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COMP 3104 - 15783  
101484621  
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# Assignment 02 - Part 01

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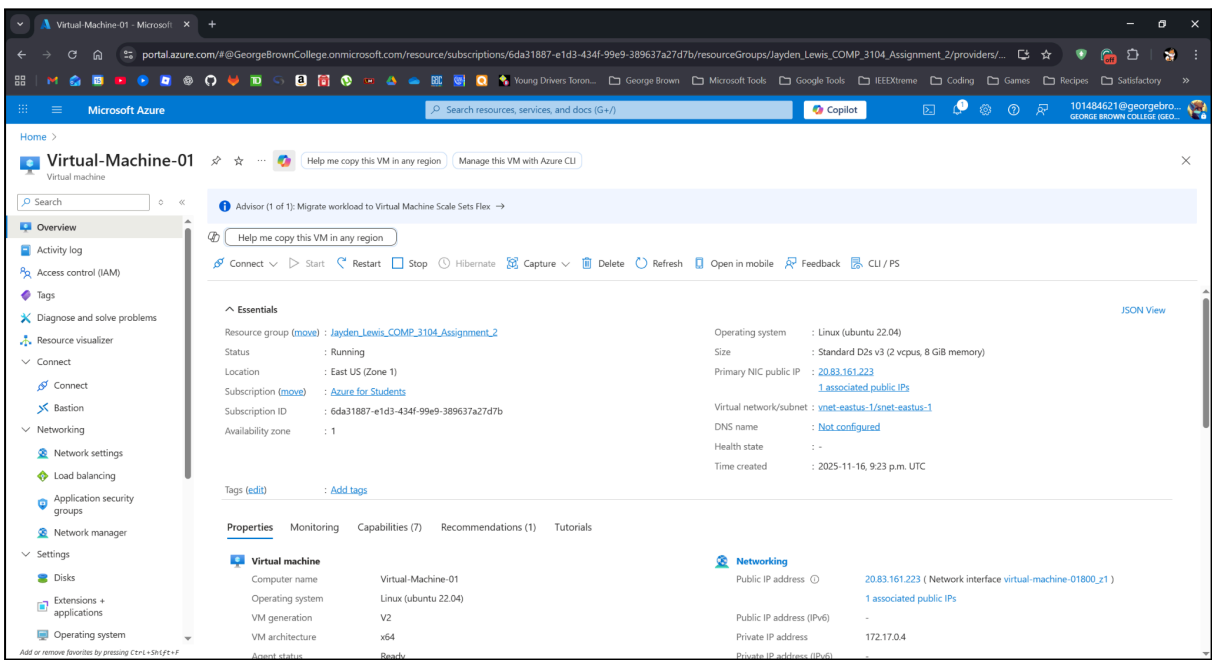
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## VM Creation Completion



## SSH Connection To VM

```
azureuser@Virtual-Machine-01: ~
PS D:\Safe_Drive\comp_3104-developer_operations\azure_keys> ssh -i 101484621-assignment-2.pem azureuser@20.83.161.223
Welcome to Ubuntu 22.04.5 LTS (GNU/Linux 6.8.0-1041-azure x86_64)

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

System information as of Sun Nov 16 21:44:46 UTC 2025

System load:  0.47          Processes:           122
Usage of /:   6.3% of 28.89GB Users logged in:        0
Memory usage: 5%          IPv4 address for eth0: 172.17.0.4
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

11 updates can be applied immediately.
10 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

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.
