Bash scripting: 01

— -

>> Bash scripting will be used as a part of automation.
>> for performing sanity test >> " free -m, ps -ef, df, du -sk" (instead of performing this sanity test everyday manually we can automate this without any manual effort)
>> as we know "vi" will edit and create the file as well — "vi test" — file got created along with the content (commands which we run " free -m, ps -ef, df, du -sk")
>> chmod 777 test (giving full permissions)
>> to execute "./" or "bash"

```
[ec2-user@ip-172-31-46-130 ~]$ vi test
[ec2-user@ip-172-31-46-130 ~]$ cat test
#!/bin/bash

free -m
ps -ef
df

[ec2-user@ip-172-31-46-130 ~]$ ll
total 4
-rw-r--r--. 1 ec2-user ec2-user 32 Dec  3 06:38 test
[ec2-user@ip-172-31-46-130 ~]$ chmod 777 test
[ec2-user@ip-172-31-46-130 ~]$ ll
total 4
-rwxrwxrwx. 1 ec2-user ec2-user 32 Dec  3 06:38 test
[ec2-user@ip-172-31-46-130 ~]$ bash test
             total       used       free     shared  buff/cache   available
Mem:           904        172        515          0         215        602
Swap:            0          0          0
UID        PID   PPID  C STIME TTY         TIME CMD
root         1      0  0 06:21 ?       00:00:00 /usr/lib/systemd/systemd --switched-root --system --deserialize=32
root         2      0  0 06:21 ?       00:00:00 [kthreadd]
root         3      2  0 06:21 ?       00:00:00 [rcu_gp]
root         4      2  0 06:21 ?       00:00:00 [rcu_par_gp]
```

```
root      2724       2  0 06:40 ?       00:00:00 [kworker/1:2-xfs-buf/nvme0n1p1]
root      2773    1948  0 06:42 ?       00:00:00 systemd-userwork: waiting...
root      2774    1948  0 06:42 ?       00:00:00 systemd-userwork: waiting...
root      2775    1948  0 06:42 ?       00:00:00 systemd-userwork: waiting...
ec2-user  2776    1963  0 06:43 pts/0   00:00:00 bash test
ec2-user  2778    2776  0 06:43 pts/0   00:00:00 ps -ef
Filesystem      1K-blocks      Used Available Use% Mounted on
devtmpfs             4096         0      4096   0% /dev
tmpfs              463276         0    463276   0% /dev/shm
tmpfs              185312       428    184884   1% /run
/dev/nvme0n1p1    8310764   1610100   6700664  20% /
tmpfs              463276         0    463276   0% /tmp
/dev/nvme0n1p128    10202      1314      8888  13% /boot/efi
tmpfs               92652         0     92652   0% /run/user/1000
[ec2-user@ip-172-31-46-130 ~]$
```

>> "echo $0 = will show you which shell you are in.
>> "cat /etc/shells" = to find all the shells present in bash
>> "cat /etc/passwd" = to find all the users using which shells

```
[ec2-user@ip-172-31-46-130 ~]$ sh
sh-5.2$ echo $0
sh
sh-5.2$ exit
exit
[ec2-user@ip-172-31-46-130 ~]$ csh
[ec2-user@ip-172-31-46-130 ~]$ echo $0
csh
[ec2-user@ip-172-31-46-130 ~]$ tcsh
[ec2-user@ip-172-31-46-130 ~]$ echo $0
tcsh
[ec2-user@ip-172-31-46-130 ~]$
```

```
[ec2-user@ip-172-31-46-130 ~]$ echo $0
-bash
[ec2-user@ip-172-31-46-130 ~]$ cat /etc/shells
/bin/sh
/bin/bash
/usr/bin/sh
/usr/bin/bash
/bin/csh
/bin/tcsh
/usr/bin/csh
/usr/bin/tcsh
[ec2-user@ip-172-31-46-130 ~]$ cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
bin:x:1:1:bin:/bin:/sbin/nologin
daemon:x:2:2:daemon:/sbin:/sbin/nologin
adm:x:3:4:adm:/var/adm:/sbin/nologin
lp:x:4:7:lp:/var/spool/lpd:/sbin/nologin
sync:x:5:0:sync:/sbin:/bin/sync
shutdown:x:6:0:shutdown:/sbin:/sbin/shutdown
halt:x:7:0:halt:/sbin:/sbin/halt
mail:x:8:12:mail:/var/spool/mail:/sbin/nologin
operator:x:11:0:operator:/root:/sbin/nologin
games:x:12:100:games:/usr/games:/sbin/nologin
ftp:x:14:50:FTP User:/var/ftp:/sbin/nologin
nobody:x:65534:65534:Kernel Overflow User:/:/sbin/nologin
dbus:x:81:81:System message bus:/:/sbin/nologin
systemd-network:x:192:192:systemd Network Management:/:/usr/sbin/nologin
systemd-oom:x:999:999:systemd Userspace OOM Killer:/:/usr/sbin/nologin
systemd-resolve:x:193:193:systemd Resolver:/:/usr/sbin/nologin
sshd:x:74:74:Privilege-separated SSH:/usr/share/empty.sshd:/sbin/nologin
rpc:x:32:32:Rpcbind Daemon:/var/lib/rpcbind:/sbin/nologin
libstoragemgmt:x:997:997:daemon account for libstoragemgmt:/:/usr/sbin/nologin
systemd-coredump:x:996:996:systemd Core Dumper:/:/usr/sbin/nologin
systemd-timesync:x:995:995:systemd Time Synchronization:/:/usr/sbin/nologin
chrony:x:994:994:chrony system user:/var/lib/chrony:/sbin/nologin
ec2-instance-connect:x:993:993::/home/ec2-instance-connect:/sbin/nologin
stapunpriv:x:159:159:systemtap unprivileged user:/var/lib/stapunpriv:/sbin/nologin
rpcuser:x:29:29:RPC Service User:/var/lib/nfs:/sbin/nologin
```

