DTL ASSIGNMENT – 7

BASH SCRIPTING

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1. Making new file and entering text into it

2. Making the file executable

3. Listing all the files in directory

4. Executing the file

```
abhishek002@ABHI:~/assg7$ echo echo Hello world > hello_world.sh
abhishek002@ABHI:~/assg7$ chmod 755 hello_world.sh
abhishek002@ABHI:~/assg7$ ls
hello_world.sh
abhishek002@ABHI:~/assg7$ bash hello_world.sh
Hello world
abhishek002@ABHI:~/assg7$
```

1. Adding multiple lines to a file

   2. Changing permission of the file created

   3. Listing all the files in the directory

   4. Executing the file

```
hello_world.sh
abhishek002@ABHI:~/assg7$  echo echo Hello world > hello_world.sh
abhishek002@ABHI:~/assg7$ chmod 755 hello_world.sh
abhishek002@ABHI:~/assg7$ ls
hello_world.sh
abhishek002@ABHI:~/assg7$ cat << ALLDONE > hello_world_multiline.sh
> echo This is DTL assignment
>  echo Hello, I am Abhishek .
> echo This is amultiline file
> ALLDONE
abhishek002@ABHI:~/assg7$ chmod 755 hello_world_multiline.sh
abhishek002@ABHI:~/assg7$ LS
LS: command not found
abhishek002@ABHI:~/assg7$ ls
hello_world.sh  hello_world_multiline.sh
abhishek002@ABHI:~/assg7$ bash hello_world_multiline.sh
This is DTL assignment
Hello, I am Abhishek .
This is amultiline file
abhishek002@ABHI:~/assg7$
```

1. Opening Downloads directory

2. Creating a new file with current timestamp

3. Opening the file 4. Changing permissions

5. Listing the files in the directory

6. Executing the file

```
# !/bin/bash -xv
# This is DTL Assignment of bash scripting
echo "Hello world, I am Abhi."
```

```
abhishek002@ABHI:~$ mkdir DTL
abhishek002@ABHI:~$ cd DTL
abhishek002@ABHI:~/DTL$ touch hello-world.sh
abhishek002@ABHI:~/DTL$ nano hello-world.sh
abhishek002@ABHI:~/DTL$ chmod +x hello-world.sh
abhishek002@ABHI:~/DTL$ ./hello-world.sh
Hello world, I am Abhi.
abhishek002@ABHI:~/DTL$
```

Special parameters:

```
abhishek002@ABHI:~/DTL$ nano file1.sh
abhishek002@ABHI:~/DTL$ chmod 755 file1.sh
abhishek002@ABHI:~/DTL$ ls
file1.sh  hello-world.sh
abhishek002@ABHI:~/DTL$ bash file.sh {A..Z}
bash: file.sh: No such file or directory
abhishek002@ABHI:~/DTL$ bash file1.sh {A..Z}
file1.sh: line 1: !/bin/bash: No such file or directory
A B H I
abhishek002@ABHI:~/DTL$
```

```
!/bin/bash -xv
echo ${1} ${2} ${8} ${9}
```

Exploring all special parameters:

```
#! /bin/bash

echo
echo $* Represents all arguments as single string
echo
echo $@ Represents all arguments as an array rather than a string
echo
echo $# Total number of positional arguments
echo
echo $- Currernt flag position
echo
echo $$ PID of the shell
echo
echo $! PID of the last executed background command
echo
echo $0 Name of the shell or shell script
echo
```

```
abhishek002@ABHI:~/DTL$ nano file2.sh
abhishek002@ABHI:~/DTL$ chmod 755 file2.sh
abhishek002@ABHI:~/DTL$ bash file2.sh {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 Represents all arguments as single
 string

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 Represents all arguments as an arr
ay rather than a string

26 Total number of positional arguments

hB Currernt flag position

978 PID of the shell

PID of the last executed background command

file2.sh Name of the shell or shell script
```

Bracket expansion:

```
abhishek002@ABHI:~/DTL$ echo a{b,d,c}e
abe ade ace
abhishek002@ABHI:~/DTL$ 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
abhishek002@ABHI:~/DTL$ mkdir z{1..10}
abhishek002@ABHI:~/DTL$ ls
file1.sh  file2.sh  hello-world.sh   z1  z10  z2  z3  z4  z5  z6  z7  z8  z9
abhishek002@ABHI:~/DTL$
```

```
abhishek002@ABHI:~/DTL$ echo $BASH
/bin/bash
abhishek002@ABHI:~/DTL$
```

