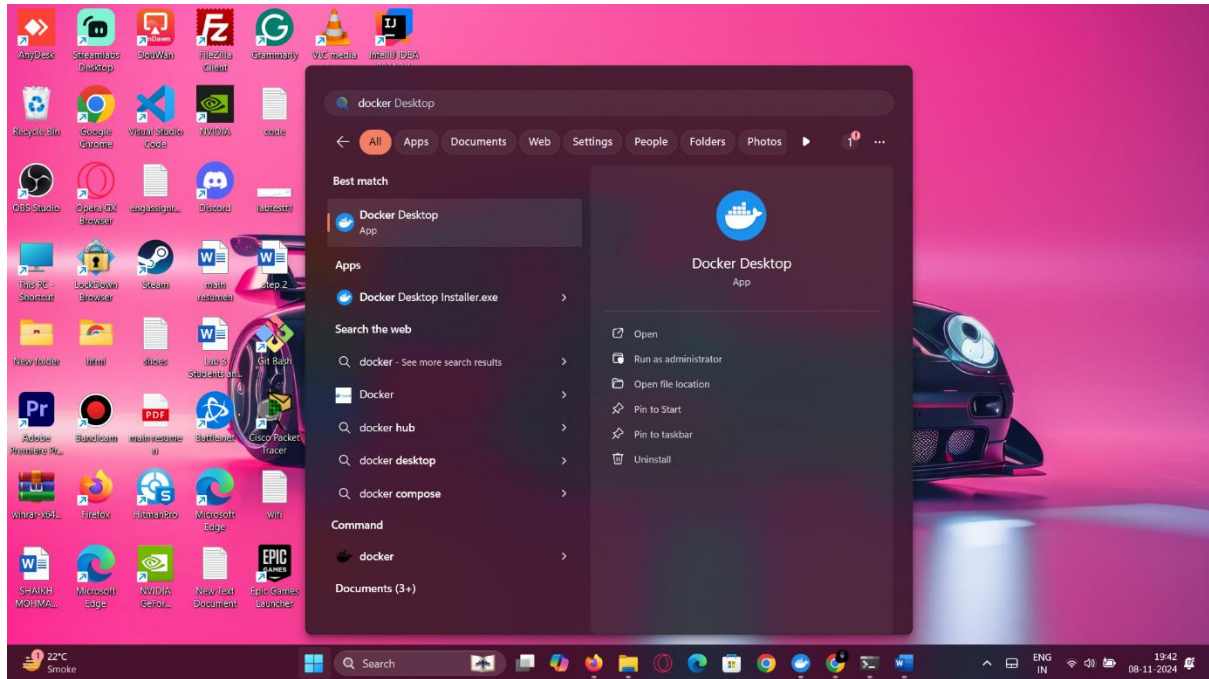
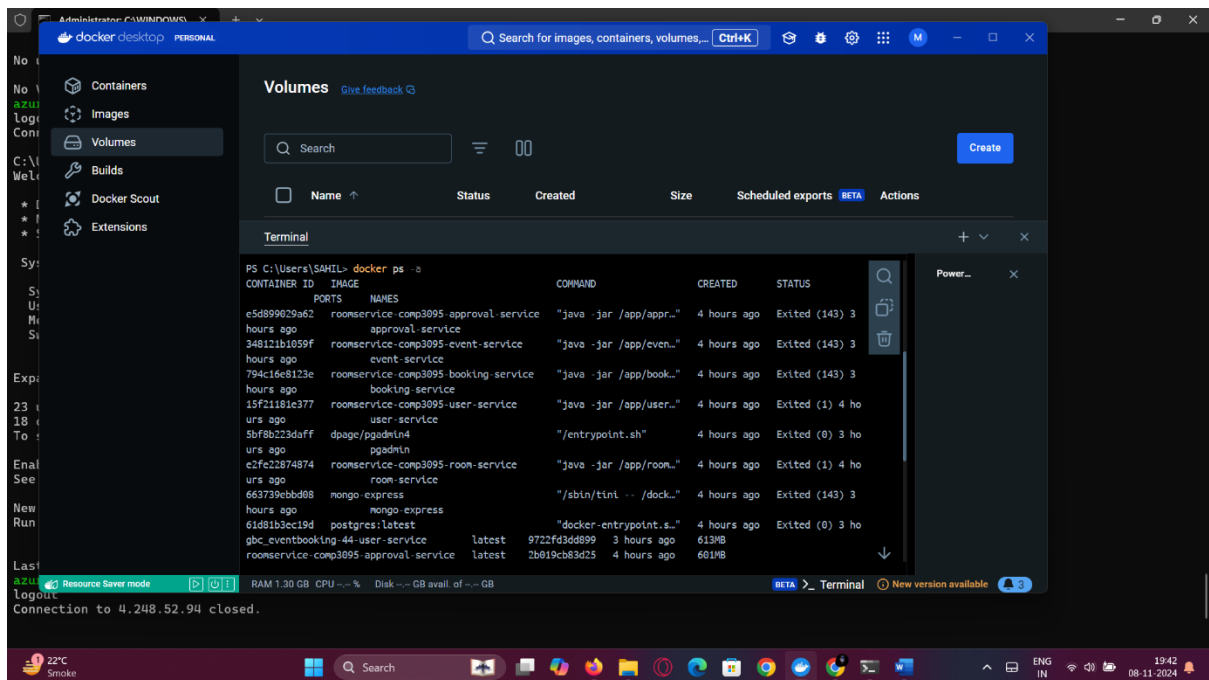


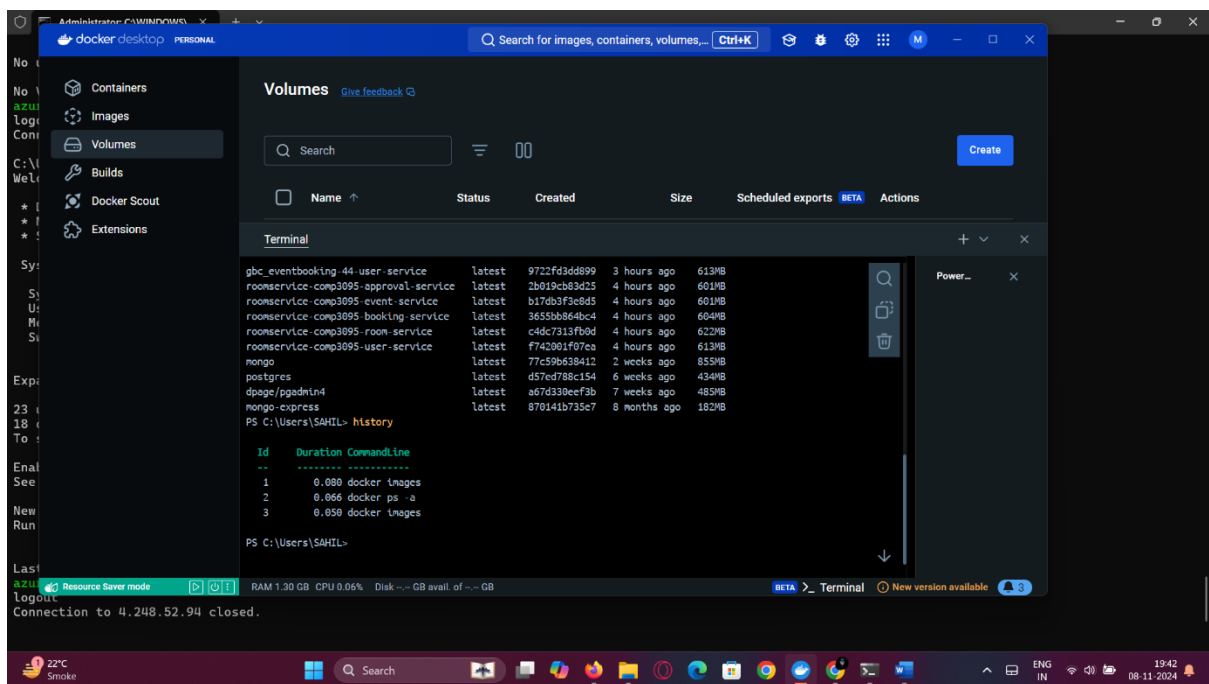
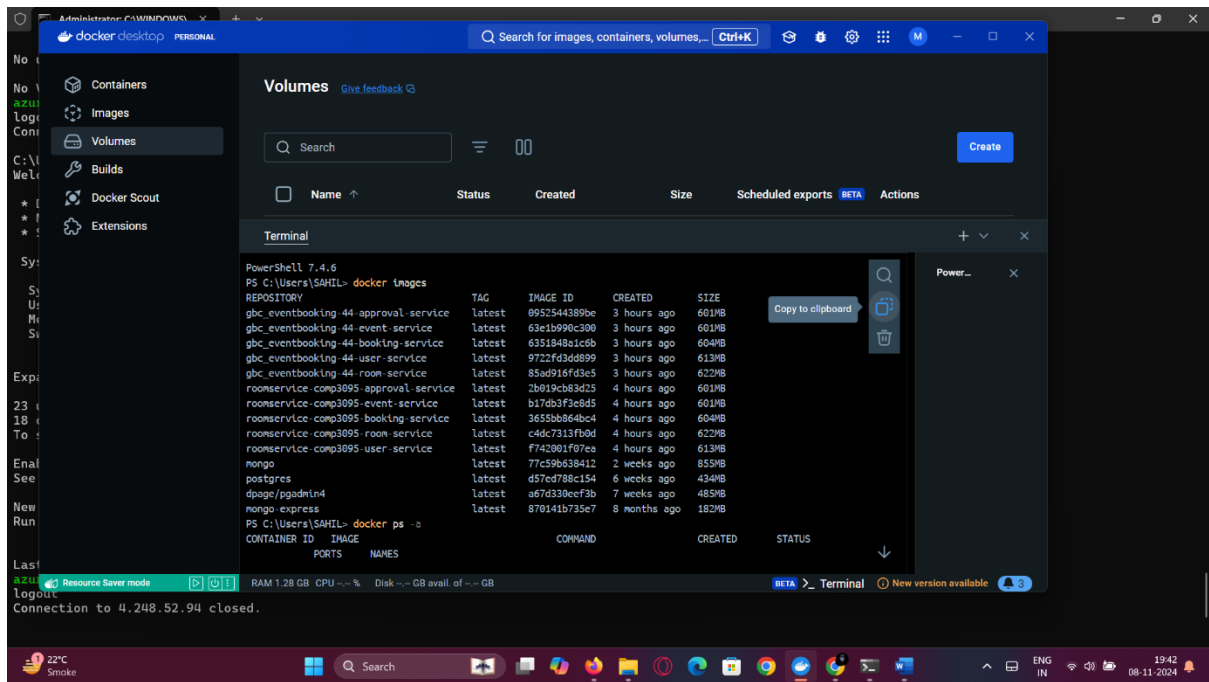
101413469

## Docker on machine:



## Docker Commands:





## Creating Virtual Machine on MS Azure:

The screenshot shows the Microsoft Azure portal interface. The main navigation pane on the left includes sections like Overview, Activity log, Access control (IAM), Tags, and Connect. The 'Connect' section is selected, showing options for Bastion, Networking, Settings, Availability + scale, Security, Backup + disaster recovery, Operations, Monitoring, and Automation. The main content area displays the 'comp3104-Devops' virtual machine details, including its public IP address (4.248.52.94) and connection options. The 'Native SSH' panel is open, providing a step-by-step guide for connecting to the VM from a local machine. The steps include configuring prerequisites, opening a local shell, and executing the SSH command.

