

112103018 Assignment BashScripting

Script Execution by calling bash

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ mkdir bash_script
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ cd bash_script
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ touch hello-world.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ nano hello-world.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ chmod +x hello-world.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ ./hello-world.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ nano hello-world.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ chmod +x hello-world.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ ./hello-world.sh
Hello World
./hello-world.sh: line 5: /etc/shells: Permission denied
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ bash -x -v hello-world.sh
#!/bin/bash
#This is my hello-world bash script
echo "Hello World"
+ echo 'Hello World'
Hello World
#!/=shebang => path to shell of choice
$cat/etc/shells
+ /etc/shells
hello-world.sh: line 5: /etc/shells: Permission denied

vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ cat x.sh
cat: x.sh: No such file or directory
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ rm
rm: missing operand
Try 'rm --help' for more information.
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ ls
hello-world.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ ls -F
hello-world.sh*
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ ls -l
total 4
-rwxrwxr-x 1 vaishnavi vaishnavi 124 Jan 20 01:40 hello-world.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ echo 'echo Hello World!' > hello_world.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ cat hello_world.sh
echo Hello World!
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ bash hello_world.sh
Hello World!
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$
```

Multiline File Creation

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ cat <<ALLDONE> hello_world_multiline.sh
> echo Hello World!
> echo Yet another line
> echo This is getting boring
> ALLDONE
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ bash hello_world_multiline.sh
Hello World!
Yet another line
This is getting boring
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$
```

Nano

```
GNU nano 4.8                                hello_world.sh
#!/bin/bash
echo This is the new file in which nano  is being executed
echo It is related to bash script
```

Script Execution with #! - Shebang

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ nano hello_world.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ chmod +x hello_world.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ ./hello_world.sh
This is the new file in which nano is being executed
It is related to bash script
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$
```

Debbuging

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ touch hello1.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ nano hello1.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ bash -x -v hello1.sh
#!/bin/bash -xv
echo "Hello World"
+ echo 'Hello World'
Hello World
+ echo 'Hello World'
+ + echo 'Hello World'
hello1.sh: line 3: +: command not found
Hello World
+ Hello World
hello1.sh: line 4: Hello: command not found
echo I am executing bash script
+ echo I am executing bash script
I am executing bash script
+ echo I am executing bash script
+ + echo I am executing bash script
hello1.sh: line 6: +: command not found
I am executing bash script
+ I am executing bash script
hello1.sh: line 7: I: command not found
```

Special Parameters

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ touch x.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ nano x.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ bash x.sh {A...Z}
{A...Z}
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ touch xp.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ nano xp.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ bash xp.sh {A...Z}
bash: xp.sh{A...Z}: No such file or directory
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ nano xp.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ bash xp.sh {A...Z}
```

{A...Z} Represents all args as single string

{A...Z} All args are represented as an array

1 is total number of args

hB Current option flag

14361 is the PID of the shell

is the PID of the last executed BG command

xp.sh is the script name

echo final arg of last executed foreground command

0 represents the exit code of last command

Shell Expansion: 1. Brace Expansion

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ echo a{b,b,c}e
abe abe ace
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ echo {A..Z}
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~/bash_script$ cd
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ mkdir z{1..10}
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ ls
```

112103018	downloads	DTL_assignment	printt.c	Templates	z2	z6
bash_script	Downloads	'DTL Linux Commands'	Public	Videos	z3	z7
Desktop	DTL	Music	sum1.c	z1	z4	z8
Documents	dtl_assignment	Pictures	sum.tar	z10	z5	z9

2. Parameter Expansion – Arithmetic Expansion

```

vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ a=4
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ b=8
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $((a=a+b))
12
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $a
12
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ ((a++))
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $a
13
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ b=8
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ unset b
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ ((b--))
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $b
-1
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ a=1
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ let a++
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $a
2
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$

```

3. Command Substitution

```

vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo uname -n
uname -n
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo `uname -n`
vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $(uname -n)
vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$

```

Variables

```

vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ nano variables.sh
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ bash variables.sh
Welcome back vaishnavi! Today is Friday, which is the best day of the week!
Your Bash shell version is: 5.0.17(1)-release. Enjoy!
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ a=4
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ b=8
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $a
4
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $b
8
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $[a+b]
12
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$

