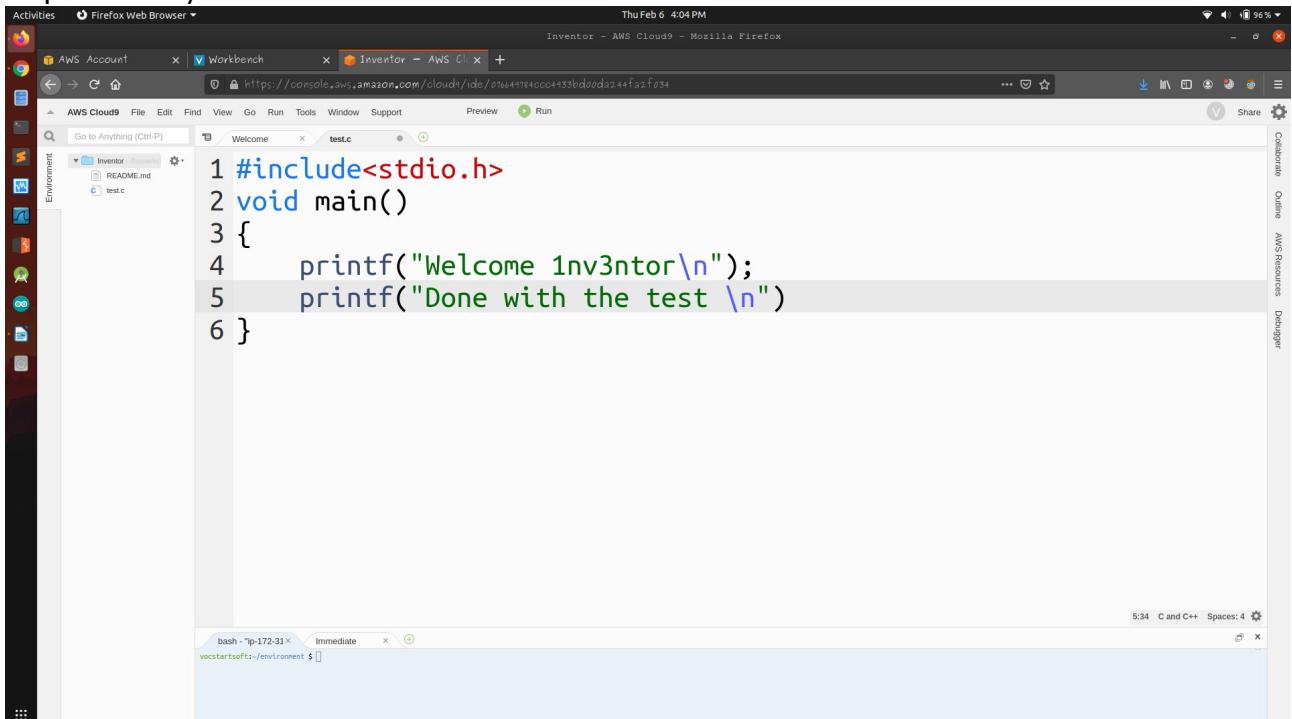
Step 4 : fill the name and description and click on next>next>creat environment

The screenshot shows the "Name environment" step of the AWS Cloud9 creation wizard in a Mozilla Firefox browser. The title bar reads "Create a new environment - Mozilla Firefox" and the address bar shows the URL "https://console.aws.amazon.com/cloud9/home/create". The left sidebar shows the steps: "Step 1 Name environment", "Step 2 Configure settings", and "Step 3 Review". The main content area is titled "Name environment" and contains a form for "Environment name and description". It has two fields: "Name" (with the value "Inventor") and "Description - Optional" (with the value "Test ca 1"). There is a note stating "The name needs to be unique per user. You can update it at any time in your environment settings." and "Limit: 60 characters". There is also a note for the description: "This will appear on your environment's card in your dashboard. You can update it at any time in your environment settings." and "Limit: 200 characters". At the bottom of the form are "Cancel" and "Next step" buttons. The footer contains copyright information and links for "Privacy Policy" and "Terms of Use".