```

## Java Installation & Check

```
azureuser@Virtual-Machine-01: ~
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jarsigner to provide /usr/bin/jarsigner (jarsigner) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/javac to provide /usr/bin/javac (javac) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/javadoc to provide /usr/bin/javadoc (javadoc) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/javap to provide /usr/bin/javap (javap) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jcmd to provide /usr/bin/jcmd (jcmd) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jdb to provide /usr/bin/jdb (jdb) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jdeprscan to provide /usr/bin/jdeprscan (jdeprscan) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jdeps to provide /usr/bin/jdeps (jdeps) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jfr to provide /usr/bin/jfr (jfr) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jimage to provide /usr/bin/jimage (jimage) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jinfo to provide /usr/bin/jinfo (jinfo) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jlink to provide /usr/bin/jlink (jlink) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jmap to provide /usr/bin/jmap (jmap) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jmod to provide /usr/bin/jmod (jmod) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jps to provide /usr/bin/jps (jps) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jrunscript to provide /usr/bin/jrunscript (jrunscript) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jshell to provide /usr/bin/jshell (jshell) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jstack to provide /usr/bin/jstack (jstack) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jstat to provide /usr/bin/jstat (jstat) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jstatd to provide /usr/bin/jstatd (jstatd) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/serialver to provide /usr/bin/serialver (serialver) in auto mode
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jhsdb to provide /usr/bin/jhsdb (jhsdb) in auto mode
Setting up libgtk2.0-0:amd64 (2.24.33-2ubuntu2.1) ...
Setting up humanity-icon-theme (0.6.16) ...
Setting up libgail18:amd64 (2.24.33-2ubuntu2.1) ...
Setting up libgtk2.0-bin (2.24.33-2ubuntu2.1) ...
Setting up libgail-common:amd64 (2.24.33-2ubuntu2.1) ...
Setting up openjdk-17-jre:amd64 (17.0.16+8-us1-0ubuntu1~22.04.1) ...
Setting up ubuntu-mono (20.10-0ubuntu2) ...
Setting up openjdk-17-jdk:amd64 (17.0.16+8-us1-0ubuntu1~22.04.1) ...
update-alternatives: using /usr/lib/jvm/java-17-openjdk-amd64/bin/jconsole to provide /usr/bin/jconsole (jconsole) in auto mode
Processing triggers for ca-certificates (20240203~22.04.1) ...
Updating certificates in /etc/ssl/certs...
0 added, 0 removed; done.
Running hooks in /etc/ca-certificates/update.d...
done.
done.
Processing triggers for liblib2.0-0:amd64 (2.72.4-0ubuntu2.6) ...
Processing triggers for libc-bin (2.35-0ubuntu3.11) ...
Processing triggers for man-db (2.10.2-1) ...
Setting up at-spi2-core (2.44.0-3) ...
Processing triggers for libgdk-pixbuf-2.0-0:amd64 (2.42.8+dfsg-1ubuntu0.4) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
azureuser@Virtual-Machine-01: $ java -version
openjdk version "17.0.16" 2025-07-15
OpenJDK Runtime Environment (build 17.0.16+8-Ubuntu-0ubuntu122.04.1)
OpenJDK 64-Bit Server VM (build 17.0.16+8-Ubuntu-0ubuntu122.04.1, mixed mode, sharing)
azureuser@Virtual-Machine-01: $
```

# Jenkins Installation, Status Check, & Jenkins Dashboard

```
azureuser@Virtual-Machine-01: ~
azureuser@Virtual-Machine-01: $ sudo wget -O /usr/share/keyrings/jenkins-keyring.asc \
> https://pkg.jenkins.io/debian/jenkins.io-2023.key
--2025-11-16 22:01:10-- https://pkg.jenkins.io/debian/jenkins.io-2023.key
Resolving pkg.jenkins.io (pkg.jenkins.io)... 146.75.30.133, 2a04:4e42:77::645
Connecting to pkg.jenkins.io (pkg.jenkins.io)[146.75.30.133]:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 3175 (3.1K) [application/pgp-keys]
Saving to: '/usr/share/keyrings/jenkins-keyring.asc'

/usr/share/keyrings/jenkins-keyring. 100%[=====] 3.10K --.-KB/s in 0s

2025-11-16 22:01:10 (28.2 MB/s) - '/usr/share/keyrings/jenkins-keyring.asc' saved [3175/3175]

azureuser@Virtual-Machine-01: $
```

```
azureuser@Virtual-Machine-01: ~
azureuser@Virtual-Machine-01: $ echo "deb [signed-by=/usr/share/keyrings/jenkins-keyring.asc]" \
> https://pkg.jenkins.io/debian binary/ | sudo tee \
> /etc/apt/sources.list.d/jenkins.list > /dev/null
azureuser@Virtual-Machine-01: $
```

```
azureuser@Virtual-Machine-01: ~
Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease
Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease
Ign:5 https://pkg.jenkins.io/debian binary/ InRelease
Get:6 https://pkg.jenkins.io/debian binary/ Release [2044 B]
Get:7 https://pkg.jenkins.io/debian binary/ Release.gpg [833 B]
Get:8 https://pkg.jenkins.io/debian binary/ Packages [73.7 kB]
Fetched 76.6 kB in 1s (81.6 kB/s)
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
11 packages can be upgraded. Run 'apt list --upgradable' to see them.