What is absolute path and relative path ?

>> Absolute path :- starts from the root directory
>> Relative path :- starts from the current directory which you're in by changing directory 'cd'
> PWD - present working directory
> creating a directory from root - "mkdir -p /gaya3/scripts >> absolute path
> cd - change directory
> cd /gaya3/scripts >> directly changing into the directory >> relative path
>> "./" will always check for the permissions
>> "bash" will directly execute the o/p
>> We can use "./" or "bash" to execute the script

```
bash: ./: is a directory
[root@ip-172-31-46-130 scripts]# ./helloworld
hello world
[root@ip-172-31-46-130 scripts]# bash helloworld
hello world
[root@ip-172-31-46-130 scripts]#
```

```
[ec2-user@ip-172-31-46-130 ~]$ pwd
/home/ec2-user
[ec2-user@ip-172-31-46-130 ~]$
[ec2-user@ip-172-31-46-130 ~]$ mkdir -p /gaya3/scripts
mkdir: cannot create directory '/gaya3': Permission denied
[ec2-user@ip-172-31-46-130 ~]$ sudo su -
Last login: Mon Nov 24 07:57:35 UTC 2025 on pts/2
[root@ip-172-31-46-130 ~]# mkdir -p /gaya3/scripts
[root@ip-172-31-46-130 ~]# cd /gaya3/scripts/
[root@ip-172-31-46-130 scripts]# ls
[root@ip-172-31-46-130 scripts]# pwd
/gaya3/scripts
[root@ip-172-31-46-130 scripts]# vi hello people
2 files to edit
[root@ip-172-31-46-130 scripts]# ll
total 4
-rw-r--r--. 1 root root 30 Dec  3 07:18 hello
[root@ip-172-31-46-130 scripts]# ls -ltr
total 4
-rw-r--r--. 1 root root 30 Dec  3 07:18 hello
[root@ip-172-31-46-130 scripts]# cat hello
#!/bin/bash

echo hello world
[root@ip-172-31-46-130 scripts]# cat people
cat: people: No such file or directory
[root@ip-172-31-46-130 scripts]# rm -rf hello people
[root@ip-172-31-46-130 scripts]# ll
total 0
[root@ip-172-31-46-130 scripts]# vi helloworld
[root@ip-172-31-46-130 scripts]# cat helloworld
#!/bin/bash

echo hello world
[root@ip-172-31-46-130 scripts]# chmod 755 helloworld
[root@ip-172-31-46-130 scripts]# ll
total 4
-rwxr-xr-x. 1 root root 30 Dec  3 07:22 helloworld
[root@ip-172-31-46-130 scripts]# pwd
/gaya3/scripts
[root@ip-172-31-46-130 scripts]# cd
[root@ip-172-31-46-130 ~]# /gaya3/scripts/helloworld
hello world
[root@ip-172-31-46-130 ~]# cd /gaya3/scripts
[root@ip-172-31-46-130 scripts]# ls
helloworld
[root@ip-172-31-46-130 scripts]#
```

>> to store the scripts, we should create a permanent directory
>> cd /gaya3/scripts is my permanent directory to store the scripts

Scripting format :
— — — — — — — — — —

>> "#!/bin/bash" = will define you're in which shell, where "#!" = defines shebang character

