WEEK 3

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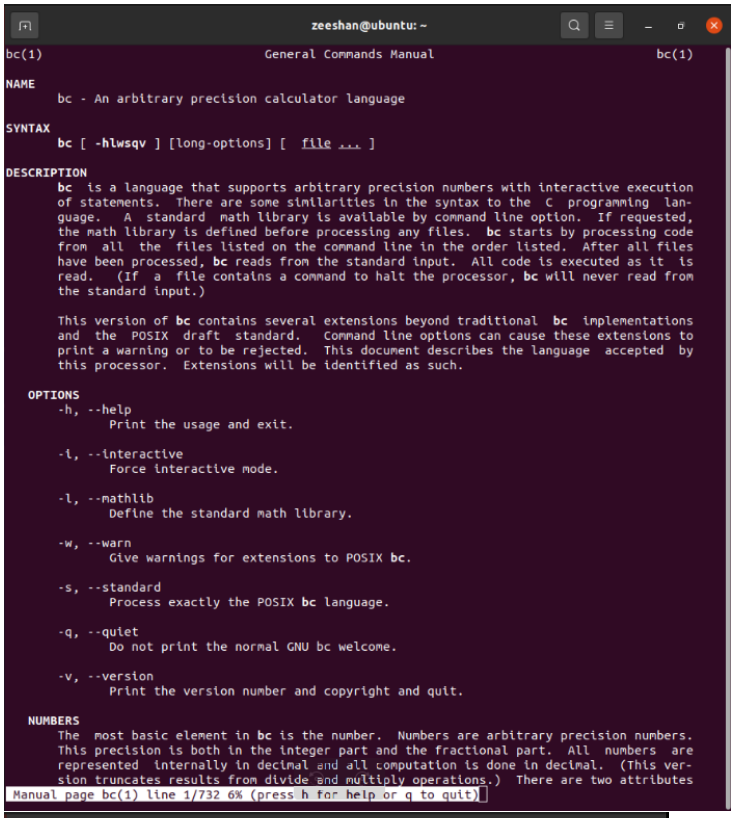
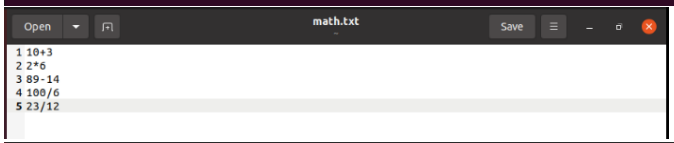
20K-1741

