Name:Bhushan Mukund Kor **Academic Year:2024-2025**

Division: D15C **Roll No: 28**

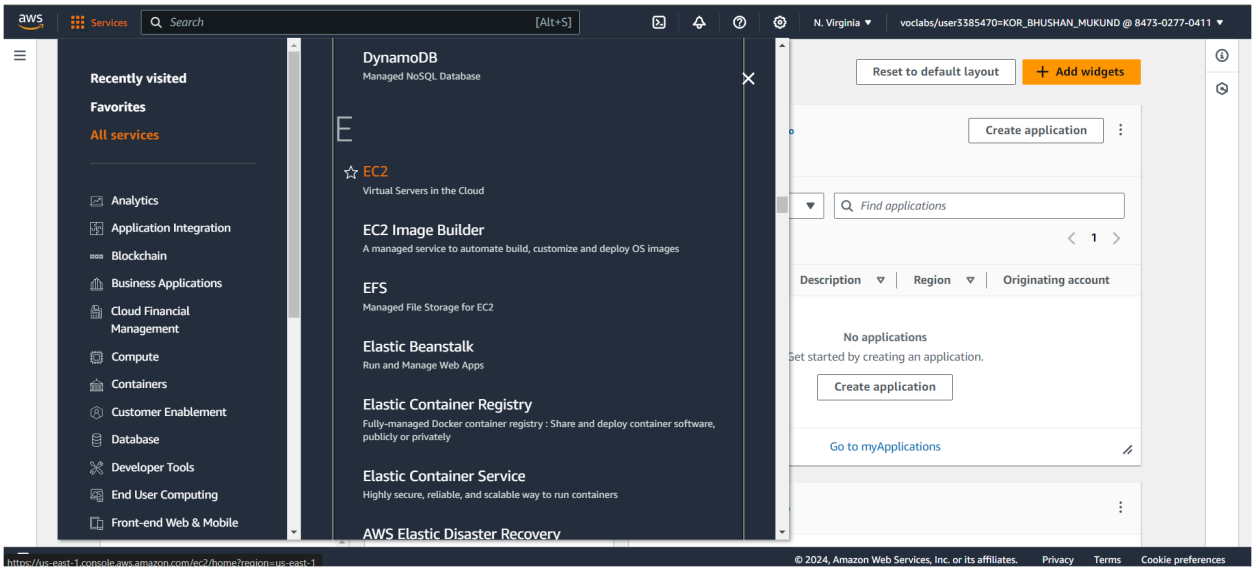
Aim: To understand the benefits of Cloud Infrastructure, Setup EC2 and Setup AWS Cloud9 IDE, Launch AWS Cloud9 IDE, and Perform Collaboration Demonstration.

A)EC2

EC2

Amazon EC2 (Elastic Compute Cloud) is a web service that provides resizable compute capacity in the cloud. It allows users to run virtual servers, known as instances, on demand. EC2 offers flexibility in scaling resources up or down based on your needs, making it ideal for hosting applications, running batch jobs, and more, with only the cost of the resources you actually use.

Step 1: Open Your AWS Academy or Personal AWS account and Search for EC2 in services.



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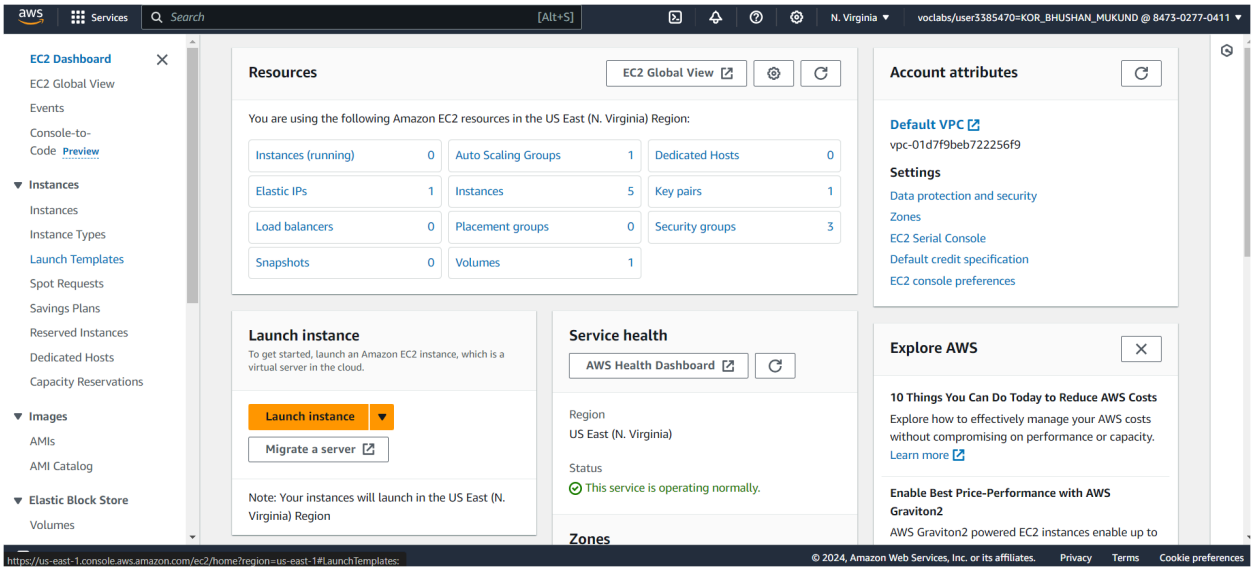
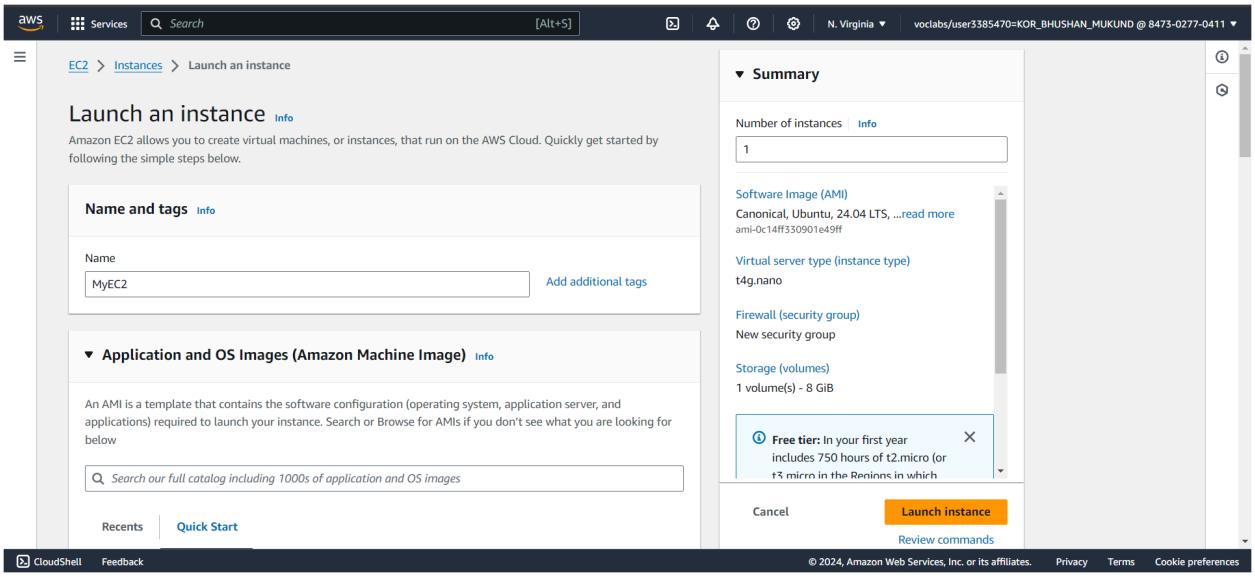
Step 2: After Opening EC2 click on Launch instance.



Step 3: Give a name to your instance.



