B M S. COLLEGE OF ENGINEERING

(Autonomous Institution)

RECORD OF PRACTICAL WORK

NAME : ANVITHA ARAVINDA

SUBJECT : Unix Shell Programming (USP)

SEMESTER : 5th BRANCH : CSE

ROLL NO : 021 USN : 1BM19CS021

OUTPUT:

① Enter a year
2004
It is a leap year

② Enter a year
2018
It is not a leap year

③ Enter a year
2019
It is not a leap year

Expt. No. 1

Date 25/10/21

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LAB PROGRAM - 1

Q. Shell script to find if the given year is leap or not

```
#!/bin/sh

echo "Enter a year"
read year
if [ $((year % 400)) -eq 0 ]
then
echo "It is a leap year"
elif [ $((year % 100)) -eq 0 ]
then
echo "It is not a leap year"
elif [ $((year % 4)) -eq 0 ]
then
echo "It is leap year"
else
echo "Not a leap year"
fi
```

Teacher's Signature :

OUTPUT:

① Enter the radius
2.4
Area : 18.07

② Enter the radius
1
Area : 3.14

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LAB PROGRAM - 2

Q. Shell script to find the area of circle

```
#!/bin/sh
pi = 3.14
echo " Enter the radius"
read r
ans = `echo $pi * $r * $r | bc`
echo " radius : $ans"
```

Teacher's Signature :

OUTPUT :

① Enter a number
2
Number is positive

② Enter a number
0
Number is 0

③ Enter a number
-1
Number is negative

Date 25/10/21

Expt. No. 3

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LAB PROGRAM - 3

Shell script to check whether the number is zero/positive/negative

```
#! /bin/sh

echo "Enter a number"
read number
if [ $number -eq 0 ]
then
echo "Number is 0"
elif [ $number -lt 0 ]
then
echo "Number is negative"
else
echo "Number is positive"
fi
```

Teacher's Signature : _____

OUTPUT:

① Enter 3 numbers
2 3 4
4 is greatest

② Enter 3 numbers
-1 -2 -3
-1 is greatest

Expt. No. 4 Date 25/10/24

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LAB PROGRAM - 4

Q. Shell script to find the biggest of three numbers.

```
#!/bin/sh

echo "Enter 3 numbers"
read a b c
if [ $a -ge $b -a $a -ge $c ]
then
echo "$a is greatest"
elif [ $b -ge $a -a $b -ge $c ]
then
echo "$b is greatest"
else
echo "$c is greatest"
fi
```

Teacher's Signature :

OUTPUT :

① Enter a no. (no is always greater than=0)
3
factorial : 6

② Enter a no (no is always greater than=0)
1
factorial : 1

③ Enter a no (no is always greater than = 0)
0
factorial : 0

Expt. No. 5 Date 8/11/21

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LAB PROGRAM - 5

Q. Shell script to find the factorial of a number

```
#!/bin/sh

r=1
i=1
echo "Enter a no(no is always greater than=0)"
read n
while test $i -le $n
do
r = $((r*i))
i = $((i+1))
done
echo "factorial : $r"
```

Teacher's Signature :

OUTPUT :

① Enter basic salary
3000
da : 300.0
hra : 600.0
gross : 3900.0
basic : 3000

Expt. No. 6 Date 8/11/21

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LAB PROGRAM - 6

Q. Shell Script to compute the gross salary of an employee

```
#!/bin/sh
echo "Enter basic salary"
read basic
da = `echo $basic \* 0.1 | bc`
hra = `echo $basic \* 0.2 | bc`
gross = `echo $basic + $hra + $da | bc`
echo "da : $da"
echo "hra : $hra"
echo "gross : $gross"
echo "basic : $basic"
```

Teacher's Signature :

OUTPUT:

① Enter temp in Fahrenheit
55
temp in celcius : 12.65

Expt. No. 7 Date 8/6/21

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LAB PROGRAM - 7

Shell script to convert temparature Fahrenheit to Celcius

```
#! /bin/sh

echo " Enter the temp in Fahrenheit"
read temp
y = `echo "scale = 2; 5/9" | bc`
x = `echo $temp \- 32 | bc`
ans = `echo $x \* $y | bc`
echo " temp in celcius : $ans"
```