BSE-4B

TASKS: COURSERA

MATH



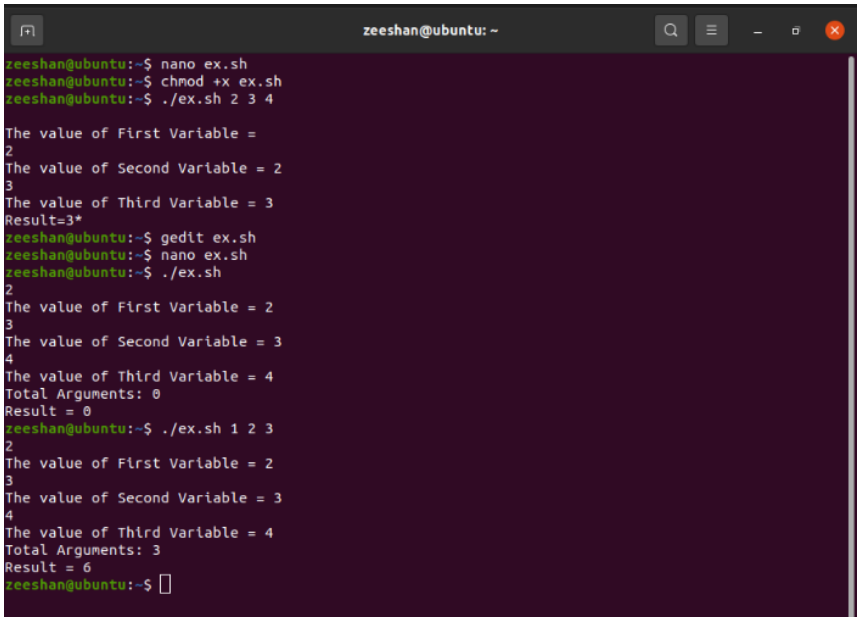


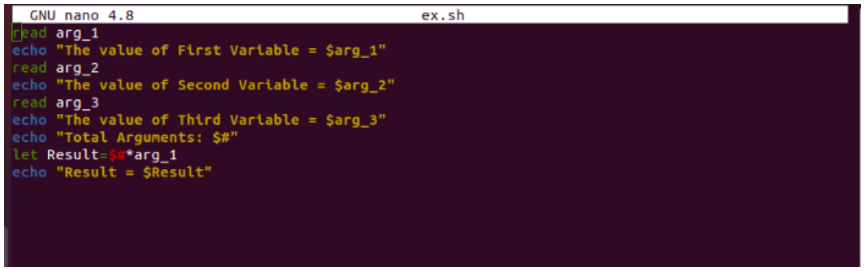

```
zeeshan@ubuntu:~$ man bc
zeeshan@ubuntu:~$ echo "13+89" | bc
102
zeeshan@ubuntu:~$ echo "7-3" | bc
4
zeeshan@ubuntu:~$ echo "7/2" | bc
3
zeeshan@ubuntu:~$ echo "3*11" | bc
33
zeeshan@ubuntu:~$ gedit math.txt
zeeshan@ubuntu:~$ cat math.txt | bc
13
12
75
16
1
zeeshan@ubuntu:~$
```

VARIABLES


zeeshan@ubuntu: ~
zeeshan@ubuntu:~$ var_1=5
zeeshan@ubuntu:~$ var_2=4
zeeshan@ubuntu:~$ echo var_1+var_2
5+4
zeeshan@ubuntu:~$ let var_3=var_1+var_2
zeeshan@ubuntu:~$ echo $var_3
9
zeeshan@ubuntu:~$ var_4=5+9
zeeshan@ubuntu:~$ var_5=6+4
zeeshan@ubuntu:~$ let var_6=var_4+var_5
zeeshan@ubuntu:~$ echo $var_6
24
zeeshan@ubuntu:~$


zeeshan@ubuntu: ~
zeeshan@ubuntu:~$ str_1="Islamabad"
zeeshan@ubuntu:~$ str_2=" is the capital of Pakistan"
zeeshan@ubuntu:~$ echo "str_1str_2"
Islamabad is the capital of Pakistan
zeeshan@ubuntu:~$ str3=$(cat << EOF
> $str_1
> $str_2
> EOF
>)
zeeshan@ubuntu:~$ echo "$str_3"
zeeshan@ubuntu:~$ echo "$str3"
Islamabad
is the capital of Pakistan
zeeshan@ubuntu:~$


zeeshan@ubuntu: ~
zeeshan@ubuntu:~$ nano ex.sh
zeeshan@ubuntu:~$ chmod +x ex.sh
zeeshan@ubuntu:~$ ./ex.sh 2 3 4
The value of First Variable =
2
The value of Second Variable = 2
3
The value of Third Variable = 3
Result=3*
zeeshan@ubuntu:~$ gedit ex.sh
zeeshan@ubuntu:~$ nano ex.sh
zeeshan@ubuntu:~$ ./ex.sh
2
The value of First Variable = 2
3
The value of Second Variable = 3
4
The value of Third Variable = 4
Total Arguments: 0
Result = 0
zeeshan@ubuntu:~$ ./ex.sh 1 2 3
2
The value of First Variable = 2
3
The value of Second Variable = 3
4
The value of Third Variable = 4
Total Arguments: 3
Result = 6
zeeshan@ubuntu:~$


GNU nano 4.8 ex.sh
read arg_1
echo "The value of First Variable = $arg_1"
read arg_2
echo "The value of Second Variable = $arg_2"
read arg_3
echo "The value of Third Variable = $arg_3"
echo "Total Arguments: $#"
let Result=$#*arg_1
echo "Result = $Result"

USER INPUT

```
zeeshan@ubuntu:~$ nano ex2.sh
zeeshan@ubuntu:~$ chmod +x ex2.sh
zeeshan@ubuntu:~$ ./ex2.sh
Enter a Noun:
Zeeshan
Enter an Adjective:
amazing
Enter a verb:
enjoying
Zeeshan is enjoying his amazing life
zeeshan@ubuntu:~$
```

```
 GNU nano 4.8                                    ex2.sh
echo "Enter a Noun: $noun"
read noun
echo "Enter an Adjective: $adj"
read adj
echo "Enter a verb: $verb"
read verb
echo "$noun is $verb his $adj life"
```