azureuser@Virtual-Machine-01: $ sudo apt install jenkins
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  net-tools
The following NEW packages will be installed:
  jenkins net-tools
0 upgraded, 2 newly installed, 0 to remove and 11 not upgraded.
Need to get 95.9 MB of archives.
After this operation, 97.1 MB of additional disk space will be used.
Do you want to continue? [Y/n] Y
Get:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates/main amd64 net-tools amd64 1.60+git20181103.0eebece-1ubuntu5.4 [204 kB]
Get:1 https://pkg.jenkins.io/debian binary/ jenkins 2.536 [95.7 MB]
Fetched 95.9 MB in 2s (39.9 MB/s)
Selecting previously unselected package net-tools.
(Reading database ... 79169 files and directories currently installed.)
Preparing to unpack .../net-tools_1.60+git20181103.0eebece-1ubuntu5.4_amd64.deb ...
Unpacking net-tools (1.60+git20181103.0eebece-1ubuntu5.4) ...
Selecting previously unselected package jenkins.
Preparing to unpack .../archives/jenkins_2.536_all.deb ...
Unpacking jenkins (2.536) ...
Setting up net-tools (1.60+git20181103.0eebece-1ubuntu5.4) ...
Setting up jenkins (2.536) ...
Created symlink /etc/systemd/system/multi-user.target.wants/jenkins.service → /lib/systemd/system/jenkins.service.
Processing triggers for man-db (2.10.2-1) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

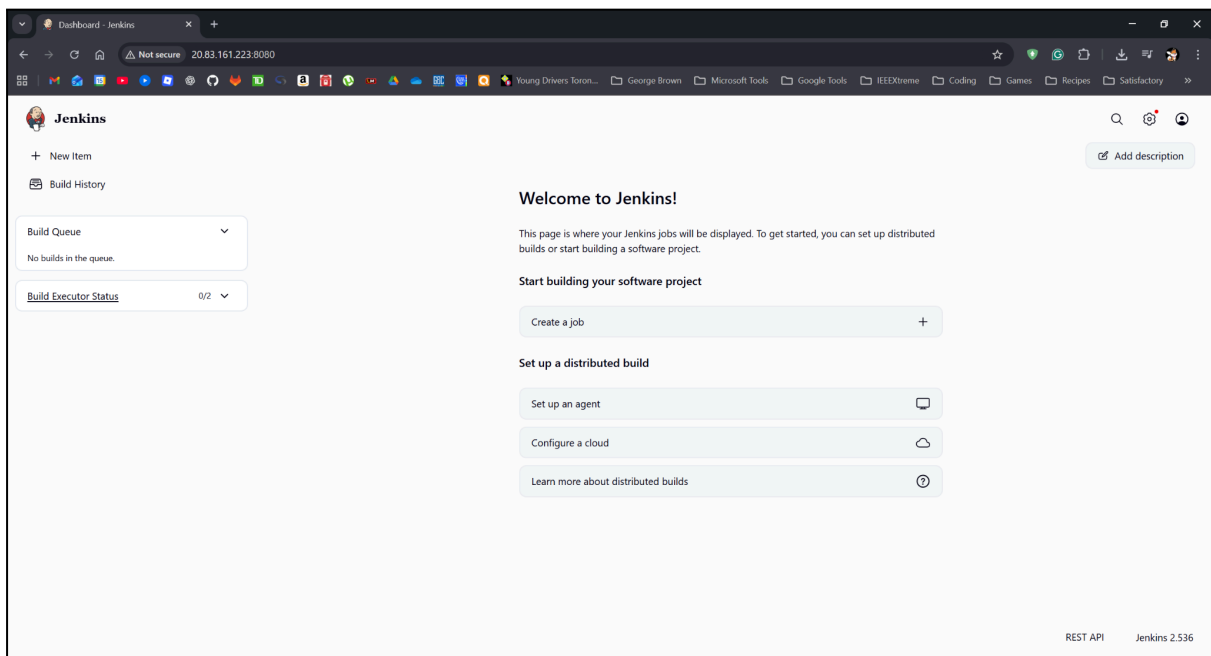
No VM guests are running outdated hypervisor (qemu) binaries on this host.