>> "#" comment = this will help you to give the information about the script however these comment will not include in executing the script, will help you only for information about the script
>> variables = variables will work as a container, which will be able to store anything.
>> commands "echo, grep, cp etc ".

```
#!/bin/bash
#purpose : testing script format
#date: 12/03/2025

a='hello world'

echo $a
~
~
~
~
~
~
~
~
~
~
~
~
~
~
~
```

```
[root@ip-172-31-46-130 scripts]# cat helloworld
#!/bin/bash

echo hello world
[root@ip-172-31-46-130 scripts]# vi helloworld
[root@ip-172-31-46-130 scripts]# cat helloworld
#!/bin/bash
#purpose : testing script format
#date: 12/03/2025

a='hello world'

echo $a
[root@ip-172-31-46-130 scripts]# 
```

>> if we want to change the content for 1 or 100 etc.. scripts, then we can simply change the variable

```
#!/bin/bash
#purpose : testing script format
#date: 12/03/2025

a='hello Devops'

echo $a
~
~
~
~
```

```
[root@ip-172-31-46-130 scripts]# cat helloworld
#!/bin/bash
#purpose : testing script format
#date: 12/03/2025

a='hello Devops'

echo $a
[root@ip-172-31-46-130 scripts]#
```

* Basic script :-

```
#!/bin/bash
#purpose : basic script
#modifiedon : 12/03/2025
#owner : gayathri

echo
echo "hello people"
echo
~
~
~
~
~
```

```
[root@ip-172-31-46-130 scripts]# ls
[root@ip-172-31-46-130 scripts]# vi helloworld.bash
[root@ip-172-31-46-130 scripts]# bash helloworld.bash

hello people
```

Basic script :-

commands

```
[root@ip-172-31-46-130 scripts]# vi commands.bash
[root@ip-172-31-46-130 scripts]# cat commands.bash
#!/bin/bash
#purpose : basic scripting by using commands
#date : 12/03/2025


pwd
ls
whoami
date
cal
touch a b c
[root@ip-172-31-46-130 scripts]# ./ commands.bash
bash: ./: Is a directory
[root@ip-172-31-46-130 scripts]# ./commands.bash
bash: ./commands.bash: Permission denied
[root@ip-172-31-46-130 scripts]# bash commands.bash
/gaya3/scripts
commands.bash   helloworld.bash
root
Wed Dec  3 09:40:40 UTC 2025
    December 2025
Su Mo Tu We Th Fr Sa
    1  2  3  4  5  6
 7  8  9 10 11 12 13
14 15 16 17 18 19 20
21 22 23 24 25 26 27
28 29 30 31

[root@ip-172-31-46-130 scripts]#
```

**Basic
administration task :-**

```
#!/bin/bash
#purpose : basic admin tasks
#modified on : 12/03/2025
#owner : gayathri

top | head -10
df -h
free -m
uptime
iostat
~
~
~
~
~
~
~
~
```

```
top - 09:58:39 up  3:37,  2 users,  load average: 0.00, 0.00, 0.00
Tasks: 105 total,   1 running, 104 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.0 us,  3.1 sy,  0.0 ni, 96.9 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :    904.8 total,    496.0 free,    188.1 used,    220.7 buff/cache
MiB Swap:      0.0 total,      0.0 free,      0.0 used.    587.4 avail Mem
top - 10:00:34 up  3:39,  2 users,  load average: 0.00, 0.00, 0.00
Tasks: 105 total,   1 running, 104 sleeping,   0 stopped,   0 zombie
%Cpu(s):  0.0 us,  0.0 sy,  0.0 ni,100.0 id,  0.0 wa,  0.0 hi,  0.0 si,  0.0 st
MiB Mem :    904.8 total,    496.0 free,    188.0 used,    220.9 buff/cache
MiB Swap:      0.0 total,      0.0 free,      0.0 used.    587.5 avail Mem
    PID USER      PR  NI    VIRT    RES    SHR S  %CPU  %MEM     TIME+ COMMAND
      1 root      20   0  172220  17284  10836 S   0.0   1.9   0:01.41 systemd
      2 root      20   0       0      0      0 S   0.0   0.0   0:00.00 kthreadd
      3 root       0 -20       0      0      0 I   0.0   0.0   0:00.00 rcu_gp
Filesystem        Size  Used Avail Use% Mounted on
devtmpfs          4.0M     0  4.0M   0% /dev
tmpfs             453M     0  453M   0% /dev/shm
tmpfs             181M  428K  181M   1% /run
/dev/nvme0n1p1    8.0G  1.6G  6.4G  20% /
tmpfs             453M     0  453M   0% /tmp
/dev/nvme0n1p128   10M  1.3M  8.7M  13% /boot/efi
tmpfs              91M     0   91M   0% /run/user/1000
              total        used        free      shared  buff/cache   available
Mem:            904         187         496           0         220         587
Swap:             0           0           0
 10:00:37 up  3:39,  2 users,  load average: 0.00, 0.00, 0.00
Linux 6.1.158-178.288.amzn2023.x86_64 (ip-172-31-46-130.eu-north-1.compute.internal)    12/03/25     _x86_64_     (2 CPU)

avg-cpu:  %user   %nice %system %iowait  %steal   %idle
           0.07    0.00    0.04    0.01    0.01   99.87

Device            tps    kB_read/s    kB_wrtn/s    kB_dscd/s    kB_read    kB_wrtn    kB_dscd
nvme0n1          1.41        16.18        17.47         0.00     213075     230104          0


[root@ip-172-31-46-130 scripts]#
```

