National Textile University

Department of Computer Science

Subject: Operating System

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Lab no.: lab2 (class task)

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Semester:5th

HOME TASK

Part 5: Text Processing and Utilities

5.1 Essential Text Commands

- **Commands to demonstrate:**

```
grep "pattern" file.txt      # Search for patterns
grep -i "pattern" file.txt   # Case-insensitive search
grep -n "pattern" file.txt   # Show line numbers
```

```
maha@DESKTOP-PDJCJQV: ~
maha@DESKTOP-PDJCJQV:~$ grep "pattern" hello.txt
maha@DESKTOP-PDJCJQV:~$ grep -i "pattern" hello.txt
maha@DESKTOP-PDJCJQV:~$ grep -n "pattern" hello.txt
maha@DESKTOP-PDJCJQV:~$
```

5.2 Pipes and Redirection

- **Concepts and commands:**

```
ls -l | grep ".txt"              # Pipe output
cat file1.txt file2.txt > combined.txt   # Redirect output
echo "new line" >> file.txt      # Append to file
sort file.txt | uniq             # Chain commands
```

```
maha@DESKTOP-PDJCJQV: ~
maha@DESKTOP-PDJCJQV:~$ ls -l | grep ".txt"
-rw-r--r-- 1 maha maha     0 Sep 28 07:40 combined.txt
-rw-r--r-- 1 maha maha     9 Sep 28 07:41 file.txt
-rw-r--r-- 1 maha maha     0 Sep 28 07:17 file1.txt
-rw-r--r-- 1 maha maha     0 Sep 28 07:17 file2.txt
-rwxr-xr-x 1 maha maha    26 Sep 28 07:18 hello.txt
maha@DESKTOP-PDJCJQV:~$ cat file1.txt file2.txt > combined.txt
maha@DESKTOP-PDJCJQV:~$ echo "new line" >> hello.txt
maha@DESKTOP-PDJCJQV:~$ sort hello.txt | uniq

hi this is my test file
new line
maha@DESKTOP-PDJCJQV:~$
```

Part 6: Introduction to Processes

6.1 Understanding Processes

- **Concepts to Cover:**
    - What is a process?
    - Process ID (PID)
    - Parent-child relationships
    - Process states
- **Commands to demonstrate:**

```
ps                    # Show current processes
ps aux                # Detailed process list
ps -ef                # Full format listing
pstree                # Process tree
top                   # Real-time process viewer
htop                  # Enhanced process viewer (if available)
kill PID              # Terminate process by PID
killall process_name  # Kill processes by name
pkill pattern         # Kill processes matching pattern
```
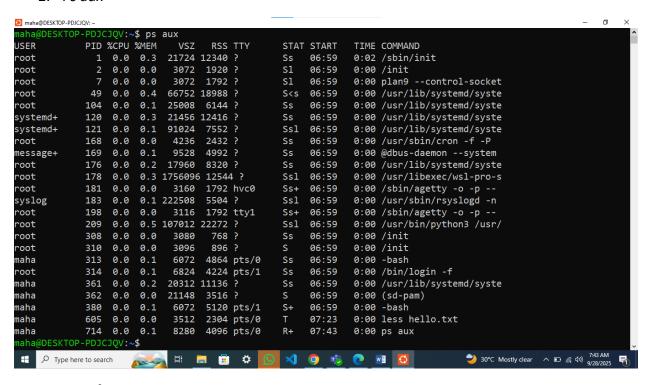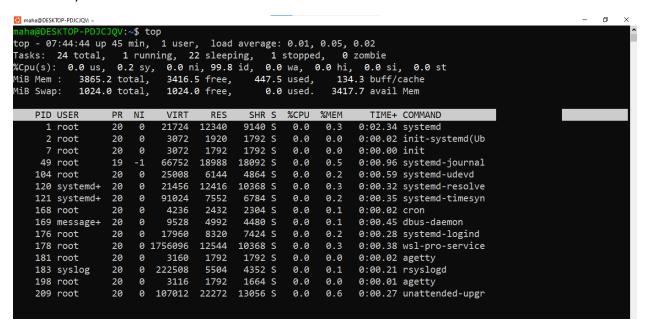
Commands:

