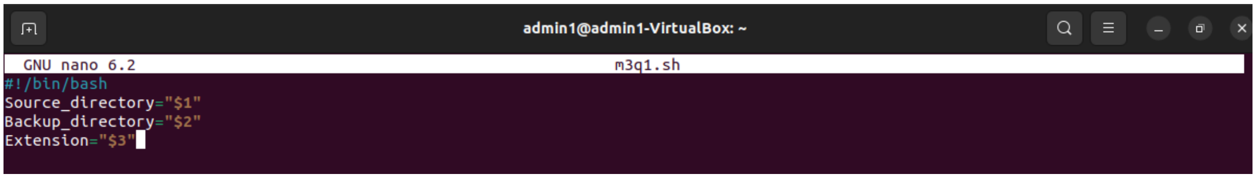
MODULE 3

Scenario: Automating file backup and Reporting to the system. Create a shell script called "backup_manager.sh" that performs the following tasks incorporating the concepts suggested.

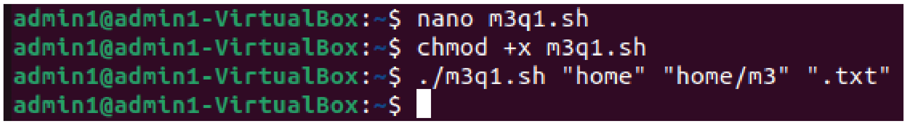
Requirements:

1. Command-line Arguments and Quoting:

The script must accept three arguments: Source directory: A directory containing files to back up. Backup directory: The destination where files will be backed up. File extension: A specific file extension to filter (e.g., .txt). Example: ./backup_manager.sh "/home/user/source" "/backup" ".txt"



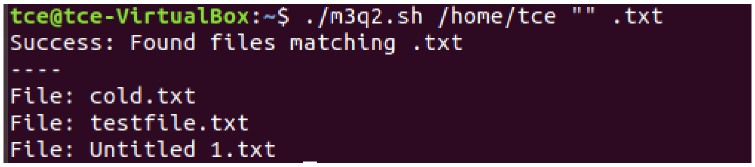
```
#!/bin/bash
Source_directory="$1"
Backup_directory="$2"
Extension="$3"
```



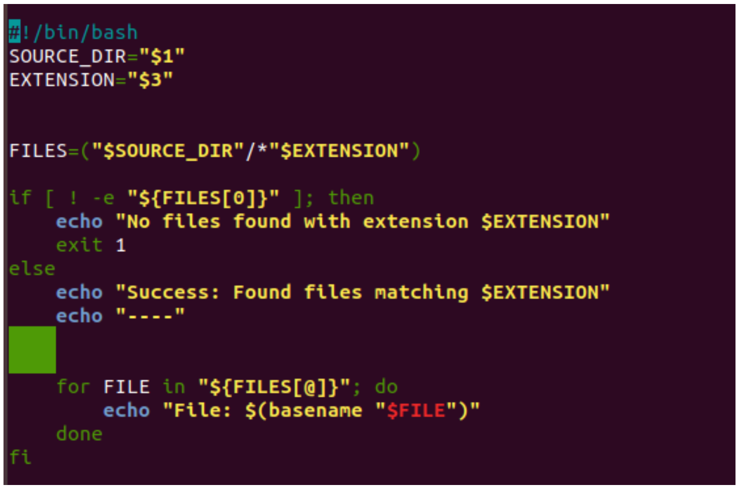
```
admin1@admin1-VirtualBox:~$ nano m3q1.sh
admin1@admin1-VirtualBox:~$ chmod +x m3q1.sh
admin1@admin1-VirtualBox:~$ ./m3q1.sh "home" "home/m3" ".txt"
admin1@admin1-VirtualBox:~$
```

2. Globbing:

The script should use globbing to find all files in the source directory matching the provided file extension.



