

Assignment = 2

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Q1. What will the following commands do?

1. echo "Hello, World!"

⇒ The command is used to print the text "Hello, World!"

2. name="Productive"

⇒ The command is used to assign the value "Productive"

3. touch file.txt

⇒ The command is used to create an empty file named file.txt

4. ls -a

⇒ The command is used to list all files and directories in the current directory.

5. rm file.txt

⇒ The command is used to remove the file named file.txt

6. cp file1.txt file2.txt

⇒ The command is used to copy the contents of file1.txt to a new file named file2.txt.

7. mv file.txt /path/to/directory/

⇒ The command is used to move the file file.txt into the specified directory /path/to/directory/.

8. `chmod 755 script.sh`

- ⇒ The command is used to change the permission of the file `script.sh`.

9. `grep "pattern" file.txt`

- ⇒ search for a specific pattern in the file `file.txt` and return all lines that contain that pattern.

`mkdir mydir && cd mydir && touch file.txt && echo "Hello, World!" > file.txt && cat file.txt`

- ⇒ `mkdir mydir`: This command creates a new directory named `mydir`.
- ⇒ `cd mydir`: This command changes the current directory to `mydir`, the directory just created.
- ⇒ `touch file.txt`: This command creates an empty file named `file.txt` inside the `mydir` directory.
- ⇒ `echo "Hello, World!" > file.txt`: This command writes the string "Hello, World!" into the file `file.txt`. The `>` operator overwrites the file with this content.

`ls -l | grep ".txt"`

- ⇒ it is used to list all files in the current directory

`cat file1.txt file2.txt | sort | uniq`

- ⇒ it is used to combine the contents of two files, sort the output, and then remove any duplicate lines.

`ls -l | grep "^d"`

- ⇒ it is used to list directories (and only directories) in the current directory.

`grep -r "pattern" /path/to/directory/`

⇒ it is used to search recursively for a specific pattern inside all files within a given directory

⇒

cat file1.txt file2.txt | sort | uniq -d

⇒ it is used to combine the contents of two files, sort them, and then display only the duplicate lines that appear in both files.

chmod 644 file.txt

⇒ it is used to change the file permissions of file.txt to 644

cp -r source_directory destination_directory

=>it is used to copy a directory and its contents from one location to another.

find /path/to/search -name "*.txt"

⇒ it is used to search for files with a .txt extension within a specified directory

chmod u+x file.txt

⇒ it is used to add execute permissions for the user of a file.

echo \$PATH

⇒ it is used to display the current system's PATH environment variable.

Identify True or False:

1. Is is used to list files and directories in a directory.

⇒ True

2. mv is used to move files and directories.

⇒ **True**

3. cd is used to copy files and directories.

⇒ **False**

4. pwd stands for "print working directory" and displays the current directory.

⇒ **True**

5. grep is used to search for patterns in files.

⇒ **True**

6. chmod 755 file.txt gives read, write, and execute permissions to the owner, and read and execute permissions to group and others.

⇒ **True**

7. mkdir -p directory1/directory2 creates nested directories, creating directory2 inside directory1 if directory1 does not exist.

⇒ **True**

8. rm -rf file.txt deletes a file forcefully without confirmation.

⇒ **True**

9. rm -rf file.txt deletes a file forcefully without confirmation.

⇒ **True**

Question 1: Write a shell script that prints "Hello, World!" to the terminal.

```
cdac@kvmahajan:~$ mkdir OS
cdac@kvmahajan:~$ nano hello.txt
cdac@kvmahajan:~$ bash hello.txt
Hello, World!
cdac@kvmahajan:~$ |
```

Mkdir = it used to create Directory

nano = it is text editor and automatically create new file when file if it does not exist

bash = it use to run script file

Question 2: Declare a variable named "name" and assign the value "CDAC Mumbai" to it. Print the value of the variable.

```
cdac@kvmahajan:~/OS$
cdac@kvmahajan:~/OS$ name="CDAC Mumbai"
cdac@kvmahajan:~/OS$
cdac@kvmahajan:~/OS$ echo $name
CDAC Mumbai
cdac@kvmahajan:~/OS$ |
```

echo = it is used to print text or variable on display

Question 3: Write a shell script that takes a number as input from the user and prints it.

```
cdac@kvmahajan:~/OS$
cdac@kvmahajan:~/OS$ nano input.txt
cdac@kvmahajan:~/OS$ cat input.txt
echo -n "enter first number : "
read num1
echo -n "enter second number : "
read num2
echo "First number is $num1 and Second number is $num2 "
```

```
cdac@kvmahajan:~/OS$ bash input.txt
enter first number : 10
enter second number : 4
First number is 10 and Second number is 4
cdac@kvmahajan:~/OS$ |
```

echo -n = -n option in echo is used to print text without a newline at the end

cat = cat command use to display file contain

Question 4: Write a shell script that performs addition of two numbers (e.g., 5 and 3) and prints the result.

```
cdac@kvmahajan:~/OS$
cdac@kvmahajan:~/OS$ touch sum.txt
cdac@kvmahajan:~/OS$ nano sum.txt
cdac@kvmahajan:~/OS$ cat sum.txt
```

```
a=5
b=3
sum=$((a+b))
echo "Total Sum is : $sum"
```

```
cdac@kvmahajan:~/OS$
cdac@kvmahajan:~/OS$ bash $sum
cdac@kvmahajan:~/OS$ bash sum.txt
Total Sum is : 8
cdac@kvmahajan:~/OS$ |
```

touch = touch command used to create empty file

Question 5: Write a shell script that takes a number as input and prints "Even" if it is even, otherwise

```
cdac@kvmahajan:~/OS$ nano evenodd.txt
cdac@kvmahajan:~/OS$ cat evenodd.txt
echo "Enter a number"
read a

if (( a % 2 == 0 ));
then
    echo "$a is even number"
else
    echo "$a is odd number"
fi

cdac@kvmahajan:~/OS$ bash evenodd.txt
Enter a number
5
5 is odd number
cdac@kvmahajan:~/OS$ |
```