azureuser@Virtual-Machine-01: $
```

```
azureuser@Virtual-Machine-01: ~
azureuser@Virtual-Machine-01: $ sudo systemctl start jenkins
azureuser@Virtual-Machine-01: $ sudo systemctl enable jenkins
Synchronizing state of jenkins.service with SysV service script with /lib/systemd/systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable jenkins
azureuser@Virtual-Machine-01: $
```

```
azureuser@Virtual-Machine-01: ~
azureuser@Virtual-Machine-01: $ sudo systemctl status jenkins
jenkins.service - Jenkins Continuous Integration Server
Loaded: loaded (/lib/systemd/system/jenkins.service; enabled; vendor preset: enabled)
Active: active (running) since Sun 2025-11-16 22:09:36 UTC; 3min 35s ago
Main PID: 7459 (java)
Tasks: 45 (limit: 9463)
Memory: 1.1G
CPU: 32.509s
CGroup: /system.slice/jenkins.service
└─7459 /usr/bin/java -Djava.awt.headless=true -jar /usr/share/java/jenkins.war --webroot=/var/cache/jenkins/war --httpPort=8080

Nov 16 22:09:29 Virtual-Machine-01 jenkins[7459]: [LF]> This may also be found at: /var/lib/jenkins/secrets/initialAdminPassword
Nov 16 22:09:29 Virtual-Machine-01 jenkins[7459]: [LF]>
Nov 16 22:09:29 Virtual-Machine-01 jenkins[7459]: [LF]> *****
Nov 16 22:09:29 Virtual-Machine-01 jenkins[7459]: [LF]> *****
Nov 16 22:09:29 Virtual-Machine-01 jenkins[7459]: [LF]> *****
Nov 16 22:09:36 Virtual-Machine-01 jenkins[7459]: 2025-11-16 22:09:36.745+0000 [id=33] INFO jenkins.InitReactorRunner$1#onAttained:
Nov 16 22:09:36 Virtual-Machine-01 jenkins[7459]: 2025-11-16 22:09:36.786+0000 [id=23] INFO hudson.lifecycle.Lifecycle#onReady: Jen
Nov 16 22:09:36 Virtual-Machine-01 systemd[1]: Started Jenkins Continuous Integration Server.
Nov 16 22:09:37 Virtual-Machine-01 jenkins[7459]: 2025-11-16 22:09:37.013+0000 [id=49] INFO h.m.DownloadService$Downloadable#load:
Nov 16 22:09:37 Virtual-Machine-01 jenkins[7459]: 2025-11-16 22:09:37.014+0000 [id=49] INFO hudson.util.Retrier#start: Performed th
lines 1-20/20 (END)
```

```
azureuser@Virtual-Machine-01: ~
azureuser@Virtual-Machine-01: $ sudo ufw status
Status: inactive
azureuser@Virtual-Machine-01: $
```



## Docker Installation & Version Check

```
azureuser@Virtual-Machine-01: ~  
azureuser@Virtual-Machine-01: $ sudo apt install apt-transport-https ca-certificates curl software-properties-common -y  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
ca-certificates is already the newest version (20240203~22.04.1).  
ca-certificates set to manually installed.  
curl is already the newest version (7.81.0-1ubuntu1.21).  
curl set to manually installed.  
software-properties-common is already the newest version (0.99.22.9).  
software-properties-common set to manually installed.  
