✦ Experiment 2:

- **AIM:** To study the shell scripting language
  A display OS version release number kernel version
  B display top 10 processors in descending order
  C display processes with highest memory usage
  D display c+

- **THEORY:**

A]
i) uname - r{username}
To show the OS version, release no. OS release version
ii) uname - v
Shows Kernel version (last when launched)
iii) uname - a
Shows all the details including OS used, PC and other details.
us - c + u - r → us - a

B]
i) ps-aux (i) sort : nk +41 tail
Sorts 10 processes in descending order. It shows logged in users, modes of memory & storage.
OR
ii) ps-aux | tail
Same as above
OR
iii) ps-aux | sort -nl+4 | tail - n15 (shows top 15 processes)
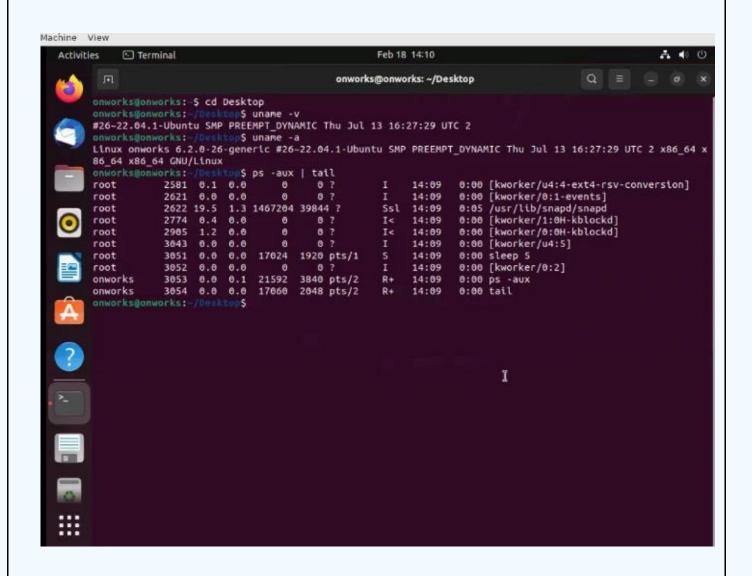same with 15