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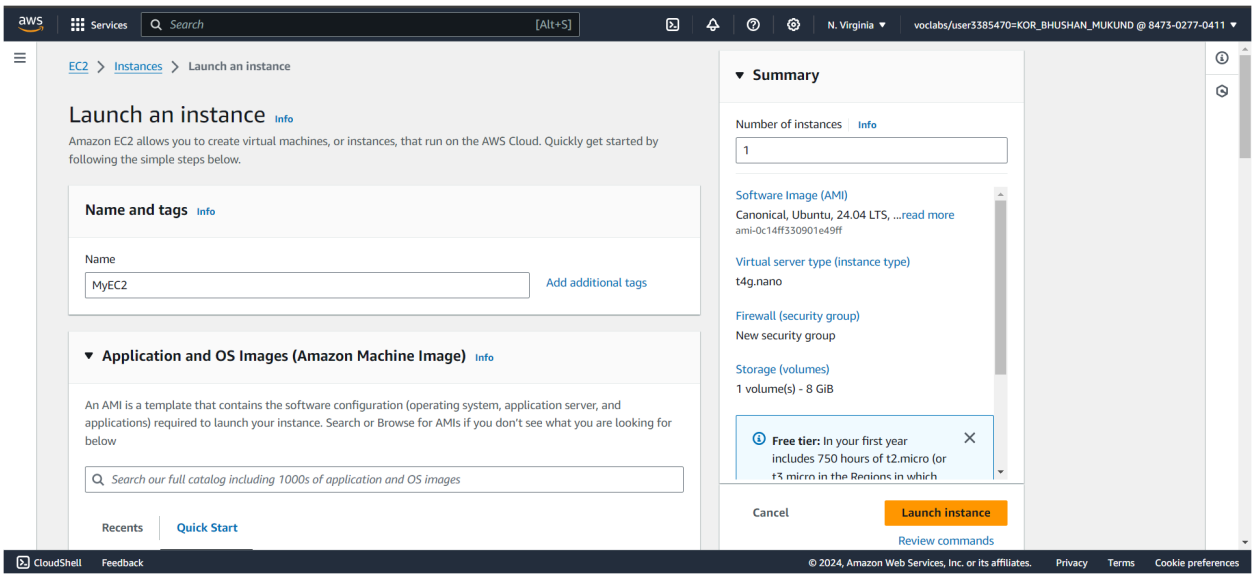
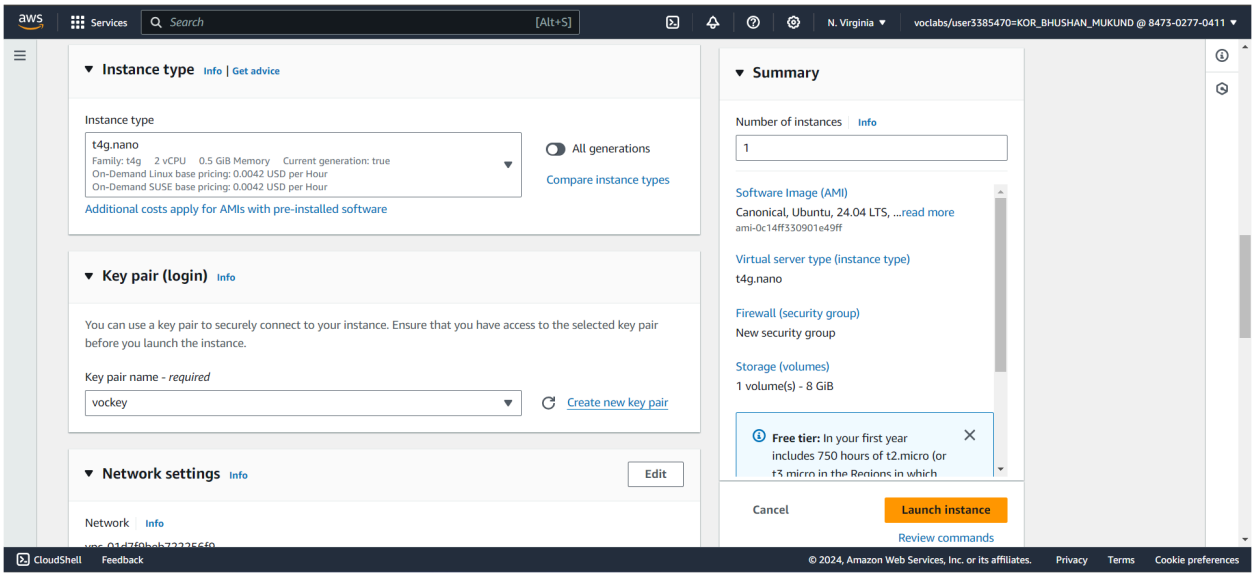
Step 4: Select the server as Ubuntu and you can select Architecture x86 or ARM .



Step 5: Keep instance type by default and key pair as default (vockey).



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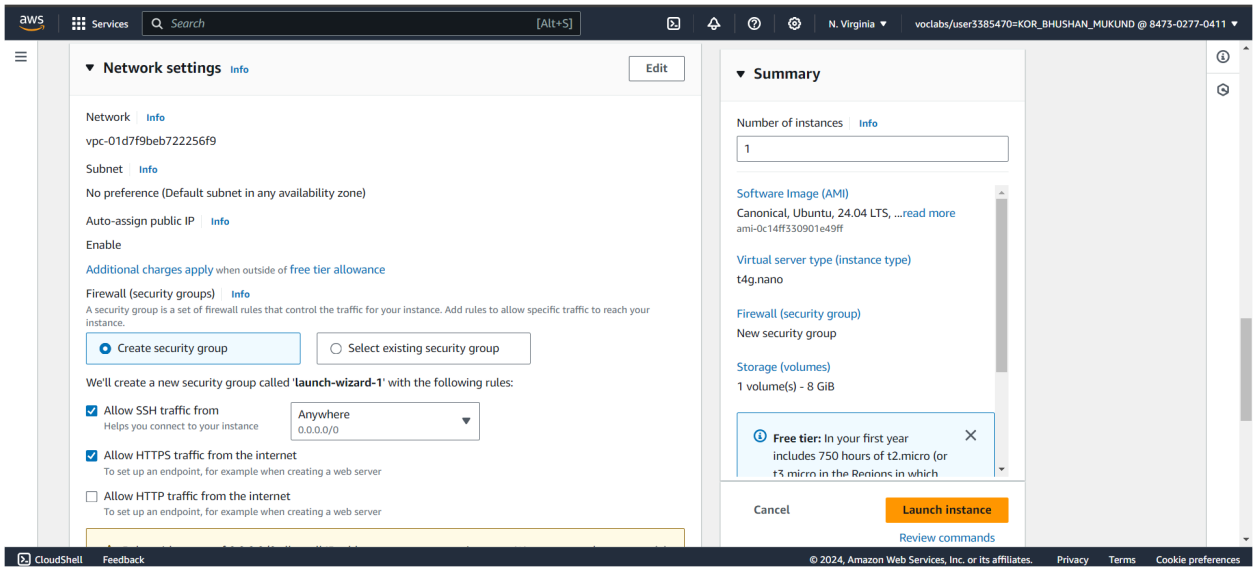
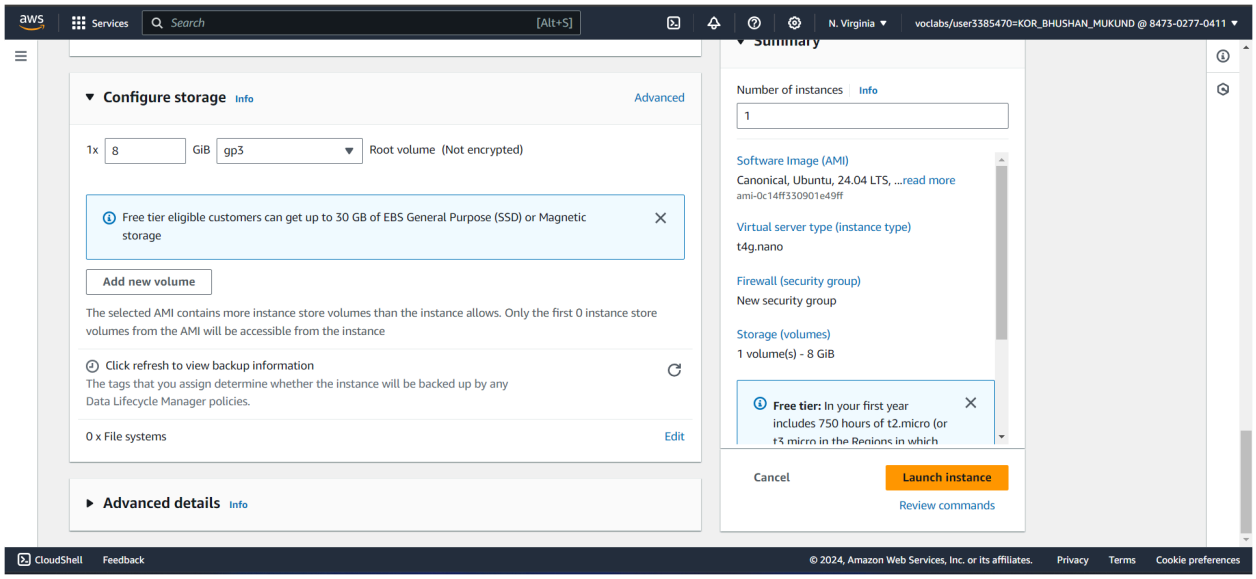
Step 6: Select the Create Security Group option and allow 2 permissions refer to screenshot. And if any error occurs allow only 1st permission.