The following NEW packages will be installed:  
  apt-transport-https  
0 upgraded, 1 newly installed, 0 to remove and 11 not upgraded.  
Need to get 1510 B of archives.  
After this operation, 170 kB of additional disk space will be used.  
Get:1 http://azure.archive.ubuntu.com/ubuntu jammy-updates/universe amd64 apt-transport-https all 2.4.14 [1510 B]  
Fetched 1510 B in 0s (46.0 kB/s)  
Selecting previously unselected package apt-transport-https.  
(Reading database ... 79234 files and directories currently installed.)  
Preparing to unpack .../apt-transport-https_2.4.14_all.deb ...  
Unpacking apt-transport-https (2.4.14) ...  
Setting up apt-transport-https (2.4.14) ...  
Scanning processes...  
Scanning linux images...  
  
Running kernel seems to be up-to-date.  
  
No services need to be restarted.  
  
No containers need to be restarted.  
  
No user sessions are running outdated binaries.  
  
No VM guests are running outdated hypervisor (qemu) binaries on this host.  
azureuser@Virtual-Machine-01: $
```

```
azureuser@Virtual-Machine-01: ~  
azureuser@Virtual-Machine-01: $ curl -fsSL https://download.docker.com/linux/ubuntu/gpg | sudo apt-key add -  
Warning: apt-key is deprecated. Manage keyring files in trusted.gpg.d instead (see apt-key(8)).  
OK  
azureuser@Virtual-Machine-01: $ sudo add-apt-repository "deb [arch=amd64] https://download.docker.com/linux/ubuntu $(lsb_release -cs) stable"  
Repository: 'deb [arch=amd64] https://download.docker.com/linux/ubuntu jammy stable'  
Description:  
Archive for codename: jammy components: stable  
More info: https://download.docker.com/linux/ubuntu  
Adding repository.  
Press [ENTER] to continue or Ctrl-c to cancel.  
Adding deb entry to /etc/apt/sources.list.d/archive_uri-https_download_docker_com_linux_ubuntu-jammy.list  
Adding disabled deb-src entry to /etc/apt/sources.list.d/archive_uri-https_download_docker_com_linux_ubuntu-jammy.list  
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease  
Get:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease [128 kB]  
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease  
Get:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease [129 kB]  
Ign:5 https://pkg.jenkins.io/debian binary/ InRelease  
Hit:6 https://pkg.jenkins.io/debian binary/ Release  
Get:7 https://download.docker.com/linux/ubuntu jammy InRelease [48.5 kB]  
Get:9 https://download.docker.com/linux/ubuntu jammy/stable amd64 Packages [61.5 kB]  
Fetched 367 kB in 1s (333 kB/s)  
Reading package lists... Done  
W: https://download.docker.com/linux/ubuntu/dists/jammy/InRelease: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg), see the DEPRECATION section in apt-key(8) for details.  
azureuser@Virtual-Machine-01: $
```

```
azureuser@Virtual-Machine-01: ~  
azureuser@Virtual-Machine-01: $ sudo apt update  
Hit:1 http://azure.archive.ubuntu.com/ubuntu jammy InRelease  
Hit:2 http://azure.archive.ubuntu.com/ubuntu jammy-updates InRelease  
Hit:3 http://azure.archive.ubuntu.com/ubuntu jammy-backports InRelease  
Hit:4 http://azure.archive.ubuntu.com/ubuntu jammy-security InRelease  
Ign:5 https://pkg.jenkins.io/debian binary/ InRelease  
Hit:6 https://pkg.jenkins.io/debian binary/ Release  
Hit:7 https://download.docker.com/linux/ubuntu jammy InRelease  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
11 packages can be upgraded. Run 'apt list --upgradable' to see them.  