Defining Variables :

```
[root@ip-172-31-46-130 scripts]# ls
a  admin.bash  b  c  commands.bash  helloworld.bash
[root@ip-172-31-46-130 scripts]#
[root@ip-172-31-46-130 scripts]#
[root@ip-172-31-46-130 scripts]# vi variables.bash
[root@ip-172-31-46-130 scripts]# chmod 755 variables.bash
[root@ip-172-31-46-130 scripts]# cat variables.bash
#!/bin/bash
#purpose : defining variables
#modified on : 12/03/2025
#owner : gayathri

p=pwd
l=ls
wi=whoami
d=date
c='cal 2025'

echo run variables tasks
echo
$p
$l
$wi
$d
$c
[root@ip-172-31-46-130 scripts]#
```

```
[root@ip-172-31-46-130 scripts]# ./variables.bash
run variables tasks

/gaya3/scripts
a   admin.bash   b   c   commands.bash   helloworld.bash   variables.bash
root
Wed Dec  3 10:12:01 UTC 2025
                              2025

           January                  February                    March
Su Mo Tu We Th Fr Sa    Su Mo Tu We Th Fr Sa    Su Mo Tu We Th Fr Sa
         1  2  3  4                        1                           1
 5  6  7  8  9 10 11     2  3  4  5  6  7  8     2  3  4  5  6  7  8
12 13 14 15 16 17 18     9 10 11 12 13 14 15     9 10 11 12 13 14 15
19 20 21 22 23 24 25    16 17 18 19 20 21 22    16 17 18 19 20 21 22
26 27 28 29 30 31       23 24 25 26 27 28       23 24 25 26 27 28 29
                                               30 31
            April                     May                       June
Su Mo Tu We Th Fr Sa    Su Mo Tu We Th Fr Sa    Su Mo Tu We Th Fr Sa
       1  2  3  4  5                  1  2  3     1  2  3  4  5  6  7
 6  7  8  9 10 11 12     4  5  6  7  8  9 10     8  9 10 11 12 13 14
13 14 15 16 17 18 19    11 12 13 14 15 16 17    15 16 17 18 19 20 21
20 21 22 23 24 25 26    18 19 20 21 22 23 24    22 23 24 25 26 27 28
27 28 29 30             25 26 27 28 29 30 31    29 30

            July                    August                   September
Su Mo Tu We Th Fr Sa    Su Mo Tu We Th Fr Sa    Su Mo Tu We Th Fr Sa
       1  2  3  4  5                     1  2        1  2  3  4  5  6
 6  7  8  9 10 11 12     3  4  5  6  7  8  9     7  8  9 10 11 12 13
13 14 15 16 17 18 19    10 11 12 13 14 15 16    14 15 16 17 18 19 20
20 21 22 23 24 25 26    17 18 19 20 21 22 23    21 22 23 24 25 26 27
27 28 29 30 31          24 25 26 27 28 29 30    28 29 30
                        31
           October                 November                  December
Su Mo Tu We Th Fr Sa    Su Mo Tu We Th Fr Sa    Su Mo Tu We Th Fr Sa
          1  2  3  4                       1        1  2  3  4  5  6
 5  6  7  8  9 10 11     2  3  4  5  6  7  8     7  8  9 10 11 12 13
12 13 14 15 16 17 18     9 10 11 12 13 14 15    14 15 16 17 18 19 20
19 20 21 22 23 24 25    16 17 18 19 20 21 22    21 22 23 24 25 26 27
26 27 28 29 30 31       23 24 25 26 27 28 29    28 29 30 31
                        30
[root@ip-172-31-46-130 scripts]# 
```

Input and Output script :

Read >> to take command from user
Echo >> to print the output

```bash
#!/bin/bash
#purpose: input and output script
#modified: 12/03/2025
#owner: gayathri

echo hello, my name is gayathri
echo
echo what is your name ?
read name
echo hello $name
echo
~
~
~
```

```
[root@ip-172-31-46-130 scripts]# vi input.bash
[root@ip-172-31-46-130 scripts]# chmod 755 input.bash
[root@ip-172-31-46-130 scripts]# cat input.bash
#!/bin/bash
#purpose: input and output script
#modified: 12/03/2025
#owner: gayathri

echo hello, my name is gayathri
echo
echo what is your name ?
read name
echo hello $name
echo
[root@ip-172-31-46-130 scripts]# ./input.bash
hello, my name is gayathri

what is your name a b c

hello
```