Shell Scripting

Day3

Nada Mohamed Ahmed Hassan Eleshmawy

Mansoura Open Source

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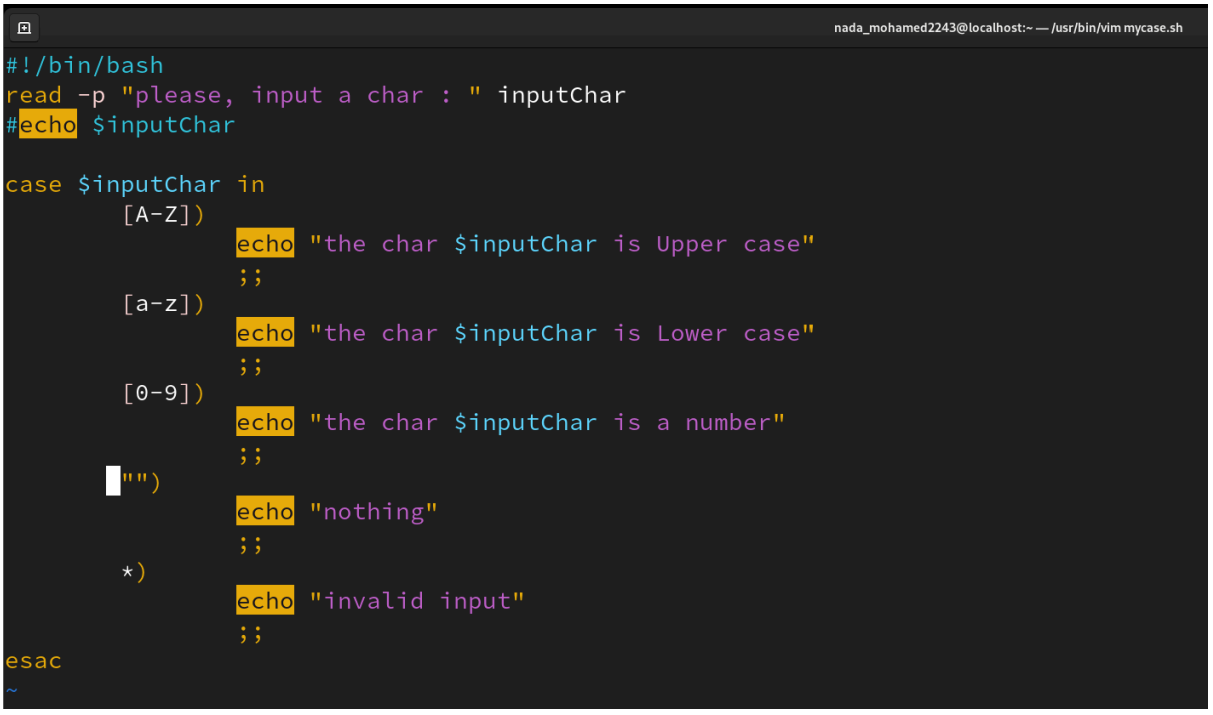
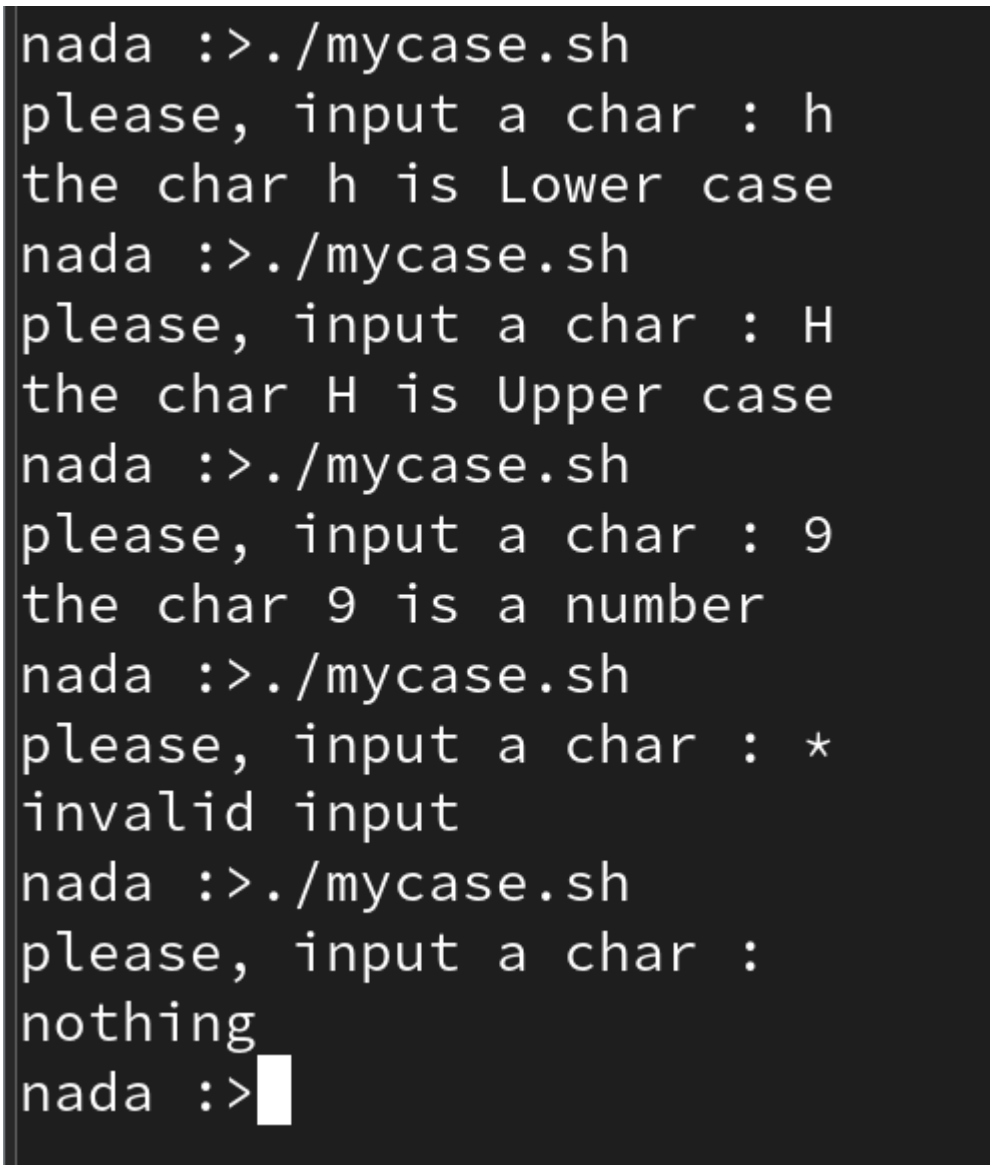
1. Write a script called mycase, using the case utility to checks the type of character entered by a user:

- **a. Upper Case.**
- **b. Lower Case.**
- **c. Number.**
- **d. Nothing.**

First create the script to start write on: vi mycase.sh
And remember to change the permissions by adding execute
chmod +x mycase.sh

Note : in bash we can write and read together using -p option with read
read -p “the sentence that will appear to the user” the variable that contain what the user write
read -p “please input char” inputChar





2. Enhanced the previous script, by checking the type of string entered by a user:

- **a. Upper Cases.**
- **b. Lower Cases.**
- **c. Numbers.**
- **d. Mix.**
- **e. Nothing.**

In bash We first should enable extended pattern matching by using :

shopt -s extglob

Then using + → one or more

nada_mohamed2243@localhost:~ — /usr/bin/vim mycasestr.sh

```
#!/bin/bash
read -p "please input your string : " inputStr
echo $inputStr


#Enable extended pattern matching
shopt -s extglob

case $inputStr in
        +([A-Z]))
                echo "the string $inputStr is upper case"
                ;;
        +([a-z]))
                echo "the string $inputStr is lowercase"
                ;;
        +([0-9]))
                echo "the string $inputStr is a number"
                ;;
        +([A-Za-z0-9]))
                echo "the string $inputStr is mixed"

                case $inputStr in
                        +([A-za-z]))
                                echo "lower case and upper case"
                                ;;
                        +([A-Z0-9]))
                                echo "upper case and numbers"
                                ;;
                        +([a-z0-9]))
                                echo "lower case and numbers"
                                ;;
                        *)
                                echo "lower case, upper case and numbers"
                esac
                ;;
        "")
                echo "nothing"
                ;;
        *)
                echo "invalid input"
                ;;
esac
```

