



# B M S. COLLEGE OF ENGINEERING

(Autonomous Institution)

## RECORD OF PRACTICAL WORK

NAME : DISHA B.  
SUBJECT : USP LAB RECORD  
SEMESTER : 5<sup>th</sup> BRANCH : CSE  
ROLL NO : 050 USN : 050



# B M S. COLLEGE OF ENGINEERING

(Autonomous Institution)

## LABORATORY CERTIFICATE

This is to Certify that Mr. / Ms. ..... DISHA B.

has Satisfactorily completed the course of experiments in Practical  
..... Prescribed

by the Visvesvaraya Technological University for ..... V

Semester ..... UG Course in the Laboratory of the college  
in the year 2021 - 2022

Head of the Department

~~Staff incharge of the Batch~~

Date : .....

Marks	
Maximum	Obtained

Name of the Candidate : ..... DISHA B.

Roll No : ..... USN : IBM19CS050

Disha  
Signature of the Candidate

# **Particulars of the Experiments Performed**

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3.	25.10.21	to check whether a number is zero / positive / negative		3
4.	25.10.21	to find largest of three nos.		4.
5.	8.11.21	to find factorial of a number		5
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7.	8.11.21	fahrenheit to celsius		7.
8.	8.11.21	arithmetic operations on two numbers		8
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# Particulars of the Experiments Performed

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13.	29/11/2021	Shell script to display pass class of a student.		13-14
14.	29/11/2021	Shell script to find the Fibonacci series upto 'n'		15
15.	29/11/2021	Shell script to count the number of vowels of a string.		16
16.	29/11/2021	Shell script to check number of lines, words, characters in a file.		17
17.	3/01/2022	Write a c/c++ program to that outputs the contents of its environment list		18
18.	3/1/2022	Write a c/c++ program to emulate the unix ls command		19.
19.	3/1/2022	Write a c/c++ posix compliant program that prints the POSIX defined configuration options supported on any given system using feature test macros.		20-21
20.	03/01/2022	Write a c/c++ program which demonstrates interprocess communication between a reader process and writer process. Use mkfifo, open, read, write and close API's in program.		22-23

OUTPUT:

Enter a year : 2000  
2000 is a leap year  
Enter a year : 1000  
1000 is not a leap year.

Expt. No. 1

Date 05/10/21

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1. Shell script to find if given year is leap or not.  
#!/bin/sh  
echo -n "Enter a year:"  
read x  
if [ \$((x % 4)) -eq 0 -a \$((x % 100)) -ne 0  
-o \$((x % 400)) -eq 0 ]  
then  
 echo "\$x is a leap year"  
else  
 echo "\$x isn't a leap year"  
fi

Teacher's Signature :

Date 25/10/21

Output:

Expt. No. 2

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Enter the radius of a circle:  
2  
Area of circle is:  
12.568

```
#!/bin/sh
echo "Enter the radius of a circle."
pi=3.142
echo "Area of circle is:"
area=`echo $pi * $1 * $1` | bc
echo $area
```

Teacher's Signature: \_\_\_\_\_

Expt. No. 3

Date 25/10/21

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Output:

Enter a number:

2

Positive number

Enter a number:

0

Zero

-5

Negative number

```
#!/bin/bash
echo "Enter a number:"
read a
if [ $a -gt 0 ]
then
    echo "It's a positive number"
elif [ $a -lt 0 ]
then
    echo "It's a negative number"
fi
```

Teacher's Signature : \_\_\_\_\_

Output:

Enter three numbers:  
45 67 0  
67 is the largest.

Expt. No. 4

Date 05/10/21  
Page No. 4

```
4) Shell script to find the biggest of three numbers.  
#!/bin/sh  
echo "Enter three numbers."  
read x y z  
if [ $x -gt $y ]  
then  
    if [ $x -gt $z ]  
    then  
        echo "$x is the largest"  
    else [ $z -gt $x ]  
    then  
        echo "$z is the largest"  
    fi  
else  
    if [ $y -gt $z ]  
    then  
        echo "$y is the largest"  
    else  
        echo "$x is the largest"  
    fi
```

Teacher's Signature: \_\_\_\_\_

Output:

Enter the number:

5

Factorial of n is 120.

Expt. No. 5

Date 8/1/21  
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5. Shell script to find the factorial of a number

```

#!/bin/sh
echo "Enter a number:"
read n
fact=1
while [ $n -gt 1 ]
do
    fact=$((fact * n))
    n=$((n - 1))
done
echo "Factorial of n is $fact."

```

Output :

Enter the basic salary:  
24000

Gross salary of employee is 31200.

Expt. No. 6

Date 25/11/21  
Page No. 6

6. Shell script to compute the gross salary of an employee

```
#!/bin/sh
echo "Enter the basic salary"
read bsl
gross=$((bsl + $bsl * 0.2 + $bsl * 0.1))bc'
echo "Gross salary of employee is $gross"
```

Teacher's Signature : \_\_\_\_\_

Output:

Enter degree fahrenheit temperature:

74

#4 degree fahrenheit is equal to 23.3 degree celsius.