## Install Java on the VM:

```
Administrator: C:\WINDOWS\
Adding debian:Izenpe.com.pem
Adding debian:Amazon_Root_CA_4.pem
Adding debian:Hongkong_Post_Root_CA_3.pem
Adding debian:Certum_Trusted_Root_CA.pem
Adding debian:Trustwave_Global_ECC_P256_Certification_Authority.pem
Adding debian:Entrust_Root_Certification_Authority.pem
Adding debian:certSIGN_Root_CA_G2.pem
Adding debian:AffirmTrust_Premium_ECC.pem
Adding debian:NetLock_Arany_=Class_Gold=_Főtanúsítvány.pem
Adding debian:CommsScope_Public_Trust_ECC_Root-01.pem
Adding debian:AffirmTrust_Commercial.pem
Adding debian:Certum_Trusted_Network_CA.pem
Adding debian:DigiCert_Global_Root_CA.pem
Adding debian:CommsScope_Public_Trust_ECC_Root-02.pem
Adding debian:Atos_TrustedRoot_Root_CA_ECC_TLS_2021.pem
Adding debian:Comodo_AAA_Services_root.pem
Adding debian:CFCA_EV_ROOT.pem
Adding debian:SSL.com_Root_Certification_Authority_ECC.pem
Adding debian:TunTrust_Root_CA.pem
Adding debian:DigiCert_TLS_ECC_P384_Root_G5.pem
Adding debian:ACCVRAIZ1.pem
Adding debian:GlobalSign_Root_CA_-_R6.pem
Adding debian:HARICA_TLS_ECC_Root_CA_2021.pem
Adding debian:Microsec_e-Szigno_Root_CA_2009.pem
Adding debian:SecureTrust_CA.pem
Adding debian:ePKI_Root_Certification_Authority.pem
Adding debian:certSIGN_Root_CA.pem
Adding debian:SSL.com_Root_Certification_Authority_RSA.pem
Adding debian:Buypass_Class_2_Root_CA.pem
Adding debian:Sectigo_Public_Server_Authentication_Root_E46.pem
Adding debian:COMODO_RSA_Certification_Authority.pem
Adding debian:OISTE_WISEKey_Global_Root_GB_CA.pem
Adding debian:TWCA_Global_Root_CA.pem
Adding debian:Entrust_Root_Certification_Authority_-_G4.pem
Adding debian:Sectigo_Public_Server_Authentication_Root_R46.pem
Adding debian:GTS_Root_R2.pem
Adding debian:QuoVadis_Root_CA_2.pem
Adding debian:TrustAsia_Global_Root_CA_G4.pem
Adding debian:T-TeleSec_GlobalRoot_Class_3.pem
Adding debian:SZAFIR_ROOT_CA2.pem
Adding debian:B3CA_Global_Root_CA2.pem
```

```
Administrator: C:\WINDOWS\
Selecting previously unselected package libjpeg8:amd64.
Preparing to unpack .../14-libjpeg8-8c-2ubuntu10_amd64.deb ...
Unpacking libjpeg8:amd64 (8c-2ubuntu10) ...
Selecting previously unselected package libgraphite2-3:amd64.
Preparing to unpack .../15-libgraphite2-3.1.3-14-1build2_amd64.deb ...
Unpacking libgraphite2-3:amd64 (1.3.14-1build2) ...
Selecting previously unselected package libharfbuzz0b:amd64.
Preparing to unpack .../16-libharfbuzz0b-2.7.4-1ubuntu3.1_amd64.deb ...
Unpacking libharfbuzz0b:amd64 (2.7.4-1ubuntu3.1) ...
Selecting previously unselected package libpcsclite1:amd64.
Preparing to unpack .../17-libpcsclite1-1.9.5-3ubuntu1_amd64.deb ...
Unpacking libpcsclite1:amd64 (1.9.5-3ubuntu1) ...
Selecting previously unselected package openjdk-17-jre-headless:amd64.
Preparing to unpack .../18-openjdk-17-jre-headless-17.0.12+7-1ubuntu2~22.04_amd64.deb ...
Unpacking openjdk-17-jre-headless:amd64 (17.0.12+7-1ubuntu2~22.04) ...
Selecting previously unselected package ca-certificates-java.
Preparing to unpack .../19-ca-certificates-java_20190909ubuntu1.2_all.deb ...
Unpacking ca-certificates-java (20190909ubuntu1.2) ...
Setting up libgraphite2-3:amd64 (1.3.14-1build2) ...
Setting up liblcms2-2:amd64 (2.12-rc1-2build2) ...
Setting up java-common (0.72build2) ...
Setting up libasound2-data (1.2.6.1-1ubuntu1) ...
Setting up libavahi-common-data:amd64 (0.8-5ubuntu5.2) ...
Setting up fonts-dejavu-core (2.37-2build1) ...
Setting up libpcsclite1:amd64 (1.9.5-3ubuntu1) ...
Setting up libjpeg-turbo8:amd64 (2.1.2-0ubuntu1) ...
Setting up alsa-topology-conf (1.2.5.1-2) ...
Setting up libasound2:amd64 (1.2.6.1-1ubuntu1) ...
Setting up libharfbuzz0b:amd64 (2.7.4-1ubuntu3.1) ...
Setting up libjpeg8:amd64 (8c-2ubuntu10) ...
