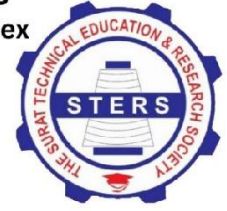




Surat Technical Education & Research Society's
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TYBCA SEM-5

501 : Linux Operating System (LOS)

Practical Journal

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Programs

1. Write script using case statement to perform basic math operations (+, -, *, /, %).

```
echo "Enter First Number:"
read a

echo "Enter Second Number:"
read b

echo "Enter Operation (+, -, *, /, %):"
read op

case $op in
    +) result=$((a + b))
        echo "Result = $result"
        ;;
    -) result=$((a - b))
        echo "Result = $result"
        ;;
    \*) result=$((a * b))
        echo "Result = $result"
        ;;
    /) if [ $b -ne 0 ]; then
        result=$((a / b))
        echo "Result = $result"
    else
        echo "Error: Division by zero not allowed"
    fi
    ;;
    %) if [ $b -ne 0 ]; then
        result=$((a % b))
        echo "Result = $result"
    else
        echo "Error: Modulo by zero not allowed"
    fi
    ;;
    *) echo "Invalid operation"
    ;;
esac
```

Out Put:

```
Enter First Number:
10
Enter Second Number:
30
Enter Operation (+, -, *, /, %):
+
Result = 40
```

```
Enter First Number:
30
Enter Second Number:
5
Enter Operation (+, -, *, /, %):
*
Result = 150
```

```
Enter First Number:
20
Enter Second Number:
50
Enter Operation (+, -, *, /, %):
-
Result = -30
```

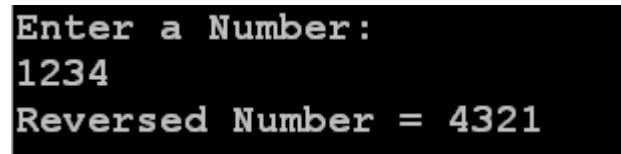
```
Enter First Number:
30
Enter Second Number:
5
Enter Operation (+, -, *, /, %):
/
Result = 6
```

```
Enter First Number:
100
Enter Second Number:
10
Enter Operation (+, -, *, /, %):
%
Result = 0
```

2. Write a shell script to reverse a given number.

```
echo "Enter a Number:"
read num

rev=0
while [ $num -gt 0 ]
do
    rem=$((num % 10))
    rev=$((rev * 10 + rem))
    num=$((num / 10))
done
echo "Reversed Number = $rev"
```

Out Put:

```
Enter a Number:
1234
Reversed Number = 4321
```

3. Write script to check inputted file is regular file, directory or does not exists.

```
echo "Enter file or directory name:"
read name

if [ -f "$name" ]; then
    echo "$name is a regular file."
elif [ -d "$name" ]; then
    echo "$name is a directory."
else
    echo "$name does not exist."
Fi
```

Out Put:

```
Enter file or directory name:
abc
abc is a directory.
```

4. Write a script which enters username & password & check that if the username = sugc & password = 98765 then display the valid user message. Otherwise invalid user. [script gives maximum 3 attempts to the user.]

```
username="chintan"
password="12345678"

attempt=1
max_attempts=3

while [ $attempt -le $max_attempts ]
do
    echo "Attempt $attempt of $max_attempts"

    echo -n "Enter Username: "
    read user

    echo -n "Enter Password: "
    read pass

    if [ "$user" = "$username" ] && [ "$pass" = "$password" ];
    then
        echo "Valid User - Login Successful!"
        exit 0
    else
        echo "Invalid User. Try Again."
    fi

    attempt=$((attempt + 1))
done
echo "Maximum Attempts reached. Access Denied!"
```

Out Put:

Login Successful:

```
Attempt 1 of 3
Enter Username: chintan
Enter Password: 12345678
Valid User - Login Successful!
```


