Operating Systems

Lab Report 4

SUBMITTED BY:
SHAHZANEER AHMED

REGISTRATION NUMBER:
SP21-BCS-087

SUBMITTED TO:
Dr. Rubina Adnan

DATE OF SUBMISSION:
January 09, 2023

// LAB 11

Task 1.

```bash
#!/bin/bash
echo "Enter name of directory"
read directory
echo "Enter name of destination"
read destination
cd ~/$destination
mkdir $directory
echo "Folder created successfully"
```

```
zaki@zaki-VirtualBox:~/Desktop$ gedit task1_11
zaki@zaki-VirtualBox:~/Desktop$ sudo chmod 777 task1_11
[sudo] password for zaki:
zaki@zaki-VirtualBox:~/Desktop$ sudo mv task1_11 /usr/bin
zaki@zaki-VirtualBox:~/Desktop$ task1_11
Enter name of directory
NewFolder
Enter name of destination
Desktop
Folder created successfully
```

Task 2.

```bash
#!/bin/bash
ls
echo "Enter name of file"
read file
echo "Enter the location"
read location
echo "Enter name of destination"
read destination
cd ~/$location
cp $file ~/$destination
echo "File moved successfully"
```

```
zaki@zaki-VirtualBox:~$ gedit task2_11
zaki@zaki-VirtualBox:~$ sudo chmod 777 task2_11
[sudo] password for zaki:
zaki@zaki-VirtualBox:~$ sudo mv task2_11 /usr/bin
zaki@zaki-VirtualBox:~$ task2_11
Enter name of file
fork
Enter the location
Desktop
Enter name of destination
NewFolder
```

Task 3.

```
zaki@zaki-VirtualBox:~/Desktop$ gedit task3_11
zaki@zaki-VirtualBox:~/Desktop$ sudo chmod 777 task3_11
[sudo] password for zaki:
zaki@zaki-VirtualBox:~/Desktop$ sudo mv task3_11 /usr/bin
zaki@zaki-VirtualBox:~/Desktop$ task3_11
```

```bash
#!/bin/bash
echo "Enter name of file"
read name
echo "Enter name of path"
read path
echo "Enter string to find"
read word
cd ~/$path
grep $word $name
echo "Word is found"
```

```
zaki@zaki-VirtualBox:~/Desktop$ task3_11
Enter name of file
list.txt
Enter name of path
Desktop
Enter string to find
apple
apple
pineapple
Word is found
```

Task 4.

```
zaki@zaki-VirtualBox:~/Desktop$ gedit task4_11
zaki@zaki-VirtualBox:~/Desktop$ sudo chmod 777 task4_11
zaki@zaki-VirtualBox:~/Desktop$ sudo mv task4_11 /usr/bin
zaki@zaki-VirtualBox:~/Desktop$ task4_11
Enter name of files with spaces
list.txt list1.txt list2.txt
Merged files are displayed
```

```bash
#!/bin/bash
echo "Enter name of files with spaces"
read files
cd ~/Desktop
touch final
cat $files >> final
less final
echo "Merged files are displayed"
```

```
apple
mango
strawberry
pineapple

item 1
item 2
item 3
item 4

file 1
file 2
file 3

final (END)
```