Using variables:

```
#! /bin/bash

name="Abhishek kakade"
echo My name is ${name}.
```

```
abhishek002@ABHI:~/DTL$ nano variable.sh
abhishek002@ABHI:~/DTL$ chmod 755 variable.sh
abhishek002@ABHI:~/DTL$ ./variable.sh
My name is Abhishek kakade.
abhishek002@ABHI:~/DTL$
```

```
#! /bin /bash
friend1=Abhishek
friend2=Himanshu
friend3=Harshal
echo ${friend1}, ${friend2} and ${friend3}are my roommates.
```

```
abhishek002@ABHI:~/DTL$ ls
file1.sh   hello-world.sh   variable.sh   z10  z3   z5   z7   z9
file2.sh   roommates.sh     z1            z2   z4   z6   z8
abhishek002@ABHI:~/DTL$ bash roommates.sh
Abhishek, Himanshu and Harshalare my roommates.
abhishek002@ABHI:~/DTL$
```

Arithematic expansion:

```bash
#!bin/bash

a=15
b=20

echo a=${a} and b=${b}
echo a+b=$((a+b))
echo ${a}
((a++))
echo
echo ${a}
unset b
((b--))
echo ${b}
a=1
let a++
echo ${a}
```

```
abhishek002@ABHI:~/DTL$ nano arithematic.sh
abhishek002@ABHI:~/DTL$ chmod 755 arithematic.sh
abhishek002@ABHI:~/DTL$ ./arithematic.sh
-bash: ./arithematic.sh: bin/bash: bad interpreter: No such file or directory
abhishek002@ABHI:~/DTL$ bash arithematic.sh
a=15 and b=20
a+b=35
15

16
-1
2
abhishek002@ABHI:~/DTL$
```

Command substitution:

```
abhishek002@ABHI:~/DTL$ file arithematic.sh
arithematic.sh: a bin/bash script, ASCII text executable
abhishek002@ABHI:~/DTL$
```

```bash
#!/bin/bash
greeting="Hii,Welcome"
user=$(whoami)
date=$(date +%F)

echo "$greeting $user Today is $date"
echo "Your bash shell version is: $BASH_VERSION.!"
```

```
abhishek002@ABHI:~/DTL$ nano greetings.sh
abhishek002@ABHI:~/DTL$ chmod 755 greetings.sh
abhishek002@ABHI:~/DTL$ ./greetings.sh
Hii,Welcome abhishek002 Today is 2023-02-07
Your bash shell version is: 5.1.16(1)-release.!
abhishek002@ABHI:~/DTL$
```

```
abhishek002@ABHI:~/DTL$ a=25
abhishek002@ABHI:~/DTL$ b=12
abhishek002@ABHI:~/DTL$ echo $a
25
abhishek002@ABHI:~/DTL$ echo $b
12
abhishek002@ABHI:~/DTL$ echo ${$a + $b}
-bash: ${$a + $b}: bad substitution
abhishek002@ABHI:~/DTL$ echo $[$a + $b]
37
abhishek002@ABHI:~/DTL$
```

Creating backups:

```bash
#!/bin/bash
# This bash script is used to backup a user's home directory to /test/.

user=$(whoami)
input=/home/${user}
output=/tmp/${user}home$(date +%Y-%m-%d_%H%M%S).tar.gz

tar -cvf $output $input

echo "$input backup is complete! Details of the backup are:"

ls -l $output
```

```
abhishek002@ABHI:~/DTL$ nano file3.sh
abhishek002@ABHI:~/DTL$ chmod 755 file3.sh
abhishek002@ABHI:~/DTL$ ./file3.sh
tar: Removing leading `/' from member names
/home/abhishek002/
/home/abhishek002/.bashrc
/home/abhishek002/.bash_history
/home/abhishek002/.bash_logout
/home/abhishek002/.config/
/home/abhishek002/.config/procps/
/home/abhishek002/.lesshst
/home/abhishek002/.local/
/home/abhishek002/.local/share/
/home/abhishek002/.local/share/nano/
/home/abhishek002/.motd_shown
/home/abhishek002/.profile
/home/abhishek002/.sudo_as_admin_successful
/home/abhishek002/.viminfo
/home/abhishek002/112103062/
/home/abhishek002/112103062/dir1/
/home/abhishek002/112103062/newDir/
/home/abhishek002/112103063/
/home/abhishek002/7939
/home/abhishek002/abhi.txt
```

```
/home/abhishek002/DTL/file2.sh
/home/abhishek002/DTL/file3.sh
/home/abhishek002/DTL/greetings.sh
/home/abhishek002/DTL/hello-world.sh
/home/abhishek002/DTL/roommates.sh
/home/abhishek002/DTL/variable.sh
/home/abhishek002/DTL/z1/
/home/abhishek002/DTL/z10/
/home/abhishek002/DTL/z2/
/home/abhishek002/DTL/z3/
/home/abhishek002/DTL/z4/
/home/abhishek002/DTL/z5/
/home/abhishek002/DTL/z6/
/home/abhishek002/DTL/z7/
/home/abhishek002/DTL/z8/
/home/abhishek002/DTL/z9/
/home/abhishek002/file1.txt
/home/abhishek002/file2.txt
/home/abhishek002/file3.txt
/home/abhishek002/hello_world.sh
/home/abhishek002/mergedFile.txt

/home/abhishek002 backup is complete! Details of the backup are:
-rw-r--r-- 1 abhishek002 abhishek002 665600 Feb  7 00:51 /tmp/abhishek002home2023-02-07_005140.tar.gz
abhishek002@ABHI:~/DTL$
```