Step 7: Configure storage to 8 GiB and gp3 if any error occurs make it to 10 GiB and gp3.



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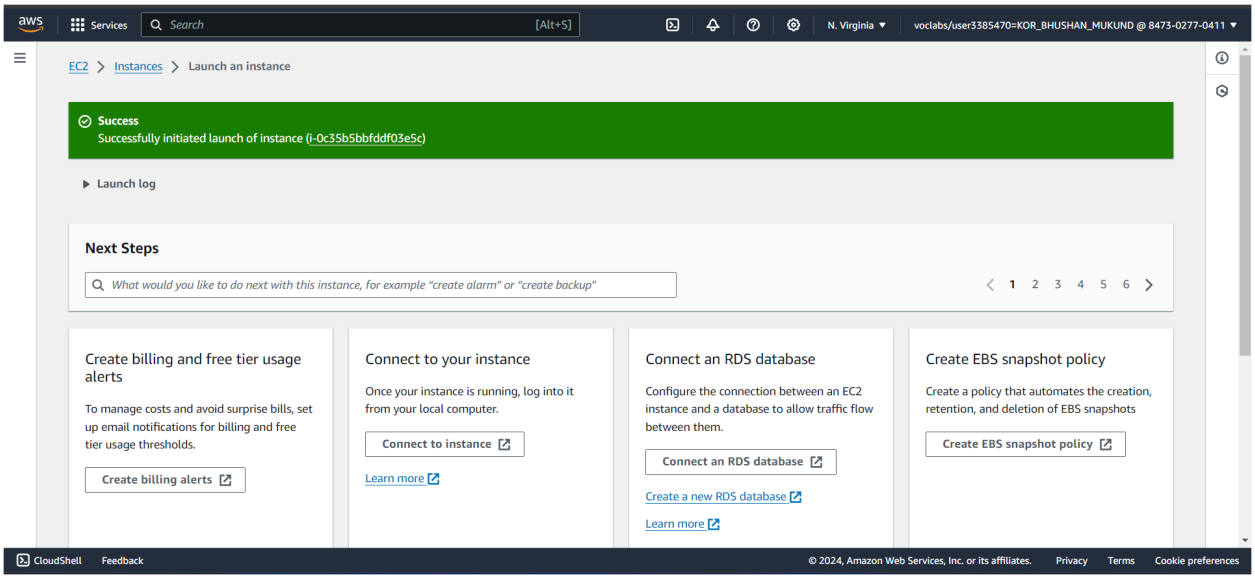
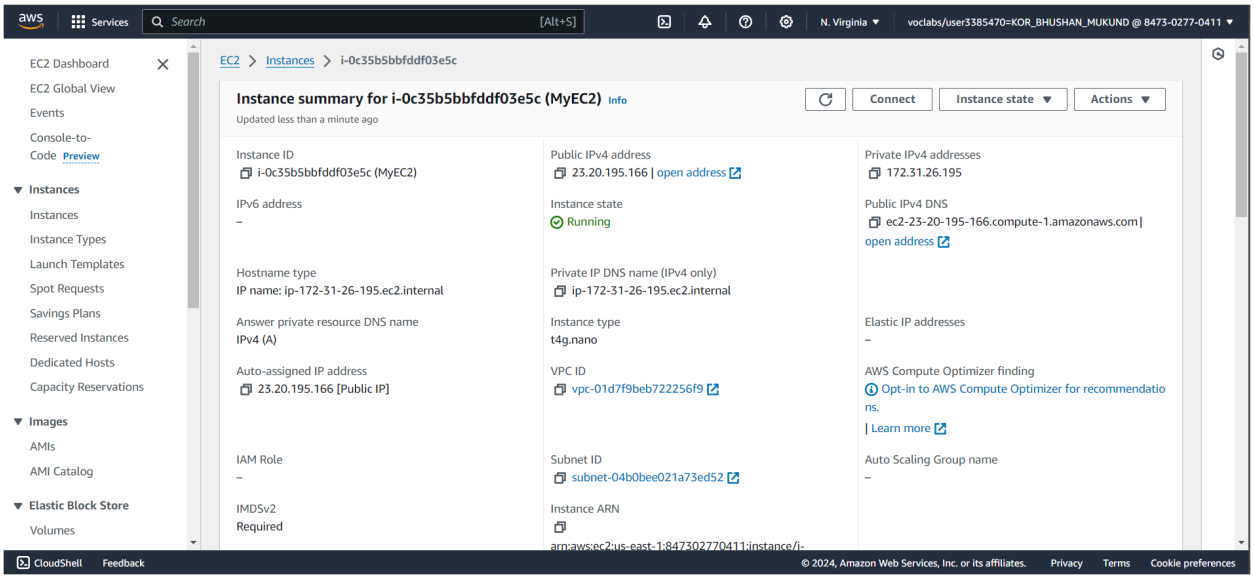
Step 10: Done Your EC2 instance is successfully created.



Step 11: Click on the instance ID then click on connect to connect to environment.



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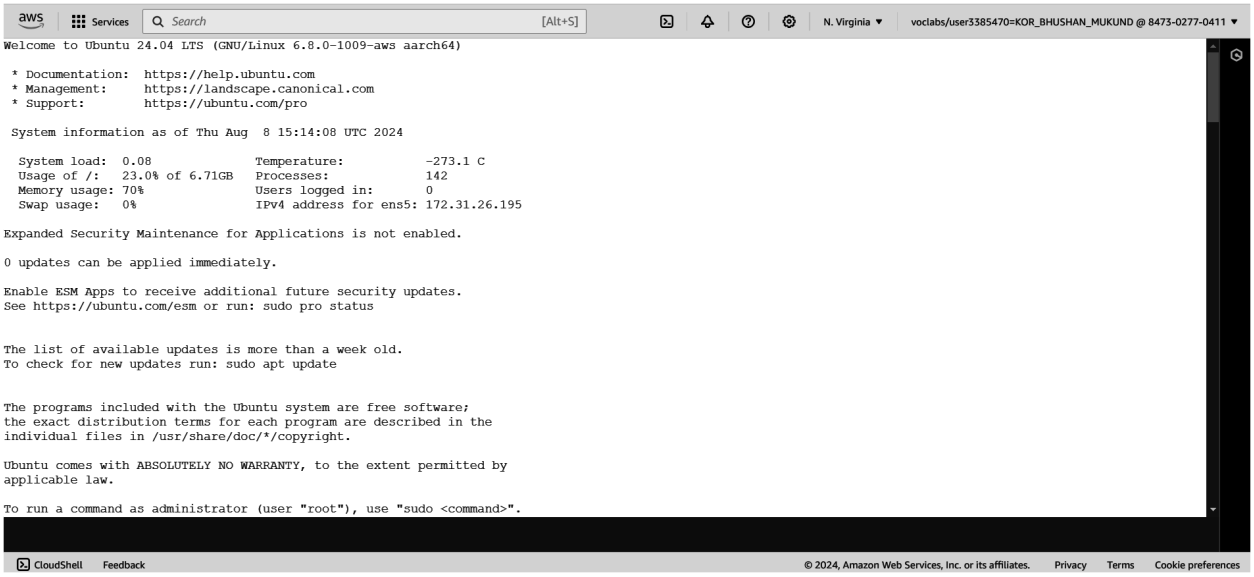

Step 12: Run the following command in Ubuntu (On EC2 Instance).

