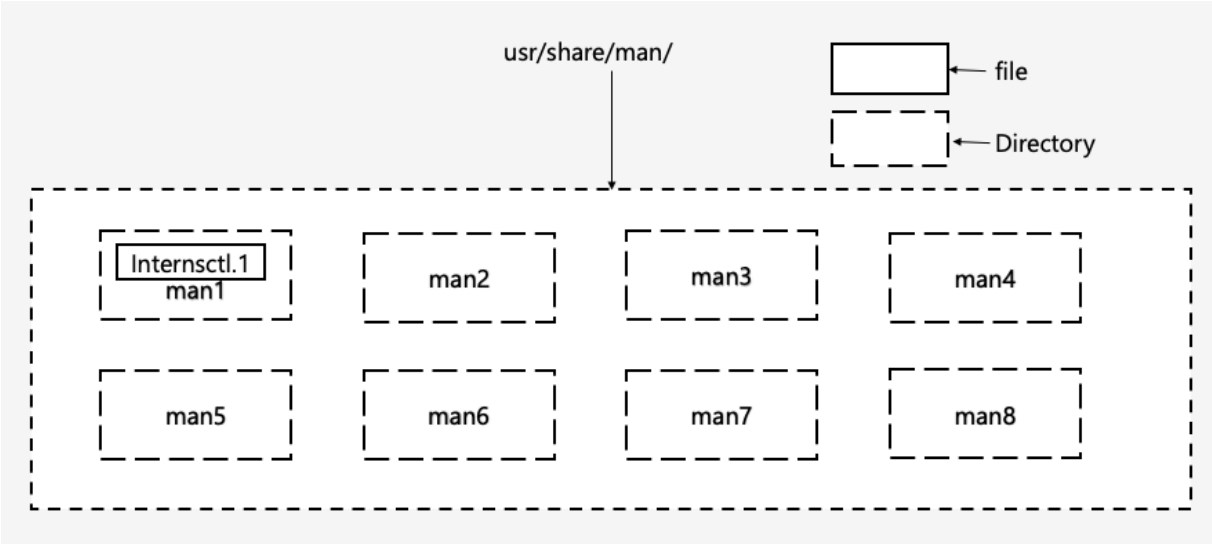
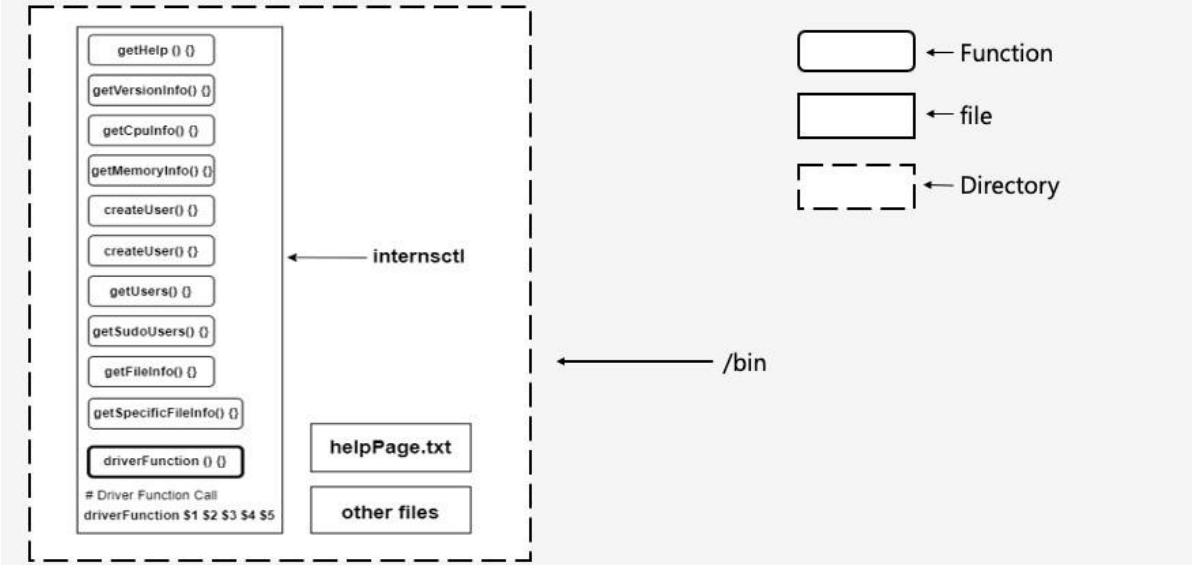
Workflow of LINUX Task 1:-



