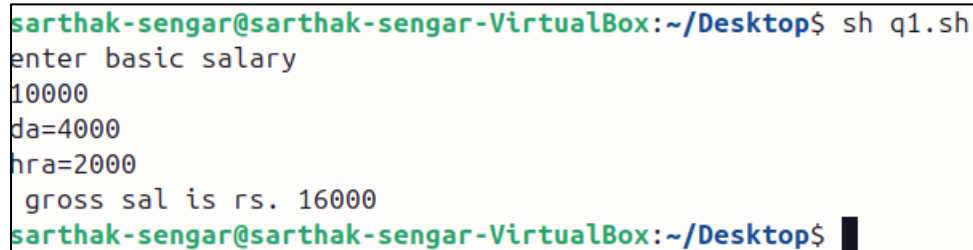### MCA- 163

Operating System with LINUX

ASSIGNMENT –2

SHELL PROGRAMMING [Based on CO1,CO2]

Q1. Basic salary of A is input through the keyboard. His dearness allowance is 40% of basic salary and house rent allowance is 20% of basic salary. Write a script to calculate his gross salary.

Code :-

```
echo 'enter basic salary'
read bassal
da=$(($bassal*40/100))
echo "da="$da
hra=$((bassal*20/100))
echo hra=$hra
gs=$(($bassal+$da+$hra))
echo " gross sal is rs." $gs
```

```
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ sh q1.sh
enter basic salary
10000
da=4000
hra=2000
 gross sal is rs. 16000
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ █
```

Q2. If a number is input through the keyboard, write a script to calculate the sum of its digits.

Code:-

```
echo Enter any five digit number :
read num
d1=$(($num%10))
num=$(($num/10))

d2=$(($num%10))
num=$(($num/10))

d3=$(($num%10))
num=$(($num/10))

d4=$(($num%10))
num=$(($num/10))

d5=$(($num%10))
num=$(($num/10))

sum=$(($d1+$d2+$d3+$d4+$d5))
echo Sum of digits : $sum
```

```
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ sh q2.sh
Enter any five digit number :
12345
Sum of digits : 15
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ ▌
```

Q3. Write a shell script which will receive either filename or the filename with its full path during execution. This script should obtain information about this file by *ls -l* and display it in proper format.

Code:-

```
echo Enter a FileName
read filename

var=`ls -l $filename`
echo $var

set -- $var

echo Name = $9
echo Fill access permissions = $1
echo Number of link = $2
echo Group to which he belongs = $4
echo Size of file = $5
echo file modification date = $6 $7
echo file modification time = $8
```

```
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ sh q3.sh
Enter a FileName
f1
-rw-rw-r-- 1 sarthak-sengar sarthak-sengar 26 Nov 11 22:36 f1
Name = f1
Fill access permissions = -rw-rw-r--
Number of link = 1
Group to which he belongs = sarthak-sengar
Size of file = 26
file modification date = Nov 11
file modification time = 22:36
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$
```

Q4. If cost price and selling price of an item is input through the keyboard, write a script to determine whether the seller has made profit or incurred loss. Also determine how much profit was made or loss incurred.

Code:-

```
echo Enter the cost price :
read cp
echo Enter the selling price :
read sp
if [ $sp -gt $cp ]
then
echo Seller has made profit
profit=$(($sp-$cp))
echo Profit : $profit

else
if [ $cp -gt $sp ]
then
echo Seller has incurred loss
loss=$(($scp-$sp))
```

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```
echo Loss :  $(($loss*-1))

else
echo No Profit, No Loss

fi
fi
```

```
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ sh q4.sh
Enter the cost price :
120
Enter the selling price :
1000
Seller has made profit
Profit : 880
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ sh q4.sh
Enter the cost price :
120
Enter the selling price :
100
Seller has incurred loss
Loss : 100
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ sh q4.sh
Enter the cost price :
100
Enter the selling price :
100
No Profit, No Loss
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$
```

Q5. Write a script which receives two file names as arguments. It should check whether the contents of the two files are same or not. If they are same then second file should be deleted.

Code :-

```
cmp -s $1 $2
if [ $? -eq 0 ]
then
rm $2
else
echo The contents of two files are not same
fi
```

```
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ ls
f1  q1.sh  q2.sh  q3.sh  q4.sh
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ cat > f2
sarthak
sengar
assignment
^C
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ cat f2
sarthak
sengar
assignment
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ cat f1
sarthak
sengar
assignment
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ cat >f3
file3
^C
```

```
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ sh q5.sh f1 f3
The contents of two files are not same
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ sh q5.sh f1 f2
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ ls
f1  f3  q1.sh  q2.sh  q3.sh  q4.sh  q5.sh
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$
```

Q6. Write a script to read the contents from the file.

Code:-

```
echo Enter File Name
read fname
terminal='tty'
exec < $fname
while read line
do
echo $line
done
```

```
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ sh q6.sh
Enter File Name
f1
sarthak
sengar
assignment
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$
```

Q7. Write a program to calculate overtime pay of 5 employees. Overtime is paid at the rate of Rs.12/hr for every hour worked above 40 hours. Assume that employees do not work for fractional part of an hour.

Code:-

```
emp=1
while [ $emp -le 5 ]
do
echo Enter working hours
read hours
if [ $hours -gt 40 ]
then
otpay=$((($hours-40)*12))
echo OverTime Pay : Rs $otpay
else
echo No Overtime pay
fi
emp=$(($emp+1))
done
```