Setting up alsa-ucm-conf (1.2.6.3-1ubuntu1.11) ...
Setting up fontconfig-config (2.13.1-4.2ubuntu5) ...
Setting up libavahi-common3:amd64 (0.8-5ubuntu5.2) ...
Setting up libfontconfig1:amd64 (2.13.1-4.2ubuntu5) ...
Setting up libavahi-client3:amd64 (0.8-5ubuntu5.2) ...
Setting up libcups2:amd64 (2.4.10p1-1ubuntu4.11) ...
Setting up ca-certificates-java (20190909ubuntu1.2) ...
head: cannot open '/etc/ssl/certs/java/cacerts' for reading: No such file or directory
Adding debian:COMODO_Certification_Authority.pem
Adding debian:Certum_EC-384_CA.pem
Adding debian:ANF_Secure_Server_Root_CA.pem
```

```
Administrator: C:\WINDOWS\
Selecting previously unselected package alsa-topology-conf.
(Reading database ... 62126 files and directories currently installed.)
Preparing to unpack .../00-alsa-topology-conf_1.2.5.1-2_all.deb ...
Unpacking alsa-topology-conf (1.2.5.1-2) ...
Selecting previously unselected package libasound2-data.
Preparing to unpack .../01-libasound2-data_1.2.6.1-1ubuntu1_all.deb ...
Unpacking libasound2-data (1.2.6.1-1ubuntu1) ...
Selecting previously unselected package libasound2:amd64.
Preparing to unpack .../02-libasound2_1.2.6.1-1ubuntu1_amd64.deb ...
Unpacking libasound2:amd64 (1.2.6.1-1ubuntu1) ...
Selecting previously unselected package alsa-ucm-conf.
Preparing to unpack .../03-alsa-ucm-conf_1.2.6.3-1ubuntu1.11_all.deb ...
Unpacking alsa-ucm-conf (1.2.6.3-1ubuntu1.11) ...
Selecting previously unselected package java-common.
Preparing to unpack .../04-java-common_0.72build2_all.deb ...
Unpacking java-common (0.72build2) ...
Selecting previously unselected package libavahi-common-data:amd64.
Preparing to unpack .../05-libavahi-common-data_0.8-5ubuntu5.2_amd64.deb ...
Unpacking libavahi-common-data:amd64 (0.8-5ubuntu5.2) ...
Selecting previously unselected package libavahi-common3:amd64.
Preparing to unpack .../06-libavahi-common3_0.8-5ubuntu5.2_amd64.deb ...
Unpacking libavahi-common3:amd64 (0.8-5ubuntu5.2) ...
Selecting previously unselected package libavahi-client3:amd64.
Preparing to unpack .../07-libavahi-client3_0.8-5ubuntu5.2_amd64.deb ...
Unpacking libavahi-client3:amd64 (0.8-5ubuntu5.2) ...
Selecting previously unselected package libcups2:amd64.
Preparing to unpack .../08-libcups2_2.4.10p1-1ubuntu4.11_amd64.deb ...
Unpacking libcups2:amd64 (2.4.10p1-1ubuntu4.11) ...
Selecting previously unselected package fonts-dejavu-core.
Preparing to unpack .../09-fonts-dejavu-core_2.37-2build1_all.deb ...
Unpacking fonts-dejavu-core (2.37-2build1) ...
Selecting previously unselected package fontconfig-config.
Preparing to unpack .../10-fontconfig-config_2.13.1-4.2ubuntu5_all.deb ...
Unpacking fontconfig-config (2.13.1-4.2ubuntu5) ...
Selecting previously unselected package libfontconfig1:amd64.
Preparing to unpack .../11-libfontconfig1_2.13.1-4.2ubuntu5_amd64.deb ...
Unpacking libfontconfig1:amd64 (2.13.1-4.2ubuntu5) ...
Selecting previously unselected package liblcms2-2:amd64.
Preparing to unpack .../12-liblcms2-2_2.12-rc1-2build2_amd64.deb ...
Unpacking liblcms2-2:amd64 (2.12-rc1-2build2) ...
Selecting previously unselected package libjpeg-turbo8:amd64.