1. sudo -l
2. sudo apt update
3. uname -a
4. df --help and df
5. ls
6. mkdir test
7. ls
8. cd test
9. touch file1
10. ls
11. touch file2 file3
12. ls
13. rm file1
14. ls
15. rm file*
16. ls
17. cd
18. ls
19. rmdir test
20. ls
21. mkdir test1 test2 test3
22. ls
23. rmdir test*
24. ls

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25. History
26. top
27. vmstat

```
ubuntu@ip-172-31-26-195:~$ sudo -l
Matching Defaults entries for ubuntu on ip-172-31-26-195:
    env_reset, mail_badpass, secure_path=/usr/local/sbin\:/usr/local/bin\:/usr/sbin\:/usr/bin\:/sbin\:/bin\:/snap/bin, use_pty

User ubuntu may run the following commands on ip-172-31-26-195:
    (ALL : ALL) ALL
    (ALL) NOPASSWD: ALL
```

```
ubuntu@ip-172-31-26-195:~$ sudo apt update
Hit:1 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble InRelease
Get:2 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-updates InRelease [126 kB]
Get:3 http://ports.ubuntu.com/ubuntu-ports noble-security InRelease [126 kB]
Get:4 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-backports InRelease [126 kB]
Get:5 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble/universe arm64 Packages [15.3 MB]
Get:6 http://ports.ubuntu.com/ubuntu-ports noble-security/main arm64 Packages [262 kB]
Get:7 http://ports.ubuntu.com/ubuntu-ports noble-security/main Translation-en [64.4 kB]
Get:8 http://ports.ubuntu.com/ubuntu-ports noble-security/main arm64 Components [5428 B]
Get:9 http://ports.ubuntu.com/ubuntu-ports noble-security/main arm64 c-n-f Metadata [3696 B]
Get:10 http://ports.ubuntu.com/ubuntu-ports noble-security/universe arm64 Packages [244 kB]
Get:11 http://ports.ubuntu.com/ubuntu-ports noble-security/universe Translation-en [108 kB]
Get:12 http://ports.ubuntu.com/ubuntu-ports noble-security/universe arm64 Components [8632 B]
Get:13 http://ports.ubuntu.com/ubuntu-ports noble-security/universe arm64 c-n-f Metadata [9356 B]
Get:14 http://ports.ubuntu.com/ubuntu-ports noble-security/restricted arm64 Packages [206 kB]
Get:15 http://ports.ubuntu.com/ubuntu-ports noble-security/restricted Translation-en [40.7 kB]
Get:16 http://ports.ubuntu.com/ubuntu-ports noble-security/restricted arm64 Components [212 B]
Get:17 http://ports.ubuntu.com/ubuntu-ports noble-security/restricted arm64 c-n-f Metadata [372 B]
Get:18 http://ports.ubuntu.com/ubuntu-ports noble-security/multiverse arm64 Packages [10.1 kB]
Get:19 http://ports.ubuntu.com/ubuntu-ports noble-security/multiverse Translation-en [2808 B]
Get:20 http://ports.ubuntu.com/ubuntu-ports noble-security/multiverse arm64 Components [212 B]
Get:21 http://ports.ubuntu.com/ubuntu-ports noble-security/multiverse arm64 c-n-f Metadata [344 B]
Get:22 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble/universe Translation-en [5982 kB]
Get:23 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble/universe arm64 Components [3573 kB]
Get:24 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble/universe arm64 c-n-f Metadata [295 kB]
Get:25 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble/multiverse arm64 Packages [223 kB]
Get:26 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble/multiverse Translation-en [118 kB]
Get:27 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble/multiverse arm64 Components [31.6 kB]
Get:28 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble/multiverse arm64 c-n-f Metadata [7152 B]
Get:29 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-updates/main arm64 Packages [334 kB]
Get:30 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-updates/main Translation-en [86.2 kB]
Get:31 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-updates/main arm64 c-n-f Metadata [5720 B]
Get:32 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-updates/universe arm64 Packages [315 kB]
Get:33 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-updates/universe Translation-en [135 kB]
Get:34 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-updates/universe arm64 Components [45.0 kB]
Get:35 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-updates/universe arm64 c-n-f Metadata [12.5 kB]
Get:36 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-updates/restricted arm64 Packages [237 kB]
Get:37 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-updates/restricted Translation-en [46.4 kB]
Get:38 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-updates/restricted arm64 c-n-f Metadata [368 B]
Get:39 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-updates/multiverse arm64 Packages [10.1 kB]
Get:40 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-updates/multiverse Translation-en [3608 B]
Get:41 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-updates/multiverse arm64 Components [212 B]
Get:42 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-updates/multiverse arm64 c-n-f Metadata [340 B]
Get:43 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-backports/main arm64 Components [208 B]
Get:44 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-backports/main arm64 c-n-f Metadata [112 B]
Get:45 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-backports/universe arm64 Packages [10.3 kB]
Get:46 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-backports/universe Translation-en [10.5 kB]
Get:47 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-backports/universe arm64 Components [17.7 kB]
Get:48 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-backports/universe arm64 c-n-f Metadata [1020 B]
Get:49 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-backports/restricted arm64 Components [216 B]
Get:50 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-backports/restricted arm64 c-n-f Metadata [116 B]
Get:51 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-backports/multiverse arm64 Components [212 B]
Get:52 http://us-east-1.ec2.ports.ubuntu.com/ubuntu-ports noble-backports/multiverse arm64 c-n-f Metadata [116 B]
Fetched 28.2 MB in 13s (2122 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
47 packages can be upgraded. Run 'apt list --upgradable' to see them.
```

```
ubuntu@ip-172-31-26-195:~$ uname -a
Linux ip-172-31-26-195 6.8.0-1009-aws #9-Ubuntu SMP Fri May 17 20:15:49 UTC 2024 aarch64 aarch64 aarch64 GNU/Linux
ubuntu@ip-172-31-26-195:~$
```

```
ubuntu@ip-172-31-26-195:~$ df --help
Usage: df [OPTION]... [FILE]...
Show information about the file system on which each FILE resides,
or all file systems by default.

Mandatory arguments to long options are mandatory for short options too.
  -a, --all             include pseudo, duplicate, inaccessible file systems
  -B, --block-size=SIZE  scale sizes by SIZE before printing them; e.g.,
                           '-BM' prints sizes in units of 1,048,576 bytes;
                           see SIZE format below
  -h, --human-readable  print sizes in powers of 1024 (e.g., 1023M)
  -H, --si              print sizes in powers of 1000 (e.g., 1.1G)
  -i, --inodes          list inode information instead of block usage
  -k                    like --block-size=1K
  -l, --local           limit listing to local file systems
      --no-sync         do not invoke sync before getting usage info (default)
      --output[=FIELD_LIST]  use the output format defined by FIELD_LIST,
                               or print all fields if FIELD_LIST is omitted.
  -P, --portability     use the POSIX output format
      --sync            invoke sync before getting usage info
      --total           elide all entries insignificant to available space,
                          and produce a grand total
  -t, --type=TYPE       limit listing to file systems of type TYPE
  -T, --print-type      print file system type
  -x, --exclude-type=TYPE   limit listing to file systems not of type TYPE
  -v                    (ignored)
      --help        display this help and exit
      --version     output version information and exit

Display values are in units of the first available SIZE from --block-size,
and the DF_BLOCK_SIZE, BLOCK_SIZE and BLOCKSIZE environment variables.
Otherwise, units default to 1024 bytes (or 512 if POSIXLY_CORRECT is set).
```

```
Display values are in units of the first available SIZE from --block-size,
and the DF_BLOCK_SIZE, BLOCK_SIZE and BLOCKSIZE environment variables.
Otherwise, units default to 1024 bytes (or 512 if POSIXLY_CORRECT is set).

The SIZE argument is an integer and optional unit (example: 10K is 10*1024).
Units are K,M,G,T,P,E,Z,Y,R,Q (powers of 1024) or KB,MB,... (powers of 1000).
Binary prefixes can be used, too: KiB=K, MiB=M, and so on.

FIELD_LIST is a comma-separated list of columns to be included.  Valid
field names are: 'source', 'fstype', 'itotal', 'iused', 'iavail', 'ipcent',
'size', 'used', 'avail', 'pcent', 'file' and 'target' (see info page).

GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
Report any translation bugs to <https://translationproject.org/team/>
Full documentation <https://www.gnu.org/software/coreutils/df>
or available locally via: info '(coreutils) df invocation'
```

