CDAC MUMBAI

Concepts of Operating System Assignment 2

Part A

- What will the following commands do?
- echo "Hello, World!" - Prints Hello,World!
- name="Productive - Productive will assign to name
- touch file.txt - create file.txt
- ls -a - Lists all the files
- rm file.txt - Remove file.txt
- cp file1.txt file2.txt - copy content from file1.txt to file2.txt
- mv file.txt /path/to/directory/ - Move file.txt to given path
- chmod 755 script.sh - Change permission to owner to read write , execute and allow permisson to read and execute to the group and others groups
- grep "pattern" file.txt - Add pattern to file.txt
- kill PID - Used for terminating the process
- mkdir mydir && cd mydir && touch file.txt && echo "Hello, World!" > file.txt && cat file.txt - Will make mydir directory and change dir to mydir , create file.txt and print Hello World! In the file.txt and show whats content in it.
- ls -l | grep ".txt" - lists all files and dir in the current location in long format showing details like permission and ownership , size and also show the files with txt files
- cat file1.txt file2.txt | sort | uniq - show the content of both files and sort it an alphabetically order and uniq finds duplicate element in it
- ls -l | grep "^d" - lista all the files and dir and greap shows the files with directory
- grep -r "pattern" /path/to/directory/ - search tha pattern word in given direc and reverse the patterns word

- cat file1.txt file2.txt | sort | uniq –d – show the content of both files and sort it and gives and displays the duplicate lines
- chmod 644 file.txt - change permission to owner to read and write also gives permission to group to read only same with other group
- cp -r source_directory destination_directory - copy the content in reverse order and put the content from the source to the destination
- find /path/to/search -name "*.txt" - find files and directory and specifies the root directory and show only files with matches with txt files
- chmod u+x file.txt - chnage mode to owner of file.txt
- echo $PATH – Prints the text that are in the PATH

Part B

Identify True or False:

1. ls 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. **True**

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. **False**

Identify the Incorrect Commands:

1. chmodx is used to change file permissions. **INCORRECT**
2. cpy is used to copy files and directories. **INCORRECT**
3. mkfile is used to create a new file. **INCORRECT**
4. catx is used to concatenate files. **INCORRECT**
5. rn is used to rename files. **INCORRECT**

Part C

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

```
cdac@Parikshit:~$ vi hello.sh
cdac@Parikshit:~$ cat hello.sh
echo "Hello World!"
cdac@Parikshit:~$
```

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

```
cdac@Parikshit:~$ vi hello.sh
cdac@Parikshit:~$ chmod +x hello.sh
cdac@Parikshit:~$ ./hello.sh
CDAC Mumbai
cdac@Parikshit:~$
```

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

```
cdac@Parikshit:~$ vi numbers.sh
cdac@Parikshit:~$ chmod +x numbers.sh
cdac@Parikshit:~$ ./numbers.sh
1 2 3
var1 is 1
var2 is 2
var3 is 3
cdac@Parikshit:~$
```

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

```
cdac@Parikshit:~$ vi numbers.sh
cdac@Parikshit:~$ ./numbers.sh
8
cdac@Parikshit:~$
```

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

```
cdac@Parikshit:~$ vi Even.sh
cdac@Parikshit:~$ ./Even.sh
Enter Number : 10
Odd Numbers
cdac@Parikshit:~$ ./Even.sh
Enter Number : 9
Odd Numbers
cdac@Parikshit:~$
```

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

```
cdac@Parikshit:~$ vi For.sh
cdac@Parikshit:~$ ./For.sh
1
2
3
4
5
cdac@Parikshit:~$
```

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

```
./While.sh: line 3: [0: command not found
cdac@Parikshit:~$ vi While.sh
cdac@Parikshit:~$ ./While.sh
1
2
3
4
5
cdac@Parikshit:~$ cat While.sh
#!/bin/bash
i=1
while   [ $i -le 5 ]
do
        echo $i
        ((i++))
done
cdac@Parikshit:~$
```

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@Parikshit:~$ vi Exit.sh
cdac@Parikshit:~$ ./Exit.sh
File does not exits
cdac@Parikshit:~$ cat Exit.sh
#!/bin/bash
if [ -e "File.txt" ]; then
        echo "File exits"
else
        echo "File does not exits"
fi
cdac@Parikshit:~$
```

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@Parikshit:~$ vi Greater.sh
cdac@Parikshit:~$ ./Greater.sh
 Enter your number :
16
Enter number is greater than 10
cdac@Parikshit:~$ cat greater.sh
cat: greater.sh: No such file or directory
cdac@Parikshit:~$ cat Greater.sh
#!/bin/bash
echo " Enter your number : "
read num

if [ "$num" -gt 10 ]; then
echo "Enter number is greater than 10"
else
echo "Enter number is not grater than 10"
fi
cdac@Parikshit:~$
```

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@Parikshit:~$ vi Nested.sh
cdac@Parikshit:~$ chmod Nested.sh
chmod: missing operand after ‘Nested.sh’
Try 'chmod --help' for more information.
cdac@Parikshit:~$ chmod +x Nested.sh
cdac@Parikshit:~$ ./Nested.sh
   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@Parikshit:~$
```

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.

```
cdac@Parikshit:~$ vi Negative.sh
cdac@Parikshit:~$ ./Negative.sh
Enter a number: 10
Square: 100
Enter a number: 4
Square: 16
Enter a number: -1
cdac@Parikshit:~$ cat Negative.sh
#!/bin/bash

while true
do
  read -p "Enter a number: " num
  if [ $num -lt 0 ]; then
    break
  fi
  echo "Square: $((num * num))"
done
```

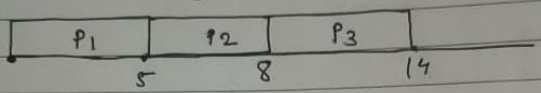
Part E

Part E

Que1 : Answer :

Process	Arrival time	Burst time	Waiting time
P_1	0	5	0
P_2	1	3	4
P_3	2	6	6

Avg waiting time : $\frac{0+4+6}{3} = \frac{10}{3} = \boxed{3.33}$

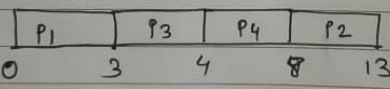


Que 2: Answer :

Process	AT	BT	CT	TAT = CT − AT
P_1	0	3	3	3
P_2	1	5	13	12
P_3	3	4	4	2
P_4	3	3	8	5

Avg TAT = $\frac{3+12+2+5}{4}$

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

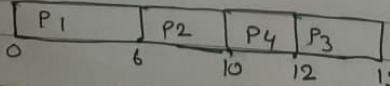


Que 3 : Answer :

Process	Arrival time	Burst time	Priority	WT
P_1	0	4	3	0
P_2	1	4	1	5
P_3	2	1	4	7
P_4	3	2	2	10

Average WT : $\frac{0+5+7+10}{4}$

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



Ans:

Process	Arrival	Burst	CT	TAT = CT - AT
P1	0	4	10	10
P2	1	5	14	13
P3	2	2	6	4
P4	3	3	13	10

Avg TAT = $\frac{10+13+4+10}{4}$

$= 37/4$

$= 9.25$