

# Shell Script – Day 3

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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.

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ gedit mycase.sh
mabotalb@ubuntu22:~/lab3-files$ cat mycase.sh
#!/bin/bash

echo "Enter a character:"
read char

case $char in
  [A-Z])
    echo "You entered an Upper Case letter.>";
  [a-z])
    echo "You entered a Lower Case letter.>";
  [0-9])
    echo "You entered a Number.>";
  *)
    echo "You entered something else or nothing.>";
esac
mabotalb@ubuntu22:~/lab3-files$
```

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ ./mycase.sh
Enter a character:
a
You entered a Lower Case letter.
mabotalb@ubuntu22:~/lab3-files$ ./mycase.sh
Enter a character:
A
You entered an Upper Case letter.
mabotalb@ubuntu22:~/lab3-files$ ./mycase.sh
Enter a character:
3
You entered a Number.
mabotalb@ubuntu22:~/lab3-files$ ./mycase.sh
Enter a character:

You entered something else or nothing.
mabotalb@ubuntu22:~/lab3-files$
```

**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.**

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ gedit enhanced-mycase.sh
mabotalb@ubuntu22:~/lab3-files$ cat enhanced-mycase.sh
#!/bin/bash

echo "Enter a string:"
read string

case $string in
    *[a-zA-Z])
        if [[ "$string" = *[a-z]* && "$string" = *[A-Z]* ]];
        then
            echo "You entered a Mix of Lower and Upper Case Characters."
        elif [[ "$string" = *[A-Z] ]];
        then
            echo "You entered an Upper Case Characters."
        elif [[ "$string" = *[a-z] ]];
        then
            echo "You entered a Lower Case Characters."
        fi
        ;;
    *[0-9])
        echo "You entered Numbers.>";
    *)
        echo "You entered something else or nothing.>";
esac
mabotalb@ubuntu22:~/lab3-files$
```

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ ./enhanced-mycase.sh
Enter a string:
mohamed
You entered a Lower Case Characters.
mabotalb@ubuntu22:~/lab3-files$ ./enhanced-mycase.sh
Enter a string:
MOHAMED
You entered an Upper Case Characters.
mabotalb@ubuntu22:~/lab3-files$ ./enhanced-mycase.sh
Enter a string:
MOHamed
You entered a Mix of Lower and Upper Case Characters.
mabotalb@ubuntu22:~/lab3-files$ ./enhanced-mycase.sh
Enter a string:
12345
You entered Numbers.
mabotalb@ubuntu22:~/lab3-files$ ./enhanced-mycase.sh
Enter a string:

You entered something else or nothing.
mabotalb@ubuntu22:~/lab3-files$
```

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

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ gedit mychmod.sh
mabotalb@ubuntu22:~/lab3-files$ cat mychmod.sh
#!/bin/bash

homeDirectory="$HOME/lab3"

for item in "$homeDirectory"/*;
do
    if [ -f "$item" ] || [ -d "$item" ];
    then
        chmod +x "$item"
    fi
done

echo "Execute permission is granted to all Files and Directories in the Home Directory"
mabotalb@ubuntu22:~/lab3-files$
```

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ ls ../lab3
file1 file2 file3 file4 file5 myDir1 myDir2 myDir3
mabotalb@ubuntu22:~/lab3-files$
mabotalb@ubuntu22:~/lab3-files$ ./mychmod.sh
Execute permission is granted to all Files and Directories in the Home Directory
mabotalb@ubuntu22:~/lab3-files$
mabotalb@ubuntu22:~/lab3-files$ ls ../lab3
file1 file2 file3 file4 file5 myDir1 myDir2 myDir3
mabotalb@ubuntu22:~/lab3-files$ ls ../lab3 -l
total 12
-rwxrwxr-x 1 mabotalb mabotalb 0 23:29 24 يـنا file1
-rwxrwxr-x 1 mabotalb mabotalb 0 23:29 24 يـنا file2
-rwxrwxr-x 1 mabotalb mabotalb 0 23:29 24 يـنا file3
-rwxrwxr-x 1 mabotalb mabotalb 0 23:29 24 يـنا file4
-rwxrwxr-x 1 mabotalb mabotalb 0 23:29 24 يـنا file5
drwxrwxr-x 2 mabotalb mabotalb 4096 23:30 24 يـنا myDir1
drwxrwxr-x 2 mabotalb mabotalb 4096 23:30 24 يـنا myDir2
drwxrwxr-x 2 mabotalb mabotalb 4096 23:30 24 يـنا myDir3
mabotalb@ubuntu22:~/lab3-files$
```