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```
ubuntu@ip-172-31-26-195:~$ mkdir test
ubuntu@ip-172-31-26-195:~$ ls
test
ubuntu@ip-172-31-26-195:~$ cd test
ubuntu@ip-172-31-26-195:~/test$ touch file1
ubuntu@ip-172-31-26-195:~/test$ ls
file1
ubuntu@ip-172-31-26-195:~/test$ touch file2 file3
ubuntu@ip-172-31-26-195:~/test$ ls
file1  file2  file3
ubuntu@ip-172-31-26-195:~/test$ rm file1
ubuntu@ip-172-31-26-195:~/test$ ls
file2  file3
ubuntu@ip-172-31-26-195:~/test$ rm file*
ubuntu@ip-172-31-26-195:~/test$ ls
ubuntu@ip-172-31-26-195:~/test$ cd
```

```
ubuntu@ip-172-31-26-195:~$ ls
test
ubuntu@ip-172-31-26-195:~$ rmdir test
ubuntu@ip-172-31-26-195:~$ ls
ubuntu@ip-172-31-26-195:~$ mkdir test1 test2 test3
ubuntu@ip-172-31-26-195:~$ ls
test1  test2  test3
ubuntu@ip-172-31-26-195:~$ rmdir test*
ubuntu@ip-172-31-26-195:~$ ls
ubuntu@ip-172-31-26-195:~$ history
```

```
ubuntu@ip-172-31-26-195:~$ df
Filesystem      1K-blocks    Used Available Use% Mounted on
/dev/root         7034376 1831888   5186104  27% /
tmpfs              212128       0    212128   0% /dev/shm
tmpfs               84852    1040     83812   2% /run
tmpfs                5120       0      5120   0% /run/lock
efivarfs              128       4       125   3% /sys/firmware/efi/efivars
/dev/nvme0n1p16    911580   57648    790292   7% /boot
/dev/nvme0n1p15     99791    6475     93317   7% /boot/efi
tmpfs               42424      12     42412   1% /run/user/1000
```

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```
ubuntu@ip-172-31-26-195:~$ history
    1  sudo -l
    2  apt update
    3  sudo apt update
    4  mkdir test
    5  ls
    6  cd test
    7  touch file1
    8  ls
    9  touch file2 file3
   10  ls
   11  rm file1
   12  ls
   13  rm file*
   14  ls
   15  cd
   16  ls
   17  rmdir test
   18  mkdir test1 test2 test3
   19  ls
   20  rmdir test*
   21  ls
   22  history
   23  top
   24  vmstat
   25  df
   26  whatis df
   27  df --help
   28  uname -a
   29  ls
   30  mkdir test
   31  ls
   32  rmdir test
   33  ls
   34  mkdir test1 test2 test3
   35  ls
   36  rmdir test*
   37  ls
   38  history
ubuntu@ip-172-31-26-195:~$
```

```
ubuntu@ip-172-31-26-195:~$ vmstat
procs -----------memory---------- ---swap-- -----io---- -system-- -------cpu-------
 r  b   swpd   free   buff  cache   si   so    bi    bo   in   cs us sy id wa st gu
 2  0      0  36688   3180 128208    0    0   193   137   43    0  0  0 99  0  0  0
```

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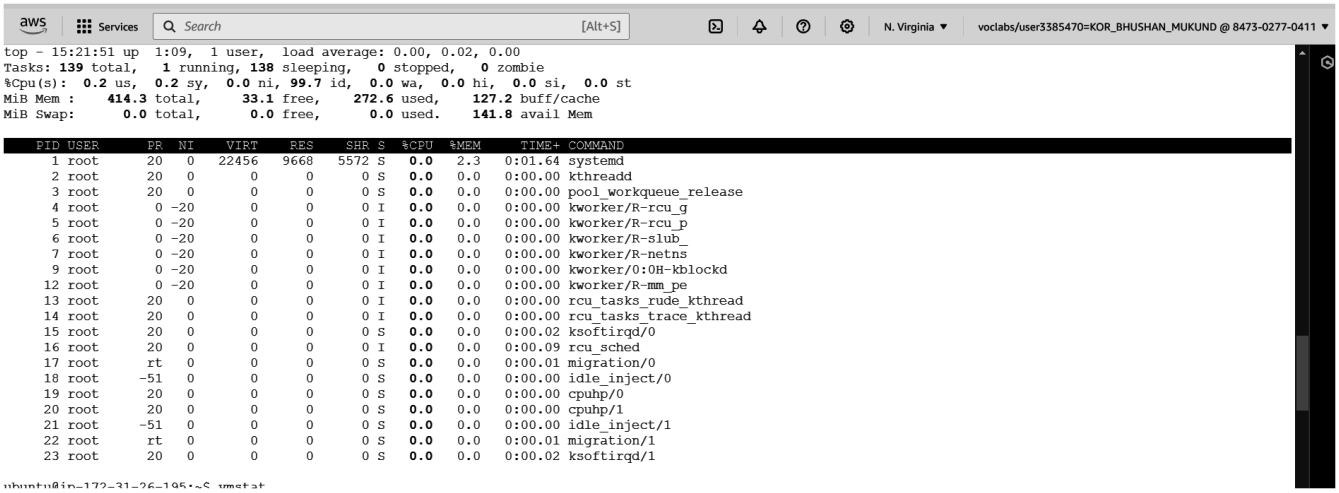

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Division: D15C **Roll No: 28**

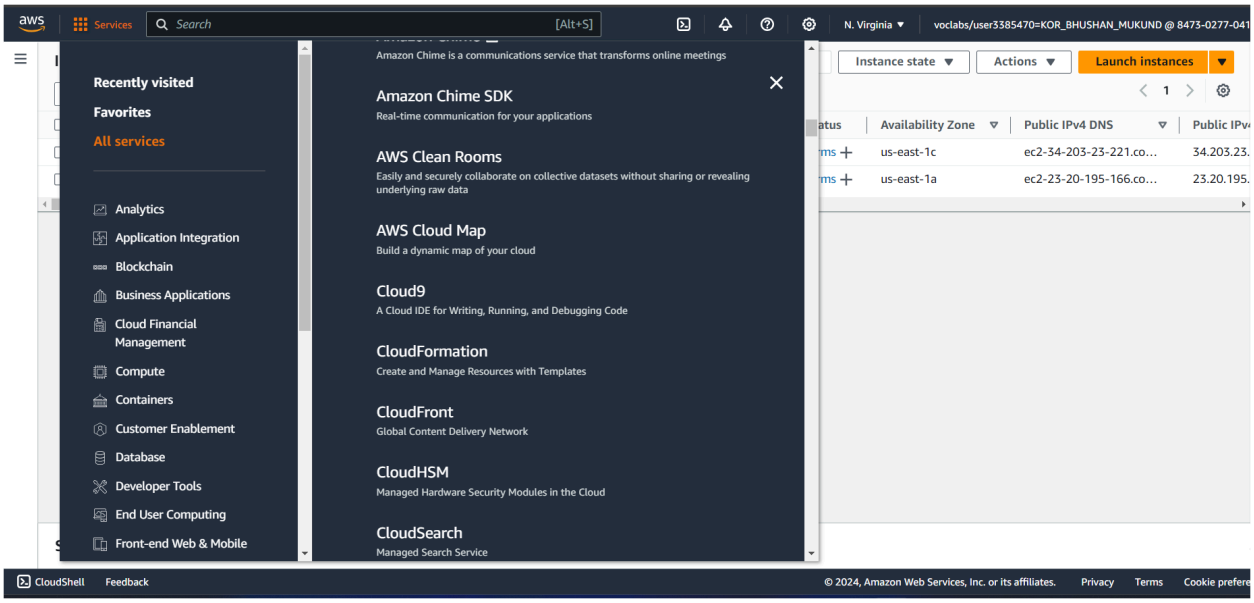
B)Cloud 9 and Cloud 9 IDE

Cloud 9 and Cloud 9 IDE

Cloud 9 is a popular term in English meaning extreme happiness or euphoria. It has no technical association with development tools.