```
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ sh q7.sh
Enter working hours
65
OverTime Pay : Rs 300
Enter working hours
20
No Overtime pay
Enter working hours
45
OverTime Pay : Rs 60
Enter working hours
86
OverTime Pay : Rs 552
Enter working hours
79
OverTime Pay : Rs 468
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$
```

Q8. Write a program to find the factorial value of any number entered through the keyboard.

Code:-

```
echo Enter any number
read num
i=1
fact=1

while [ $i -le $num ]
do
fact=`echo $fact \* $i | bc`
i=`expr $i + 1`
done
echo factorial value of $num = $fact
```

```
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ sh q8.sh
Enter any number
5
factorial value of 5 = 120
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$
```

Q9. The marks obtained by a student in 5 different subjects are input through the keyboard. The student gets a division as per the following rules:

> **--percentage above or equal to 60 – First Division**

> **--percentage between 50 and 59 –Second Division**

> **--percentage between 40 and 49 – Third Division**

> **--percentage less than 40 – Fail**

Code:-

```
echo Enter Marks of each subject

echo Enter Maths marks :
read math

echo Enter English marks :
read eng

echo Enter Physics marks :
read phy

echo Enter Chemistry marks :
read chem

echo Enter CS marks :
read cs

total=$(($math + $eng +$phy + $chem + $cs))

per=$(($total/5))
echo percentage : $per

if [ $per -ge 60 ]
then
echo First Division

else if [ $per -ge 50 -a $per -le 59 ]
then
echo Second Division
```

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```
else if [ $per -ge 40 -a $per -le 49 ]
then
echo Third Division

else
echo FAILED

fi
fi
fi
```

```
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ sh q9.sh
Enter Marks of each subject
Enter Maths marks :
100
Enter English marks :
80
Enter Physics marks :
100
Enter Chemistry marks :
80
Enter CS marks :
100
percentage : 92
First Division
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$
```

Q10. Write a script to receive an adapter name (MA or CGA or VGA or EGA) from the keyboard and then decide and print as per the following rule:

> **if MA it is monochrome adapter**
>
> **if CGA it is color graphics adapter if [$adapter = "CGA"]**
>
> **if EGA it is enhanced graphics adapter**
>
> **if VGA it is video graphics adapter**

Code:-

```
echo Enter adapter name
read adapter

if [ $adapter = 'MA' -o $adapter = 'ma' ]
then
echo You have a monochrome adapter

else if [ $adapter = 'CGA' -o $adapter = 'cga' ]
then
echo You have a color graphics adapter

else if [ $adapter = 'EGA' -o $adapter = 'ega' ]
then
echo You have a enhanced graphics adapter

else if [ $adapter = 'VGA' -o $adapter = 'vga' ]
then
echo You have a video graphics adapter

else if [ $adapter = 'SGA' -o $adapter = 'sga' ]
then
```

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```
echo You have a super graphics adapter

else
echo write valid adapter name

fi
fi
fi
fi
fi
```

```
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ sh q10.sh
Enter adapter name
ma
You have a monochrome adapter
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ sh q10.sh
Enter adapter name
cga
You have a color graphics adapter
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$
```

Q11. Write a script to input a file name and check if file is readable, writable and executable or does not exist.

```
echo enter file name
read fname
if [ -e $fname ]
then
        if [ -r $fname -a -w $fname -a -x $fname ]
        then
                echo You have read,write and execute permission to $fname
        else
                echo read,write and execute denied
        fi
else
        echo improper file name
fi
```

```
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ sh q11.sh
enter file name
f1
read,write and execute denied
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$ sh q11.sh
enter file name
f4
improper file name
```

Q 12. A friend of yours has promised to log in at a particular time. However, he has not kept the promise. You want to contact him as soon as he logs in. Write a shell script which checks after every 1 minute whether your friend has logged in or not. The Logname should be supplied to the shell script at command prompt.

```
echo "Waiting for $1"
while [ 1 ]
        do
        whoami|grep "$1" > /dev/null
        if [ $? -eq 0 ]
        then
                echo "$1 logged in "
                break
        fi
        sleep 60
```

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```
done
```

Ques 13: Write a menu driven program which has following options :

1. **Content of /etc/passwd**
2. **List of users who have currently logged in**
3. **Present Working Directory**
4. **Exit**

Code:-

```
ch=1

while [ $ch -eq 1 ]
do
echo "AIM : Menu Driven Program"

clear
echo "1. Content of /etc/passwd"
echo "2. List of users who have currently logged in"
echo "3. Present Working Directory"
echo "4. Exit"

read choice

case $choice in
        1) echo "Enter the name of user"
           read user
           grep $user /etc/passwd
           ;;
        2) whoami
           ;;
        3) echo "present working dir is"
           pwd
           ;;
        *) echo "invalid Choice"
           ;;
esac
echo "do you want to continue : press 1 for yes and 0 for no"
read ch
done
```

```
1. Content of /etc/passwd
2. List of users who have currently logged in
3. Present Working Directory
4. Exit
1
Enter the name of user
sarthak-sengar
sarthak-sengar:x:1000:1000:sarthak sengar:/home/sarthak-sengar:/bin/bash
do you want to continue : press 1 for yes and 0 for no
```

```
1. Content of /etc/passwd
2. List of users who have currently logged in
3. Present Working Directory
4. Exit
2
sarthak-sengar
do you want to continue : press 1 for yes and 0 for no
```

```
1. Content of /etc/passwd
2. List of users who have currently logged in
3. Present Working Directory
4. Exit
3
present working dir is
/home/sarthak-sengar/Desktop
do you want to continue : press 1 for yes and 0 for no
```

```
do you want to continue : press 1 for yes and 0 for no
0
sarthak-sengar@sarthak-sengar-VirtualBox:~/Desktop$
```

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