C]
i) sudo apt install htop
shows date of processes with highest memory
ii) ps - eo pid, ppid, cmd, % mem, % cpu –sort =-% mem | head
same as above same as above
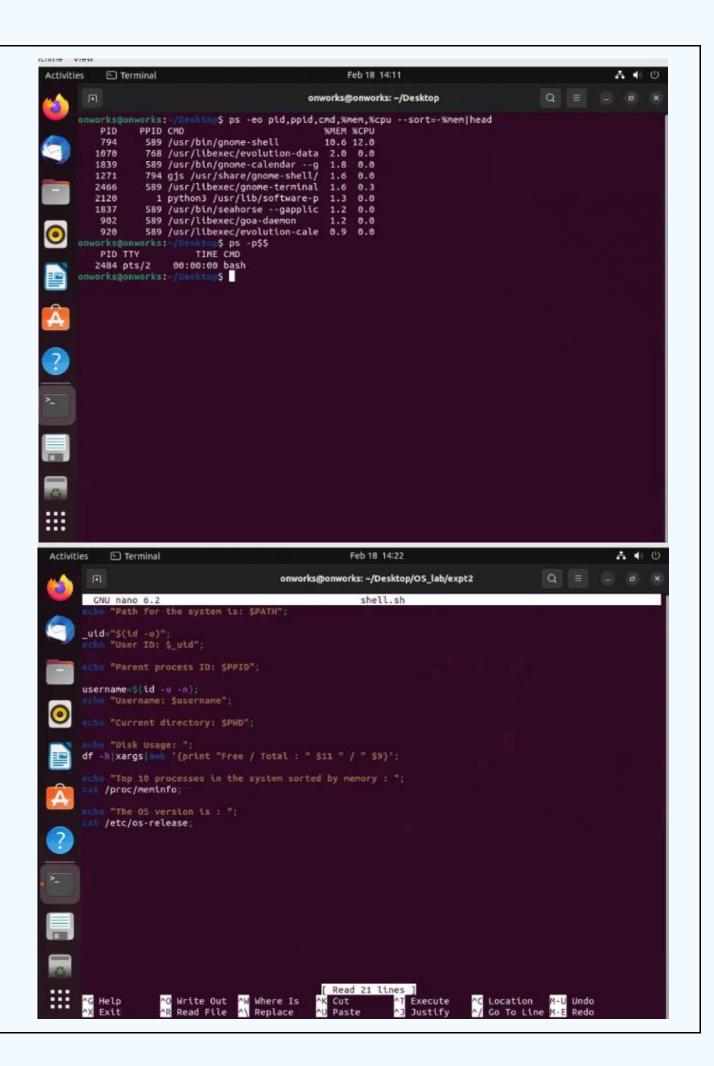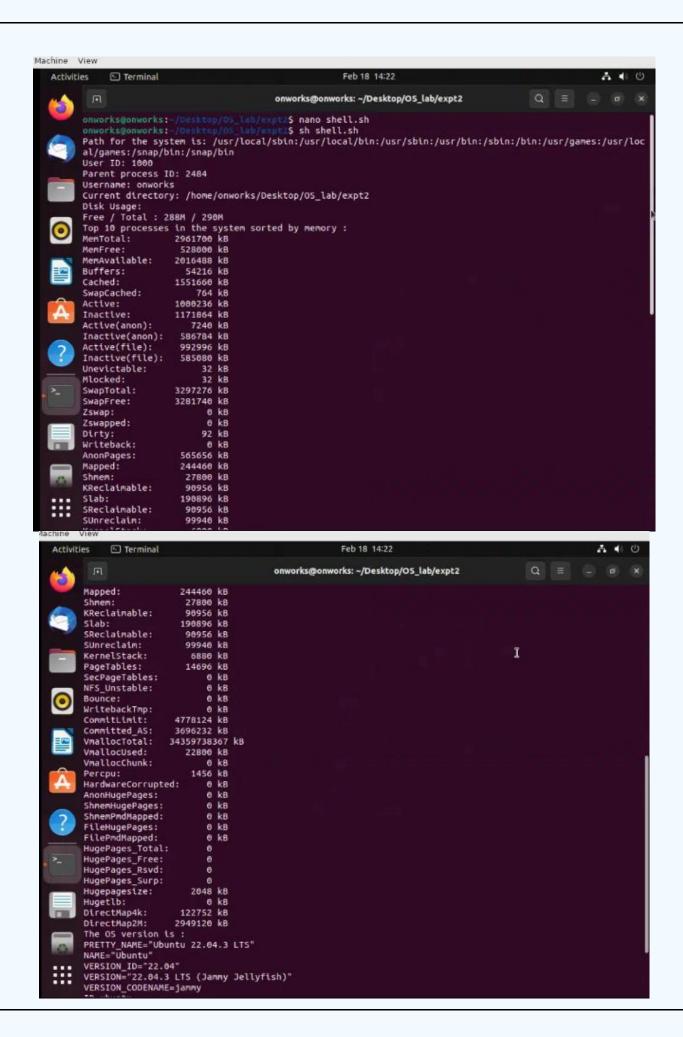
D]
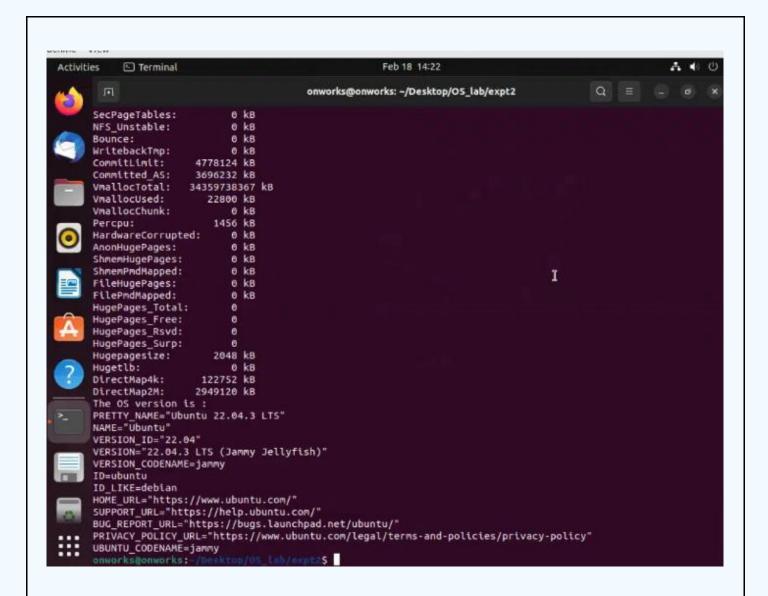
i) ps-p$$