Teacher's Signature : _____

OUTPUT:

① Enter 2 nos
3
4
Subtraction : -1
Addition : 7
Multiplication : 12
Division : 0
Modulus : 3

Expt. No. 8 Date 8/4/21

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LAB PROGRAM-8

Shell script to perform arithmetic operations on two numbers

```
#!/bin/sh
echo "Enter 2 nos"
read n1
read n2
minus = `echo $n1 \- $n2 | bc`
add = `echo $n1 \+ $n2 | bc`
mul = `echo $n1 \* $n2 | bc`
div = `echo $n1 \/ $n2 | bc`
mod = `echo $n1 \% $n2 | bc`
echo "Subtraction : $minus"
echo "Addition : $add"
echo "Multiplication : $mul"
echo "Division : $div"
echo "Modulus : $mod"
```

Teacher's Signature : _____

OUTPUT

① Enter value of n
10
sum of even nos : 30

Expt. No. 9 Date 15/11/21

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LAB PROGRAM - 9

Schell Script to find the sum of even numbers upto n

```
#!/bin/sh

echo "Enter value of n:"
read n
sum=0
i=0
while test $i -le $n
do
sum = $ ((sum+i))
i= $ ((i+2))
done
echo "sum of even nos: $sum"
```

Teacher's Signature :

OUTPUT

```
111
112
113
121
122
123
131
132
133
211
212
213
221
222
223
231
232
233
311
312
313
321
322
323
331
332
333
```

Expt. No. 10

Date 6/11/24

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LAB PROGRAM - 10

Shell script to print combinations of numbers 1 2 3

```
#! /bin/sh

for i in 1 2 3
do
for j in 1 2 3
do
for k in 1 2 3
do
echo "$i $j $k"
done
done
done
```

Teacher's Signature : _____

OUTPUT:

① Enter the value of base: 5
Enter power : 0
5 to the power 0 is : 1

② Enter value of base : 2
Enter power : 5
2 to the power 5 is : 32

Expt. No. 11 Date 15/11/21

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LAB PROGRAM - 11

Shell Script to find power of a number

```
#!/bin/sh
echo "Enter value of base : \c"
read b
echo "Enter power : \c"
read p
prod = 1
i = 1
while test $i -le $p
do
prod = $((prod * b))
i = $((i+1))
done
echo "$b to the power $p is : $prod"
```

Teacher's Signature :

OUTPUT:

① Enter value of n
5
Sum of 5 natural numbers is : 15

② Enter value of n
0
value of n should be greater than 0

③ Enter value of n
-1
value of n should be greater than 0

Expt. No. 12 Date 15/11/21

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LAB PROGRAM - 12

Shell Script to find sum of n natural numbers

```
#!/bin/sh

echo "Enter value of n"
read n
if test $n -le 0
then
echo "value of n should be greater than 0"
else
 sum=0
 i=1
while test $i -le $n
do
sum=$((sum+i))
i=$((i+1))
done
echo "sum of $n natural numbers is : $sum"
fi
```

Teacher's Signature :

Name of the student

ABC

Enter cie of sub 1

45

Enter see of sub 1

50

GRADE S

Enter cie of sub 2

48

Enter see (for 50) of sub 2

50

GRADE S

Enter cie of sub 3

30

Enter see (for 50) of sub 3

9

Grade F

Enter cie of sub 4

30

Enter see (for 50) of sub 4

30

GRADE C

Enter cie of sub 5

30

Enter see (for 50) of sub 5

20

GRADE D

Enter cie of sub 6

20

Enter see (for 50) of sub 6

20

GRADE

Expt. No. 13

Date 29/11/2021

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LAB PROGRAM - 13

Shell script to display the pass class of a student

```
#!/bin/bash

echo "Name of the student"
read name
n=6
i=1
c=0
d=0
while [ $i -le $n ]
do
echo "enter cie of sub $i"
read cie
echo "enter see (for 50) of sub $i"
read see
echo "SUBJECT $i"
total=`echo $cie + $see | bc`
if test $total -ge 90
then
c=$((c+1))
echo "GRADE S"
elif test $total -ge 80
then
echo "GRADE A"
```