Step 5 : go to file and create new file and save it as per your preffered language



step 6 : enter your code and save it



Step 7 : click on run

The screenshot shows the AWS Cloud9 IDE interface. In the code editor, a file named `test.c` contains the following C code:

```
1 #include<stdio.h>
2 void main()
3 {
4     printf("Welcome Inv3ntor\n");
5     printf("Done with the test \n");
6 }
```

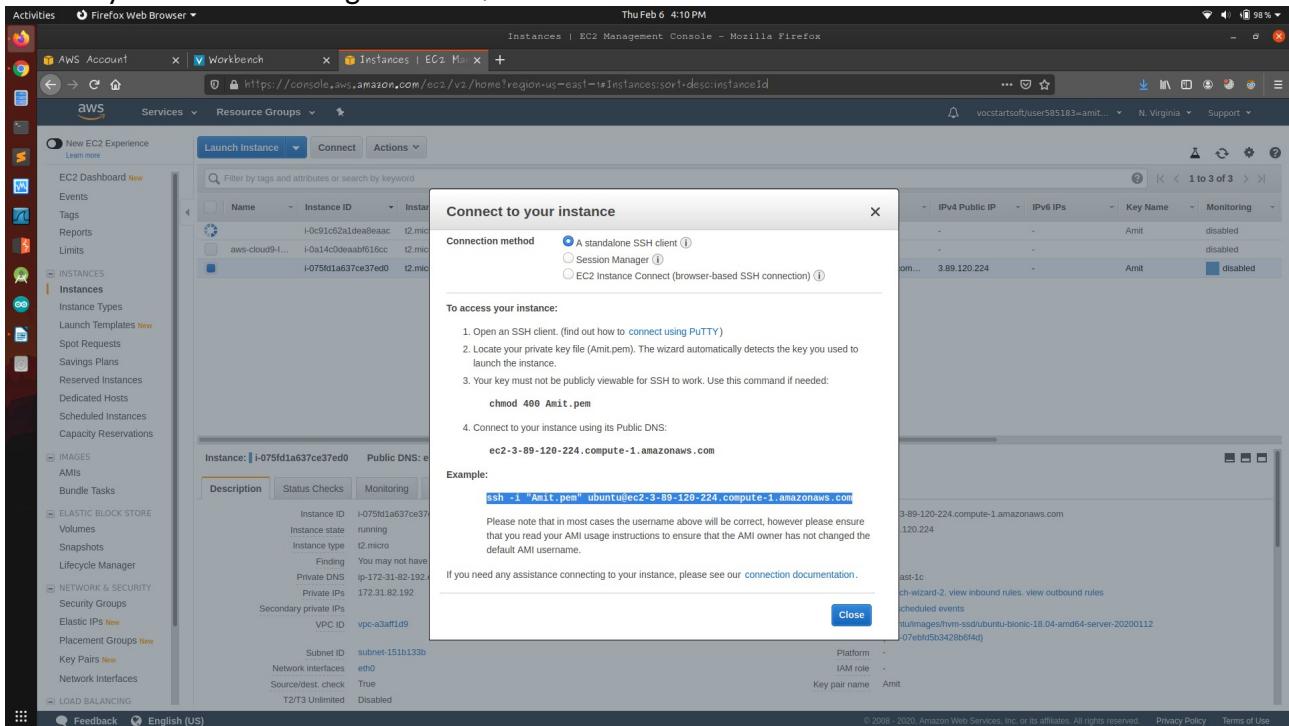
Below the code editor, a terminal window titled "bash - [ip-172-31]" shows the output of running the program:

```
Running /home/ec2-user/environment/test.c
Welcome Inv3ntor
Done with the test

Process exited with code: 20
```

Question 3

Step 1 : if you don't have running machine follow the previous step and create your machine
Step 2 : go to your machine and click on connect option ther you will get the command to open your machine using terminal / cmd



Step 3 : past the command on your terminal / cmd with root permissions and then you will be connected to your machine

