Operating Systems - Lab 03 In Lab + Post-Lab Tasks

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Post-Lab Questions:

Task 1:

```
#!/bin/bash

#check if 2 args are provided here
if [ $# -ne 2 ]; then
        echo "Usage: $0 <num1> <num2>"
        exit 1
fi

#multiply the 2 nums
result=$(( $1 * $2 ))

#print result
echo "product of $1 & $2 is: $result"
```

```
ibrahim-johar@ibrahim-johar-VirtualBox:~$ bash /home/ibrahim-johar/03/q1.sh 10 3
product of 10 & 3 is: 30
ibrahim-johar@ibrahim-johar-VirtualBox:~$
```

Task 2:

```
read -p "enter sentence: " sentence
vowels=0

for (( i=0; i<${#sentence}; i++ )); do
        letters="${sentence:i:1}"

        if [[ "$letters" =~ [aeiouAEIOU] ]]; then
                ((vowel++))
        fi
done

echo "vowel count: "$vowel
```

```
ibrahim-johar@ibrahim-johar-VirtualBox:~$ bash /home/ibrahim-johar/03/q2.sh
enter sentence: my name is ibrahim johar
vowel count: 8
ibrahim-johar@ibrahim-johar-VirtualBox:~$
```

Task 3:

```
#!/bin/bash

read -p "enter filename: " filename

#checking if file exists
if [ -f "$filename" ]; then
    #append current-date & time
    echo "$(date)" >> "$filename"
    echo "date & time appended to $filename"
else
    echo "error: file '$filename' doesn't exist."
fi
```

```
ibrahim-johar@ibrahim-johar-VirtualBox:~/03$ /home/ibrahim-johar/03/q3.sh
enter filename: q2.sh
date & time appended to q2.sh
```

Open | q2.sh ~/03 | q1.sh | q2.sh | q3.sh

```
read -p "enter sentence: " sentence
vowels=0

for (( i=0; i<${#sentence}; i++ )); do
        letters="${sentence:i:1}"

        if [[ "$letters" =~ [aeiouAEIOU] ]]; then
                ((vowel++))
        fi
done

echo "vowel count: "$vowel

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```

Task 4:

```
read -p "enter file or directory name: " file

if [ -f "$file" ]; then
        echo "'$file' named file was found."
elif [ -f "$file.sh" ]; then
    echo "'$file.sh' named file was found."
elif [ -d "$file" ]; then
        echo "'$file' named directory was found."
else
        echo "'$file' not found."
fi
```

```
ibrahim-johar@ibrahim-johar-VirtualBox:~/03$ bash q4.sh
enter file or directory name: q1.sh
'q1.sh' named file was found.
```

Task 5:

```bash
#!/bin/bash
if [ -z "$1" ]; then
        echo "usage: $0 <path_to_directory>"
        exit 1
fi
target_dir="$1"
if [ ! -d "$target_dir" ]; then
        echo "error: directory '$target_dir' not found."
        exit 1
fi
destination="$HOME/saved_copies"
mkdir -p "$destination"
date=$(date +"%Y-%m-%d")
backup="$destination/archive_$date"
mkdir -p "$backup"
rsync -a --progress "$target_dir/" "$backup/"
file_count=$(find "$backup" -type f | wc -l)
dir_count=$(find "$backup" -type d | wc -l)
echo "backup completed."
echo "total files: $file_count"
echo "total directories: $dir_count"
echo "saved at: $backup"
```

```
ibrahim-johar@ibrahim-johar-VirtualBox:~$ bash /home/ibrahim-johar/03/q5.sh /home/ibr
ahim-johar/03
sending incremental file list
./
q1.sh
          212 100%    0.00kB/s    0:00:00 (xfr#1, to-chk=4/6)
q2.sh
          241 100%  235.35kB/s    0:00:00 (xfr#2, to-chk=3/6)
q3.sh
          272 100%  265.62kB/s    0:00:00 (xfr#3, to-chk=2/6)
q4.sh
          287 100%  280.27kB/s    0:00:00 (xfr#4, to-chk=1/6)
q5.sh
          591 100%  577.15kB/s    0:00:00 (xfr#5, to-chk=0/6)
backup completed.
total files: 5
total directories: 1
saved at: /home/ibrahim-johar/saved_copies/archive_2025-03-01
ibrahim-johar@ibrahim-johar-VirtualBox:~$
```