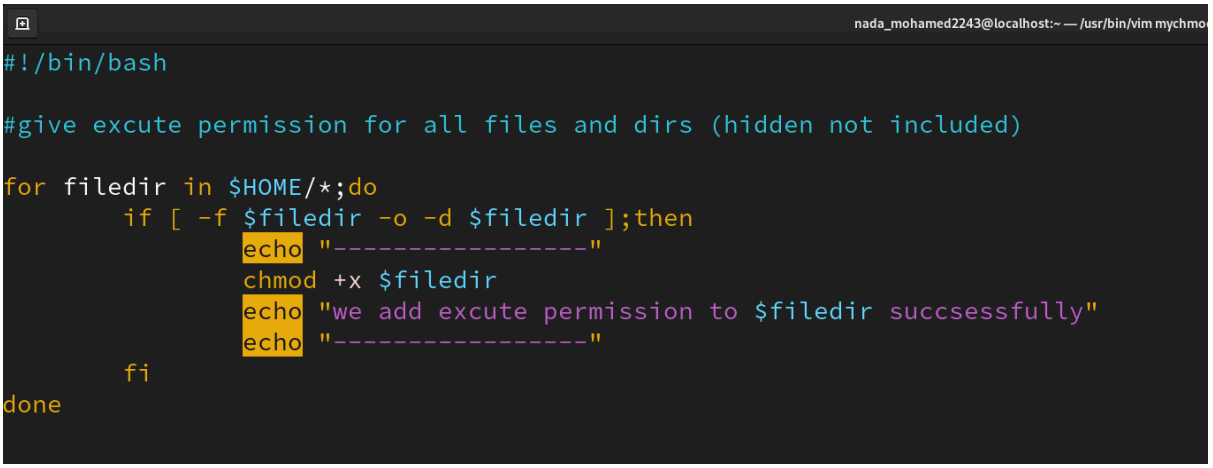
```
nada :>./mycasestr.sh
please input your string : NADA
NADA
the string NADA is upper case
nada :>./mycasestr.sh
please input your string : nada
nada
the string nada is lowercase
nada :>./mycasestr.sh
please input your string : 876
876
the string 876 is a number
nada :>./mycasestr.sh
please input your string : ))
))
invalid input
nada :>./mycasestr.sh
please input your string :

nothing
nada :>./mycasestr.sh
please input your string : Nada
Nada
the string Nada is mixed
lower case and upper case
```

```
nada :>./mycasestr.sh
please input your string : NADA1
NADA1
the string NADA1 is mixed
upper case and numbers
nada :>./mycasestr.sh
please input your string : nada1
nada1
the string nada1 is mixed
lower case and numbers
```

```
nada :>./mycasestr.sh
please input your string : nadaM1
nadaM1
the string nadaM1 is mixed
lower case, upper case and numbers
```

3. Write a script called mychmod using for utility to give execute permission to all files and directories in your home directory.



```
nada :>./mychmod.sh
-----------------
we add excute permission to /home/nada_mohamed2243/Desktop succsessfully
-----------------
-----------------
we add excute permission to /home/nada_mohamed2243/Documents succsessfully
-----------------
-----------------
we add excute permission to /home/nada_mohamed2243/Downloads succsessfully
-----------------
-----------------
we add excute permission to /home/nada_mohamed2243/file succsessfully
-----------------
-----------------
we add excute permission to /home/nada_mohamed2243/filename1 succsessfully
```

```
nada :>ls -l
total 21764
drwxr-xr-x. 2 nada_mohamed2243 nada_mohamed2243        6 Dec 25 13:10 Desktop
drwxr-xr-x. 2 nada_mohamed2243 nada_mohamed2243        6 Dec 25 13:10 Documents
drwxr-xr-x. 2 nada_mohamed2243 nada_mohamed2243        6 Dec 25 13:10 Downloads
---x--x--x. 1 nada_mohamed2243 nada_mohamed2243        0 Dec 25 13:53 file
```

If we apply this in all files and dirs include hidden

```
#give excute permission for all files and dirs (hidden included)

for filedir in $HOME/{.,}*;do

        # Skip ('.' (current directory) and '..' (parent directory)) special directories
        if [ "$filedir" = "$HOME/." ] || [ "$filedir" = "$HOME/.." ]; then
                continue
        fi

        if [ -f $filedir -o -d $filedir ];then
                echo "-----------------"
                chmod +x $filedir
                echo "we add excute permission to $filedir succsessfully"
                echo "-----------------"
        fi
done
```

```
we add excute permission to /home/nada_mohamed2243/.config succsessfully
-----------------
-----------------
we add excute permission to /home/nada_mohamed2243/.lesshst succsessfully
-----------------
-----------------
we add excute permission to /home/nada_mohamed2243/.local succsessfully
```