LOGIC AND IF/ELSE

```
 GNU nano 4.8                                    ex3.sh
echo "Enter a string: $str_1"
read str_1
if [[ $str_1 -ge A && $str_1 -le Z ]];then
echo "how proper"
else
echo "not upper case"
fi
```

```
zeeshan@ubuntu:~$ nano ex3.sh
zeeshan@ubuntu:~$ chmod +x ex3.sh
zeeshan@ubuntu:~$ ./ex3.sh
Enter a string:
Hello
how proper
zeeshan@ubuntu:~$
```

```
zeeshan@ubuntu:~$ nano ex4.sh
zeeshan@ubuntu:~$ chmod +x ex4.sh
zeeshan@ubuntu:~$ ./ex4.sh
Enter a number:
4
Even
zeeshan@ubuntu:~$ ./ex4.sh
Enter a number:
5
Odd
zeeshan@ubuntu:~$
```

```
 GNU nano 4.8                                ex4.sh
echo "Enter a number: $var"
read var
if [[ $var%2 -eq 0 ]];then
echo "Even"
else
echo "Odd"
fi
```

```
zeeshan@ubuntu: ~
zeeshan@ubuntu:~$ nano ex5.sh
zeeshan@ubuntu:~$ chmod +x ex5.sh
zeeshan@ubuntu:~$ ./ex5.sh
Enter values of arg_1 and arg_2: 3 6
9
zeeshan@ubuntu:~$ ./ex5.sh
Enter values of arg_1 and arg_2: r t
0
zeeshan@ubuntu:~$
```

```
 GNU nano 4.8                                ex5.sh
read -p  "Enter values of arg_1 and arg_2: " x y
if [[ $x -ge 0 && $x -le 9 ]];then
if [[ $y -ge 0 && $y -le 9 ]];then
let z=$x+$y
echo "$z"
else
echo "$x $y"
fi
fi
```

```
zeeshan@ubuntu:~$ nano ex6.sh
zeeshan@ubuntu:~$ chmod +x ex6.sh
zeeshan@ubuntu:~$ ./ex6.sh
Sunday
Not Friday
zeeshan@ubuntu:~$
```

```
 GNU nano 4.8                                ex6.sh
date +%A
var=$(date)
var='date'
if [[ $var -eq "Friday" ]];then
echo "Not Friday"
else
echo "Thanks Moses its Friday"
fi
```

ARRAYS

```
 GNU nano 4.8                                    ex7.sh
array=(zeeshan mustafa ayesha umer muneer ghufran hassan areeba ehtisham)
echo ${array[$0]}
```

```
zeeshan@ubuntu: ~
zeeshan@ubuntu:~$ nano ex7.sh
zeeshan@ubuntu:~$ chmod +x ex7.sh
zeeshan@ubuntu:~$ ./ex7.sh 2
ayesha
zeeshan@ubuntu:~$
```

```
 GNU nano 4.8                                    ex8.sh
arr1=(a b c d e f g h i j)
arr2=(1 2 3 4 5)
let var=${#arr1[@]}+${#arr2[@]}
echo $var
```

```
zeeshan@ubuntu:~$ nano ex8.sh
zeeshan@ubuntu:~$ chmod +x ex8.sh
zeeshan@ubuntu:~$ ./ex8.sh
15
zeeshan@ubuntu:~$
```

BRACES

```
zeeshan@ubuntu:~$ nano {0..99} ex9.txt


Use "fg" to return to nano.

[1]+  Stopped                 nano {0..99} ex9.txt
zeeshan@ubuntu:~$

zeeshan@ubuntu:~$ gedit 50ex9.txt
zeeshan@ubuntu:~$
```