//LAB 12

Task 1.

```bash
#!/bin/bash

echo "Enter marks for subject1"
read subject1
echo "Enter marks for subject2"
read subject2
echo "Enter marks for subject3"
read subject3

gpa1=0
gpa2=0
gpa3=0


if [ $subject1 -ge 90 ]
then
        gpa1=4.0

elif [ $subject1 -ge 85 ]
then
        gpa1=3.7

elif [ $subject1 -ge 80 ]
then
        gpa1=3.3

elif [ $subject1 -ge 75 ]
then
```

```bash
    elif [ $subject1 -ge 70 ]
    then
            gpa1=2.7

    elif [ $subject1 -ge 65 ]
    then
            gpa1=2.3

    elif [ $subject1 -ge 60 ]
    then
            gpa1=2.0

    else
            gpa1=0.0
    fi

    if [ $subject2 -ge 90 ]
    then
            gpa2=4.0

    elif [ $subject2 -ge 85 ]
    then
            gpa2=3.7

    elif [ $subject2 -ge 80 ]
    then
            gpa2=3.3
```

```bash
elif [ $subject2 -ge 80 ]
then
        gpa2=3.3

elif [ $subject2 -ge 75 ]
then
        gpa2=3.0

elif [ $subject2 -ge 70 ]
then
        gpa2=2.7

elif [ $subject2 -ge 65 ]
then
        gpa2=2.3

elif [ $subject2 -ge 60 ]
then
        gpa2=2.0

else
        gpa2=0.0
fi

if [ $subject3 -ge 90 ]
then
        gpa3=4.0
```

```bash
elif [ $subject3 -ge 85 ]
then
        gpa3=3.7

elif [ $subject3 -ge 80 ]
then
        gpa3=3.3

elif [ $subject3 -ge 75 ]
then
        gpa3=3.0

elif [ $subject3 -ge 70 ]
then
        gpa3=2.7

elif [ $subject3 -ge 65 ]
then
        gpa3=2.3

elif [ $subject3 -ge 60 ]
then
        gpa3=2.0


else
        gpa3=0.0
fi

cgpa=$(echo "scale=2; ($gpa1 + $gpa2 + $gpa3)/3" | bc )

echo "GPA for subject 1: $gpa1"
echo "GPA for subject 2: $gpa2"
echo "GPA for subject 3: $gpa3"
echo "CGPA is: $cgpa"
```

```
zaki@zaki-VirtualBox:~$ task1_12
Enter marks for subject1
87
Enter marks for subject2
67
Enter marks for subject3
92
GPA for subject 1: 3.7
GPA for subject 2: 2.3
GPA for subject 3: 4.0
CGPA is: 3.33
```

Task 2.

```bash
#!/bin/bash

echo "Menu"
echo "A. Display hostname and uptime"
echo "B. Display disk and memory space"
echo "C. Display home space utilization"
echo "Q. Quit"
echo "Enter your choice: "
read choice

case $choice in
 A)
        hostname
        uptime;;
 B)
        df -h
        free -m;;
 C)
        du -sh ~;;
 Q)
        exit;;
 *)
        echo "Invalid Choice";;
esac
```

```
zaki@zaki-VirtualBox:~$ sudo chmod 777 task2_12
zaki@zaki-VirtualBox:~$ sudo task2_12 /usr/bin
sudo: task2_12: command not found
zaki@zaki-VirtualBox:~$ sudo mv task2_12 /usr/bin
zaki@zaki-VirtualBox:~$ task2_12
Menu
A. Display hostname and uptime
B. Display disk and memory space
C. Display home space utilization
Q. Quit
Enter your choice:
A
zaki-VirtualBox
 22:38:37 up  4:20,  1 user,  load average: 1.21, 1.11, 1.09
```

```
zaki@zaki-VirtualBox:~$ task2_12
Menu
A. Display hostname and uptime
B. Display disk and memory space
C. Display home space utilization
Q. Quit
Enter your choice:
B
Filesystem      Size  Used Avail Use% Mounted on
udev            973M     0  973M   0% /dev
tmpfs           200M  1.6M  198M   1% /run
/dev/sda1       9.8G  7.3G  2.1G  79% /
tmpfs           996M     0  996M   0% /dev/shm
tmpfs           5.0M  4.0K  5.0M   1% /run/lock
tmpfs           996M     0  996M   0% /sys/fs/cgroup
/dev/loop1      768K  768K     0 100% /snap/gnome-logs/115
/dev/loop0       92M   92M     0 100% /snap/gtk-common-themes/1535
/dev/loop2      1.0M  1.0M     0 100% /snap/gnome-logs/61
/dev/loop3      128K  128K     0 100% /snap/bare/5
/dev/loop5      3.8M  3.8M     0 100% /snap/gnome-system-monitor/100
/dev/loop4       73M   73M     0 100% /snap/core22/469
/dev/loop7      512K  512K     0 100% /snap/gnome-characters/781
/dev/loop6      117M  117M     0 100% /snap/core/14399
```

```
/dev/loop19     1.5M  1.5M     0 100% /snap/gnome-system-monitor/181
/dev/loop13      64M   64M     0 100% /snap/core20/1778
tmpfs           200M   28K  200M   1% /run/user/121
tmpfs           200M   56K  200M   1% /run/user/1000
              total        used        free      shared  buff/cache   available
Mem:           1991        1039         109          11         842         778
Swap:           472           1         471
zaki@zaki-VirtualBox:~$ task2_12
Menu
A. Display hostname and uptime
B. Display disk and memory space
C. Display home space utilization
Q. Quit
Enter your choice:
C
313M    /home/zaki
```

```
zaki@zaki-VirtualBox:~$ task2_12
Menu
A. Display hostname and uptime
B. Display disk and memory space
C. Display home space utilization
Q. Quit
Enter your choice:
Q
```