Login Fail:

```
Attempt 1 of 3
Enter Username: abc
Enter Password: 123
Invalid User. Try Again.
Attempt 2 of 3
Enter Username: mohit
Enter Password: 38940
Invalid User. Try Again.
Attempt 3 of 3
Enter Username: satish
Enter Password: 983082
Invalid User. Try Again.
Maximum Attempts reached. Access Denied!
```

5. Accept a string from terminal and echo suitable message if it does not have atleast 10 characters.

```
echo "Enter a string: "  
read str
```

```
length=${#str}
```

```
if [ $length -lt 10 ];  
then  
    echo "The string is too short (Only $length characters). It must have at least 10  
characters."  
else  
    echo "Valid string! It has $length characters."  
Fi
```

Out Put:

Invalid:

```
Enter a string:  
chintan  
The string is too short (Only 7 characters). It must have at least 10 characters.
```

Valid:

```
Enter a string:  
abcdefghij  
Valid string! It has 10 characters.
```

6. Write a script to delete all vowels from particular string.

```
echo "Enter a String:"  
read str  
  
result=$(echo "$str" | tr -d 'aeiouAEIOU')  
  
echo "String without vowels: $result"
```

Out Put:

```
Enter a String:  
Hello World  
String without vowels: Hll Wrld
```

7. Write a script to accept a number from user until he enters 0 & find sum of all that numbers.

```
sum = 0
while true
do
    echo -n "Enter a number (0 to Stop): "
    read num

    if [ $num -eq 0 ];
    then
        break
    fi

    sum=$((sum + num))
done

echo "Sum of all entered number = $sum"
```

Out Put:

```
Enter a number (0 to Stop): 4
Enter a number (0 to Stop): 3
Enter a number (0 to Stop): 0
Sum of all entered number = 7
```

8. Write a script to check whether file is empty or not, and if file name doesn't exist than print appropriate message.

```
echo "Enter file name: "  
read filename  
  
if [ ! -e "$filename" ];  
then  
    echo "File does not exist."  
elif [ ! -s "$filename" ];  
then  
    echo "File exists but it is empty."  
else  
    echo "File exists and it is not empty."  
fi
```

Out Put:

```
Enter file name:  
1-1.sh  
File exists and it is not empty.
```

- 9. Write a shell script to prompts the user to enter the time (in 24-Hour format) then wish them “Good morning”, “Good Afternoon”, “Good Evening”, or “Good night” based on the input. (example: if Input is 13 then print Good afternoon)**

```
echo "Enter time in 24-horu format (0-23):"
read hour

if [ $hour -ge 0 ] && [ $hour -lt 12 ];
then
    echo "Good Morning"
elif [ $hour -ge 12 ] && [ $hour -lt 17 ];
then
    echo "Good Afternoon"
elif [ $hour -ge 17 ] && [ $hour -lt 21 ];
then
    echo "Good Evening"
elif [ $hour -ge 21 ] && [ $hour -lt 24 ];
then
    echo "Good Night"
else
    echo "Invalid hour entered! Please enter a value between 0 to 23."
Fi
```

Out Put:

```
Enter time in 24-horu format (0-23):
18
Good Evening
```

10. Write a shell script which takes input of file name and prints first 10 lines of that file. File name is to be passed as command line argument. If argument is not passed then any 'C' program from the current directory is to be selected.

```
if [ $# -eq 0 ];
then
    file=$(ls *.c 2>/dev/null | head -n 1)

    if [ -z "$file" ];
    then
        echo "No C Program found in the current directory!"
        exit 1
    else
        echo "No aregument provide. Using file: $file"
    fi
else
    file=$1
fi

if [ -f "$file" ];
then
    echo "First 10 lines of $file: "
    head -n 10 "$file"
else
    echo "File '$file' does not exist!"
fi
```

Out Put:

I can't provide Out Put because I don't have Possible File and Directory.