```

```
Administrator: C:\WINDOWS\
azureuser@comp3104-Devops:~$ sudo apt install openjdk-17-jre-headless
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  alsa-topology-conf alsa-ucm-conf ca-certificates-java fontconfig-config fonts-dejavu-core java-common libasound2
  libasound2-data libavahi-client3 libavahi-common-data libavahi-common3 libcups2 libfontconfig1 libgraphite2-3
  libharfbuzz0b libjpeg-turbo8 libjpeg8 liblcms2-2 libpcsclite1
Suggested packages:
  default-jre libasound2-plugins alsa-utils cups-common liblcms2-utils pcsd libnss-mdns fonts-dejavu-extra
  fonts-ipafont-gothic fonts-ipafont-mincho fonts-wqy-microhei | fonts-wqy-zenhei fonts-indic
The following NEW packages will be installed:
  alsa-topology-conf alsa-ucm-conf ca-certificates-java fontconfig-config fonts-dejavu-core java-common libasound2
  libasound2-data libavahi-client3 libavahi-common-data libavahi-common3 libcups2 libfontconfig1 libgraphite2-3
  libharfbuzz0b libjpeg-turbo8 libjpeg8 liblcms2-2 libpcsclite1 openjdk-17-jre-headless
0 upgraded, 20 newly installed, 0 to remove and 13 not upgraded.
Need to get 51.0 MB of archives.
After this operation, 202 MB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 alsa-topology-conf all 1.2.5.1-2 [15.5 kB]
Get:2 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 libasound2-data all 1.2.6.1-1ubuntu1 [19.1 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 libasound2 amd64 1.2.6.1-1ubuntu1 [390 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 alsa-ucm-conf all 1.2.6.3-1ubuntu1.11 [43.6 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 java-common all 0.72build2 [6782 B]
Get:6 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libavahi-common-data amd64 0.8-5ubuntu5.2 [23.8 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libavahi-common3 amd64 0.8-5ubuntu5.2 [23.9 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libavahi-client3 amd64 0.8-5ubuntu5.2 [28.0 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libcups2 amd64 2.4.1op1-1ubuntu4.11 [263 kB]
Get:10 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 fonts-dejavu-core all 2.37-2build1 [1041 kB]
Get:11 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 fontconfig-config all 2.13.1-4.2ubuntu5 [29.1 kB]
Get:12 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 libfontconfig1 amd64 2.13.1-4.2ubuntu5 [131 kB]
Get:13 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 liblcms2-2 amd64 2.12-rc1-2build2 [159 kB]
Get:14 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 libjpeg-turbo8 amd64 2.1.2-0ubuntu1 [134 kB]
Get:15 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 libjpeg8 amd64 8c-2ubuntu10 [2264 B]
Get:16 http://azure.archive.ubuntu.com/ubuntu jammy/main amd64 libgraphite2-3 amd64 1.3.14-1build2 [71.3 kB]
Get:17 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libharfbuzz0b amd64 2.7.4-1ubuntu3.1 [352 kB]
Get:18 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 libpcsclite1 amd64 1.9.5-3ubuntu1 [19.8 kB]
Get:19 http://azure.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 openjdk-17-jre-headless amd64 17.0.12+7-1ubuntu2-22.04 [48.2 MB]
Get:20 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 ca-certificates-java all 20190909ubuntu1.2 [12.1 kB]
Fetched 51.0 MB in 6s (8560 kB/s)
Selecting previously unselected package alsa-topology-conf.
```

```
Administrator: C:\WINDOWS\
No user sessions are running outdated binaries.
No VM guests are running outdated hypervisor (qemu) binaries on this host.
azureuser@comp3104-Devops:~$ exit
logout
Connection to 4.248.52.94 closed.

C:\Users\SAHIL\Downloads>ssh -i comp3104-Devops_key.pem azureuser@4.248.52.94
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.5.0-1025-azure x86_64)

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

System information as of Sat Nov  9 00:39:52 UTC 2024

System load:  0.31          Processes:      118
Usage of /:   6% of 28.89GB Users logged in:  0
Memory usage: 4%           IPv4 address for eth0: 10.0.0.4
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

23 updates can be applied immediately.
18 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

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

New release '24.04.1 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Sat Nov  9 00:35:03 2024 from 142.189.140.132
azureuser@comp3104-Devops:~$ exit
logout
Connection to 4.248.52.94 closed.
```