

Linux Assignment 2:

Web Development Team Management

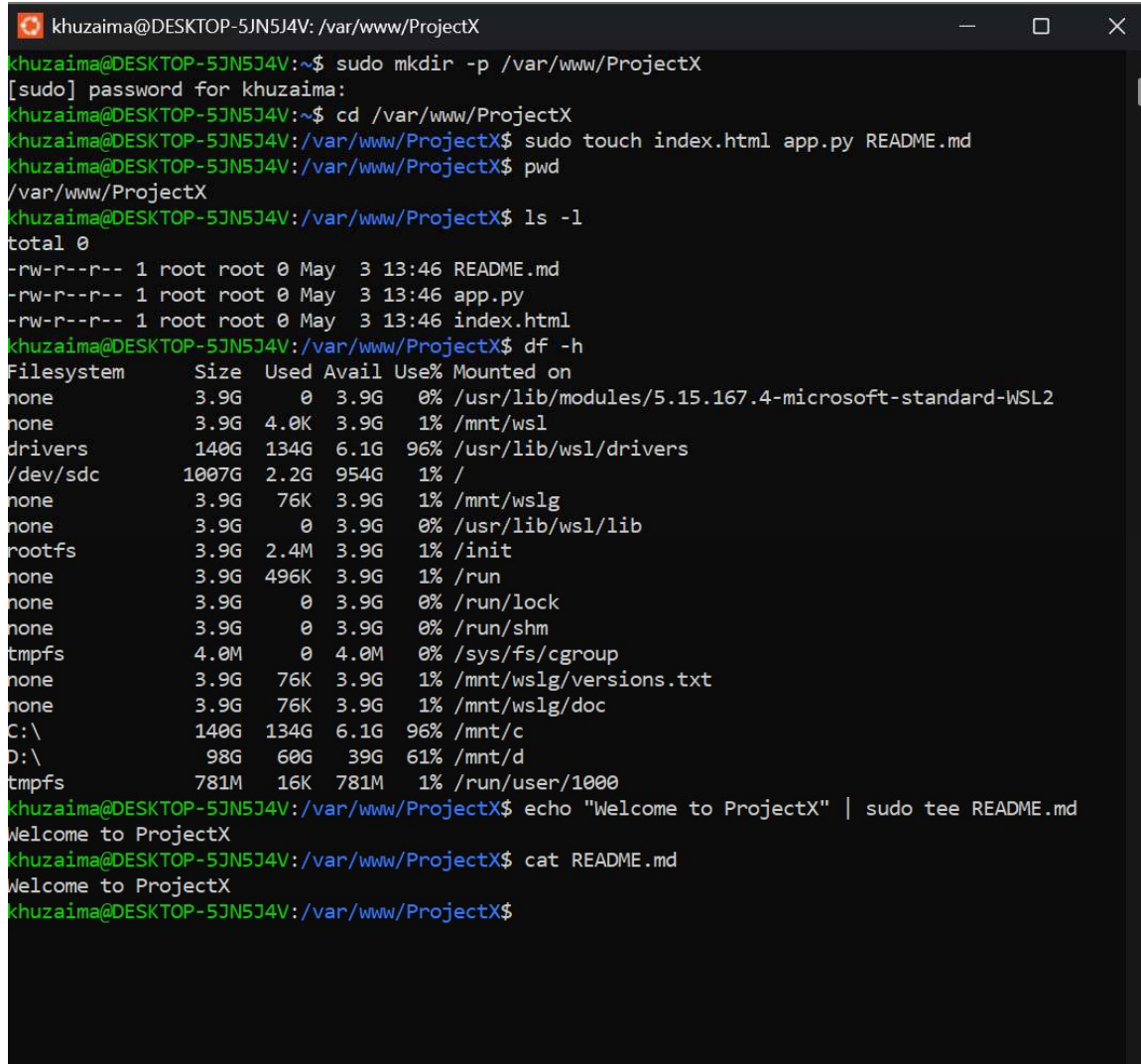
Task 1: Basic Linux Commands

Objective: Set up a workspace for ProjectX using basic Linux commands.