Script Setup



Creating and Configuring the Custom Command : internsctl

Section A

1. Creating manual (man) page**

- ***Step 1 :***
    - Login as a root user by running the command sudo -i(If it asks for the administrative password, Enter it).
    - Now using cdcommand move into to the standrad location in filesystem : /usr/share/man, where manual pages of all the commands are normally stored in **nroff(1)** format.
    - Then run lscommand to list all the directories in that location.
      Here in this location, each man page is categorized in a specific section (directory), different directories (e.g., man1, man2, man3...) store man pages for different category of commands. See below -

      man1 - User Commandsman2 -
      System Calls
      man3 - C Library Functions
      man4 - Devices and Special Files man5 - File
      Formats and Conventionsman6 - Games et. al
      man7 - Miscellaneous
      man8 - System Administration tools and Daemons

      Now since **internsctl** is a **user command**, we will create and store the manual page file in /man1directory.

- ***Step 2 :***
    - From the current directory, navigate to /man1directory using cd man1command.
    - Create the source file of the man page using the command touchfollowedby <File_Name>.<Section_Index>.

      File_Name : The command whose manual page to be created.
      Section_Index : For man1 - it'll be **1**, For man2 - it'll be **2**, and so on.

      In this case it will be : **touch internsctl.1**

- ***Step 3 :***
    - Now run nano internsctl.1to edit the source file in nano text editor. Copyand paste the following script into the source file or write it from yourself andsave it.
    - .\" Manual (man) page of internsctl
    - .TH internsctl 1 "10 june 2023" "0.1.0" "Custom Command"
    - .SH NAME
    - internsctl
    - .SH SYNOPSIS

- internsctl cpu getinfo |
- .brinternsctl memory getinfo |
- .brinternsctl user create <username> |
- internsctl user list |
- internsctl user list --sudo-only |
- internsctl file getinfo <file-name> |
- internsctl file getinfo [options] <file-name>
- .SH DESCRIPTION
- Display cpu and memory information, create new user, list allusers, list all users with sudo permissions, get file information, get specific information of file.
- .SH OPTIONS
- .TP
- .BR \-\-size ", " \-s print " " file " "size
- .TP
- .BR \-\-permissions ", " \-p print " " file " " permissions
- .TP
- .BR \-\-owner ", " \-o print " " file " "owner
- .TP
- .BR \-\-last-modified ", " \-m print " " last " "modified " " date " " and " " time " " of " " the " " file
- .SH BUGS
- No known bugs.
- .SH AUTHOR
- SAMRIDHI VERMA

- ***Step 4 :***

  - Run man internsctlfrom terminal to check the manual page ofthe internsctl.
  - 2. Creating function to display the help text through the command internsctl --help**

- Create a file internsctlin /bindirectory.

- Copy and paste the following code into that file and save it.

- getHelp () {
- cat /usr/bin/helpPage.txt
- }
- Now create another file helpPage.txtin the same directory and copy and paste the following help text into that file and save it.
- Usage: 'internsctl cpu getinfo' -> Get cpu information of the localserver.
- 'internsctl memory getinfo' -> Get memory information of thelocal server.
- 'internsctl user create <username>' -> Create a new user on the local server.
- 'internsctl user list' -> List all the regular users presenton the local server.
- 'internsctl user list' --sudo-only' -> List all the userswith sudo permissions on the local server.

- 'internsctl file getinfo <file-name>' -> Get informationabout a file.
- 'internsctl file getinfo [options] <file-name>' -> Getspecific information about a file.

- Mandatory arguments to long options are mandatory for short optionstoo.
- --size, -s print file size
- --permissions, -p print file permissions
- --owner, -o print file owner
- --last-modified, -m print last modified date and time ofthe file

- --help display help text and exit
- --version output version information and exit

- Exit status:
- 0 if OK,
- 1 if minor problems (e.g., cannot access subdirectory),
- 2 if serious trouble (e.g., cannot access command-line argument).