W: https://download.docker.com/linux/ubuntu/dists/jammy/InRelease: Key is stored in legacy trusted.gpg keyring (/etc/apt/trusted.gpg), see the DEPRECATION section in apt-key(8) for details.  
azureuser@Virtual-Machine-01: $
```

```
azureuser@Virtual-Machine-01: ~
Selecting previously unselected package containerd.io.
(Reading database ... 79238 files and directories currently installed.)
Preparing to unpack .../0-containerd.io_2.1.5-1~ubuntu.22.04~jammy_amd64.deb ...
Unpacking containerd.io (2.1.5-1~ubuntu.22.04~jammy) ...
Selecting previously unselected package docker-ce-cli.
Preparing to unpack .../1-docker-ce-cli_5%3a29.0.1-1~ubuntu.22.04~jammy_amd64.deb ...
Unpacking docker-ce-cli (5:29.0.1-1~ubuntu.22.04~jammy) ...
Selecting previously unselected package docker-ce.
Preparing to unpack .../2-docker-ce_5%3a29.0.1-1~ubuntu.22.04~jammy_amd64.deb ...
Unpacking docker-ce (5:29.0.1-1~ubuntu.22.04~jammy) ...
Selecting previously unselected package pigz.
Preparing to unpack .../3-pigz_2.6-1_amd64.deb ...
Unpacking pigz (2.6-1) ...
Selecting previously unselected package docker-buildx-plugin.
Preparing to unpack .../4-docker-buildx-plugin_0.30.0-1~ubuntu.22.04~jammy_amd64.deb ...
Unpacking docker-buildx-plugin (0.30.0-1~ubuntu.22.04~jammy) ...
Selecting previously unselected package docker-ce-rootless-extras.
Preparing to unpack .../5-docker-ce-rootless-extras_5%3a29.0.1-1~ubuntu.22.04~jammy_amd64.deb ...
Unpacking docker-ce-rootless-extras (5:29.0.1-1~ubuntu.22.04~jammy) ...
Selecting previously unselected package docker-compose-plugin.
Preparing to unpack .../6-docker-compose-plugin_2.40.3-1~ubuntu.22.04~jammy_amd64.deb ...
Unpacking docker-compose-plugin (2.40.3-1~ubuntu.22.04~jammy) ...
Selecting previously unselected package libslirp0:amd64.
Preparing to unpack .../7-libslirp0_4.6.1-1build1_amd64.deb ...
Unpacking libslirp0:amd64 (4.6.1-1build1) ...
Selecting previously unselected package slirp4netns.
Preparing to unpack .../8-slirp4netns_1.0.1-2_amd64.deb ...
Unpacking slirp4netns (1.0.1-2) ...
Setting up docker-buildx-plugin (0.30.0-1~ubuntu.22.04~jammy) ...
Setting up containerd.io (2.1.5-1~ubuntu.22.04~jammy) ...
Created symlink /etc/systemd/system/multi-user.target.wants/containerd.service → /lib/systemd/system/containerd.service.
Setting up docker-compose-plugin (2.40.3-1~ubuntu.22.04~jammy) ...
Setting up docker-ce-cli (5:29.0.1-1~ubuntu.22.04~jammy) ...
Setting up libslirp0:amd64 (4.6.1-1build1) ...
Setting up pigz (2.6-1) ...
Setting up docker-ce-rootless-extras (5:29.0.1-1~ubuntu.22.04~jammy) ...
Setting up slirp4netns (1.0.1-2) ...
Setting up docker-ce (5:29.0.1-1~ubuntu.22.04~jammy) ...
Created symlink /etc/systemd/system/multi-user.target.wants/docker.service → /lib/systemd/system/docker.service.
Created symlink /etc/systemd/system/sockets.target.wants/docker.socket → /lib/systemd/system/docker.socket.
