20CO24
Khan Arshad Abdulla

Experiment No: 02

Shell Scripting:

Aim: Write shell scripts to do the following:

a. Display OS version, release number, kernel version

b. Display top 10 processes in descending order

c. Display processes with highest memory usage.

d. Display current logged in user and log name.

e. Display current shell, home directory, operating system type, current path setting current working directory.

Theory:

What is Shell Scripting:

In Linux, shells like bash and korn support programming construct which are saved as scripts. These scripts become shell commands and hence many Linux commands are script. A shell script is a text file hat contains a sequence of commands. It is called a Shell Script because it combines a sequence of commands , that would otherwise have to be typed into keyboard one at a time. A shell script is usually created for command sequences in which a user has a need to use repeatedly in order to save time. Like other programs, the shell script can contain parameters, comments and subcommands that the shell must follow. Users initiate the sequence of commands in the shell script by simply entering the file name on a command line.

We can get the name of your shell prompt, with following command:

Syntax: echo $SHELL__

The sign #! is called she-bang and is written at top of the script. It passes instruction to program /bin/sh. To run your script in a certain shell, start your script with #! followed by the shell name.

How to use Shell Scripting:

To create a shell script, we can create it through the terminal or one can create in any text editor. In terminal we can use nano command

Syntax: nano <filename>.sh

After creating a shell script always start your script with #!/bin/bash Now we can write commands in our shell script.

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How to execute Shell Scripting:

After creating a shell script we have to give the permission to execute the file we can use chmod +x .sh instead of ‘x’ we can also use ‘r’ or ‘w’ to execute the shell script use sh . sh now the file is executable

Program:

```
#!/bin/sh

echo "a. Displaying OS version, release number and kernel number:"

echo

echo "  ***OS version***"

cat /etc/os-release

echo

echo "  ***Release Number***"

cat /proc/sys/kernel/osrelease

echo

echo "  ***Kernel Version***"

cat /proc/sys/kernel/version

echo

echo "b. Displaying Top 10 Processes in descending order "

echo

ps -aux | head -n 10

echo

echo "c. Displaying processes with high memory usage"

echo

ps aux --sort -rss | head

echo

echo "d. Displaying current logged in user and log name"

echo

who

whoami

id

echo
```

```
echo "e. Displaying current shell, home directory, os type, current path setting, current working directory"

echo

echo "Displaying Current Shell => $SHELL"

echo "Displaying Home Directory => $HOME"

echo "Displaying Operating System Type => $OSTYPE"

cat /proc/sys/kernel/ostype

echo "Displaying Current Path Setting => $PATH"

echo "Displaying Current Working Directory=> $PWD"
```

Output:

```
a. Displaying OS version, release number and kernel number:


        ***OS version***

PRETTY_NAME="Kali GNU/Linux Rolling"

NAME="Kali GNU/Linux"

ID=kali

VERSION="2021.4"

VERSION_ID="2021.4"

VERSION_CODENAME="kali-rolling"

ID_LIKE=debian

ANSI_COLOR="1;31"

HOME_URL="https://www.kali.org/"

SUPPORT_URL="https://forums.kali.org/"

BUG_REPORT_URL="https://bugs.kali.org/"


        ***Release Number***

5.14.0-kali4-amd64


        ***Kernel Version***

#1 SMP Debian 5.14.16-1kali1 (2021-11-05)
```

b. Displaying Top 10 Processes in descending order:

```
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME
COMMAND

root           1  0.0  0.2 164264 10652 ?        Ss   00:15   0:01
/sbin/init splash

root           2  0.0  0.0      0     0 ?        S    00:15   0:00
[kthreadd]

root           3  0.0  0.0      0     0 ?        I<   00:15   0:00
[rcu_gp]

root           4  0.0  0.0      0     0 ?        I<   00:15   0:00
[rcu_par_gp]

root           5  0.1  0.0      0     0 ?        I    00:15   0:03
[kworker/0:0-events]

root           6  0.0  0.0      0     0 ?        I<   00:15   0:00
[kworker/0:0H-events_highpri]

root           8  0.0  0.0      0     0 ?        I<   00:15   0:00
[mm_percpu_wq]

root           9  0.0  0.0      0     0 ?        S    00:15   0:00
[rcu_tasks_rude_]

root          10  0.0  0.0      0     0 ?        S    00:15   0:00
[rcu_tasks_trace]
```

c. Displaying processes with high memory usage:

```
USER         PID %CPU %MEM    VSZ   RSS TTY      STAT START   TIME
COMMAND

root         583  1.6  3.2 355748 117140 tty7    Ssl+ 00:16   0:50
/usr/lib/xorg/Xorg :0 -seat seat0 -auth /var/run/lightdm/root/:0 -
nolisten tcp vt7 -novtswitch

kali         928  0.5  2.4 922444 87928 ?        Sl   00:16   0:17
xfwm4

kali        1318  0.2  2.3 400356 82920 ?        Sl   00:17   0:08
/usr/bin/qterminal

kali        2116  0.1  2.2 400180 80820 ?        Sl   00:20   0:04
/usr/bin/qterminal
```

```
kali        1010  0.0  1.3 370028 47708 ?        Sl   00:16   0:00
/usr/bin/python3 /usr/bin/blueman-applet

kali         970  0.1  1.2 464232 43468 ?        Sl   00:16   0:03
/usr/lib/x86_64-linux-gnu/xfce4/panel/wrapper-2.0 /usr/lib/x86_64-
linux-gnu/xfce4/panel/plugins/libwhiskermenu.so 1 16777223
whiskermenu Whisker Menu Show a menu to easily access installed
applications

kali        9814  1.3  1.1 466964 40396 ?        Sl   00:51   0:12
mousepad

kali         969  0.0  1.0 431136 39408 ?        Sl   00:16   0:01
xfdesktop

kali         960  0.1  1.0 470956 39104 ?        Sl   00:16   0:05
xfce4-panel
```

d. Displaying current logged in user and log name:

```
kali     tty7         2022-02-09 00:16 (:0)

kali
```

e. Displaying current shell, home directory, os type, current path setting, current working directory:

```
Displaying Current Shell => /usr/bin/zsh

Displaying Home Directory => /home/kali

Displaying Operating System Type =>

Linux

Displaying Current Path Setting =>
/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/lo
cal/games:/usr/games

Displaying Current Working Directory=> /home/kali
```