4. Write a script called mybackup using for utility to create a backup of only files in your home directory.

Remember :

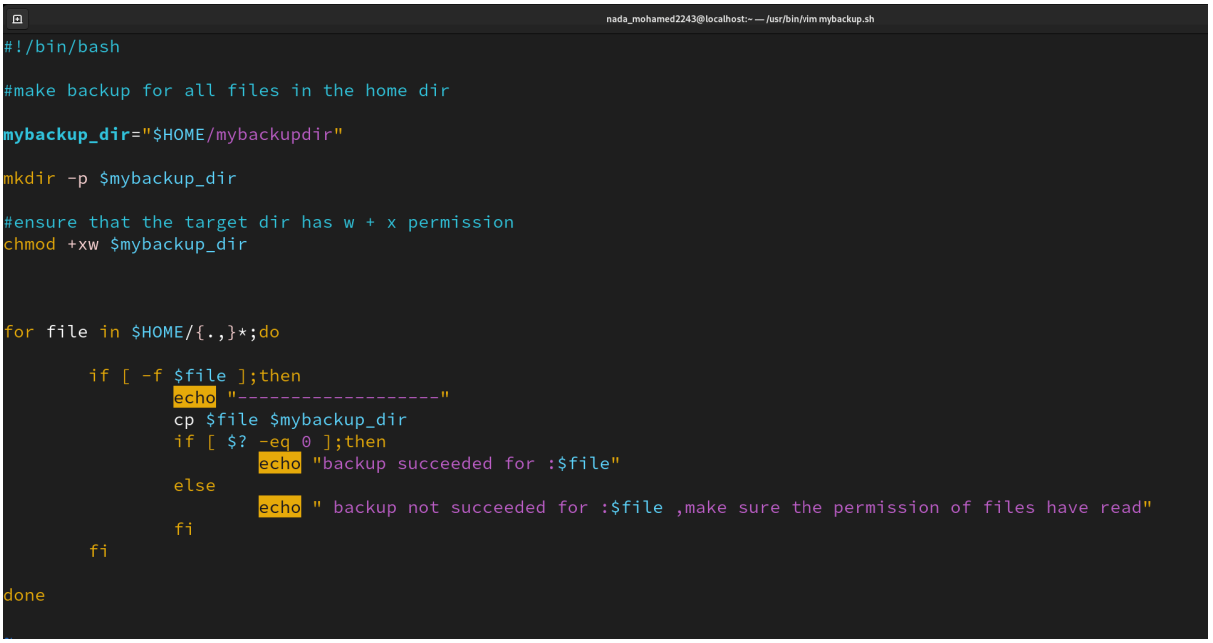
- $? Return code of the last command.

if `$?` is equal to `0`, meaning the above command was successful.
`$?` is non-zero, meaning the above command was not successful.

- On mkdir, If the directory already exists, using `-p` will not return an error. Without `-p`, `mkdir` would throw an error if the directory already exists.

- With cp : The source files must have read permission And the target dir must have write and execute permission.

With no file permission modification :



```
nada :>./mybackup.sh
-------------------
backup succeeded for :/home/nada_mohamed2243/.bash_history
-------------------
backup succeeded for :/home/nada_mohamed2243/.bash_logout
-------------------
backup succeeded for :/home/nada_mohamed2243/.bash_profile
-------------------
backup succeeded for :/home/nada_mohamed2243/.bashrc
-------------------
backup succeeded for :/home/nada_mohamed2243/.bashrc.swp
-------------------
backup succeeded for :/home/nada_mohamed2243/.lesshst
-------------------
backup succeeded for :/home/nada_mohamed2243/.mycv.swp
-------------------
backup succeeded for :/home/nada_mohamed2243/.viminfo
-------------------
cp: cannot open '/home/nada_mohamed2243/file' for reading: Permission denied
 backup not succeeded for :/home/nada_mohamed2243/file ,make sure the permission of files have read
-------------------
backup succeeded for :/home/nada_mohamed2243/filename1
-------------------
```