Question 6: Write a shell script that uses a for loop to print numbers from 1 to 5.

```
cdac@kvmahajan:~/OS$ touch loop.txt
cdac@kvmahajan:~/OS$ nano loop.txt
cdac@kvmahajan:~/OS$ bash loop.txt
1
2
3
4
5
cdac@kvmahajan:~/OS$ cat loop.txt

n=5

for (( i=1;i<=n;i++ ))
do
    echo "$i"
done

cdac@kvmahajan:~/OS$ |
```

Question 7: Write a shell script that uses a while loop to print numbers from 1 to 5.

```

cdac@kvmahajan:~/OS$ nano loop1.txtz
cdac@kvmahajan:~/OS$
cdac@kvmahajan:~/OS$ cat loop1.txtz

n=5

i=1
while (( i<=n ))
do
    echo "$i"
    ((i++))
done
cdac@kvmahajan:~/OS$ bash loop1.txtz
1
2
3
4
5
cdac@kvmahajan:~/OS$ |

```

Question 8: Write a shell script that checks if a file named "file.txt" exists in the current directory. If it does, print "File exists", otherwise, print "File does not exist".

```

cdac@kvmahajan:~/OS$
cdac@kvmahajan:~/OS$ touch if.txt
cdac@kvmahajan:~/OS$ nano if.txt
cdac@kvmahajan:~/OS$
cdac@kvmahajan:~/OS$ cat if.txt
if [ -f "file.txt" ]
then
    echo "file exists"
else
    echo "file not exists"
fi
cdac@kvmahajan:~/OS$ bash if.txt
file not exists
cdac@kvmahajan:~/OS$ ls
evenodd.txt  if.txt  input.txt  loop.txt  loop1.txt  loop1.txtz  sum.txt
cdac@kvmahajan:~/OS$ |

```


Question 9: Write a shell script that uses the if statement to check if a number is greater than 10 and prints a message accordingly.

```
cdac@kvmahajan:~/OS$ nano txt
cdac@kvmahajan:~/OS$
cdac@kvmahajan:~/OS$ cat txt
echo "enter number"
read num
if [ $num -gt 10 ];
then
    echo "The number is greater 10"
else
    echo "The number is less the 10"
fi
cdac@kvmahajan:~/OS$ bash txt
enter number
12
The number is greater 10
cdac@kvmahajan:~/OS$ |
```

Question 10: Write a shell script that uses nested for loops to print a multiplication table for numbers from 1 to 5. The output should be formatted nicely, with each row representing a number and each column representing the multiplication result for that number.

```
cdac@kvmahajan:~/OS$ nano table1
cdac@kvmahajan:~/OS$
cdac@kvmahajan:~/OS$ cat table1
```

```
for i in {1..5}
do
    for j in {1..5}
    do
        mul=$((i * j))
        echo -n " " " " $mul "
    done
    echo
done
```

```
cdac@kvmahajan:~/OS$ bash table1
 1   2   3   4   5
 2   4   6   8  10
 3   6   9  12  15
 4   8  12  16  20
 5  10  15  20  25
cdac@kvmahajan:~/OS$ |
```


2. Consider the following processes with arrival times and burst times:

| Process | Arrival Time | Burst Time |

|-----|-----|-----|

| P1 | 0 | 3 |

| P2 | 1 | 5 |

| P3 | 2 | 1 |

| P4 | 3 | 4 |

Calculate the average turnaround time using Shortest Job First (SJF) scheduling.

Non Preemptive :-

process	AT	BT	CT	TAT	WT
P1	0	3	3	3	0
P2	1	5	13	12	7
P3	2	1	4	2	1
P4	3	4	8	5	1

Order chosen

P1	P3	P4	P2
----	----	----	----

0 3 4 8 13

Avg WT $\Rightarrow \frac{9}{4} \Rightarrow 2.25$

Avg TAT = $\frac{22}{4} = 5.5$

Question 6: Write a shell script that uses a for loop to print numbers from 1 to 5.

Question 7: Write a shell script that uses a while loop to print numbers from 1 to 5.

Question 8: Write a shell script that checks if a file named "file.txt" exists in the current directory. If it

does, print "File exists", otherwise, print "File does not exist".

Question 9: Write a shell script that uses the if statement to check if a number is greater than 10 and

prints a message accordingly.

Question 10: Write a shell script that uses nested for loops to print a multiplication table for numbers

from 1 to 5. The output should be formatted nicely, with each row representing a number and each

column representing the multiplication result for that number.

Question 11: Write a shell script that uses a while loop to read numbers from the user until the user enters

a negative number. For each positive number entered, print its square. Use the break statement to exit the

loop when a negative number is entered