1. Ps:

```
maha@DESKTOP-PDJCJQV: ~

maha@DESKTOP-PDJCJQV:~$ ps
    PID TTY          TIME CMD
    313 pts/0    00:00:00 bash
    605 pts/0    00:00:00 less
    712 pts/0    00:00:00 ps
maha@DESKTOP-PDJCJQV:~$ _
```

2. Ps aux


```
maha@DESKTOP-PDJCJQV: ~

maha@DESKTOP-PDJCJQV:~$ ps aux
USER        PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME COMMAND
root          1  0.0  0.3  21724 12340 ?        Ss   06:59   0:02 /sbin/init
root          2  0.0  0.0   3072  1920 ?        Sl   06:59   0:00 /init
root          7  0.0  0.0   3072  1792 ?        Sl   06:59   0:00 plan9 --control-socket
root         49  0.0  0.4  66752 18988 ?        S<s  06:59   0:00 /usr/lib/systemd/syste
root        104  0.0  0.1  25008  6144 ?        Ss   06:59   0:00 /usr/lib/systemd/syste
systemd+    120  0.0  0.3  21456 12416 ?        Ss   06:59   0:00 /usr/lib/systemd/syste
systemd+    121  0.0  0.1  91024  7552 ?        Ssl  06:59   0:00 /usr/lib/systemd/syste
root        168  0.0  0.0   4236  2432 ?        Ss   06:59   0:00 /usr/sbin/cron -f -P
message+    169  0.0  0.1   9528  4992 ?        Ss   06:59   0:00 @dbus-daemon --system
root        176  0.0  0.2  17960  8320 ?        Ss   06:59   0:00 /usr/lib/systemd/syste
root        178  0.0  0.3 1756096 12544 ?       Ssl  06:59   0:00 /usr/libexec/wsl-pro-s
root        181  0.0  0.0   3160  1792 hvc0     Ss+  06:59   0:00 /sbin/agetty -o -p --
syslog      183  0.0  0.1 222508  5504 ?        Ssl  06:59   0:00 /usr/sbin/rsyslogd -n
root        198  0.0  0.0   3116  1792 tty1     Ss+  06:59   0:00 /sbin/agetty -o -p --
root        209  0.0  0.5 107012 22272 ?        Ssl  06:59   0:00 /usr/bin/python3 /usr/
root        308  0.0  0.0   3080   768 ?        Ss   06:59   0:00 /init
root        310  0.0  0.0   3096   896 ?        S    06:59   0:00 /init
maha        313  0.0  0.1   6072  4864 pts/0    Ss   06:59   0:00 -bash
root        314  0.0  0.1   6824  4224 pts/1    Ss   06:59   0:00 /bin/login -f
maha        361  0.0  0.2  20312 11136 ?        Ss   06:59   0:00 /usr/lib/systemd/syste
maha        362  0.0  0.0  21148  3516 ?        S    06:59   0:00 (sd-pam)
maha        380  0.0  0.1   6072  5120 pts/1    S+   06:59   0:00 -bash
maha        605  0.0  0.0   3512  2304 pts/0    T    07:23   0:00 less hello.txt
maha        714  0.0  0.1   8280  4096 pts/0    R+   07:43   0:00 ps aux
maha@DESKTOP-PDJCJQV:~$
```

