PUNJAB ENGINEERING COLLEGE (DEEMED TO BE UNIVERSITY) CHANDIGARH

Assignment 3

Submitted By :

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Q1. Write a script to check if a specific process is running and display its PID.

```
#!/bin/bash
# Script by Sugam Arora
# Purpose: Check if a process is running and display its PID

read -p "Enter the process name to check: " process_name
pid=$(pgrep -x "$process_name")

if [ -z "$pid" ]; then
    echo "Process '$process_name' is not running."
else
    echo "Process '$process_name' is running with PID: $pid."
fi
```

```
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ls
10.sh  1.sh  2.sh  3.sh  4.sh  5.sh  6.sh  7.sh  8.sh  9.sh  README.md
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ chmod +x 1.sh
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ls
10.sh  1.sh  2.sh  3.sh  4.sh  5.sh  6.sh  7.sh  8.sh  9.sh  README.md
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ./1.sh
Enter the process name to check: chrome
Process 'chrome' is running with PID: 5579
5598
5599
5602
5678
5770
5777
5817
5827
6037
6266
6276
6320
6422
6431
6504
6539
6571
6600
6610
6626
6697
6726
6772
6790
6805
6848
6863
6953
7127
8632
9493
9969
10180
10199.
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$
```

Q2. Create a script to display the disk usage of the home directory in a human-readable format.

```
#!/bin/bash
# Script by Sugam Arora
# Purpose: Display disk usage of the home directory

echo "Disk usage of the home directory:"
du -sh $HOME
```

```
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ chmod +x 2.sh
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ./2.sh
Disk usage of the home directory:
29G     /home/sugam-arora
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$
```

Q3. Write a script to generate the Fibonacci sequence up to n terms, where n is provided by the user.

```
#!/bin/bash
# Script by Sugam Arora
# Purpose: Generate Fibonacci sequence

read -p "Enter the number of terms for the Fibonacci sequence: " n

a=0
b=1

echo "Fibonacci sequence up to $n terms:"
for ((i=0; i<n; i++)); do
    echo -n "$a "
    fib=$((a + b))
    a=$b
    b=$fib
done
echo
```

```
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ls
10.sh  1.sh  2.sh  3.sh  4.sh  5.sh  6.sh  7.sh  8.sh  9.sh  README.md
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ chmod +x 3.sh
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ./3.sh
Enter the number of terms for the Fibonacci sequence: 5
Fibonacci sequence up to 5 terms:
0 1 1 2 3
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$
```

Q4. Write a script to search for a string in a file and replace it with another string.

```
#!/bin/bash
# Script by Sugam Arora
# Purpose: Search and replace a string in a file

read -p "Enter the file name: " file
read -p "Enter the string to search: " search
read -p "Enter the replacement string: " replace

if [ -f "$file" ]; then
    sed -i "s/$search/$replace/g" "$file"
    echo "String replaced successfully in $file."
else
    echo "File $file does not exist."
fi
```

```
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ls
10.sh  1.sh  2.sh  3.sh  4.sh  5.sh  6.sh  7.sh  8.sh  9.sh  README.md
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ chmod +x 4.sh
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ls
10.sh  1.sh  2.sh  3.sh  4.sh  5.sh  6.sh  7.sh  8.sh  9.sh  README.md
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ./4.sh
Enter the file name: 1.sh
Enter the string to search: Sugam
Enter the replacement string: Shaggy
String replaced successfully in 1.sh.
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$
```

Q5. Create a script that checks whether a given string or number is a palindrome.

```
#!/bin/bash
# Script by Sugam Arora
# Purpose: Check for palindrome

read -p "Enter a string or number: " input
reversed=$(echo "$input" | rev)

if [ "$input" == "$reversed" ]; then
    echo "$input is a palindrome."
else
    echo "$input is not a palindrome."
fi
~
~
```

```
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ls
10.sh  1.sh  2.sh  3.sh  4.sh  5.sh  6.sh  7.sh  8.sh  9.sh  README.md
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ chmod +x 5.sh
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ./5.sh
Enter a string or number: 1234321
1234321 is a palindrome.
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ./5.sh
Enter a string or number: 122323211
122323211 is not a palindrome.
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$
```