A screenshot of a Linux desktop environment. In the top right corner, there's a system tray icon showing a battery level of 98%. The main focus is a terminal window titled "Terminal" located in the Activities overview. The terminal shows a root shell on an Ubuntu 18.04 LTS system. The user has run the command "sudo ssh -i "Amit.pem" ubuntu@ec2-3-89-120-224.compute-1.amazonaws.com" and is prompted for a password. The terminal also displays system load, memory usage, and other system information. The desktop background features a landscape scene with a silhouette of a person standing on a rock.

```
Activities Terminal Thu Feb 6 4:13 PM
ubuntu@ip-172-31-82-112: ~
Linux 5.3.0-29-generic (cosmogic) 06/02/20 _x86_64_ (4 CPU)
04:12:37 PM IST CPU %usr %nice %sys %wait %irq %soft %steal %guest %nice %idle
04:12:37 PM IST all 16.23 0.03 6.24 0.13 0.00 1.78 0.00 0.00 0.00 75.58
inventor@cosmogic:~$ cd Desktop/
[sudo] password for inventor:
The authenticity of host 'ec2-3-89-120-224.compute-1.amazonaws.com (3.89.120.224)' can't be established.
ECDSA key fingerprint is SHA256:GtYkfeByehSEFECSy0UQEqJqt+Vc1ghzZOIH4Uv06o.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-89-120-224.compute-1.amazonaws.com,3.89.120.224' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 18.04.3 LTS (GNU/Linux 4.15.0-1057-aws x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage

System information as of Thu Feb 6 10:43:00 UTC 2020

System load: 0.0 Processes: 86
Usage of /: 13.8% of 7.69GB Users logged in: 0
Memory usage: 14% IP address for eth0: 172.31.82.192
Swap usage: 0%

0 packages can be updated.
0 updates are security updates.

Last login: Thu Feb 6 10:20:49 2020 from 136.233.20.197
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-82-112:~$ pwd
/home/ubuntu
ubuntu@ip-172-31-82-112:~$
```

A second screenshot of a Linux desktop environment, similar to the first one. It shows a terminal window with a root shell on an Ubuntu 18.04 LTS system. The user has run the command "sudo ssh -i "Amit.pem" ubuntu@ec2-3-89-120-224.compute-1.amazonaws.com" and is prompted for a password. The terminal also displays system load, memory usage, and other system information. The desktop background features a landscape scene with a silhouette of a person standing on a rock.

```
Activities Terminal Thu Feb 6 4:15 PM
ubuntu@ip-172-31-82-112: ~
Linux 5.3.0-29-generic (cosmogic) 06/02/20 _x86_64_ (4 CPU)
04:12:37 PM IST CPU %usr %nice %sys %wait %irq %soft %steal %guest %nice %idle
04:12:37 PM IST all 16.23 0.03 6.24 0.13 0.00 1.78 0.00 0.00 0.00 75.58
inventor@cosmogic:~$ cd Desktop/
inventor@cosmogic:~/Desktop$ sudo ssh -i "Amit.pem" ubuntu@ec2-3-89-120-224.compute-1.amazonaws.com
[sudo] password for inventor:
The authenticity of host 'ec2-3-89-120-224.compute-1.amazonaws.com (3.89.120.224)' can't be established.
ECDSA key fingerprint is SHA256:GtYkfeByehSEFECSy0UQEqJqt+Vc1ghzZOIH4Uv06o.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-3-89-120-224.compute-1.amazonaws.com,3.89.120.224' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 18.04.3 LTS (GNU/Linux 4.15.0-1057-aws x86_64)

 * Documentation: https://help.ubuntu.com
 * Management: https://landscape.canonical.com
 * Support: https://ubuntu.com/advantage

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System load: 0.0 Processes: 86
Usage of /: 13.8% of 7.69GB Users logged in: 0
Memory usage: 14% IP address for eth0: 172.31.82.192
Swap usage: 0%

0 packages can be updated.
0 updates are security updates.

Last login: Thu Feb 6 10:20:49 2020 from 136.233.20.197
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

ubuntu@ip-172-31-82-112:~$ pwd
/home/ubuntu
ubuntu@ip-172-31-82-112:~$ uname -a
Linux ip-172-31-82-192 4.15.0-1057-aws #59-Ubuntu SMP Wed Dec 4 10:02:00 UTC 2019 x86_64 x86_64 x86_64 GNU/Linux
ubuntu@ip-172-31-82-112:~$
```