Expt. No. \_\_\_\_\_  
Date 2/1/21

Page No. \_\_\_\_\_  
1

7. Shell script to convert temperature fahrenheit to  
celsius.  
#!/bin/sh  
echo "Enter degree fahrenheit temperature."  
read f  
c=echo "scale=4; (\$f - 32)/ 1.80 | bc"  
echo "\$c degree fahrenheit is equal to \$c degree celsius."

Teacher's Signature : \_\_\_\_\_

Output:

1. Addition \n 2. Subtraction \n 3. Multiplication \n 4. Division

Numbers are :

10

2

12

8

20

5.00

Expt. No. 8

Date 8/1/21  
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8. Shell script to perform arithmetic operations on given two numbers.

```
#!/bin/sh
echo "1. Addition \n 2. Subtraction \n 3. Multiplication \n 4.
Division"
read i
echo " numbers are :"
read a
read b
case $i in
    1)ans=$((a+b));;
    2)ans=$((a-b));;
    3)ans=$((a*b));;
    4)ans=$(echo "scale=2; $a/$b" | bc `;;
*)echo "enter valid input";;
esac
echo $ans
```

Expt. No. 9

Date 15/1/21

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Output:

enter the count: 5

sum = 6.

9. Shell script to find the sum of even numbers upto n.  
#!/bin/sh  
echo "enter the count"  
read n  
i=0  
while [ \$i -le \$n ]  
do  
 sum=\$((sum+i))  
 i=\$((i+2))  
done  
echo "sum=\$sum"

Teacher's Signature : \_\_\_\_\_

Output:

123.  
213  
231  
321

Expt. No. 10

Date 15/11/21  
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10. Shell script to print the combinations of numbers 123.

```
#!/bin/bash
for i in 1 2 3
do
    for j in 1 2 3
    do
        for k in 1 2 3
        do
            if [ $i -ne $j -a $j -ne $k -a $i -ne $k ]
            then
                echo "$i $j $k"
            fi
        done
    done
done
```

Teacher's Signature :

Output:

Enter a number: 5  
Enter the power: 2

5 to the power 2 is 25.

```
11. Shell script to find the power of a number.
#!/bin/sh
echo "Enter a number"
read n
echo "Enter the power"
read p
pow=$p
mul=1
while [ $p -gt 0 ]
do
    mul=$((mul*$n))
    p=$((p-1))
done
echo "$n to the power $pow is $mul"
```

Output:

Enter value of n:

5  
Sum of 5 natural numbers is : 15

```
#!/bin/sh
echo "Enter value of n"
read n
i=1
while [ $i -le $n ]
do
    sum=$((sum+i))
    i=$((i+1))
done
echo "Sum of '$n' natural numbers is :" $sum
```

Output:

```

        enter cie marks of 1 subject : 45
        enter the see marks of 1 subject : 67.
        the grade is B
        enter cie marks of 2 subject: 25
        enter see marks of 2 subject : 78
        the grade is C
        enter cie marks of 3 subject: 2
        enter see marks of 3 subject: 10
        the grade is F
        enter cie marks of 4 subject : 22.
        enter see marks of 4 subject : 84
        the grade is F
        enter cie marks of 5 subject: 95
        enter the see marks of 5 subject : 99
        the grade is A
        enter cie marks of 6 subject: 48
        enter see marks of 6 subject: 99
        the grade is S.
        the number of subjects passed is:4.

        echo "the grade is A"
        if [$marks -ge 80 -a $marks -lt 80]
        then
            echo "the grade is B"
        elif [$marks -ge 60 -a $marks -lt 60]
        then
    
```

Expt. No. ....

```
echo "the grade is C"  
if $marks >= 50 -o $marks -lt 60 ]  
then
```

```
echo "the grade is D"
```

```
else
```

```
echo "the grade is E"
```

```
fi
```

```
else
```

```
echo "the grade is F"
```

```
fi
```

```
else
```

```
echo "the grade is F"
```

```
fi  
n=$((cont))
```

```
done
```

```
echo "the number of subjects passed is : $pass"
```

Teacher's Signature :

Output:  
enter the value of n.

```
8
Fibonacci series
0 1 1 2 3 5 8 13
```

14. Shell script to find the fibonacci series upto n

```
#!/bin/sh
echo "Enter value of n:"
read n
echo "Fibonacci series"
num0=0
num1=1
echo "$num0"
while [ $n -gt 0 ]
do
    file0=$((num1+num0))
    echo "$file0"
    num0=num1
    num1=$file0
    n=$((n-1))
done.
```

Output:

enter a string:

Hello this is computer

echo i o u e

number of vowels in the string is = 7.

```
[root@centos ~]#!/bin/bash
echo " enter a string:"
```

```
read str
```

```
len=${#str}
```

```
count=0
```

```
while [ $len -gt 0 ]
```

```
do
```

```
ch=${str:0:1}
```

```
case $ch in
```

```
[aeiouAEIOU ])
```

```
count=$((count+1))
```

```
echo $ch
```

```
;;
```

```
done
```

```
len=$((len-1))
```

```
done
```

```
echo "Number of vowels in a string is:"
```

```
echo "$count"
```

Output:

Enter file path:  
 bmsce@ubuntuci:~/progr/text\$  
 Number of lines = 3  
 Number of words = 21  
 Number of characters = 108

16. Shell script to check number of lines, words, characters.

```
#!/bin/sh
echo "Enter file path"
read str
lines=`wc -l $str`
words=`wc -w $str`
char=`wc -c $str`
echo "Number of lines: $lines"
echo "Number of words: $words"
echo "Number of characters: $char"
```

OUTPUT:

SSH\_AGENT\_PID = 2201  
HOSTNAME = localhost.localdomain  
SHELL = /bin/bash  
TERM = xterm  
HISTSIZE = 1000  
KDE\_NO\_XPM = 1  
GTK\_RC\_FILES = /etc/gtk/snow/gtkrc-1.2-grounder  
WINDOWID = 4404273  
DLDPWD = /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:  
KDEDIR = /usr  
MAIL = /var/spool/mail/root  
PATH = /usr/lib/:  
HOME = /root  
SHELL = 2  
LOGNAME = root  
STLIB = /usr/lib /lib /lib  
COLORTERM = gnome-terminal

Expt. No. 17

Date 3/1/22

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17. Write a C program that outputs the content 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;
}
```

Output:

Usage ./a.out [-s] filename linkname  
 Usage ./a.out [-s] filename linkname  
 ./a.out l.c z  
 Hard link created  
 ./a.out -s l.a.c z  
 Symbolic link created.

```

write a 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") != 0) )
        printf( "usage : ./a.out [-s] filename linkname" );
    else
    {
        if( argc == 4 )
            if( (symbolink( argv[2], argv[3] )) == -1 )
                printf( "cannot create softlink" );
            else
                printf( "soft link created" );
        else
        {
            if( (argv[1], argv[2]) == -1 )
                printf( "cannot create hard link" );
            else
                printf( "Hard link created" );
        }
    }
}
  
```

Expt. No. 19.

Date 3/1/2022  
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### Output:

System supports job control.  
System supports rwd set UID and rwd set GID.  
Chown - restricted option is l  
Pathname trunc option is l  
Disable character for terminal files is zero.

Write a C program that prints POSIX defined configuration options supported on any given system using features fstat macros.

Teacher's Signature :

Expt. No. \_\_\_\_\_

Date \_\_\_\_\_

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```
printf("System doesn't support system wide pathname  
#ifndef _POSIX_SOURCE  
#include <stropts.h>  
#endif  
#ifndef _POSIX_VDISABLE  
#define _POSIX_VDISABLE 0;  
#endif  
{  
    if (fopen("test", "w") != NULL)  
        printf("File test created successfully\n");  
    else  
        printf("File test creation failed\n");  
    if (remove("test") == -1)  
        printf("File test deletion failed\n");  
    else  
        printf("File test deletion successful\n");  
}
```

Teacher's Signature : \_\_\_\_\_

OUTPUT:

Terminal 1

```
/a.out FIFO "This is USP & CD lab"
```

After this open new terminal

Terminal 2

```
/a.out FIFO
```

guru is USP & CD lab.

```
#include <sys/types.h>
#include <unistd.h>
#include <fcntl.h>
#include <sys/stat.h>
#include <stroq.h>
#include <errno.h>
#include <stroq.h>
int main(int argc, char **argv)
{
    int fd;
    char buff[256];
    if (argc != 2 && argc != 3)
    {
        perror("USAGE -> file [ <arg> ]", argv[0]);
        return 0;
    }
    if (argc == 1), S_FIFO | S_IRWXU | S_IRWXG | S_IRWXO);
    if (argc == 2)
    {
        fd = open(argv[1], O_RDONLY | O_NONBLOCK);
        while (read(fd, buff, sizeof(buff)) > 0)
            perror("fd", buff);
    }
}
```

Expt. No. \_\_\_\_\_

Date \_\_\_\_\_

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else

{

fd = open ("argu[1]", O\_WRONLY);  
write (fd, argv [2], strlen (argv [2]));

close (fd);

}

if (fd < 0) {  
    printf ("fd = %d\n", fd);  
    exit (1);  
}  
else  
    printf ("fd = %d\n", fd);

if (fd < 0) {  
    printf ("fd = %d\n", fd);  
    exit (1);  
}

if (argc > 2) {  
    printf ("argc = %d\n", argc);  
    exit (1);  
}

Teacher's Signature : \_\_\_\_\_