

**Computer Science and Engineering & Information
Technology (2nd Year B.Tech.)
IIIT Kalyani, West Bengal**

Operating System Lab (CS 411): (Spring: 2019-2020)

Practice - 1

Date: 10th January, 2020

We shall work in a Linux environment so it is necessary to be familiar with the basic commands of a standard command interpreter `bash` (Bourne again shell) on Linux.

1. Use the following link for a list of `bash` commands:
<https://courses.cs.washington.edu/courses/cse390a/14au/bash.html>
Execute the following commands with different options:
`Ctrl-C, cal, cat, cd, chmod, clear, cp, date, kill, less, ls, man, mkdir, more, mv, passwd, pwd, rm, rmdir, sudo, tar, touch, uname, unzip, whoami, zip`
2. Enter the `bash` scripts given below and execute them. Also modify these codes as specified.
1. Following `bash` script takes a parameter and prints it. You need to change the mode of the script file to *executable* using the command `chmod`.

```
#!/bin/bash
# 1st bash script: 1.sh
echo $1

$ chmod +x 1.sh
$ 1.sh Kalyani
Kalyani
```

2. Try: `$ 1.sh IIIT Kalyani` and see the output.
How can you pass `IIIT Kalyani` as a single parameter?
3. How can you print the length of a parameter string?
4. How can you take two parameter strings? How can you take any number of parameters and print them one by one per line?

```
$ 4.sh a bb ccc dddd
a
bb
ccc
dddd
```

5. Write the missing line so that the script computes $n!$. Write `bash` script to compute the n^{th} Fibonacci number (you need to look for `if-then-else-fi` construct) (`5a.sh`).

```
#!/bin/bash
# Write the missing line (5.sh)
n=$1
remN=$n
fact=1
while [ $n -gt 0 ]
do
# Missing line
    n=$((n-1))
done
echo "${remN}! = $fact"
```

6. Take help from internet and explain the following code. It reads one line from a file.

```
#!/bin/bash
# What does it do?
exec 5< $1
read -u 5 Ln
echo "$Ln"
exec 5<&-
```

7. Modify the previous code to read all lines of a text file and print it on *stdout*.
8. Modify the code of previous example to copy a text file to another file.
9. Modify the following code to compute $n!$

```
#!/bin/bash
# sum of 1..n
sum=0
for (( i=1; i <= $1; i++))
do
    sum=$((sum + i))
done
echo "1+..+$1 = $sum"
```

10. Write a bash script so that it takes a text file name as a parameter and prints the number of characters per line and total number of characters.
11. What does the following script do? What is in out12?

```
#!/bin/bash
# $ 12.sh infile outfile
exec 4< $1
exec 5>&1
exec > $2
for ((i=1; i <= 5; ++i))
do
    read -u 4 Ln
    echo $Ln
done
exec 1>&5
while read -u 4 Ln
do
    echo $Ln
done
```

Input file (data12):

```
aaa
bbbb
ccc
dddd
eee
ffff
ggg
hhh
iii
jjjj
```

A run:

```
$ 12.sh data12 out12
ffff
ggg
```

hhh
iii
jjj