Teacher's Signature :

Number of subjects passed = 6
total no of subs failed = 1

Expt. No. _____ Date _____

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```
elif test $total -ge 70
then
c = $ ((c+1))
echo " GRADE B"
elif test $total -ge 60
then
c = $ ((c+1))
echo " GRADE C"
elif test $total -ge 50
then
c=$((c+1))
echo "GRADE D"
elif test $total -ge 40
then
c = $ ((c+1))
echo "GRADE E"
else
c1 = $((c1+1))
echo "GRADE F"
fi
i= $ ((i+1))
done
echo "total no of subs pass : $c"
echo "total no of subs failed : $c1"
```

Teacher's Signature : _____

OUTPUT

```
Enter range:
10
Series is : 0 1 1 2 3 5 8 13 21 34 55
```

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LAB PROGRAM 14

Shell script to find the fibonacci series up to n

```
echo "Enter range:"
read a
i=0; j=1
echo "Series is : \c"
while [ $a -gt 0 ]
do
  echo "$i \c"
  t=$i
  i=$(( i+j ))
  j=$t
  a=$(( a-1 ))
done
echo "\n"
```

Teacher's Signature : _____

OUTPUT:

Enter a string
Anuritha
No of vowels : 2

Enter a string
12345
No of vowels : 0

Expt. No. 15 Date 29/11/2021

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LAB PROGRAM - 15

Shell script to count the no of vowels of a string

```
#!/bin/sh
echo "Enter a string"
read name
c=0
len=`expr "$name" | wc -c`
len=$((len-1))
while [ $len -gt 0 ]
do
ch=`expr "$name" | cut -c $len`
case $ch in
[aeiou,AEIOU]) c=$((c+1));;
esac
len=$((len-1))
done
echo "No of vowels : $c"
```

Teacher's Signature :

OUTPUT:

Enter the name of the file

test.txt

No of words : 35
No of lines : 5
No of chars : 101

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LAB-PROGRAM -16

Shell script to check number of lines, words, characters in a file

```
#!/bin/bash
echo "Enter the name of the file"
read name
echo "$name"
w=`wc -w < $name`
l=`wc -l < $name`
c=`wc -c < $name`
echo " No of words : $w \n No of lines : $l \n No of chars: $c"
```

Teacher's Signature :

OUTPUT:

```
SSH_AGENT_PID = 3207
HOSTNAME = localhost.localdomain
DESKTOP_STARTUP_ID =
SHELL = /bin/bash
TERM = xterm
HISTSIZE = 1000
KDE_NO_IPV6 = 1
GTK_RC_FILES = /etc/gtk/gtkrc:/root/.gtkrc-1.2-gnome2
WINDOWID = 64040273
OLDPWD = /root/tan
QTDIR = /usr/lib/qt-3.3
QTINC = /usr/lib/qt-3.3/include
USER = root
LS_COLORS = no=00:fi=00:di=00;34:l
GNOME_KEYRING_SOCKET = /tmp/keyring-XSMBVL/socket
KDEDIR = /usr
DESKTOP_SESSION = default
GDM_KEYBOARD_LAYOUT = us
GDM_XSERVER_LOCATION = local
INPUTRC = /etc/inputrc
PWD = /root/tanuj/mpl
XMODIFIERS = @im=none
LANG = en_US.UTF-8
GDMSESSION = default
HOME = /root
QTLIB = /usr/lib/qt-3.3/lib
.
.
.
```


LAB-PROGRAM - 17

Write a c/c++ program to that output the contents of its Environment List.