Cloud 9 IDE, on the other hand, is an online integrated development environment (IDE) that allows developers to write, run, and debug code in various programming languages directly in the cloud. It was originally an independent product but is now part of Amazon Web Services (AWS).

Step 1: Select Cloud 9 from services in AWS.



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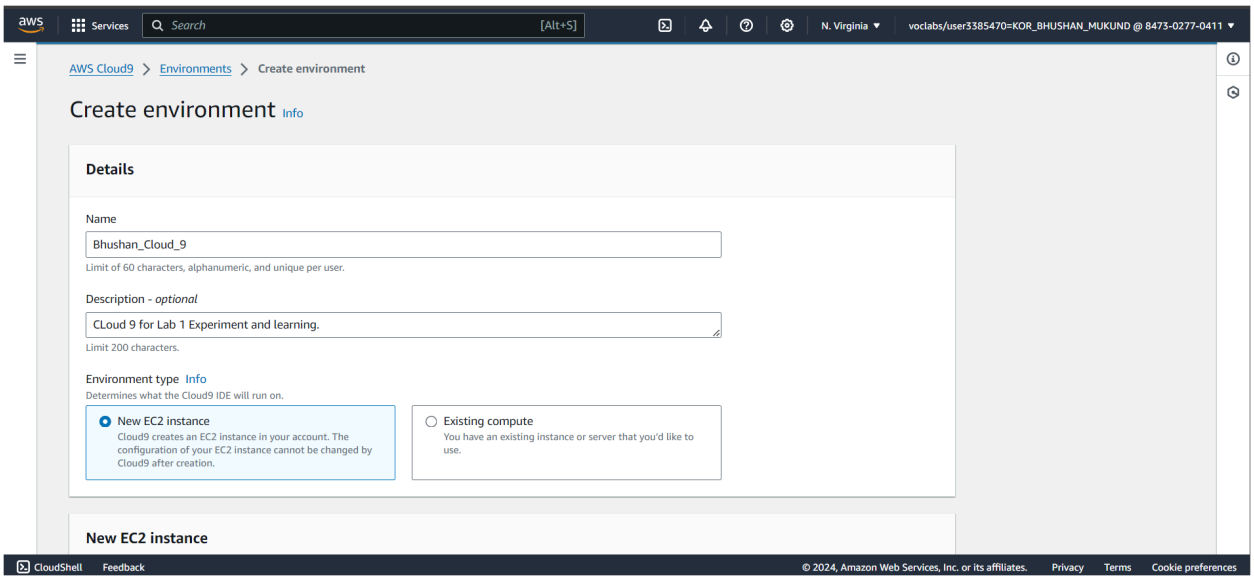
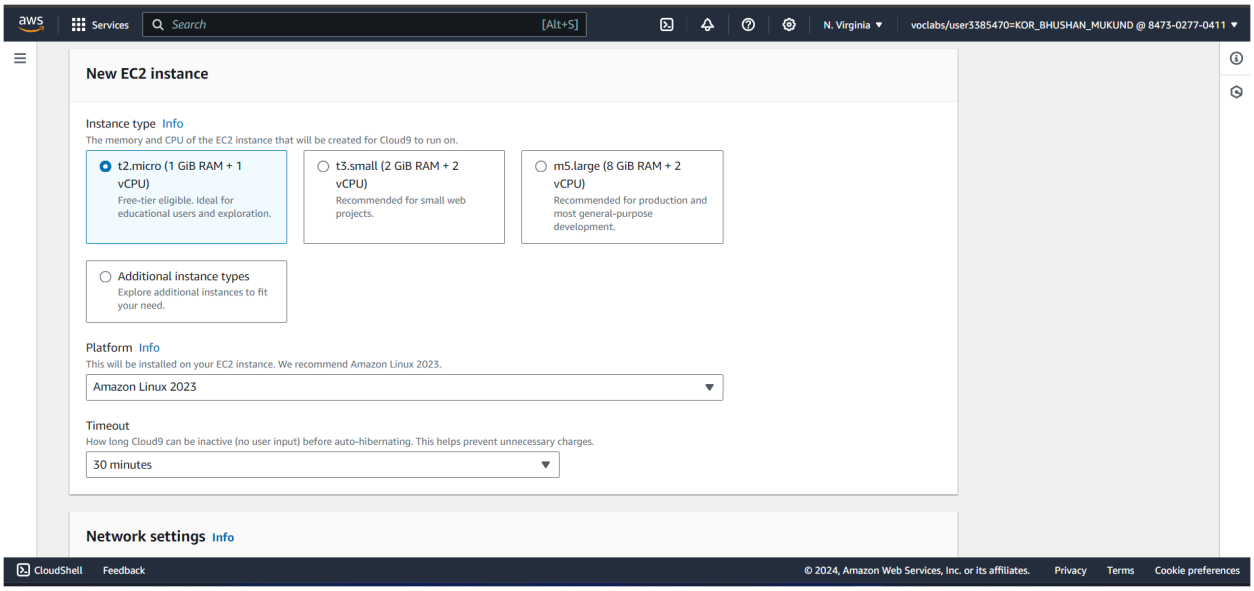
Step 2: Now Click on Create Environment and give name to your environment and select new EC2 instance option.



Step 3: Keep other things by default then select platform as Amazon Linux 2023 or latest and time 30 minutes.



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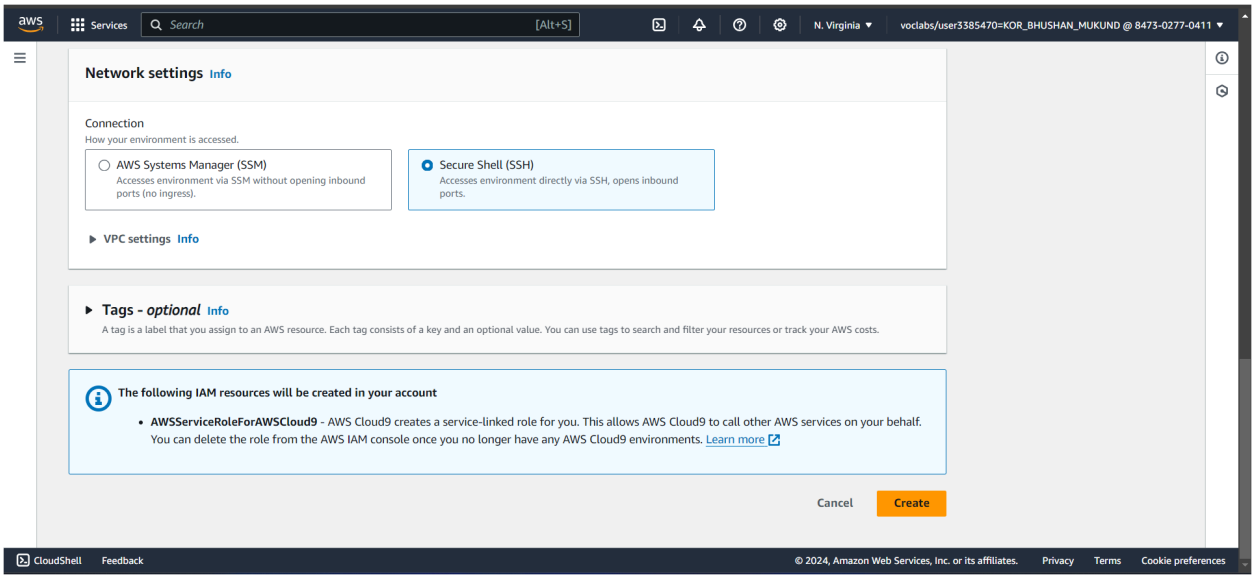
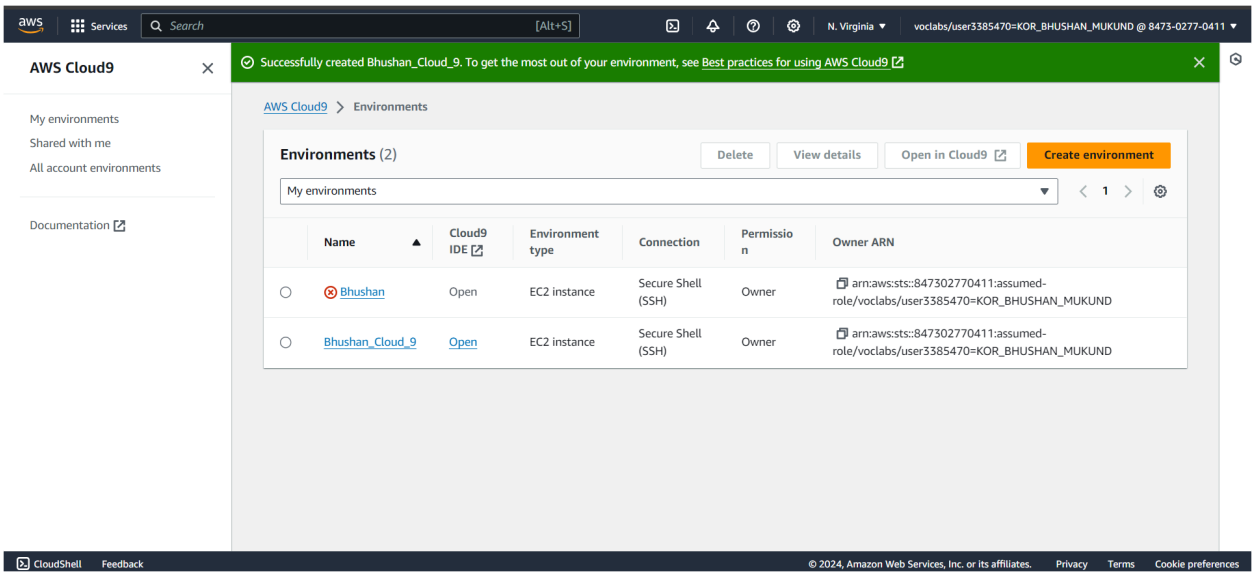
Step 4: Select Secure Shell (SSH) and click on Create.