With file permission modification :

nada_mohamed2243@localhost:~ — /usr/bin/vim mybackup.sh

```
mybackup_dir="$HOME/mybackupdir"

mkdir -p "$mybackup_dir"

#ensure that the target dir has w + x permission
chmod +wx "$mybackup_dir"



for file in $HOME/{.,}*;do

        if [ -f "$file" ]; then
                echo "-------------------------"
                # Save the current permissions
                original_permissions=$(stat -c "%a" "$file")

                # Temporarily set read permission if not already granted
                chmod +r "$file"

                cp "$file" "$mybackup_dir"
                echo "backup successefully : $file"

                # Restore the original permissions
                chmod "$original_permissions" "$file"  # Correct variable name
        fi


done
```

```
nada :>./mybackup.sh
------------------------
backup successefully : /home/nada_mohamed2243/.bash_history
------------------------
backup successefully : /home/nada_mohamed2243/.bash_logout
------------------------
backup successefully : /home/nada_mohamed2243/.bash_profile
------------------------
backup successefully : /home/nada_mohamed2243/.bashrc
------------------------
backup successefully : /home/nada_mohamed2243/.bashrc.swp
------------------------
backup successefully : /home/nada_mohamed2243/.lesshst
------------------------
backup successefully : /home/nada_mohamed2243/.mycv.swp
------------------------
backup successefully : /home/nada_mohamed2243/.viminfo
------------------------
backup successefully : /home/nada_mohamed2243/file
------------------------
backup successefully : /home/nada_mohamed2243/filename1
------------------------
backup successefully : /home/nada_mohamed2243/filename2
------------------------
```

5. Write a script called mymail using a utility to send mail to all users in the system.
Note: write the mail body in a file called mtemplate.

First : create mtemplate → vi mtemplate
Install mailx
Second : create mymail.sh → vi mymail.sh
Third : modify the permission → chmod +x mymail.sh

```
File  Edit  View  Search  Terminal  Help
#!/bin/bash

for user in `awk -F: '{print $1}' /etc/passwd`;do
        #echo $user
        mailx -s "system test" $user < mtemplate
        if [ $? -eq 0 ];then
                echo "mail successfully send to the user $user"
        else
                echo "mail can't send to $user due to connection problem"
        fi
done
~
```

```
nada :>./mymail.sh
mail successfully send to the user root
mail successfully send to the user bin
mail successfully send to the user daemon
mail successfully send to the user adm
mail successfully send to the user lp
```

```
mail successfully send to the user nada_mohamed2243
mail successfully send to the user ahmed
mail successfully send to the user testu
mail successfully send to the user saslauth
mail successfully send to the user mailnull
mail successfully send to the user smmsp
mail successfully send to the user postfix
You have new mail in /var/spool/mail/nada_mohamed2243
```

Ensure the mail was send and don’t exist in dead.letter

```
nada :>cat /var/spool/mail/nada_mohamed2243
From nada_mohamed2243@localhost.localdomain  Sat Jan 18 19:20:48 2025
Return-Path: <nada_mohamed2243@localhost.localdomain>
Received: from localhost.localdomain (localhost [127.0.0.1])
        by localhost.localdomain (8.16.1/8.16.1) with ESMTPS id 50IHKltB037906
        (version=TLSv1.3 cipher=TLS_AES_256_GCM_SHA384 bits=256 verify=NOT)
        for <nada_mohamed2243@localhost.localdomain>; Sat, 18 Jan 2025 19:20:48 +0200
Received: (from nada_mohamed2243@localhost)
        by localhost.localdomain (8.16.1/8.16.1/Submit) id 50IH3LOs036041
        for nada_mohamed2243; Sat, 18 Jan 2025 19:03:21 +0200
From: Nada_Mohamed2243 <nada_mohamed2243@localhost.localdomain>
Message-Id: <202501181703.50IH3LOs036041@localhost.localdomain>
Date: Sat, 18 Jan 2025 19:03:21 +0200
To: nada_mohamed2243@localhost.localdomain
Subject: system test
User-Agent: s-nail v14.9.22

Hello everyone, welcome to ITI
I am Nada
```

6. Write a script called chkmail to check for new mails every 10 seconds. Note: mails are saved in /var/mail/username.

whoami : display the username of the current user who is logged into the system

So mails exist on : **/var/mail/$(whoami)**

every 10 seconds → use while true with sleep 10

Sleep 10 : pauses the execution for 10 seconds before it checks the mailbox again.

- The script checks the mailbox file for new mail.
- After checking, the script will wait for 10 seconds (due to `sleep 10`).
- Once 10 seconds have passed, it checks the mailbox file again.

The indicate for new mail arrival is the size of mailbox:
`stat -c %s "$MAIL_FILE"` : gets the current size of the mail file.(`-c`: This option allows you to specify a format string for the output,`%s`: The format specifier used with `-c` to retrieve only the **size** of the file in bytes.)