```

Arrays

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ array=(a b c)
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo ${array[*]}
a b c
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo ${array[2]}
c
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo ${#array[*]}
3
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ for chr in ${array[@]}; do
> echo $chr
> done
a
b
c
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ for chr in ${array[*]}; do
> echo $chr
> done
a
b
c
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$
```

Input, Output and Error Redirections

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ touch foobar
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ ls -l foobar
-rw-rw-r-- 1 vaishnavi vaishnavi 0 Jan 20 02:26 foobar
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $?
0
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ ls -l foobar
-rw-rw-r-- 1 vaishnavi vaishnavi 0 Jan 20 02:26 foobar
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $?
0
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ ls -l foobar
-rw-rw-r-- 1 vaishnavi vaishnavi 0 Jan 20 02:26 foobar
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $?
0
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ #exit status(if 0--> success else fail)
```

Redirecting stdout and stderr

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ ls foobar barfoo
ls: cannot access 'barfoo': No such file or directory
foobar
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ ls foobar barfoo > stdout.txt
ls: cannot access 'barfoo': No such file or directory
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ ls foobar barfoo 2> stderr.txt
ls: cannot access 'barfoo': No such file or directory
ls: cannot access '2': No such file or directory
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ ls foobar barfoo 2> stderr.txt
foobar
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ ls foobar barfoo &>stdoutandsderr.txt
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ cat stdout.txt
foobar
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ cat stderr.txt
ls: cannot access 'barfoo': No such file or directory
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ cat stdoutandsder.txt
cat: stdoutandsder.txt: No such file or directory
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$
```

Redirecting stdin

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ cat>file1.txt
I am using keyboard to input text.
Cat command reads my keyboard input, converts it to stdout which is instantly redirected to file1.txt
This is, until I press CTRL+D
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ cat<file1.txt
I am using keyboard to input text.
Cat command reads my keyboard input, converts it to stdout which is instantly redirected to file1.txt
This is, until I press CTRL+D
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$
```

Numeric Comparison

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ a=1
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ b=2
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ [ $a -lt $b ]
[1: command not found
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ [ &a -lt $b ]
[1] 15811
bash: [: missing `]'
a: command not found
[1]+  Exit 2
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ [ $a -lt $b ]
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $?
0
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ [ $a -gt $b ]
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $?
1
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ [ $a -ne $b ]
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $?
0
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ [ $a -eq $b ]
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $?
1
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$
```

Comparing Strings

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ [ "apples" = "oranges" ]
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $?
1
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ str1="apples"
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ str2="oranges"
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ [ str1 = str2 ]
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $?
1
```


Conditional Arithmetic

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ a=4
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ if (( (a-5) == 0 )) ;
> C
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ if (( (a-5) == 0 )) ; then echo yes ; else echo no ; fi
no
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ if (( a<10 )) ; then echo yes ; else echo no ; fi
yes
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ if ((a==4)) ; then echo yes ;
> ^C
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ if ((a==4)) ; then echo yes ; else echo no ; fi
yes
```

Bash Arithmetics:

1. Arithmetic Expansion

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ a=$((12 + 5))
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $a
17
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $(( 12 + 5 ))
17
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $(( 100 - 1 ))
99
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $(( 3*11 ))
33
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ division = $((100/10))
division: command not found
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ division=$((100/10))
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $division
10
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ x=10;y=33
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ z=$(( $x * $y ))
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $z
330
```

2. expr Command

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ expr 2 + 2
4
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ expr 6 \* 6
6*6
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ expr 6 \* 6
36
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ expr 6 / 3
2
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ expr 1000 - 999
1
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$
```

3. let Command

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ let a=2+2
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $a
4
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ let b=4*($a-1)
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $b
12
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ let c=($b**3)/2
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $c
864
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ let c++
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $c
865
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ let c-
bash: let: c-: syntax error: operand expected (error token is "-")
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ let c--
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $c
864
```

4. bc Command

```
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo '8.5 / 2.3' | bc
3
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo 'scale=2;8.5 / 2.3' | bc
3.69
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo 'scale=30;8.5 / 2.3' | bc
3.695652173913043478260869565217
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ squareroot=$( echo 'scale=50;sqrt(50)' | bc )
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo squareroot
squareroot
vaishnavi@vaishnavi-HP-Pavilion-Gaming-Laptop-15-ec2xxx:~$ echo $$squareroot
7.07106781186547524400844362104849039284835937688474
```