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.11) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
azureuser@Virtual-Machine-01: $
```

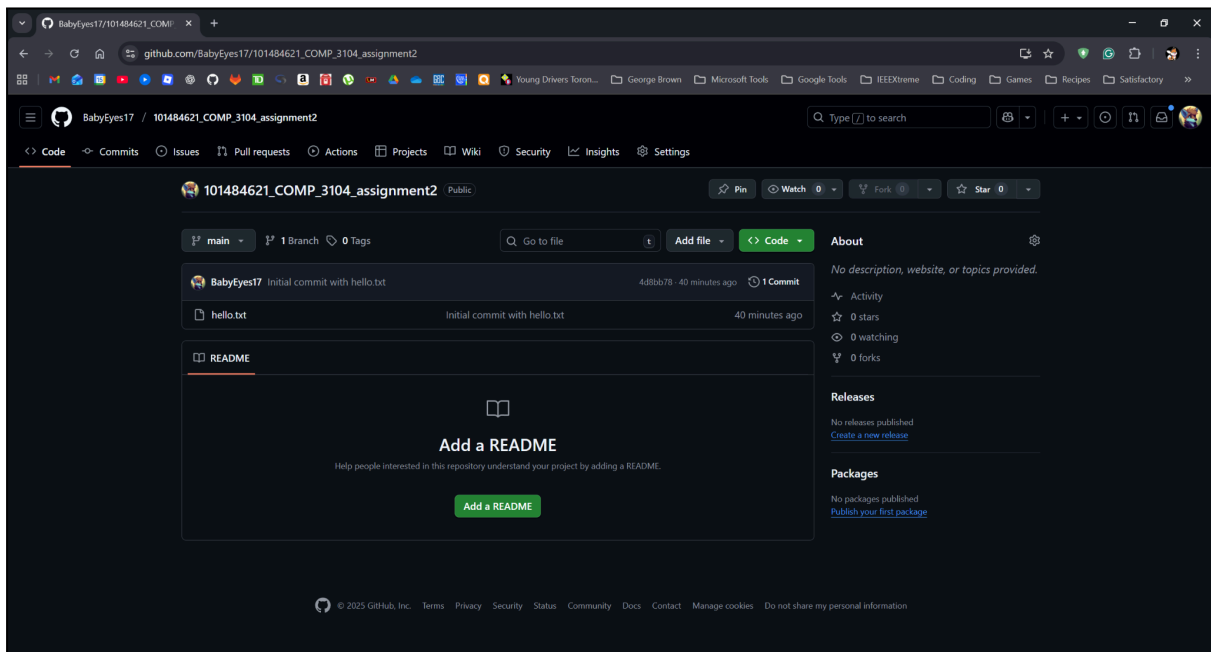
```
azureuser@Virtual-Machine-01: ~
azureuser@Virtual-Machine-01: $ docker --version
Docker version 29.0.1, build eedd969
azureuser@Virtual-Machine-01: $
```

## Git Installation, Version Check, & GitHub Repository Link

[https://github.com/BabyEyes17/101484621\\_COMP\\_3104\\_assignment2](https://github.com/BabyEyes17/101484621_COMP_3104_assignment2)

```
azureuser@Virtual-Machine-01: ~  
azureuser@Virtual-Machine-01: $ sudo apt install git -y  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
git is already the newest version (1:2.34.1-1ubuntu1.15).  
git set to manually installed.  
0 upgraded, 0 newly installed, 0 to remove and 11 not upgraded.  
azureuser@Virtual-Machine-01: $ git --version  
git version 2.34.1  
azureuser@Virtual-Machine-01: $
```

```
azureuser@Virtual-Machine-01: ~  
azureuser@Virtual-Machine-01: $ git config --global user.name "Jayden Lewis"  
azureuser@Virtual-Machine-01: $ git config --global user.email "jaydentlewis@gmail.com"  
azureuser@Virtual-Machine-01: $ git config --list  
user.name=Jayden Lewis  
user.email=jaydentlewis@gmail.com  
azureuser@Virtual-Machine-01: $
```



## IP Address / Jenkins Server URL

<http://20.83.161.223:8080>