The script compares the current size with the initial size:

- If the current size is greater than the initial size, new mail has been added, and it will print "You have new mail!"
- Otherwise, it prints "No new mail."

```
File  Edit  View  Search  Terminal  Help
echo $mail_box

initial_size=`stat -c %s $mail_box`

echo "we will check for new mails every 10 seconds , click ctrl+z to stop this"

# $() === ` ` --> run command

while true;do
        current_size=`stat -c %s $mail_box`
        if [ $current_size -gt $initial_size ];then
                echo "new mail arrive"

                #update the initial size
                initial_size=$current_size
        else
                echo "no new mails"
        fi

        #wait 10 second
        sleep 10
done
```

```
nada :>./chkmail.sh
/var/mail/nada_mohamed2243
we will check for new mails every 10 seconds , click ctrl+z t
no new mails
no new mails
no new mails
new mail arrive
no new mails
no new mails
```

```
mail successfully send to the user cockpit-wsinstance
mail successfully send to the user flatpak
mail successfully send to the user colord
mail successfully send to the user setroubleshoot
mail successfully send to the user clevis
mail successfully send to the user gdm
mail successfully send to the user sssd
mail successfully send to the user gnome-initial-setup
mail successfully send to the user dnsmasq
mail successfully send to the user chrony
mail successfully send to the user sshd
mail successfully send to the user tcpdump
mail successfully send to the user nada_mohamed2243
mail successfully send to the user ahmed
mail successfully send to the user testu
```

Bonus: Open a talk session to a certain user when she/he logs into the system.

The `talk` session allows two users to communicate interactively. It creates a real-time, split-screen chat session between them, allowing them to send and receive text messages .

we need to check when a specific user logs in and then automatically start a `talk` session.

who command : show information about users currently logged into the system.(It reads from the **/var/run/utmp** file, which contains details about active user sessions).
So we can use
Who | grep -qw $target_user or grep -qw $target_user /var/run/utmp

```
nada_mohamed2243@localhost:~ — /usr/bin/vim mytalk.sh
#!/bin/bash


if [ $# -eq 0 ];then
        echo "please input your target user for the talk session"
else
        target_user=$1

        #check every 10 second if our target user login the system or no

        while true;do
                # just the target user enter the system --> start talk section
                if who | grep -q -w $target_user ;then
                        echo "your target user $target_user just enter the system, let's start the talk session"
                #       talk $target_user
                        write $target_user
                        break
                else
                        echo "the target user $target_user not here"
                        sleep 10

                fi
        done
fi
~
~
~
```

```
nada :>./mytalk.sh nada_mohamed2243
your target user nada_mohamed2243 just enter the system, let's start the talk session
```

7. What is the output of the following script

```
typeset –i n1
typeset –i n2
n1=1
n2=1
while test $n1 –eq $n2      1  = 1  (true)          1 =2 (false)
do
        n2=$n2+1              n2=1+1=2
        print $n1             1
if [ $n1 –gt $n2 ]          1 > 2 → false
then
        break
```

else
continue **scape this iteration**
fi
n1=$n1+1
print $n2
done

```
File  Edit  View  Search  Terminal  Help
#!/bin/bash

#in bash we don't have this
#typeset -i n1
#typeset -i n2
n1=1
n2=1
while [ $n1 -eq $n2 ]
do
        n2=$((n2+1))
        echo $n1
        if [ $n1 -gt $n2 ]
        then
                break
        else
                continue
        fi
        n1=$((n1+1))
        echo $n2
done
```

```
nada :>./test.sh
1
```