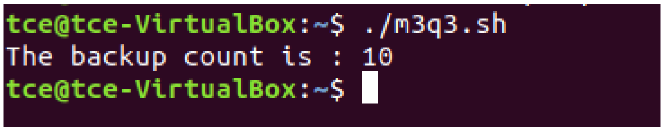
```
tce@tce-VirtualBox:~$ ./m3q2.sh /home/tce "" .txt
Success: Found files matching .txt
----
File: cold.txt
File: testfile.txt
File: Untitled 1.txt
```



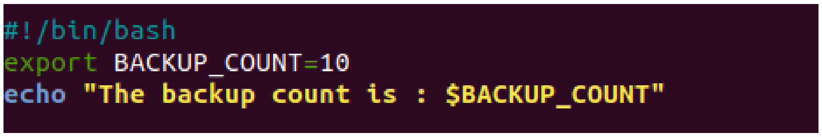
```
#!/bin/bash
SOURCE_DIR="$1"
EXTENSION="$3"


FILES=("$SOURCE_DIR"/*"$EXTENSION")

if [ ! -e "${FILES[0]}" ]; then
    echo "No files found with extension $EXTENSION"
    exit 1
else
    echo "Success: Found files matching $EXTENSION"
    echo "----"


    for FILE in "${FILES[@]}"; do
        echo "File: $(basename "$FILE")"
    done
fi
```

3. Export Statements:

Use export to set an environment variable BACKUP_COUNT, which tracks the total number of files backed up during the script execution.



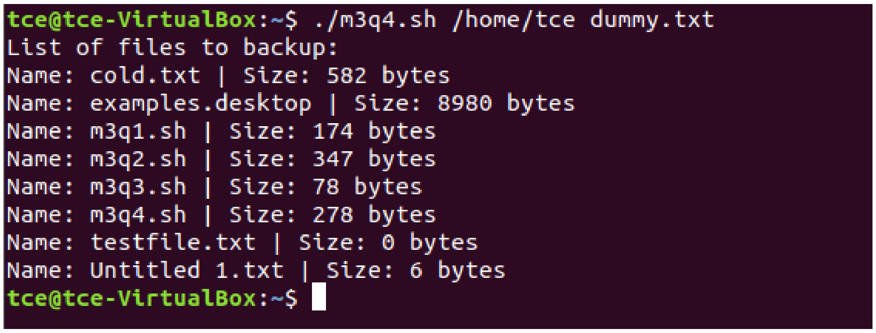
```
tce@tce-VirtualBox:~$ ./m3q3.sh
The backup count is : 10
tce@tce-VirtualBox:~$ 
```



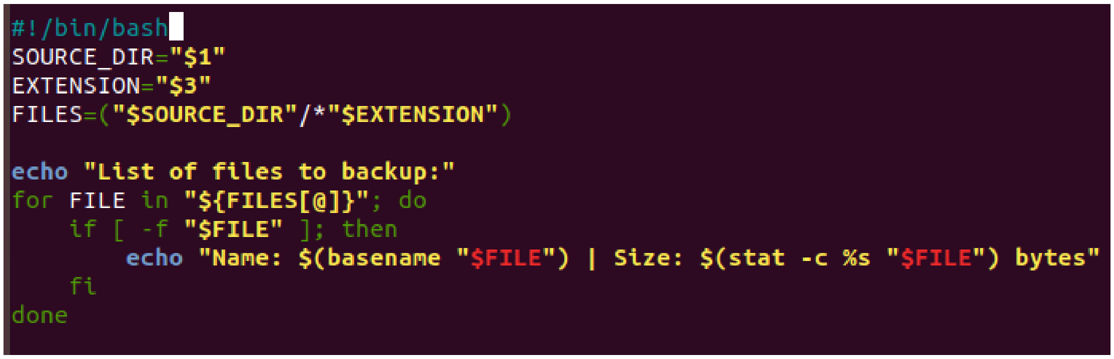
```
#!/bin/bash
export BACKUP_COUNT=10
echo "The backup count is : $BACKUP_COUNT"
```

4. Array Operations:

Store the list of files to be backed up in an array. Print the names of these files along with their sizes before performing the backup.



```
tce@tce-VirtualBox:~$ ./m3q4.sh /home/tce dummy.txt
List of files to backup:
Name: cold.txt | Size: 582 bytes
Name: examples.desktop | Size: 8980 bytes
Name: m3q1.sh | Size: 174 bytes
Name: m3q2.sh | Size: 347 bytes
Name: m3q3.sh | Size: 78 bytes
Name: m3q4.sh | Size: 278 bytes
Name: testfile.txt | Size: 0 bytes
Name: Untitled 1.txt | Size: 6 bytes
tce@tce-VirtualBox:~$ 
```