Step 5: Now It will create the environment after that open it.



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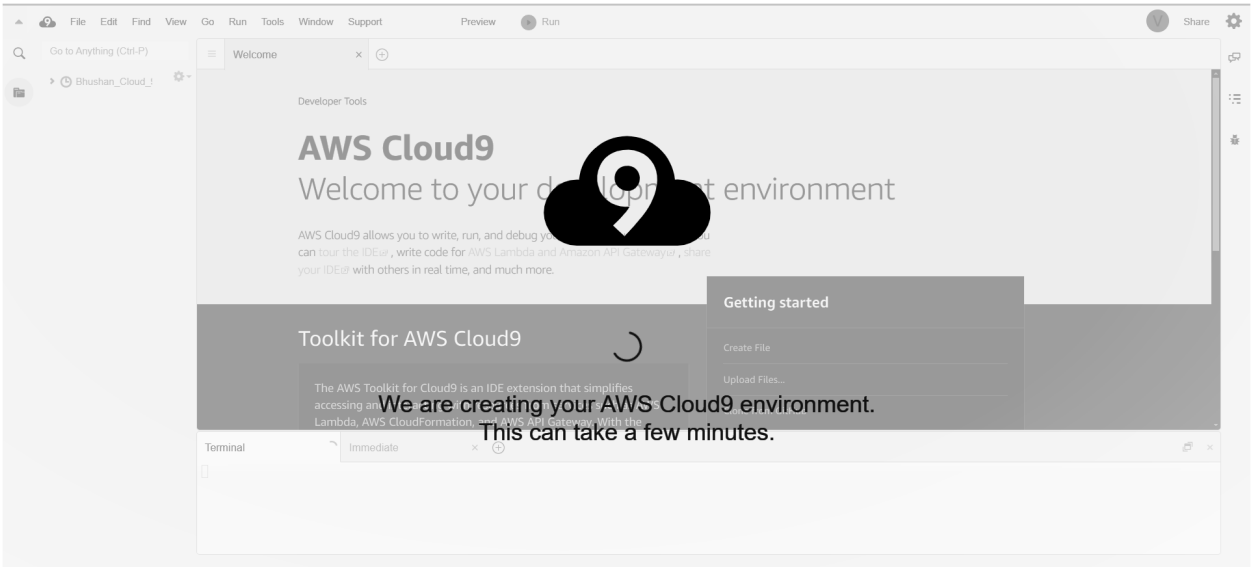
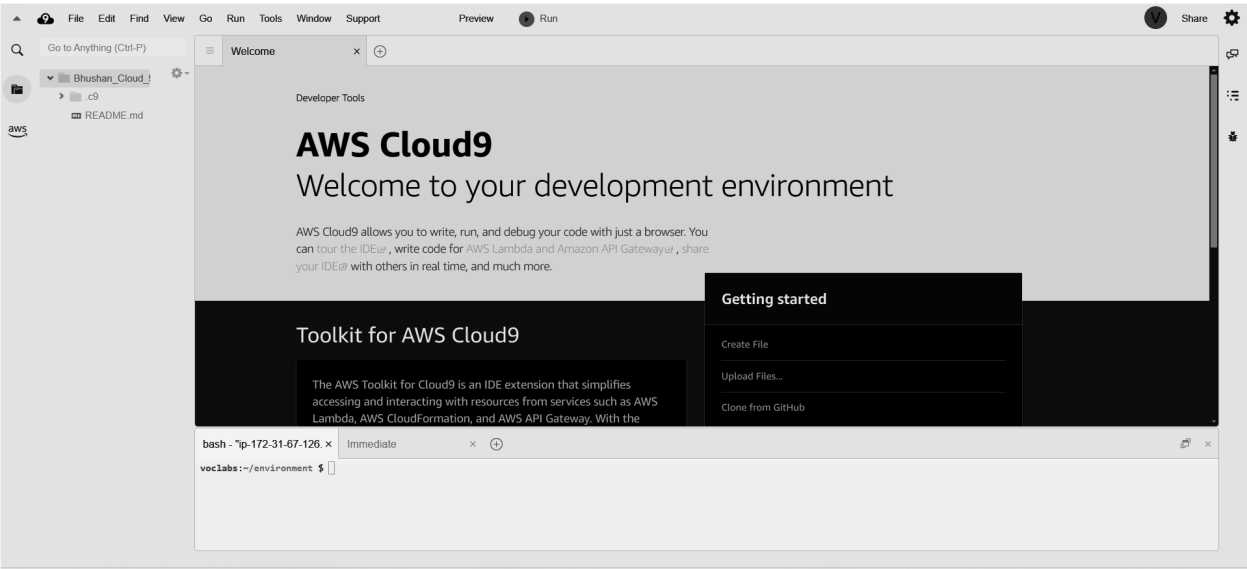
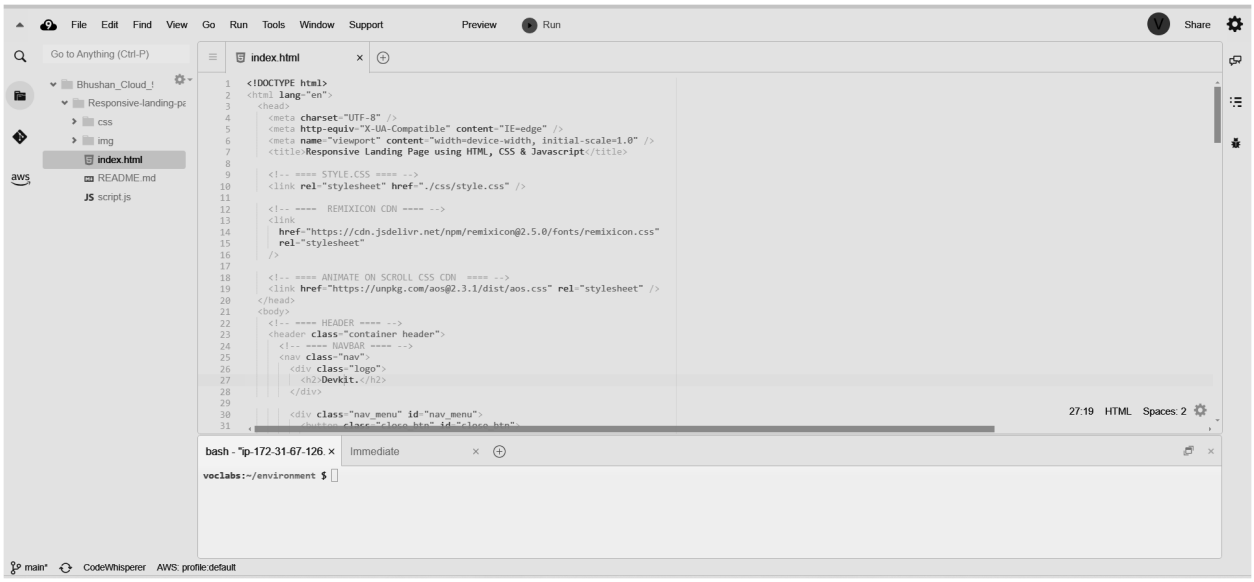