Q6. Write a script that monitors a file for changes and displays a message when it is modified.

```
#!/bin/bash
# Script by Sugam Arora
# Purpose: Monitor a file for changes

read -p "Enter the file to monitor: " file

if [ -f "$file" ]; then
    echo "Monitoring $file for changes. Press [Ctrl+C] to stop."
    while inotifywait -e modify "$file"; do
        echo "The file $file was modified at $(date)."
    done
else
    echo "File $file does not exist."
fi
~
```

```
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ls
10.sh  1.sh  2.sh  3.sh  4.sh  5.sh  6.sh  7.sh  8.sh  9.sh  README.md
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ chmod +x 6.sh
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ls
10.sh  1.sh  2.sh  3.sh  4.sh  5.sh  6.sh  7.sh  8.sh  9.sh  README.md
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ./6.sh
Enter the file to monitor: 1.sh
Monitoring 1.sh for changes. Press [Ctrl+C] to stop.
./6.sh: line 9: inotifywait: command not found
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$
```

Q7. Create a script to read numbers from a file, sort them in ascending order, and save the output to another file.

```
#!/bin/bash
# Script by Sugam Arora
# Purpose: Read, sort, and save numbers

read -p "Enter the file containing numbers: " input_file
read -p "Enter the output file name: " output_file

if [ -f "$input_file" ]; then
    sort -n "$input_file" > "$output_file"
    echo "Numbers sorted and saved in $output_file."
else
    echo "Input file $input_file does not exist."
fi
~
~
```

```
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ls
10.sh  1.sh  2.sh  3.sh  4.sh  5.sh  6.sh  7.sh  8.sh  9.sh  README.md
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ chmod +x 7.sh
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ls
10.sh  1.sh  2.sh  3.sh  4.sh  5.sh  6.sh  7.sh  8.sh  9.sh  README.md
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ./7.sh
Enter the file containing numbers: 1 3 2
Enter the output file name: product.txt
```

Q8. Write a script to count the number of files with specific extensions (e.g., `.txt`, `.sh`) in a directory.

```
#!/bin/bash
# Script by Sugam Arora
# Purpose: Count files with specific extensions

read -p "Enter the directory to search: " directory
read -p "Enter the file extension (e.g., .txt, .sh): " extension

if [ -d "$directory" ]; then
    count=$(find "$directory" -type f -name "*$extension" | wc -l)
    echo "Number of files with $extension in $directory: $count."
else
    echo "Directory $directory does not exist."
fi
~
```

```
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ls
10.sh  1.sh  2.sh  3.sh  4.sh  5.sh  6.sh  7.sh  8.sh  9.sh  README.md
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ chmod +x 8.sh
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ls
10.sh  1.sh  2.sh  3.sh  4.sh  5.sh  6.sh  7.sh  8.sh  9.sh  README.md
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ./8.sh
Enter the directory to search: .
Enter the file extension (e.g., .txt, .sh): .sh
Number of files with .sh in .: 10.
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$
```

Q9. Write a script to display system information such as OS version, kernel version, and system uptime.

```
#!/bin/bash
# Script by Sugam Arora
# Purpose: Display system information

echo "System Information:"
echo "-------------------"
echo "OS Version: $(uname -o)"
echo "Kernel Version: $(uname -r)"
echo "System Uptime: $(uptime -p)"
~
```

```
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ls
10.sh  1.sh  2.sh  3.sh  4.sh  5.sh  6.sh  7.sh  8.sh  9.sh  README.md
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ chmod +x 9.sh
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ls
10.sh  1.sh  2.sh  3.sh  4.sh  5.sh  6.sh  7.sh  8.sh  9.sh  README.md
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ./9.sh
System Information:
-------------------
OS Version: GNU/Linux
Kernel Version: 6.11.0-14-generic
System Uptime: up 2 hours, 16 minutes
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$
```

Q10. Create a script that generates and displays the multiplication table for a given number.

```
#!/bin/bash
# Script by Sugam Arora
# Purpose: Display multiplication table

read -p "Enter a number for the multiplication table: " num

echo "Multiplication table for $num:"
for i in {1..10}; do
    echo "$num x $i = $((num * i))"
done
~
```

```
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ls
10.sh  1.sh  2.sh  3.sh  4.sh  5.sh  6.sh  7.sh  8.sh  9.sh  README.md
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ chmod +x 10.sh
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$ ./10.sh
Enter a number for the multiplication table: 5
Multiplication table for 5:
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50
sugam-arora@sugam-arora:~/Documents/GitHub/Operating-System/Assignment 3$
```