Write Command Using sed Or grep

1. Write command to replace 'RAM' with 'ROM' on line no 10 to 20.

```
sed '10,20 s/RAM/ROM/g' filename.txt
```

Out Put:

```
Line 1: CPU and RAM
Line 2: ROM is permanent
Line 3: RAM is volatile
Line 4: Hard disk is storage
Line 5: RAM is faster
Line 6: ROM is slower
Line 7: Cache memory is small
Line 8: RAM is main memory
Line 9: Data is stored in ROM
Line 10: RAM is temporary
Line 11: RAM helps performance
Line 12: ROM contains BIOS
Line 13: RAM is cleared after shutdown
Line 14: ROM is non-volatile
Line 15: RAM is faster than ROM
Line 16: RAM stores running processes
Line 17: ROM cannot be easily modified
Line 18: RAM allows quick access
Line 19: ROM holds firmware
Line 20: RAM improves speed
```



```
Line 1: CPU and RAM
Line 2: ROM is permanent
Line 3: RAM is volatile
Line 4: Hard disk is storage
Line 5: RAM is faster
Line 6: ROM is slower
Line 7: Cache memory is small
Line 8: RAM is main memory
Line 9: Data is stored in ROM
Line 10: ROM is temporary
Line 11: ROM helps performance
Line 12: ROM contains BIOS
Line 13: ROM is cleared after shutdown
Line 14: ROM is non-volatile
Line 15: ROM is faster than ROM
Line 16: ROM stores running processes
Line 17: ROM cannot be easily modified
Line 18: ROM allows quick access
Line 19: ROM holds firmware
Line 20: ROM improves speed
```

2. Display all blank lined between line 20 and 30 of file test.txt.

```
sed -n '20,30p' test.txt | grep '^$'
```

3. To list file names consist of only 4 digits.

```
ls | grep '^[0-9]\{4\}$'
```

4. Display the lines that do not contain “Unix”.

```
grep -v "Unix" test.txt
```

Out Put:

```
Line 3: Windows is another OS
Line 4:
Line 5: Programming in C
Line 7:
Line 8: RAM and ROM are memories
Line 10:
Line 11: Networking in Linux
Line 13: File handling in C
Line 14:
Line 15: RAM improves performance
Line 16: ROM is permanent
Line 18: Cloud runs on Linux
Line 19:
Line 20: End of file
```

5. Display the lines which are starting with 1 at the beginning.

```
grep '^1' test.txt
```

Out Put:

```
1234 is a number
1987 was a year
1000 is four digits
```

6. Display lines beginning either with alphabet or digit from file test.txt.

```
grep '^[A-Za-z0-9]' test.txt
```

Out Put:

```
1234 is a number
Linux is powerful
abc starts with small letter
```

7. Write a command to display all file name containing only digits in a filename.

```
ls | grep '^[0-9]\+$'
```

8. Display two lines starting from 4th line of file test.txt.

```
sed -n '4,5p' test.txt
```

Out Put:

```
Line 4: Programming in C
Line 5: Unix shell scripting
```

9. To display lines beginning with numbers of a file y1.txt.

```
grep '^[0-9]' y1.txt
```

Out Put:

```
1234 This line starts with numbers  
9 Lives of a cat
```

10. To count number of words in line 10 thought 20 of file test.txt.

```
sed -n '10,20p' test.txt | wc -w
```

Out Put:

```
$ . 2-10.sh  
7
```

Write The Command

1. **Count number of characters in first five lines of file x1.**

```
head -n 5 x1 | wc -m
```

2. **Display files of current directory whose 1st character is not digit.**

```
ls | grep '^[^0-9]'
```

3. **Display last 2 lines of working directory.**

```
ls | tail -n 2
```

4. **Display only those files of current directory which is own by the current user.**

```
ls -l | grep "$USER"
```

5. **To combine content of two file do not use cat command.**

```
sed " file1 file2
```

6. **Count the total no of blank lines of file x1.**

```
grep -c '^$' x1
```

7. Display the lines which are not starting with 2 at the beginning.

```
grep -v '^2' x1
```

8. Count the total no. of lines in a file.

```
wc -l x1
```

9. To display lines beginning with alphabets of a file test.txt

```
grep '^[A-Za-z]' test.txt
```

10. Display lines of file line 3-5.

```
sed -n '3,5p' x1
```