Steps & Commands:

1. Create project directory and navigate into it:
mkdir /var/www/ProjectX
cd /var/www/ProjectX
2. Create files for frontend and backend:
touch index.html app.py README.md
3. Check current working directory:
pwd
4. List files with detailed information:
ls -l
5. Display system disk usage:
df -h
6. View file content:
echo "Welcome to ProjectX" > README.md
cat README.md

Screenshot:



```
khuzaima@DESKTOP-5JN5J4V: /var/www/ProjectX
khuzaima@DESKTOP-5JN5J4V:~$ sudo mkdir -p /var/www/ProjectX
[sudo] password for khuzaima:
khuzaima@DESKTOP-5JN5J4V:~$ cd /var/www/ProjectX
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ sudo touch index.html app.py README.md
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ pwd
/var/www/ProjectX
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ ls -l
total 0
-rw-r--r-- 1 root root 0 May  3 13:46 README.md
-rw-r--r-- 1 root root 0 May  3 13:46 app.py
-rw-r--r-- 1 root root 0 May  3 13:46 index.html
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ df -h
Filesystem      Size  Used Avail Use% Mounted on
none            3.9G   0 3.9G   0% /usr/lib/modules/5.15.167.4-microsoft-standard-WSL2
none            3.9G  4.0K 3.9G   1% /mnt/wsl
drivers          140G  134G  6.1G  96% /usr/lib/wsl/drivers
/dev/sdc         1007G  2.2G  954G   1% /
none            3.9G   76K 3.9G   1% /mnt/wslg
none            3.9G   0 3.9G   0% /usr/lib/wsl/lib
rootfs          3.9G  2.4M 3.9G   1% /init
none            3.9G  496K 3.9G   1% /run
none            3.9G   0 3.9G   0% /run/lock
none            3.9G   0 3.9G   0% /run/shm
tmpfs            4.0M   0 4.0M   0% /sys/fs/cgroup
none            3.9G   76K 3.9G   1% /mnt/wslg/versions.txt
none            3.9G   76K 3.9G   1% /mnt/wslg/doc
C:\              140G  134G  6.1G  96% /mnt/c
D:\              98G   60G  39G  61% /mnt/d
tmpfs            781M   16K 781M   1% /run/user/1000
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ echo "Welcome to ProjectX" | sudo tee README.md
Welcome to ProjectX
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ cat README.md
Welcome to ProjectX
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$
```

Task 2: User and Group Permission Management

1. Create a developer group and users:

groupadd devteam

useradd Khuzaima

useradd Abdullah

usermod -aG devteam Khuzaima

usermod -aG devteam Abdullah

2. Assign the group ownership of the project directory:

chgrp -R devteam /var/www/ProjectX

3. Set directory permissions:

chmod -R 770 /var/www/ProjectX

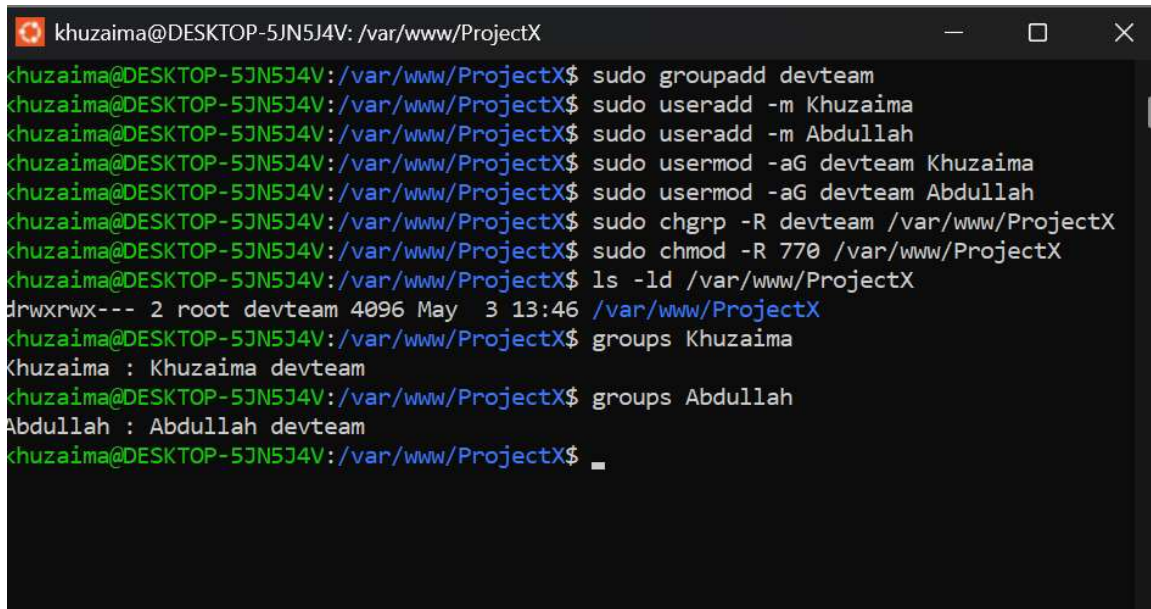
4. Verify permissions:

