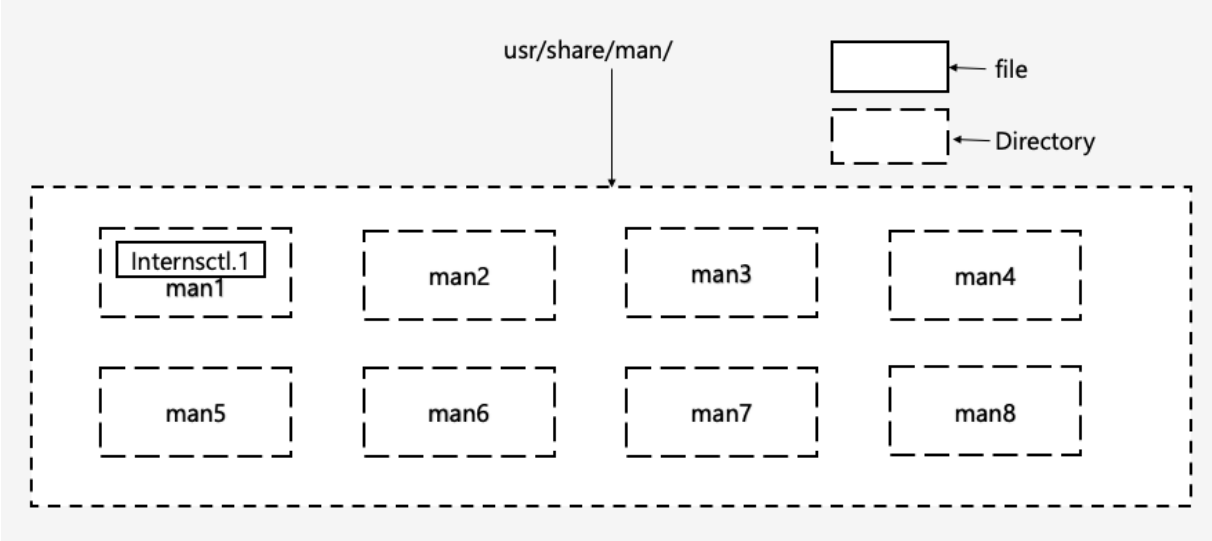
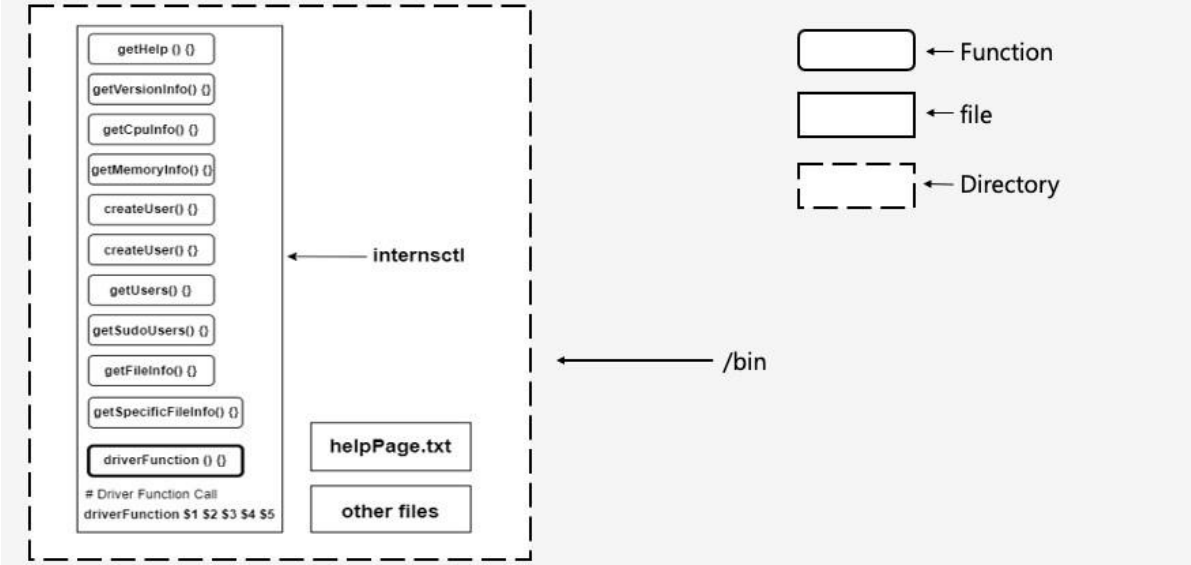
Workflow



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 `cd` command 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 `ls` command 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 Commands
man2 - System Calls
man3  -  C Library Functions
man4  -  Devices and Special Files
man5 - File Formats and Conventions
man6  -  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 `/man1` directory.

- ***Step 2 :***
    - From the current directory, navigate to `/man1` directory using `cd man1` command.
    - Create the source file of the man page using the command `touch` followed by `<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.1` to edit the source file in nano text editor. Copy and paste the following script into the source file or write it from yourself and save it.

```
.\" Manual (man) page of internsctl
.TH internsctl 1 "22 Dec 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 all
users, 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
Shikha Rajput
```

- ***Step 4 :***
    - Run `man internsctl` from terminal to check the manual page of the `internsctl`.
    - [2. Creating function to display the help text through the command `internsctl --help`**]

- Create a file `internsctl` in `/bin` directory.

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

```
getHelp () {
   cat /usr/bin/helpPage.txt
}
```

- Now create another file `helpPage.txt` in 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 local
server.
       'internsctl memory getinfo' -> Get memory information of the
local server.
       'internsctl user create <username>' -> Create a new user on
the local server.
       'internsctl user list' -> List all the regular users present
on the local server.
       'internsctl user list' --sudo-only' -> List all the users
with sudo permissions on the local server.
```

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

Mandatory arguments to long options are mandatory for short options
too.
 --size, -s                    print file size
 --permissions, -p             print file permissions
 --owner, -o                   print file owner
 --last-modified, -m           print last modified date and time of
the 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 `internsctl` present in `/bin` folder and save it.

```
getVersionInfo () {
   echo "internsctl 0.1.0"
   echo "Copyright (C) 2023 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 `internsctl` present in `/bin` folder 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 `internsctl` present in `/bin` folder 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 `internsctl` present in `/bin` folder 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 `internsctl` present in `/bin` folder 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 `internsctl` present in `/bin` folder 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 `internsctl` present in `/bin` folder 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 current directory"
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 `internsctl` present in `/bin` folder 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': No
such file in current directory"
                fi ;;

        "--last-modified" | "-m")
                if test -f "$4"; then
                        echo "$(stat -c '%y' $4)"
                else
                        echo "internsctl: cannot access '$4': No
such 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' for
additional 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