Environment

```
abhishek002@ABHI:~/DTL$ env
SHELL=/bin/bash
WSL_DISTRO_NAME=Ubuntu
NAME=ABHI
PWD=/home/abhishek002/DTL
LOGNAME=abhishek002
HOME=/home/abhishek002
LANG=C.UTF-8
LS_COLORS=rs=0:di=01;34:ln=01;36:mh=00:pi=40;33:so=01;35:do=01;35:bd=40;33;01:cd=40;33;01:or=40;31;01:mi=00:su=37;41:s
g=30;43:ca=30;41:tw=30;42:ow=34;42:st=37;44:ex=01;32:*.tar=01;31:*.tgz=01;31:*.arc=01;31:*.arj=01;31:*.taz=01;31:*.lha
=01;31:*.lz4=01;31:*.lzh=01;31:*.lzma=01;31:*.tlz=01;31:*.txz=01;31:*.tzo=01;31:*.t7z=01;31:*.zip=01;31:*.z=01;31:*.dz
=01;31:*.gz=01;31:*.lrz=01;31:*.lz=01;31:*.lzo=01;31:*.xz=01;31:*.zst=01;31:*.tzst=01;31:*.bz2=01;31:*.bz=01;31:*.tbz=
01;31:*.tbz2=01;31:*.tz=01;31:*.deb=01;31:*.rpm=01;31:*.jar=01;31:*.war=01;31:*.ear=01;31:*.sar=01;31:*.rar=01;31:*.al
z=01;31:*.ace=01;31:*.zoo=01;31:*.cpio=01;31:*.7z=01;31:*.rz=01;31:*.cab=01;31:*.wim=01;31:*.swm=01;31:*.dwm=01;31:*.e
sd=01;31:*.jpg=01;35:*.jpeg=01;35:*.mjpg=01;35:*.mjpeg=01;35:*.gif=01;35:*.bmp=01;35:*.pbm=01;35:*.pgm=01;35:*.ppm=01;
35:*.tga=01;35:*.xbm=01;35:*.xpm=01;35:*.tif=01;35:*.tiff=01;35:*.png=01;35:*.svg=01;35:*.svgz=01;35:*.mng=01;35:*.pcx
=01;35:*.mov=01;35:*.mpg=01;35:*.mpeg=01;35:*.m2v=01;35:*.mkv=01;35:*.webm=01;35:*.webp=01;35:*.ogm=01;35:*.mp4=01;35:
*.m4v=01;35:*.mp4v=01;35:*.vob=01;35:*.qt=01;35:*.nuv=01;35:*.wmv=01;35:*.asf=01;35:*.rm=01;35:*.rmvb=01;35:*.flc=01;3
5:*.avi=01;35:*.fli=01;35:*.flv=01;35:*.gl=01;35:*.dl=01;35:*.xcf=01;35:*.xwd=01;35:*.yuv=01;35:*.cgm=01;35:*.emf=01;3
5:*.ogv=01;35:*.ogx=01;35:*.aac=00;36:*.au=00;36:*.flac=00;36:*.m4a=00;36:*.mid=00;36:*.midi=00;36:*.mka=00;36:*.mp3=0
0;36:*.mpc=00;36:*.ogg=00;36:*.ra=00;36:*.wav=00;36:*.oga=00;36:*.opus=00;36:*.spx=00;36:*.xspf=00;36:
LESSCLOSE=/usr/bin/lesspipe %s %s
TERM=xterm-256color
LESSOPEN=| /usr/bin/lesspipe %s
USER=abhishek002
SHLVL=1
WSLENV=
XDG_DATA_DIRS=/usr/local/share:/usr/share:/var/lib/snapd/desktop
PATH=/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/mnt/c/Program Files/Win
dowsApps/CanonicalGroupLimited.Ubuntu_2204.1.8.0_x64__79rhkp1fndgsc:/mnt/c/Windows/system32:/mnt/c/Windows:/mnt/c/Wind
ows/System32/Wbem:/mnt/c/Windows/System32/WindowsPowerShell/v1.0/:/mnt/c/Windows/System32/OpenSSH/:/mnt/c/Program File
s (x86)/NVIDIA Corporation/PhysX/Common:/mnt/c/Program Files/NVIDIA Corporation/NVIDIA NvDLISR:/mnt/c/Program Files/do
tnet/:/mnt/d/CODING/PYTHON/Scripts/:/mnt/d/CODING/PYTHON/:/mnt/c/Users/susha/AppData/Local/Microsoft/WindowsApps:/mnt/
c/Users/susha/AppData/Local/Programs/Microsoft VS Code/bin:/mnt/c/MinGW/bin:/mnt/c/Users/susha/AppData/Local/Programs/
MiKTeX/miktex/bin/x64/:/snap/bin
HOSTTYPE=x86_64
_=/usr/bin/env
OLDPWD=/home/abhishek002
abhishek002@ABHI:~/DTL$
abhishek002@ABHI:~/DTL$
```

```
abhishek002@ABHI:~/DTL$ cat /etc/environment
PATH="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/usr/local/games:/snap/bin"
abhishek002@ABHI:~/DTL$
```

```
abhishek002@ABHI:~/DTL$ cat /etc/profile
# /etc/profile: system-wide .profile file for the Bourne shell (sh(1))
# and Bourne compatible shells (bash(1), ksh(1), ash(1), ...).

if [ "${PS1-}" ]; then
  if [ "${BASH-}" ] && [ "$BASH" != "/bin/sh" ]; then
    # The file bash.bashrc already sets the default PS1.
    # PS1='\h:\w\$ '
    if [ -f /etc/bash.bashrc ]; then
      . /etc/bash.bashrc
    fi
  else
    if [ "$(id -u)" -eq 0 ]; then
      PS1='# '
    else
      PS1='$ '
    fi
  fi
fi

if [ -d /etc/profile.d ]; then



abhishek002@ABHI:~/DTL$
abhishek002@ABHI:~/DTL$
```