8. Create the following menu:

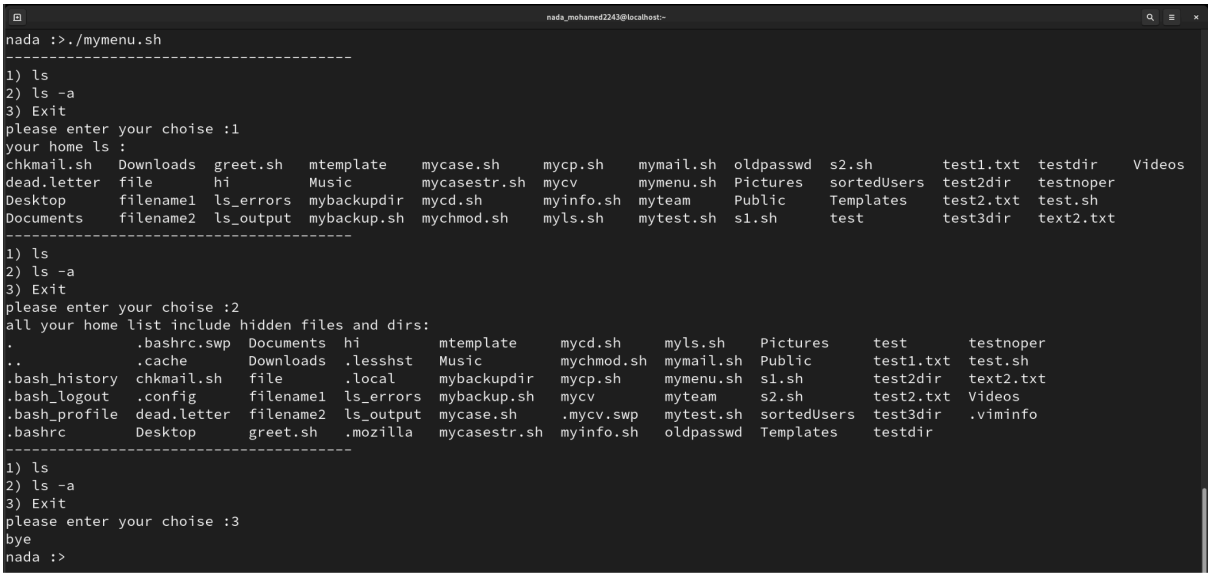
a. Press 1 to ls
b. Press 2 to ls –a
c. Press 3 to exit

Using select utility then while utility.

```
nada_mohamed2243@localhost:~ — /usr/bin/vim mymenu.sh
#!/bin/bash

PS3="please enter your choise :"
while true ;do
        echo "----------------------------------------"
        select choise in "ls" "ls -a" "Exit";do
                case $choise in
                        "ls")
                                echo "your home ls : "
                                ls
                                #for select break and don't make the ps3 apear everytime
                                break
                                #case break
                                ;;
                        "ls -a")
                                echo "all your home list include hidden files and dirs:"
                                ls -a
                                break
                                ;;
                        "Exit")
                                echo "bye"
                                exit
                                break
                                ;;
                        *)
                                echo "invalid option"
                                break
                                ;;

"mymenu.sh" 33L, 528B
```



```
nada_mohamed2243@localhost:~
nada :>./mymenu.sh
----------------------------------------
1) ls
2) ls -a
3) Exit
please enter your choise :1
your home ls :
chkmail.sh   Downloads  greet.sh   mtemplate    mycase.sh     mycp.sh     mymail.sh  oldpasswd  s2.sh        test1.txt  testdir    Videos
dead.letter  file       hi         Music        mycasestr.sh  mycv        mymenu.sh  Pictures   sortedUsers  test2dir   testnoper
Desktop      filename1  ls_errors  mybackupdir  mycd.sh       myinfo.sh   myteam     Public     Templates    test2.txt  test.sh
Documents    filename2  ls_output  mybackup.sh  mychmod.sh    myls.sh     mytest.sh  s1.sh      test         test3dir   text2.txt
----------------------------------------
1) ls
2) ls -a
3) Exit
please enter your choise :2
all your home list include hidden files and dirs:
.              .bashrc.swp  Documents  hi         mtemplate     mycd.sh     myls.sh    Pictures     test       testnoper
..             .cache       Downloads  .lesshst   Music         mychmod.sh  mymail.sh  Public       test1.txt  test.sh
.bash_history  chkmail.sh   file       .local     mybackupdir   mycp.sh     mymenu.sh  s1.sh        test2dir   text2.txt
.bash_logout   .config      filename1  ls_errors  mybackup.sh   mycv        myteam     s2.sh        test2.txt  Videos
.bash_profile  dead.letter  filename2  ls_output  mycase.sh     .mycv.swp   mytest.sh  sortedUsers  test3dir   .viminfo
.bashrc        Desktop      greet.sh   .mozilla   mycasestr.sh  myinfo.sh   oldpasswd  Templates    testdir
----------------------------------------
1) ls
2) ls -a
3) Exit
please enter your choise :3
bye
nada :>
```

If you use a `while` loop inside a `select` loop with select break, the input prompt will be displayed repeatedly for each selection.