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

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ gedit mybackup.sh
mabotalb@ubuntu22:~/lab3-files$ cat mybackup.sh
#!/bin/bash

homeDir="$HOME/lab3"
backupDir="$HOME/backup"

mkdir -p "$backupDir"

for file in "$homeDir"/*
do
    if [ -f "$file" ];
    then
        cp -r $file $backupDir
    fi
done

backupFile="backup.tar.gz"

cd ~

tar -czf "$backupFile" -C "$backupDir" .

echo "Backup completed. Backup file: ~/$backupFile"
mabotalb@ubuntu22:~/lab3-files$
```



```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ ./mybackup.sh
Backup completed. Backup file: ~/backup.tar.gz
mabotalb@ubuntu22:~/lab3-files$
```

**5. Write a script called mymail using for utility to send a mail to all users in the system.**

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ gedit mymail.sh
mabotalb@ubuntu22:~/lab3-files$ cat mymail.sh
#!/bin/bash

subject="This is mymail.sh file"
sender="mohamed.abotalb277@gmail.com"

for user in $(cut -d: -f1 /etc/passwd);
do
    if [ -d "/home/$user" ];
    then
        mailx -s "$subject" "$sender" < mtemplate
        echo "Email is sent to $user."
    fi
done

echo "Emails sent to all users in the system."
mabotalb@ubuntu22:~/lab3-files$
```

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ ./mymail.sh
Email is sent to mabotalb.
Email is sent to ahmed.
Emails sent to all users in the system.
mabotalb@ubuntu22:~/lab3-files$
```

**6. Write a script called chkmail to check for new mails every 10 seconds.**

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ gedit chkmail.sh
mabotalb@ubuntu22:~/lab3-files$ cat chkmail.sh
#!/bin/bash

user="mabotalb"
mailDir="/var/mail/$user"

while true;
do
    newMailCount=$(mail -H | wc -l)

    if [ $newMailCount -gt 0 ];
    then
        echo "You have $newMailCount new mail(s)."
    else
        echo "No new mail."
    fi

    sleep 10
done
mabotalb@ubuntu22:~/lab3-files$
```

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ ./chkmail.sh
You have 6 new mail(s).
You have 6 new mail(s).
You have 6 new mail(s).
You have 6 new mail(s).
```

## 7. What is the output of the following script

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ cat test-output.sh
#!/bin/bash

typeset -i n1
typeset -i n2
n1=1
n2=1
while test $n1 -eq $n2
do
n2=$n2+1
print $n1
if [ $n1 -gt $n2 ]
then
break
else
continue
fi
n1=$n1+1
print $n2
done
mabotalb@ubuntu22:~/lab3-files$ ~
```

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ ./test-output.sh
./test-output.sh: line 3: typeset: `-i': not a valid identifier
./test-output.sh: line 4: typeset: `-i': not a valid identifier
./test-output.sh: line 7: test: -eq: binary operator expected
mabotalb@ubuntu22:~/lab3-files$
```

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ gedit test-output.sh
mabotalb@ubuntu22:~/lab3-files$ cat test-output.sh
#!/bin/bash

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 $n2
done
mabotalb@ubuntu22:~/lab3-files$
```

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ ./test-output.sh
1
mabotalb@ubuntu22:~/lab3-files$
```

## 8. Create the following menu:

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