3. Creating function to display version of the command through internsctl --version**

- Add the following code into the file internsctlpresent in /binfolder and save it.
- getVersionInfo () {
- echo "internsctl 0.1.0"
- echo "Copyright (C) 2024 XenonStack "
- }

Section B

Part 1 | Level Easy

1. Creating function to get cpu information of server through the command internsctl cpu getinfo**

- Add the following code into the file internsctlpresent in /binfolder and save it.
- getCpuInfo () {
- lscpu
- }

2. Creating function to get memory information of server through the command internsctl memory getinfo**

- Add the following code into the file internsctlpresent in /binfolder and save it.
- getMemoryInfo () {
- free
- }

Part 2 | Level Intermediate

1. Creating function to create a new user on server through the command internsctl user create <username>**

- Add the following code into the file internsctlpresent in /binfolder and save it.
- createUser () {
- sudo adduser $3
- }

2. Creating function to list all the regular users present on the server through the command internsctl user list**

- Add the following code into the file internsctlpresent in /binfolder and save it.
- getUsers () {
- cut -d: -f1 /etc/passwd
- }

3. Creating function to list all the users with sudo permissions on the server through the command internsctl user list --sudo-only**

- Add the following code into the file internsctlpresent in /binfolder and save it.
- getSudoUsers () {
- getent group sudo | cut -d: -f4
- }

Part 3 | Advanced Level

1. Creating function to get some information about a file through the command internsctl file getinfo <file-name>**

- Add the following code into the file internsctlpresent in /binfolder and save it.
- getFileInfo () {
- if test -f "$3"; then
- echo "File: $3"
- displayPermissions() {
- case "$1" in
- 0) echo "no";;
- 1) echo "--x";;
- 2) echo "-w-";;
- 3) echo "-wx";;
- 4) echo "r--";;
- 5) echo "r-x";;
- 6) echo "rw-";;
- 7) echo "rwx";;
- esac
- }
- permissions=$(stat -c%a "$3")
- user=${permissions:0:1}
- group=${permissions:1:1}
- others=${permissions:2:1}
- echo "Access: -$(displayPermissions $user)$(displayPermissions $group)$(displayPermissions $others)"
- myFileSize=$(wc -c $3 | awk '{print $1}')
- echo "Size(B): $myFileSize"
- echo "Owner: $(stat -c '%U' $3)"

```
else
    echo "internsctl: cannot access '$3': No such file in currentdirectory"
fi
}
```

2. Creating function to get specific information about a file through the command internsctl file getinfo [options] <file-name>**

- Add the following code into the file internsctlpresent in /binfolder and save it.

```
getSpecificFileInfo () {
    case "$3" in
        --size | -s)
            if test -f "$4"; then
                myFileSize=$(wc -c $4 | awk '{print $1}')
                if [ $myFileSize -ge 1000 ]; then
                    myFileSize=$(echo "$myFileSize * 0.001"|bc)
                    printf "%.2f kilobytes\n" $myFileSize
                else
                    echo "$myFileSize bytes"
                fi
            else
                echo "internsctl: cannot access '$4': No such file in current directory"
            fi ;;

        "--permissions" | "-p")
            if test -f "$4"; then
                displayPermissions() {
                    case "$1" in
                        0) echo "no";;
                        1) echo "--x";;
                        2) echo "-w-";;
                        3) echo "-wx";;
                        4) echo "r--";;
                        5) echo "r-x";;
                        6) echo "rw-";;
                        7) echo "rwx";;
                    esac
                }
                permissions=$(stat -c%a "$4")
                user=${permissions:0:1}
                group=${permissions:1:1}
                others=${permissions:2:1}
                echo "-$(displayPermissions $user)$(displayPermissions $group)$(displayPermissions $others)"
            else
                echo "internsctl: cannot access '$4': No such file in current directory"
            fi ;;

        "--owner" | "-o")
            if test -f "$4"; then
                echo "$(stat -c '%U' $4)"
            else
```

```
                                        echo "internsctl: cannot access '$4': Nosuch file in
current directory"
                                fi ;;

                "--last-modified" | "-m")
                                if test -f "$4"; then
                                        echo "$(stat -c '%y' $4)"
                                else
                                        echo "internsctl: cannot access '$4': Nosuch file in
current directory"
                                fi ;;

                *)
                                if [ "${3:0:1}" = "-" ]; then
                                        echo "internsctl: invalid option"
                                        printf "\nUsage:\n internsctl file getinfo[options] <file-
name>\n"
                                        printf "\nTry 'internsctl --help' for more
information.\n"
                                else
                                        printf "error: too many arguments\n"
                                        printf "\nUsage:\n internsctl file getinfo
<file-name>\n"
                                        printf "\n Try 'internsctl --help' foradditional help
text.\n"
                                fi ;;
        esac
}
```

Options :

--size, -s to print size
--permissions, -p to print file permissions
--owner, -o toprint file owner
--last-modified, -m to print last modification time and date