ls -ld /var/www/ProjectX

5. Check user group memberships:

groups Khuzaima

Screenshot:



```
khuzaima@DESKTOP-5JN5J4V: /var/www/ProjectX
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ sudo groupadd devteam
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ sudo useradd -m Khuzaima
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ sudo useradd -m Abdullah
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ sudo usermod -aG devteam Khuzaima
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ sudo usermod -aG devteam Abdullah
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ sudo chgrp -R devteam /var/www/ProjectX
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ sudo chmod -R 770 /var/www/ProjectX
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ ls -ld /var/www/ProjectX
drwxrwx--- 2 root devteam 4096 May  3 13:46 /var/www/ProjectX
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ groups Khuzaima
Khuzaima : Khuzaima devteam
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ groups Abdullah
Abdullah : Abdullah devteam
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$
```

Task 3: Change Ownership

1. Change ownership of the directory:

chown -R Khuzaima:devteam /var/www/ProjectX

2. Verify ownership changes:

ls -l /var/www/ProjectX

3. Switch to user Khuzaima and create new file:

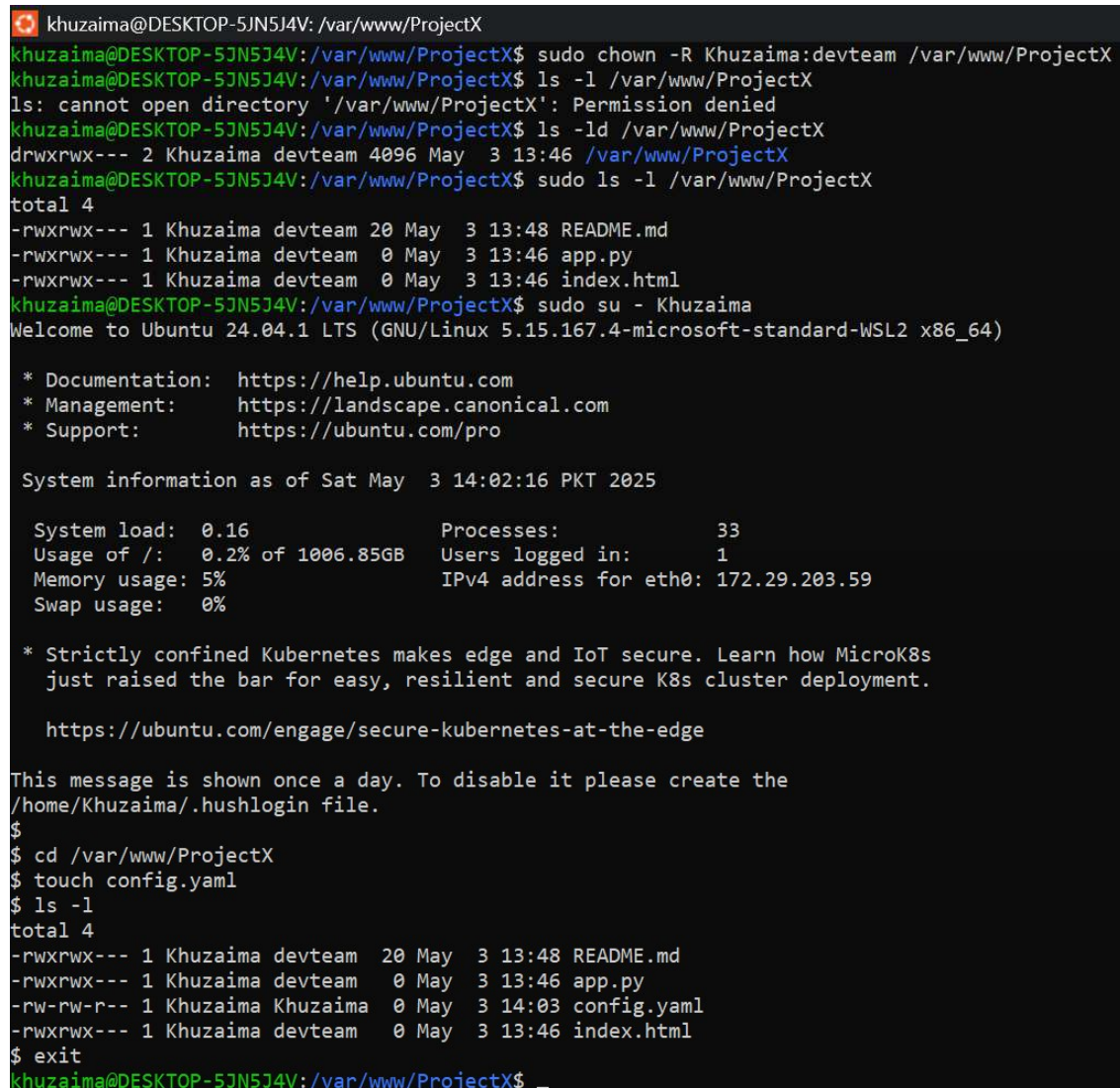
su - Khuzaima

cd /var/www/ProjectX

touch config.yaml

ls -l

Screenshot:



```
khuzaima@DESKTOP-5JN5J4V: /var/www/ProjectX
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ sudo chown -R Khuzaima:devteam /var/www/ProjectX