which is the same behavior as when there is no `select` break without while.

```
nada_mohamed2243@localhost:~ — /usr/bin/vim mymenu.sh
PS3="please enter your choise :"
select choise in "ls" "ls -a" "Exit";do
        while true;do
        case $choise in
                "ls")
                        echo "your home ls : "
                        ls
                        #for select break and don't make the ps3 apear everytime
                        break
                        #case break
                        ;;
                "ls -a")
                        echo "all your home list include hidden files and dirs:"
                        ls -a
                        break
                        ;;
                "Exit")
                        echo "bye"
                        exit
                        break
                        ;;
                *)
                        echo "invalid option"
                        break
                        ;;

        esac
done
done
Already at oldest change
```

```
nada :>./mymenu.sh
1) ls
2) ls -a
3) Exit
please enter your choise :1
your home ls :
chkmail.sh   Downloads  greet.sh   mtemplate    mycase.sh     mycp.sh    mymail.sh  oldpasswd  s2.sh        test1.txt  testdir    Videos
dead.letter  file       hi         Music        mycasestr.sh  mycv       mymenu.sh  Pictures   sortedUsers  test2dir   testnoper
Desktop      filename1  ls_errors  mybackupdir  mycd.sh       myinfo.sh  myteam     Public     Templates    test2.txt  test.sh
Documents    filename2  ls_output  mybackup.sh  mychmod.sh    myls.sh    mytest.sh  s1.sh      test         test3dir   text2.txt
please enter your choise :2
all your home list include hidden files and dirs:
.              .bashrc.swp  Documents  hi         mtemplate     mycd.sh     myls.sh    Pictures     test       testnoper
..             .cache       Downloads  .lesshst   Music         mychmod.sh  mymail.sh  Public       test1.txt  test.sh
.bash_history  chkmail.sh   file       .local     mybackupdir   mycp.sh     mymenu.sh  s1.sh        test2dir   text2.txt
.bash_logout   .config      filename1  ls_errors  mybackup.sh   mycv        myteam     s2.sh        test2.txt  Videos
.bash_profile  dead.letter  filename2  ls_output  mycase.sh     .mycv.swp   mytest.sh  sortedUsers  test3dir   .viminfo
.bashrc        Desktop      greet.sh   .mozilla   mycasestr.sh  myinfo.sh   oldpasswd  Templates    testdir
please enter your choise :4
invalid option
please enter your choise :3
bye
nada :>
```

If you use a `while` loop inside a `select` loop without select break,it will cause the menu to have an unintended repetitive display of the menu because the `select` loop will keep prompting for input without terminating after a valid choice.

```
your home ls :
chkmail.sh   Downloads  greet.sh   mtemplate    mycase.sh     mycp.sh    mymail.sh  oldpasswd  s2.sh        test1.txt  testdir    Videos
dead.letter  file       hi         Music        mycasestr.sh  mycv       mymenu.sh  Pictures   sortedUsers  test2dir   testnoper
Desktop      filename1  ls_errors  mybackupdir  mycd.sh       myinfo.sh  myteam     Public     Templates    test2.txt  test.sh
Documents    filename2  ls_output  mybackup.sh  mychmod.sh    myls.sh    mytest.sh  s1.sh      test         test3dir   text2.txt
your home ls :
chkmail.sh   Downloads  greet.sh   mtemplate    mycase.sh     mycp.sh    mymail.sh  oldpasswd  s2.sh        test1.txt  testdir    Videos
dead.letter  file       hi         Music        mycasestr.sh  mycv       mymenu.sh  Pictures   sortedUsers  test2dir   testnoper
Desktop      filename1  ls_errors  mybackupdir  mycd.sh       myinfo.sh  myteam     Public     Templates    test2.txt  test.sh
Documents    filename2  ls_output  mybackup.sh  mychmod.sh    myls.sh    mytest.sh  s1.sh      test         test3dir   text2.txt
your home ls :
chkmail.sh   Downloads  greet.sh   mtemplate    mycase.sh     mycp.sh    mymail.sh  oldpasswd  s2.sh        test1.txt  testdir    Videos
dead.letter  file       hi         Music        mycasestr.sh  mycv       mymenu.sh  Pictures   sortedUsers  test2dir   testnoper
Desktop      filename1  ls_errors  mybackupdir  mycd.sh       myinfo.sh  myteam     Public     Templates    test2.txt  test.sh
Documents    filename2  ls_output  mybackup.sh  mychmod.sh    myls.sh    mytest.sh  s1.sh      test         test3dir   text2.txt
```