Input and output redirection:

```
abhishek002@ABHI:~/DTL$
abhishek002@ABHI:~/DTL$
abhishek002@ABHI:~/DTL$ ~/.bashrc
-bash: /home/abhishek002/.bashrc: Permission denied
abhishek002@ABHI:~/DTL$ cmd < x.in
-bash: x.in: No such file or directory
abhishek002@ABHI:~/DTL$ touch foobar
abhishek002@ABHI:~/DTL$ ls -l foobar
-rw-r--r-- 1 abhishek002 abhishek002 0 Feb  7 01:08 foobar
abhishek002@ABHI:~/DTL$ ls foobar barfoo
ls: cannot access 'barfoo': No such file or directory
foobar
abhishek002@ABHI:~/DTL$ ls foobar barfoo > stdout.txt
ls: cannot access 'barfoo': No such file or directory
abhishek002@ABHI:~/DTL$ ls foobar barfoo 2> stdout.txt
foobar
abhishek002@ABHI:~/DTL$
```

Conditionmal statements:

```
#! /bin/bash
a=19
if ((a==30))
then echo YES;
else
echp NO;
```

```
abhishek002@ABHI:~/DTL$ nano file4.sh
abhishek002@ABHI:~/DTL$ chmod 755 file4.sh
abhishek002@ABHI:~/DTL$ ./file4.sh
```

Arithematic expresssions:

```
abhishek002@ABHI:~/DTL$ echo $(( 24+4 ))
28
abhishek002@ABHI:~/DTL$ echo $(( 46-8 ))
38
abhishek002@ABHI:~/DTL$ echo $(( 13*4 ))
52
abhishek002@ABHI:~/DTL$ echo $(( 200/10 ))
20
```

```
abhishek002@ABHI:~/DTL$ expr 8 + 6
14
abhishek002@ABHI:~/DTL$ expr 8 - 6
2
abhishek002@ABHI:~/DTL$ expr 30/6
30/6
abhishek002@ABHI:~/DTL$
```

```
abhishek002@ABHI:~/DTL$ let x=6+55
abhishek002@ABHI:~/DTL$ echo $x
61
abhishek002@ABHI:~/DTL$
```