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ ls -l /var/www/ProjectX
ls: cannot open directory '/var/www/ProjectX': Permission denied
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ ls -ld /var/www/ProjectX
drwxrwx--- 2 Khuzaima devteam 4096 May  3 13:46 /var/www/ProjectX
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ sudo ls -l /var/www/ProjectX
total 4
-rwxrwx--- 1 Khuzaima devteam 20 May  3 13:48 README.md
-rwxrwx--- 1 Khuzaima devteam  0 May  3 13:46 app.py
-rwxrwx--- 1 Khuzaima devteam  0 May  3 13:46 index.html
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$ sudo su - Khuzaima
Welcome to Ubuntu 24.04.1 LTS (GNU/Linux 5.15.167.4-microsoft-standard-WSL2 x86_64)

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

System information as of Sat May  3 14:02:16 PKT 2025

System load:  0.16               Processes:           33
Usage of /:   0.2% of 1006.85GB  Users logged in:    1
Memory usage: 5%                IPv4 address for eth0: 172.29.203.59
Swap usage:   0%

* Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
just raised the bar for easy, resilient and secure K8s cluster deployment.

https://ubuntu.com/engage/secure-kubernetes-at-the-edge

This message is shown once a day. To disable it please create the
/home/Khuzaima/.hushlogin file.
$
$ cd /var/www/ProjectX
$ touch config.yaml
$ ls -l
total 4
-rwxrwx--- 1 Khuzaima devteam 20 May  3 13:48 README.md
-rwxrwx--- 1 Khuzaima devteam  0 May  3 13:46 app.py
-rw-rw-r-- 1 Khuzaima Khuzaima  0 May  3 14:03 config.yaml
-rwxrwx--- 1 Khuzaima devteam  0 May  3 13:46 index.html
$ exit
khuzaima@DESKTOP-5JN5J4V:/var/www/ProjectX$
```