```
#include <stdio.h>
int main (int argc, char *argv[])
{
int i;
char **ptr;
extern char **environ;
for (ptr = environ, *ptr != 0; ptr++)
printf ("%s\n", *ptr);
return 0;
}
```

Teacher's Signature : _____

Usage : ./a.out [-s] <org-file> <new_link>

OUTPUT:

./a.out 1 2 3 4
Usage : ./a.out [-s] <org-file> <new_link>

./a.out 1.c z
Hard link created

./a.out 1.c z
Cannot create hard link (because z is already exists)

./a.out -s 1.c zz
Symbolic link created

Expt. No. 18 Date 3-1-22

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LAB PROGRAM - 18

Write a C/C++ program to emulate the Unix ln command.

```
#include <stdio.h>
#include <sys/types.h>
#include <unistd.h>
#include <string.h>
int main (int argc, char * argv[])
{
if (argc<3 || argc > 4 || (argc == 4 && strcmp (argv [1], "-s")
{
printf ("Usage : ./a.out [-s] <org_file> <new-link> \n");
return 1;
}
if (argc == 4)
{
if ((symlink (argv [2], argv[3])) == -1)
printf ("Cannot create symbolic link \n");
else
printf ("Symbolic link created \n");
}
else
{
if ((link (argv[1], argv[2])) == -1)
printf ("Cannot create hard link \n");
```

Teacher's Signature :

Expt. No. _____ Date _____

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```
else
printf ("Hard link created \n");
}
return 0;
}
```

Teacher's Signature : _____

OUTPUT:

System support job control
System supports saved set-UID and saved set-GID
Chown-restricted option is 1
Pathname trunc Option is 1
Disable character for terminal files is 0

Expt. No. 19

Date 3-1-22

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LAB PROGRAM - 19

Write a C/C++ POSIX compliant program that prints the POSIX defined configuration options supported on any given system using feature test macros.

```
#define _POSIX_SOURCE
#define _POSIX_C_SOURCE 199309L
#include <stdio.h>
#include <unistd.h>
int main()
{
#ifdef _POSIX_JOB_CONTROL
printf ("System support job controlled \n");
#else
printf ("System does not support job control \n");
#endif
#ifdef _POSIX_SAVED_IDS
printf ("System supports saved set-UID and saved set-GID \n");
#endif
#ifdef _POSIX_CHOWN_RESTRICTED
printf ("chown_rescrited Option is %d \n", _POSIX_CHOWN_RESTRI-
CTED);
#else
printf ("System does not Support chown restricted option \n");
#endif
#if def _POSIX_NO_TRUC
```

Teacher's Signature : _____

Date _____

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```
printf("Pathname trunc option is %d \n", _POSIX_NO_TRUC);
#else
printf("System does not support system-wide pathname trunc
        option \n");
#endif
#ifdef _POSIX_VDISABLE
printf("Disable character for terminal file is %d \n",
        _POSIX_VDISABLE);
#else
printf("System does not support _POSIX_VDISABLE \n");
#endif
return 0;
}
```

Teacher's Signature : _____

OUTPUT :

Terminal -1

• ./a.out FIFO1 "This is the record of Adarsh K.N"

Terminal -2

• ./a.out FIFO1

This is the record of Adarsh K.N

Date 3-1-22

Expt. No. 20 Page No. 23

LAB PROGRAM - 20

Write a C/C++ program which demonstrates interprocess communication between a reader process and a writer process. Use mkfifo, open, read, write and close APIs in your program.

```
#include <sys/types.h>
#include <unistd.h>
#include <fcntl.h>
#include <sys/stat.h>
#include <string.h>
#include <errno.h>
#include <stdio.h>
int main (int argc, char *argv[])
{
int fd;
char buf[256];
if (argc != 2 && argc != 3)
{
printf ("USAGE %s <file> [<args>] \n", argv[0]);
return 0;
}
mkfifo (argv[1], S_IFIFO | S_IRWXU | S_IRWXG | S_IRWXO);
if (argc == 2)
{
fd = open (argv[1], O_RDONLY | O_NONBLOCK);
```

Teacher's Signature :

Expt. No. _____ Date _____

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```
while (read (fd, buf, sizeof (buf)) > 0)
printf ("%s", buf);
}
else
{
fd = open (argv [1], O_WRONLY);
write (fd, argv [2], strlen (argv [2]));
}
close (fd);
}
```

Teacher's Signature : _____