Assignment 3

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ECE

Question 1: Check if a specific process is running and display its PID.

Answer 1:

```
echo "Enter process name to check:"
read process_name
pid=$(pgrep -x "$process_name" )
if [ -n "$pid" ]; then
echo "Process '$process_name' is running with PID: $pid"
else
echo "Process '$process_name' is not running."
fi
```

```
(base) navneetyadav@Navneets-MacBook-Air Assignment_3 % bash "/Users/navneetyadav/Downloads/q1.sh"
Enter process name to check:
Google Chrome
Process 'Google Chrome' is running with PID: 826
```

Question 2: Display disk usage of the home directory in a human-readable.

Answer 2:

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

```
du: /Users/navneetyadav/Library/Caches/com.apple.ap.adprivacyd: Operation not permitted
du: /Users/navneetyadav/.Trash: Operation not permitted
129G    /Users/navneetyadav
```

Question 3: Generate Fibonacci sequence up to n terms.

Answer 3:

```bash
echo "Enter the number of terms for Fibonacci sequence:"
read n
a=0
b=1
echo "Fibonacci sequence:"
for (( i=0; i<n; i++ ))
do
    echo -n "$a "
    fn=$((a + b))
    a=$b
    b=$fn
done
echo
```

```
(base) navneetyadav@Navneets-MacBook-Air Assignment_3 % bash "/Users/navneetyadav/Desktop/OS_labs/Assignment_3/q3.sh"
Enter the number of terms for Fibonacci sequence:
6
Fibonacci sequence:
0 1 1 2 3 5
```

Question 4: Search for a string in a file and replace it with another string.

Answer 4:

```bash
echo "Enter the filename:"
read filename
echo "Enter the string to search:"
read search_str
echo "Enter the replacement string:"
read replace_str
sed -i '' "s/$search_str/$replace_str/g" "$filename"
echo "String replacement completed"
```

```
(base) navneetyadav@Navneets-MacBook-Air Assignment_3 % bash "/Users/navneetyadav/Desktop/OS_labs/Assignment_3/q4.sh"
Enter the filename:
test_file.txt
Enter the string to search:
Hello!!
Enter the replacement string:
Hi!!
String replacement completed
```

Question 5: Check whether a given string or number is a palindrome.

Answer 5:

```bash
echo "Enter a string or number to check palindrome:"
read input
rev=$(echo "$input" | rev)
if [ "$input" == "$rev" ]; then
    echo "'$input' is a palindrome."
else
    echo "'$input' is not a palindrome."
fi
```

```
(base) navneetyadav@Navneets-MacBook-Air Assignment_3 % bash "/Users/navneetyadav/Desktop/OS_labs/Assignment_3/q5.sh"
Enter a string or number to check palindrome:
abcdedcba
'abcdedcba' is a palindrome.
```

Question 6: Monitor a file for changes and display a message when modified

Answer 6:

```bash
#!/bin/bash

echo "Enter the filename to monitor:"
read file_to_monitor
echo "Monitoring file: $file_to_monitor"

fswatch -o "$file_to_monitor" | while read num; do
    echo "$(date +"%Y-%m-%d %H:%M:%S") $file_to_monitor was modified"
done
```

```
(base) navneetyadav@Navneets-MacBook-Air OS_labs % bash "/Users/navneetyadav/Desktop/OS_labs/Assignment_3/q6.sh"
Enter the filename to monitor:
test_file.txt
Monitoring file: test_file.txt
for changes...Press ICTRL+C] to stop.
File 'file.txt' has been modified
```

Question 7: Read numbers from a file, sort them, and save to another file.

Answer 7:

```bash
#!/bin/bash

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

if [ ! -f "$input_file" ]; then
    echo "Error: File '$input_file' not found."
    exit 1
fi

# Sort the numbers and save to output file
sort -n "$input_file" > "$output_file"

echo "Sorted numbers saved to '$output_file'."