Submitted by: Khuzaima Hassan

Task 4: System-Level Commands

1. Check system resource usage:

top

Screenshot:

```

khuzaïma@DESKTOP-5JN5J4V: /var/www/ProjectX
khuzaïma@DESKTOP-5JN5J4V: /var/www/ProjectX$ top
top - 14:06:01 up 23 min, 1 user, load average: 0.14, 0.13, 0.04
Tasks: 23 total, 1 running, 22 sleeping, 0 stopped, 0 zombie
%Cpu(s): 0.1 us, 0.8 sy, 0.0 ni, 97.7 id, 1.2 wa, 0.0 hi, 0.2 si, 0.0 st
MiB Mem : 7804.0 total, 7165.0 free, 599.8 used, 269.5 buff/cache
MiB Swap: 2048.0 total, 2048.0 free, 0.0 used. 7204.2 avail Mem

  PID USER      PR  NI   VIRT   RES   SHR  S  %CPU  %MEM     TIME+ COMMAND
    67 root        19  -1   83224   19684 18424 S   4.0   0.2   0:22.51 systemd-jou+
   129 systemd+   20   0   91020    6536  5688 S   0.3   0.1   0:00.59 systemd-tim+
    1 root        20   0   21732   12872  9572 S   0.0   0.2   0:04.38 systemd
    2 root        20   0    2776    1924  1796 S   0.0   0.0   0:00.02 init-system+
    7 root        20   0    2776     132   132 S   0.0   0.0   0:00.00 init
   112 root        20   0   24388    6344  4788 S   0.0   0.1   0:00.50 systemd-ude+
   122 systemd+  20   0   21452   11892  9696 S   0.0   0.1   0:00.53 systemd-res+
   180 root        20   0    4236    2644  2412 S   0.0   0.0   0:00.02 cron
   181 message+  20   0    9584    5164  4616 S   0.0   0.1   0:01.52 dbus-daemon
   189 root        20   0   18148    8188  7168 S   0.0   0.1   0:00.72 systemd-log+
   192 root        20   0 1756096   17932  9316 S   0.0   0.2   0:00.37 wsl-pro-ser+
   197 root        20   0    3160    1104  1016 S   0.0   0.0   0:00.01 agetty
   209 root        20   0    3116    1156  1072 S   0.0   0.0   0:00.01 agetty
   213 syslog    20   0   222508   7320   4428 S   0.0   0.1   0:00.32 rsyslogd
   228 root        20   0   112792   24468 14652 S   0.0   0.3   0:00.34 unattended-+
   329 root        20   0    2776     208    80 S   0.0   0.0   0:00.00 SessionLead+
   330 root        20   0    2776     208    80 S   0.0   0.0   0:00.21 Relay(331)
   331 khuzaïma  20   0    6068    5344   3628 S   0.0   0.1   0:00.33 bash
   332 root        20   0    6692    4648   3868 S   0.0   0.1   0:00.02 login
   384 khuzaïma  20   0   20264   11516  9432 S   0.0   0.1   0:00.48 systemd
   385 khuzaïma  20   0   21148    1728    0 S   0.0   0.0   0:00.00 (sd-pam)
   396 khuzaïma  20   0    6072    4824   3320 S   0.0   0.1   0:00.04 bash
  1149 khuzaïma  20   0    9292    5152   3000 R   0.0   0.1   0:00.07 top

```

2. Check running processes:

ps aux | grep ProjectX

Screenshot:

```

khuzaïma@DESKTOP-5JN5J4V: /var/www/ProjectX$ ps aux | grep ProjectX
khuzaïma  1175  0.0  0.0  4092  2020 pts/0  S+   14:06   0:00 grep --color=auto ProjectX