Shows process ID and current shell

ii) echo display home directory

echo $ home

To display home directory

- **SCREENSHOTS:**

onworks@onworks: ~/Desktop

```
onworks@onworks:~/Desktop$ ps -eo pid,ppid,cmd,%mem,%cpu --sort=-%mem|head
    PID    PPID CMD                         %MEM %CPU
    794     589 /usr/bin/gnome-shell        10.6 12.0
   1070     768 /usr/libexec/evolution-data  2.0  0.0
   1839     589 /usr/bin/gnome-calendar --g  1.8  0.0
   1271     794 gjs /usr/share/gnome-shell/  1.6  0.0
   2466     589 /usr/libexec/gnome-terminal  1.6  0.3
   2120       1 python3 /usr/lib/software-p  1.3  0.0
   1837     589 /usr/bin/seahorse --gapplic  1.2  0.0
    902     589 /usr/libexec/goa-daemon      1.2  0.0
    920     589 /usr/libexec/evolution-cale  0.9  0.0
onworks@onworks:~/Desktop$ ps -p$$
    PID TTY          TIME CMD
   2484 pts/2    00:00:00 bash
onworks@onworks:~/Desktop$
```

onworks@onworks: ~/Desktop/OS_lab/expt2

```
  GNU nano 6.2                          shell.sh
echo "Path for the system is: $PATH";

_uid="$(id -u)";
echo "User ID: $_uid";

echo "Parent process ID: $PPID";

username=$(id -u -n);
echo "Username: $username";

echo "Current directory: $PWD";

echo "Disk Usage: ";
df -h|xargs|awk '{print "Free / Total : " $11 " / " $9}';

echo "Top 10 processes in the system sorted by memory : ";
cat /proc/meminfo;

echo "The OS version is : ";
cat /etc/os-release;
```

```
                        [ Read 21 lines ]
^G Help        ^O Write Out    ^W Where Is    ^K Cut       ^T Execute    ^C Location    M-U Undo
^X Exit        ^R Read File    ^\ Replace     ^U Paste     ^J Justify    ^/ Go To Line  M-E Redo
```

Activities   Terminal   Feb 18 14:22

onworks@onworks: ~/Desktop/OS_lab/expt2

```
onworks@onworks:~/Desktop/OS_lab/expt2$ nano shell.sh
onworks@onworks:~/Desktop/OS_lab/expt2$ sh shell.sh
Path for the system is: /usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/loc
al/games:/snap/bin:/snap/bin
User ID: 1000
Parent process ID: 2484
Username: onworks
Current directory: /home/onworks/Desktop/OS_lab/expt2
Disk Usage:
Free / Total : 288M / 290M
Top 10 processes in the system sorted by memory :
MemTotal:         2961700 kB
MemFree:           528000 kB
MemAvailable:     2016488 kB
Buffers:            54216 kB
Cached:           1551660 kB
SwapCached:           764 kB
Active:           1000236 kB
Inactive:         1171864 kB
Active(anon):        7240 kB
Inactive(anon):    586784 kB
Active(file):      992996 kB
Inactive(file):    585080 kB
Unevictable:           32 kB
Mlocked:               32 kB
SwapTotal:        3297276 kB
SwapFree:         3281740 kB
Zswap:                  0 kB
Zswapped:               0 kB
Dirty:                 92 kB
Writeback:              0 kB
AnonPages:         565656 kB
Mapped:            244460 kB
Shmem:              27800 kB
KReclaimable:       90956 kB
Slab:              190896 kB
SReclaimable:       90956 kB
SUnreclaim:         99940 kB
```

Activities   Terminal   Feb 18 14:22

onworks@onworks: ~/Desktop/OS_lab/expt2

```
Mapped:            244460 kB
Shmem:              27800 kB
KReclaimable:       90956 kB
Slab:              190896 kB
SReclaimable:       90956 kB
SUnreclaim:         99940 kB
KernelStack:         6880 kB
PageTables:         14696 kB
SecPageTables:          0 kB
NFS_Unstable:           0 kB
Bounce:                 0 kB
WritebackTmp:           0 kB
CommitLimit:      4778124 kB
Committed_AS:     3696232 kB
VmallocTotal:   34359738367 kB
VmallocUsed:        22800 kB
VmallocChunk:           0 kB
Percpu:              1456 kB
HardwareCorrupted:      0 kB
AnonHugePages:          0 kB
ShmemHugePages:         0 kB
ShmemPmdMapped:         0 kB
FileHugePages:          0 kB
FilePmdMapped:          0 kB
HugePages_Total:        0
HugePages_Free:         0
HugePages_Rsvd:         0
HugePages_Surp:         0
Hugepagesize:        2048 kB
Hugetlb:                0 kB
DirectMap4k:       122752 kB
DirectMap2M:      2949120 kB
The OS version is :
PRETTY_NAME="Ubuntu 22.04.3 LTS"
NAME="Ubuntu"
VERSION_ID="22.04"
VERSION="22.04.3 LTS (Jammy Jellyfish)"
VERSION_CODENAME=jammy
```

- **CONCLUSION: Thus, we have successfully studied and implemented shell scripting.**