Task 3.

```bash
#!/bin/bash

#If filename not provided as an argument
if [ $# -eq 0 ]; then
    echo "Error: No filename provided"
    exit 1
fi


vowels=0
spaces=0
characters=0
lines=0
symbols=0

#Read all files one at a time
while read line;
do
    #count the number of lines
    ((lines++))

    #Iterate through each in the line
    for (( i=0; i<${#line}; i++ ));
    do
        #Check if character is a vowel
        if [[ "${line:$i:1}" =~ [AEIOUaeiou] ]]; then
            ((vowels++))
        fi
```

```bash
        #Check if character is a space
        if [[ "${line:$i:1}" =~ " " ]]; then
            ((spaces++))
        fi

        #Check if the character is a symbol
        if [[ "${line:$i:1}" =~ [AEIOUaeiou0-9] ]]; then
            ((symbols++))
        fi

        #Increment the character counter
            ((characters++))

    done
done < $1

#Print the results
echo "Vowels: $vowels"
echo "Spaces: $spaces"
echo "Characters: $characters"
echo "Lines: $lines"
echo "Symbol: $symbols"
```

```
zaki@zaki-VirtualBox:~$ gedit task3_12
zaki@zaki-VirtualBox:~$ sudo chmod 777 task3_12
[sudo] password for zaki:
zaki@zaki-VirtualBox:~$ sudo mv task3_12 /usr/bin
zaki@zaki-VirtualBox:~$ task3_12
Error: No filename provided
```

```
zaki@zaki-VirtualBox:~$ task3_12 CovidEffects
Vowels: 104
Spaces: 56
Characters: 342
Lines: 1
Symbol: 108
```

// LAB 13

Task 1.

```bash
#!/bin/bash

sum_of_digits() {

        #$1 is the first argument passed to the function
        number=$1

        sum=0

        #Extract each digit and add to the sum
        while [ $number -gt 0 ]; do

                digit=$((number % 10))

                sum=$((sum+digit))

                number=$((number / 10))

        done

        echo "The sum of the digits for $1 is: $sum"
}

sum_of_digits 12345
```

```
zaki@zaki-VirtualBox:~$ gedit task1_13
zaki@zaki-VirtualBox:~$ sudo chmod 777 task1_13
[sudo] password for zaki:
zaki@zaki-VirtualBox:~$ sudo mv task1_13 /usr/bin
zaki@zaki-VirtualBox:~$ task1_13
The sum of the digits for 12345 is: 15
```

Task 2.

```bash
#!/bin/bash

is_palindrome() {
        # $1 is the first argument passed to the function
        number=$1

        #Reverse the number
        reverse=0
        while [ $number -gt 0 ]; do
                digit=$((number % 10))

                reverse=$((reverse * 10 + digit))

                number=$((number / 10))
        done

        #Checking
        if [ $1 -eq $reverse ]; then
                echo "The number $1 is a palindrome"
        else
                echo "The number $1 is not a palindrome"

        fi
}

is_palindrome 1234
is_palindrome 12321
```

```
zaki@zaki-VirtualBox:~$ gedit task2_13
zaki@zaki-VirtualBox:~$ sudo chmod 777 task2_13
[sudo] password for zaki:
zaki@zaki-VirtualBox:~$ sudo mv task2_13 /usr/bin
```

```
zaki@zaki-VirtualBox:~$ task2_13
The number 1234 is not a palindrome
The number 12321 is a palindrome
```

Task 3.

```bash
#!/bin/bash

reverse_int() {

        number=$1

        reverse=0

        while [ $number -gt 0 ]; do

                digit=$((number % 10))

                reverse=$((reverse * 10 + digit))

                number=$((number / 10))

        done

        echo "The integer $1 in reverse is: $reverse"
}

reverse_int 123
reverse_int 14786
```

```
zaki@zaki-VirtualBox:~$ gedit task3_13
zaki@zaki-VirtualBox:~$ sudo chmod 777 task3_13
zaki@zaki-VirtualBox:~$ sudo mv task3_13 /usr/bin
zaki@zaki-VirtualBox:~$ task3_13
The integer 123 in reverse is: 321
The integer 14786 in reverse is: 68741
```