```

```
tail -n 50 /var/log/syslog
```

```

khuzaima@DESKTOP-5JN5J4V: /var/www/ProjectX$ sudo tail -n 50 /var/log/syslog
khuzaima@DESKTOP-5JN5J4V: /var/www/ProjectX$ sudo tail -n 50 /var/log/syslog
2025-05-03T14:03:45.791402+05:00 DESKTOP-5JN5J4V systemd[951]: Reached target shutdown.target - Shutdown.
2025-05-03T14:03:45.791745+05:00 DESKTOP-5JN5J4V systemd[951]: Finished system.exit.target - Exit the Session.
2025-05-03T14:03:45.791745+05:00 DESKTOP-5JN5J4V systemd[951]: Reached target exit.target - Exit the Session.
2025-05-03T14:03:45.802186+05:00 DESKTOP-5JN5J4V systemd[1]: user@1001.service: Deactivated successfully.
2025-05-03T14:03:45.803271+05:00 DESKTOP-5JN5J4V systemd[1]: Stopped user@1001.service - User Manager for UID 1001.
2025-05-03T14:03:45.808877+05:00 DESKTOP-5JN5J4V system[1]: Stopping user-runtime-dir@1001.service - User Runtime Directory /run/user/1001...
2025-05-03T14:03:45.837293+05:00 DESKTOP-5JN5J4V systemd[1]: mnt-wslg-run-user-1001.mount: Deactivated successfully.
2025-05-03T14:03:45.837293+05:00 DESKTOP-5JN5J4V systemd[1]: mnt-wslg-run-user-1001.mount: Deactivated successfully.
2025-05-03T14:03:45.841636+05:00 DESKTOP-5JN5J4V systemd[1]: user-runtime-dir@1001.service: Deactivated successfully.
2025-05-03T14:03:45.842473+05:00 DESKTOP-5JN5J4V systemd[1]: Stopped user-runtime-dir@1001.service - User Runtime Directory /run/user/1001.
2025-05-03T14:03:45.847563+05:00 DESKTOP-5JN5J4V systemd[1]: Removed slice user-1001.slice - User Slice of UID 1001.
2025-05-03T14:03:58.338674+05:00 DESKTOP-5JN5J4V systemd-resolved[122]: Clock change detected. Flushing caches.
2025-05-03T14:03:58.320797+05:00 DESKTOP-5JN5J4V systemd-resolved[122]: Clock change detected. Flushing caches.
2025-05-03T14:03:59.956044+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[36mINFO#033[0m Daemon: connecting to Windows Agent
2025-05-03T14:03:59.974293+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[36mINFO#033[0m Updated system status to "Connecting"
2025-05-03T14:03:59.966614+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[37mDEBUG#033[0m Daemon: could not connect to Windows Agent: could not get address: could not r
read agent port file "/mnt/c/Users/Administrator/.ubuntuport/address": open "/mnt/c/Users/Administrator/.ubuntuport/address": no such file or directory
2025-05-03T14:03:59.966930+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[36mINFO#033[0m Reconnecting to Windows host in 60 seconds
2025-05-03T14:03:59.967499+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[37mDEBUG#033[0m Updated system status to "Not connected: waiting to retry"
2025-05-03T14:04:03.532954+05:00 DESKTOP-5JN5J4V systemd-resolved[122]: Clock change detected. Flushing caches.
2025-05-03T14:03:59.324677+05:00 DESKTOP-5JN5J4V kernel: systemd-journald[67]: Time jumped backwards, rotating.
2025-05-03T14:04:03.309449+05:00 DESKTOP-5JN5J4V kernel: systemd-journald[67]: Time jumped backwards, rotating. (Dropped 8 similar message(s))
2025-05-03T14:04:03.415355+05:00 DESKTOP-5JN5J4V kernel: systemd-journald[67]: Time jumped backwards, rotating.
2025-05-03T14:04:03.416516+05:00 DESKTOP-5JN5J4V systemd-resolved[122]: message repeated 21 times: [Clock change detected. Flushing caches.]
2025-05-03T14:04:03.489563+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[36mINFO#033[0m Daemon: connecting to Windows Agent
2025-05-03T14:04:03.490619+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[37mDEBUG#033[0m Updated system status to "Connecting"
2025-05-03T14:04:03.986432+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[33mWARNING#033[0m Daemon: could not connect to Windows Agent: could not get address: could not r