```

```
(base) navneetyadav@Navneets-MacBook-Air OS_labs % cat /Users/navneetyadav/Desktop/OS_labs/Assignment_3/test_file_num.txt
7
9
5
8
3
2
1 %
(base) navneetyadav@Navneets-MacBook-Air OS_labs % /bin/bash "/Users/navneetyadav/Desktop/OS_labs/Assignment_3/q7.sh"
Enter the input file name: /Users/navneetyadav/Desktop/OS_labs/Assignment_3/test_file_num.txt
Enter the output file name: output_new.txt
Sorted numbers saved to 'output_new.txt'.
(base) navneetyadav@Navneets-MacBook-Air OS_labs % cat /Users/navneetyadav/Desktop/OS_labs/output_new.txt
1
2
3
5
7
8
9
```

Question 8: Count the number of files with specific extensions in a directory.

Answer 8:

```bash
#!/bin/bash

read -p "Enter the directory path: " dir
read -p "Enter the file extension (e.g., txt, sh, log): " ext

# Check if directory exists
if [ ! -d "$dir" ]; then
    echo "Error: Directory '$dir' not found."
    exit 1
fi

# Count files with the given extension
count=$(find "$dir" -type f -name "*.$ext" | wc -l)

echo "Number of '.$ext' files in '$dir': $count"

```

```
(base) navneetyadav@Navneets-MacBook-Air OS_labs % /bin/bash "/Users/navneetyadav/Desktop/OS_labs/Assignment_3/q8.sh"
Enter the directory path: /Users/navneetyadav/Desktop/OS_labs/Assignment_3
Enter the file extension (e.g., txt, sh, log): txt
Number of '.txt' files in '/Users/navneetyadav/Desktop/OS_labs/Assignment_3':        3
(base) navneetyadav@Navneets-MacBook-Air OS_labs % /bin/bash "/Users/navneetyadav/Desktop/OS_labs/Assignment_3/q8.sh"
Enter the directory path: /Users/navneetyadav/Desktop/OS_labs/Assignment_3
Enter the file extension (e.g., txt, sh, log): sh
Number of '.sh' files in '/Users/navneetyadav/Desktop/OS_labs/Assignment_3':       10
```

Question 9: Display system information.

Answer 9:

```bash
#!/bin/bash

echo "System Information"
echo "------------------"

echo "OS Version: $(uname -s) $(uname -r)"

echo "Kernel Version: $(uname -v)"

echo "System Uptime: $(uptime -p)"

echo "CPU Info: $(sysctl -n machdep.cpu.brand_string 2>/dev/null || lscpu | grep 'Model name')"

echo "Total RAM: $(vm_stat | awk '/Pages free/ {print $3 * 4096 / 1024 / 1024 " MB"}' 2>/dev/null || free -h | grep Mem | awk '{print $2}')"

```

```
(base) navneetyadav@Navneets-MacBook-Air OS_labs % /bin/bash "/Users/navneetyadav/Desktop/OS_labs/Assignment_3/q9.sh"
System Information
------------------
OS Version: Darwin 24.3.0
Kernel Version: Darwin Kernel Version 24.3.0: Thu Jan  2 20:24:06 PST 2025; root:xnu-11215.81.4~3/RELEASE_ARM64_T8103
uptime: illegal option -- p
usage: uptime
System Uptime:
CPU Info: Apple M1
Total RAM: 15.2812 MB
```

Question 10: Generate and display the multiplication table for a given number.

Answer 10:

```bash
#!/bin/bash

echo "Enter a number"
read num

for (( i=1; i<=10; i++ ))
do
    echo "$num x $i = $((num * i))"
done

```

```
(base) navneetyadav@Navneets-MacBook-Air OS_labs % /bin/bash "/Users/navneetyadav/Desktop/OS_labs/Assi
ent_3/q10.sh"
Enter a number
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
```