```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ gedit select-menu.sh
mabotalb@ubuntu22:~/lab3-files$ cat select-menu.sh
#!/bin/bash

echo "Select Menu:"
echo "Enter your choice: "

select ch in "ls" "ls -a" "exit";
do
    case "$REPLY" in
        1)
            ls
            ;;
        2)
            ls -a
            ;;
        3)
            echo "Exiting..."
            break
            ;;
        *)
            echo "Invalid choice. Please try again."
            ;;
    esac

    echo
done
mabotalb@ubuntu22:~/lab3-files$
```

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ ./select-menu.sh
Select Menu:
Enter your choice:
1) ls
2) ls -a
3) exit
#? 1
chkmail.sh          mtemplate    mycase.sh    mymail.sh    test-output.sh
enhanced-mycase.sh  mybackup.sh  mychmod.sh   select-menu.sh

#? 2
.   chkmail.sh          mtemplate    mycase.sh    mymail.sh    test-output.sh
..  enhanced-mycase.sh  mybackup.sh  mychmod.sh   select-menu.sh

#? 3
Exiting...
mabotalb@ubuntu22:~/lab3-files$
```

**9. Write a script called myarr that ask a user how many elements he wants to enter in an array, fill the array and then print it.**

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ gedit myarr.sh
mabotalb@ubuntu22:~/lab3-files$ cat myarr.sh
#!/bin/bash

echo "Enter the number of elements: "

read size

if [[ $size -le 0 ]];
then
    echo "Invalid input. Please enter a positive integer."
    exit 1
fi

# Declare an array
typeset -i myArray[$size]

# Fill the array with user input
for ((i = 0; i < size; i++)); do
    read -p "Enter element $((i + 1)): " element
    myArray[i]=$element
done

echo "Entered array: ${myArray[@]}"
mabotalb@ubuntu22:~/lab3-files$
```

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ ./myarr.sh
Enter the number of elements:
-5
Invalid input. Please enter a positive integer.
mabotalb@ubuntu22:~/lab3-files$ ./myarr.sh
Enter the number of elements:
0
Invalid input. Please enter a positive integer.
mabotalb@ubuntu22:~/lab3-files$ ./myarr.sh
Enter the number of elements:
3
Enter element 1: 1
Enter element 2: 2
Enter element 3: 3
Entered array: 1 2 3
mabotalb@ubuntu22:~/lab3-files$
```

**10. Write a script called myavg that calculate average of all numbers entered by a user.**

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ gedit myavg.sh
mabotalb@ubuntu22:~/lab3-files$ cat myavg.sh
#!/bin/bash

echo "Enter the number of elements: "
read size

if [[ $size -le 0 ]];
then
    echo "Invalid input. Please enter a positive integer."
    exit 1
fi

# Declare an array
typeset -i myArray[$size]

# Fill the array with user input
for ((i = 0; i < size; i++)); do
    read -p "Enter element $((i + 1)): " element
    myArray[i]=$element
done

# Calculate the sum
sum=0
for num in "${myArray[@]}";
do
    sum=$((sum + num))
done

# Calculate the average
average=$((sum / size))

# Print the result
echo "Entered numbers: ${myArray[@]}"
echo "Average: $average"
mabotalb@ubuntu22:~/lab3-files$
```

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ ./myavg.sh
Enter the number of elements:
-3
Invalid input. Please enter a positive integer.
mabotalb@ubuntu22:~/lab3-files$ ./myavg.sh
Enter the number of elements:
0
Invalid input. Please enter a positive integer.
mabotalb@ubuntu22:~/lab3-files$ ./myavg.sh
Enter the number of elements:
3
Enter element 1: 2
Enter element 2: 4
Enter element 3: 6
Entered numbers: 2 4 6
Average: 4
mabotalb@ubuntu22:~/lab3-files$
```

**11. Write a function called `mysq` that calculate square if its argument.**

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ gedit mysq.sh
mabotalb@ubuntu22:~/lab3-files$ cat mysq.sh
#!/bin/bash

mysq() {
    local num=$1
    local square=$((num * num))
    echo "Square of $num is $square"
}

echo "Enter a number: "
read input

mysq "$input"
mabotalb@ubuntu22:~/lab3-files$
```

```
mabotalb@ubuntu22: ~/lab3-files
mabotalb@ubuntu22:~/lab3-files$ ./mysq.sh
Enter a number:
5
Square of 5 is 25
mabotalb@ubuntu22:~/lab3-files$
```