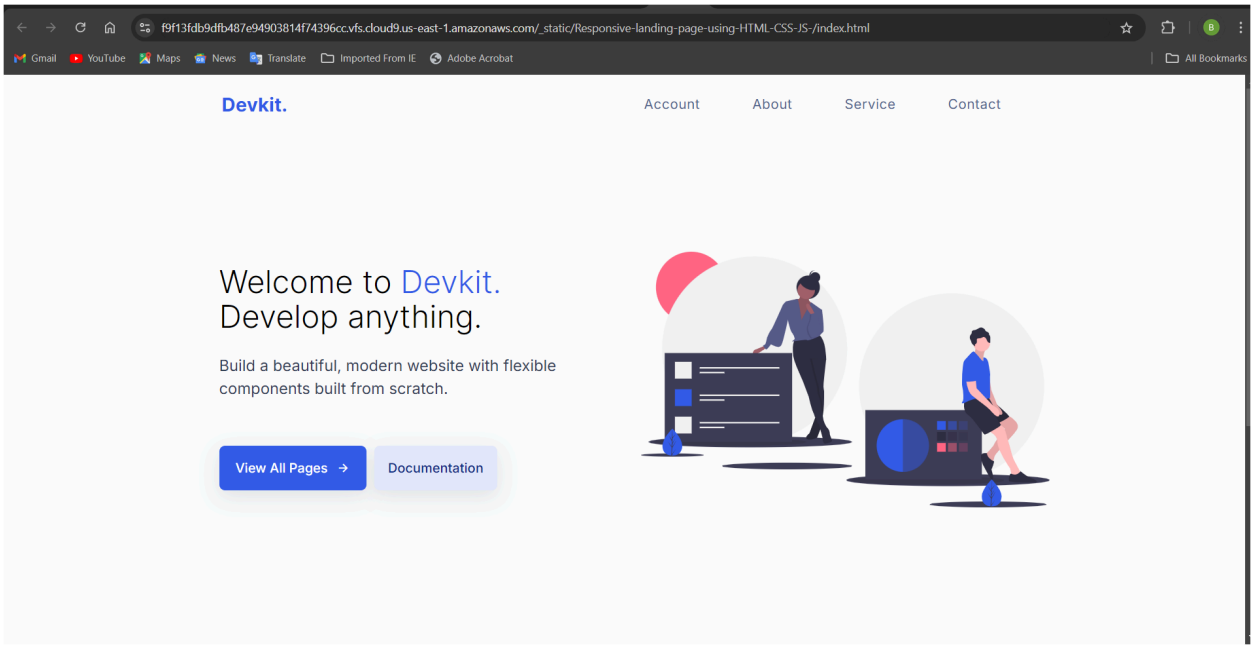


Name:Bhushan Mukund Kor **Academic Year:2024-2025**

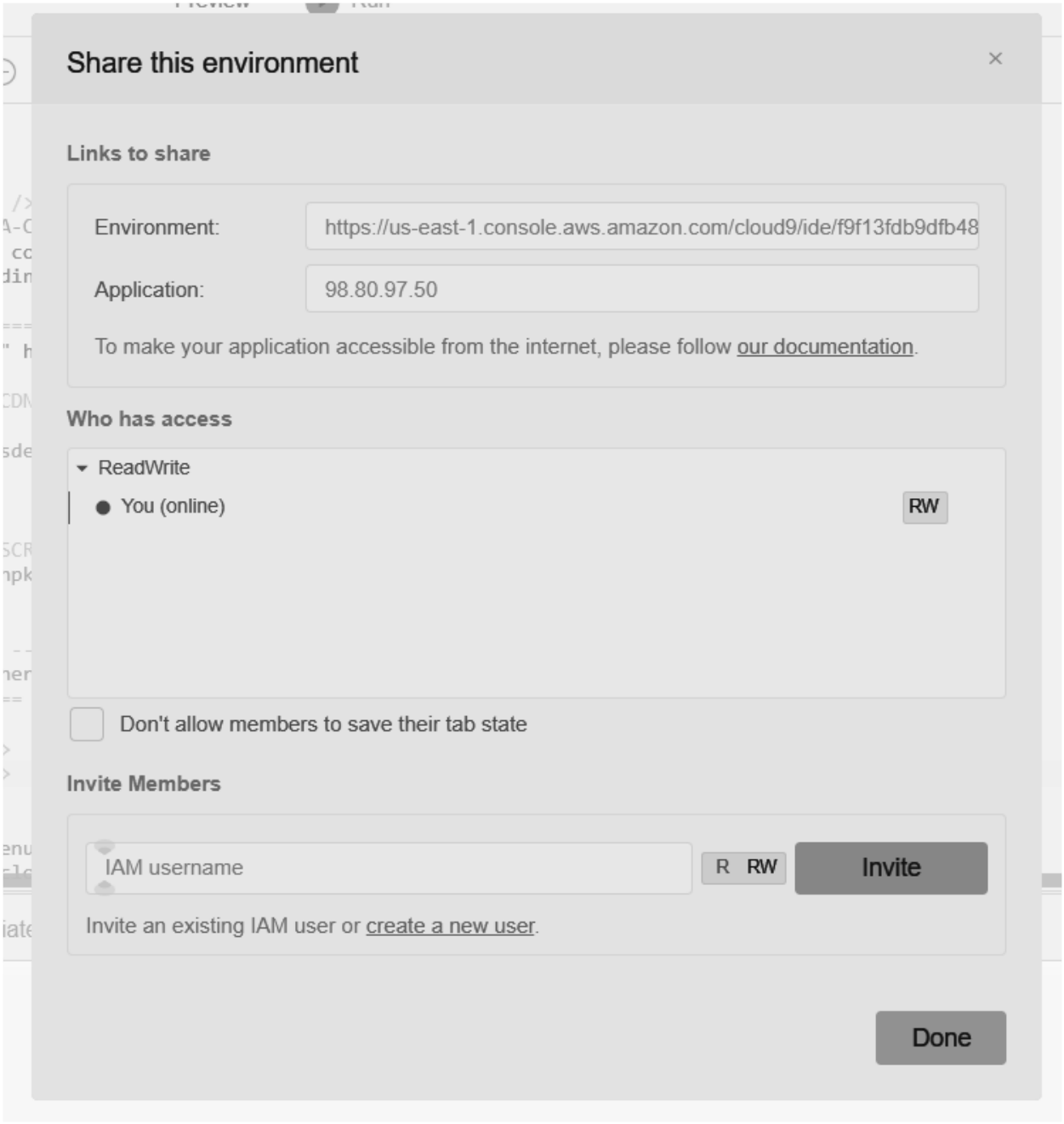
Division: D15C **Roll No: 28**

Step 6: Add some files or create some files and see the preview of it. Here we have created an index.html file.





Step 7: Now lets share the file with IAM users.



Step 8: Note That sharing is not possible as we are using AWS academy account in which we do not have access to the IAM policies. And Also 2nd Important thing to note that is AWS has closed Cloud 9 for those who have created their AWS account after 25 Jul 2024. Instead of Cloud 9 AWS has alternative as AWS IDE Toolkits and AWS cloudshell.