LOOPS

```
 GNU nano 4.8                                ex10.sh
count=3
while [[ $count -gt 0 ]]
do
let count=$count-1
for i in {1..10}
do
if [[ $i -lt 3 ]] || [[ $i -gt 8 ]];then
echo $i
fi
done
done
```

```
zeeshan@ubuntu:~$ nano ex10.sh
zeeshan@ubuntu:~$ ./ex10.sh
1
2
9
10
1
2
9
10
1
2
9
10
zeeshan@ubuntu:~$ nano ex10.sh
zeeshan@ubuntu:~$
```

```
YES(1)                          User Commands                          YES(1)

NAME
       yes - output a string repeatedly until killed

SYNOPSIS
       yes [STRING]...
       yes OPTION

DESCRIPTION
       Repeatedly output a line with all specified STRING(s), or 'y'.

       --help display this help and exit

       --version
              output version information and exit

AUTHOR
       Written by David MacKenzie.

REPORTING BUGS
       GNU coreutils online help: <https://www.gnu.org/software/coreutils/>
       Report yes translation bugs to <https://translationproject.org/team/>

COPYRIGHT
       Copyright  © 2018 Free Software Foundation, Inc.  License GPLv3+: GNU GPL version 3 or
       later <https://gnu.org/licenses/gpl.html>.
       This is free software: you are free to change and redistribute it.  There is  NO  WAR-
       RANTY, to the extent permitted by law.

SEE ALSO
       Full documentation at: <https://www.gnu.org/software/coreutils/yes>
       or available locally via: info '(coreutils) yes invocation'

GNU coreutils 8.30                    September 2019                    YES(1)
 Manual page yes(1) line 1/35 (END) (press h for help or q to quit)
```

FUNCTIONS

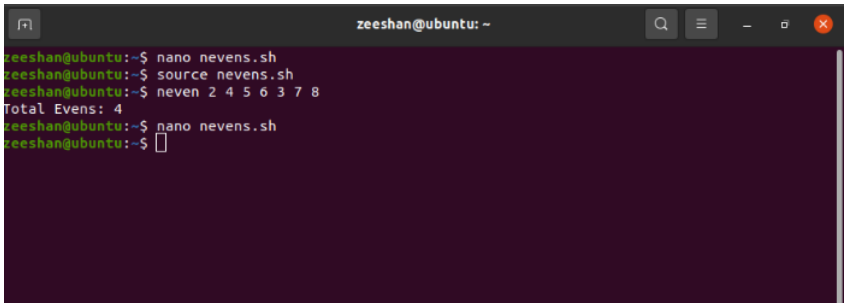
```
zeeshan@ubuntu:~$ nano plier.sh
zeeshan@ubuntu:~$ source plier.sh
zeeshan@ubuntu:~$ plier 2 3 4
24
zeeshan@ubuntu:~$ plier 45 6 78
21060
zeeshan@ubuntu:~$ plier 1 23 67
1541
zeeshan@ubuntu:~$
```

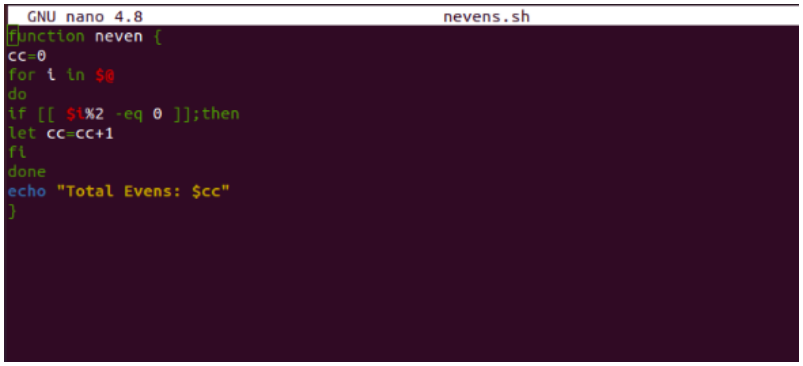
```
 GNU nano 4.8                                plier.sh
function plier
{
product=1
for element in $@
do
let product=product*$element
done
echo $product

}
```

```
zeeshan@ubuntu: ~
zeeshan@ubuntu:~$ nano isiteven.sh
zeeshan@ubuntu:~$ source isiteven.sh
zeeshan@ubuntu:~$ isiteven
Enter an integer: clear
6
1
zeeshan@ubuntu:~$ isiteven
Enter an integer: 6
7
0
zeeshan@ubuntu:~$
```

```
 GNU nano 4.8                              isiteven.sh
function isiteven {
echo "Enter an integer: $num"
read num
if [[ $num%2 -eq 0 ]];then
echo "1"
else
echo "0"
fi
}
```


zeeshan@ubuntu: ~
zeeshan@ubuntu:~$ nano nevens.sh
zeeshan@ubuntu:~$ source nevens.sh
zeeshan@ubuntu:~$ neven 2 4 5 6 3 7 8
Total Evens: 4
zeeshan@ubuntu:~$ nano nevens.sh
zeeshan@ubuntu:~$