3. Ps -ef

```
maha@DESKTOP-PDJCJQV:~$ ps -ef
UID          PID    PPID  C STIME TTY          TIME CMD
root           1       0  0 06:59 ?        00:00:02 /sbin/init
root           2       1  0 06:59 ?        00:00:00 /init
root           7       2  0 06:59 ?        00:00:00 plan9 --control-socket 7 --log-level
root          49       1  0 06:59 ?        00:00:00 /usr/lib/systemd/systemd-journald
root         104       1  0 06:59 ?        00:00:00 /usr/lib/systemd/systemd-udevd
systemd+     120       1  0 06:59 ?        00:00:00 /usr/lib/systemd/systemd-resolved
systemd+     121       1  0 06:59 ?        00:00:00 /usr/lib/systemd/systemd-timesyncd
root         168       1  0 06:59 ?        00:00:00 /usr/sbin/cron -f -P
message+     169       1  0 06:59 ?        00:00:00 @dbus-daemon --system --address=syste
root         176       1  0 06:59 ?        00:00:00 /usr/lib/systemd/systemd-logind
root         178       1  0 06:59 ?        00:00:00 /usr/libexec/wsl-pro-service -vv
root         181       1  0 06:59 hvc0     00:00:00 /sbin/agetty -o -p -- \u --noclear --
syslog       183       1  0 06:59 ?        00:00:00 /usr/sbin/rsyslogd -n -iNONE
root         198       1  0 06:59 tty1     00:00:00 /sbin/agetty -o -p -- \u --noclear -
root         209       1  0 06:59 ?        00:00:00 /usr/bin/python3 /usr/share/unattende
root         308       2  0 06:59 ?        00:00:00 /init
root         310     308  0 06:59 ?        00:00:00 /init
maha         313     310  0 06:59 pts/0    00:00:00 -bash
root         314       2  0 06:59 pts/1    00:00:00 /bin/login -f
maha         361       1  0 06:59 ?        00:00:00 /usr/lib/systemd/systemd --user
maha         362     361  0 06:59 ?        00:00:00 (sd-pam)
maha         380     314  0 06:59 pts/1    00:00:00 -bash
maha         605     313  0 07:23 pts/0    00:00:00 less hello.txt
maha         720     313  0 07:43 pts/0    00:00:00 ps -ef
maha@DESKTOP-PDJCJQV:~$
```

4. Pstree

```
maha@DESKTOP-PDJCJQV:~$ pstree
systemd─┬─2*[agetty]
        ├─cron
        ├─dbus-daemon
        ├─init-systemd(Ub─┬─SessionLeader─Relay(313)─bash─┬─less
        │                 │                               └─pstree
        │                 ├─init─{init}
        │                 ├─login─bash
        │                 └─{init-systemd(Ub}
        ├─rsyslogd─3*[{rsyslogd}]
        ├─systemd──(sd-pam)
        ├─systemd-journal
        ├─systemd-logind
        ├─systemd-resolve
        ├─systemd-timesyn──{systemd-timesyn}
        ├─systemd-udevd
        ├─unattended-upgr──{unattended-upgr}
        └─wsl-pro-service──7*[{wsl-pro-service}]
maha@DESKTOP-PDJCJQV:~$
```

5. top

6. htop

7. Kill PID

```
maha@DESKTOP-PDJCJQV: ~
maha@DESKTOP-PDJCJQV:~$ kill 2345
-bash: kill: (2345) - No such process
maha@DESKTOP-PDJCJQV:~$ kill PID
-bash: kill: PID: arguments must be process or job IDs
maha@DESKTOP-PDJCJQV:~$
```

8. Killall process_name:

```
maha@DESKTOP-PDJCJQV: ~
maha@DESKTOP-PDJCJQV:~$ killall process_name
process_name: no process found
maha@DESKTOP-PDJCJQV:~$ killall gedit
gedit: no process found
maha@DESKTOP-PDJCJQV:~$ killall firefox
firefox: no process found
maha@DESKTOP-PDJCJQV:~$
```

9. Pkill pattern

```
maha@DESKTOP-PDJCJQV: ~
maha@DESKTOP-PDJCJQV:~$ pkill pattern
maha@DESKTOP-PDJCJQV:~$
```