read agent port file "/mnt/c/Users/Administrator/.ubuntuport/address": open "/mnt/c/Users/Administrator/.ubuntuport/address": no such file or directory
2025-05-03T14:04:03.982855+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[36mINFO#033[0m Reconnecting to Windows host in 60 seconds
2025-05-03T14:04:03.453582+05:00 DESKTOP-5JN5J4V systemd-resolved[122]: Clock change detected. Flushing caches.
2025-05-03T14:04:03.424536+05:00 DESKTOP-5JN5J4V kernel: systemd-journald[67]: Time jumped backwards, rotating.
2025-05-03T14:05:30.475989+05:00 DESKTOP-5JN5J4V kernel: systemd-journald[67]: Time jumped backwards, rotating. (Dropped 8 similar message(s))
2025-05-03T14:05:35.492287+05:00 DESKTOP-5JN5J4V kernel: systemd-journald[67]: Time jumped backwards, rotating.
2025-05-03T14:05:40.478048+05:00 DESKTOP-5JN5J4V systemd-resolved[122]: message repeated 21 times: [Clock change detected. Flushing caches.]
2025-05-03T14:05:40.477099+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[36mINFO#033[0m Daemon: connecting to Windows Agent
2025-05-03T14:05:40.484806+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[37mDEBUG#033[0m Updated system status to "Connecting"
2025-05-03T14:05:40.484175+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[33mWARNING#033[0m Daemon: could not connect to Windows Agent: could not get address: could not r
read agent port file "/mnt/c/Users/Administrator/.ubuntuport/address": open "/mnt/c/Users/Administrator/.ubuntuport/address": no such file or directory
2025-05-03T14:05:40.484238+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[36mINFO#033[0m Reconnecting to Windows host in 60 seconds
2025-05-03T14:05:40.484849+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[37mDEBUG#033[0m Updated system status to "Not connected: waiting to retry"
2025-05-03T14:05:45.954664+05:00 DESKTOP-5JN5J4V systemd-resolved[122]: Clock change detected. Flushing caches.
2025-05-03T14:05:45.954664+05:00 DESKTOP-5JN5J4V kernel: systemd-journald[67]: Time jumped backwards, rotating.
2025-05-03T14:06:25.558444+05:00 DESKTOP-5JN5J4V kernel: systemd-journald[67]: Time jumped backwards, rotating. (Dropped 8 similar message(s))
2025-05-03T14:06:30.592748+05:00 DESKTOP-5JN5J4V kernel: systemd-journald[67]: Time jumped backwards, rotating.
2025-05-03T14:06:30.587754+05:00 DESKTOP-5JN5J4V systemd-resolved[122]: message repeated 19 times: [Clock change detected. Flushing caches.]
2025-05-03T14:06:35.717143+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[36mINFO#033[0m Daemon: connecting to Windows Agent
2025-05-03T14:06:35.717470+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[37mDEBUG#033[0m Updated system status to "Connecting"
2025-05-03T14:06:35.725086+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[33mWARNING#033[0m Daemon: could not connect to Windows Agent: could not get address: could not r
read agent port file "/mnt/c/Users/Administrator/.ubuntuport/address": open "/mnt/c/Users/Administrator/.ubuntuport/address": no such file or directory
2025-05-03T14:06:35.725413+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[36mINFO#033[0m Reconnecting to Windows host in 60 seconds
2025-05-03T14:06:35.725959+05:00 DESKTOP-5JN5J4V wsl-pro-service[192]: #033[37mDEBUG#033[0m Updated system status to "Not connected: waiting to retry"
2025-05-03T14:06:35.626853+05:00 DESKTOP-5JN5J4V systemd-resolved[122]: Clock change detected. Flushing caches.
2025-05-03T14:07:00.687556+05:00 DESKTOP-5JN5J4V systemd-resolved[122]: message repeated 11 times: [Clock change detected. Flushing caches.]
khuzaima@DESKTOP-5JN5J4V: /var/www/ProjectX$ q

```