GNU nano 4.8 nevens.sh
function neven {
cc=0
for i in $@
do
if [[$1%2 -eq 0]];then
let cc=cc+1
fi
done
echo "Total Evens: $cc"
}


zeeshan@ubuntu:~$ nano fib.sh
zeeshan@ubuntu:~$ source fib.sh
zeeshan@ubuntu:~$ fib 4
0
1
1
2
zeeshan@ubuntu:~$


GNU nano 4.8 fib.sh
function fib {
count=1
num=$@
a=0
b=1
for ((i=0; i<num; i++))
do
echo "$a"
func=$((a + b))
a=$b
b=$func
done
}

WRITING PROGRAMS

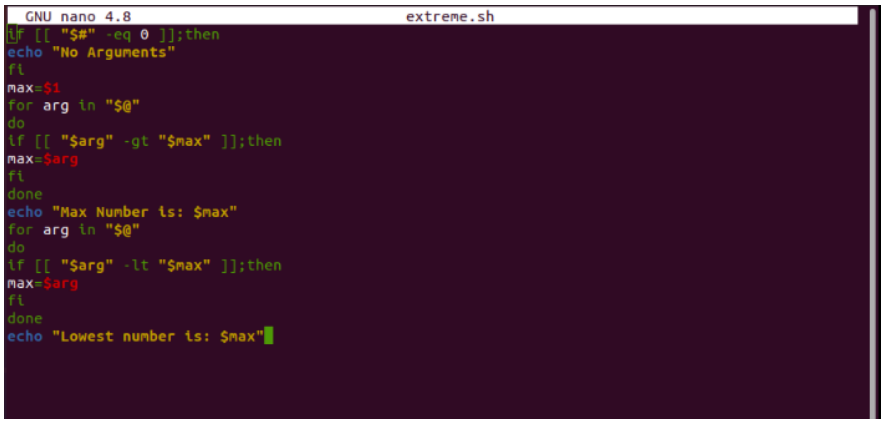
```
zeeshan@ubuntu:~$ echo '#!/usr/bin/env bash' > short
zeeshan@ubuntu:~$ echo 'echo "A small program"' >> short
zeeshan@ubuntu:~$ cat short
#!/usr/bin/env bash
echo "A small program"
zeeshan@ubuntu:~$
```

```
zeeshan@ubuntu: ~/Dir1
zeeshan@ubuntu:~/Dir1$ cd ..
zeeshan@ubuntu:~$
zeeshan@ubuntu:~$ mv ex10.sh Dir1
zeeshan@ubuntu:~$ cd Dir1
zeeshan@ubuntu:~/Dir1$ ls -l
total 8
-rwxrwxr-x 1 zeeshan zeeshan 137 Feb 20 08:31 ex10.sh
-rw-rw-r-- 1 zeeshan zeeshan   0 Feb 20 09:02 ex11.sh
-rw-rw-r-- 1 zeeshan zeeshan  16 Feb 20 09:05 ex12.sh
zeeshan@ubuntu:~/Dir1$ ./ex10.sh
1
2
9
10
1
2
9
10
1
2
9
10
zeeshan@ubuntu:~/Dir1$
```

```
zeeshan@ubuntu:~$ nano ex13.sh
zeeshan@ubuntu:~$ chmod +x ex13.sh
zeeshan@ubuntu:~$ ./ex13.sh
1
2
3
4
5
zeeshan@ubuntu:~$
```

```
 GNU nano 4.8                          ex13.sh
for i in $(seq 5)
do
echo "$i"
done
```


zeeshan@ubuntu: ~
zeeshan@ubuntu:~$ nano extreme.sh
zeeshan@ubuntu:~$ chmod +x extreme.sh
zeeshan@ubuntu:~$ ./extreme.sh
No Arguments
Max Number is:
Lowest number is:
zeeshan@ubuntu:~$ ./extreme.sh 2 4 7
Max Number is: 7
Lowest number is: 2
zeeshan@ubuntu:~$


GNU nano 4.8
extreme.sh
if [["$#" -eq 0]];then
echo "No Arguments"
fi
max=$1
for arg in "$@"
do
if [["$arg" -gt "$max"]];then
max=$arg
fi
done
echo "Max Number is: $max"
for arg in "$@"
do
if [["$arg" -lt "$max"]];then
max=$arg
fi
done
echo "Lowest number is: $max"