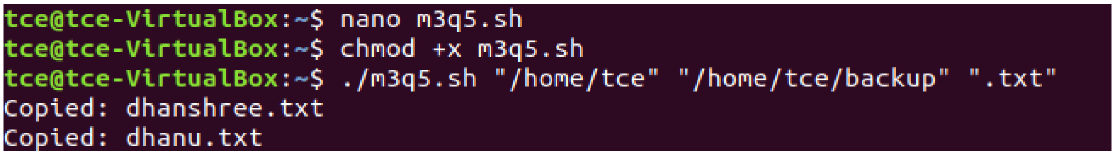
```
#!/bin/bash
SOURCE_DIR="$1"
EXTENSION="$3"
FILES=("$SOURCE_DIR"/*"$EXTENSION")

echo "List of files to backup:"
for FILE in "${FILES[@]}"; do
    if [ -f "$FILE" ]; then
        echo "Name: $(basename "$FILE") | Size: $(stat -c %s "$FILE") bytes"
    fi
done
```

5. Conditional Execution:

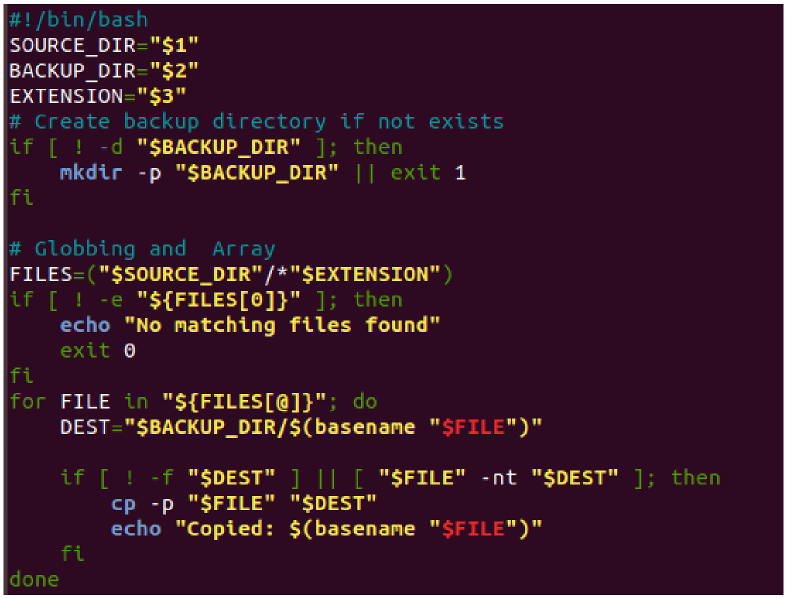
If the backup directory does not exist, create it. If creation fails, exit with an error.

If the source directory is empty or contains no files matching the extension, exit with a message.

If a file already exists in the backup directory with the same name, only overwrite it if it is older than the source file (compare timestamps).



```
tce@tce-VirtualBox:~$ nano m3q5.sh
tce@tce-VirtualBox:~$ chmod +x m3q5.sh
tce@tce-VirtualBox:~$ ./m3q5.sh "/home/tce" "/home/tce/backup" ".txt"
Copied: dhanshree.txt
Copied: dhanu.txt
```



```
#!/bin/bash
SOURCE_DIR="$1"
BACKUP_DIR="$2"
EXTENSION="$3"
# Create backup directory if not exists
if [ ! -d "$BACKUP_DIR" ]; then
    mkdir -p "$BACKUP_DIR" || exit 1
fi

# Globbing and  Array
FILES=("$SOURCE_DIR"/*"$EXTENSION")
if [ ! -e "${FILES[0]}" ]; then
    echo "No matching files found"
    exit 0
fi
for FILE in "${FILES[@]}"; do
    DEST="$BACKUP_DIR/$(basename "$FILE")"

    if [ ! -f "$DEST" ] || [ "$FILE" -nt "$DEST" ]; then
        cp -p "$FILE" "$DEST"
        echo "Copied: $(basename "$FILE")"
    fi
done
```

6. Output Report:

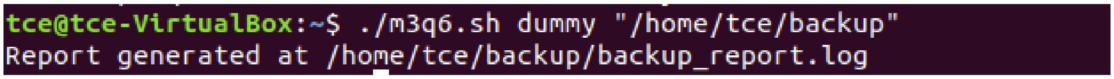
After the backup, generate a summary report displaying:

Total files processed.

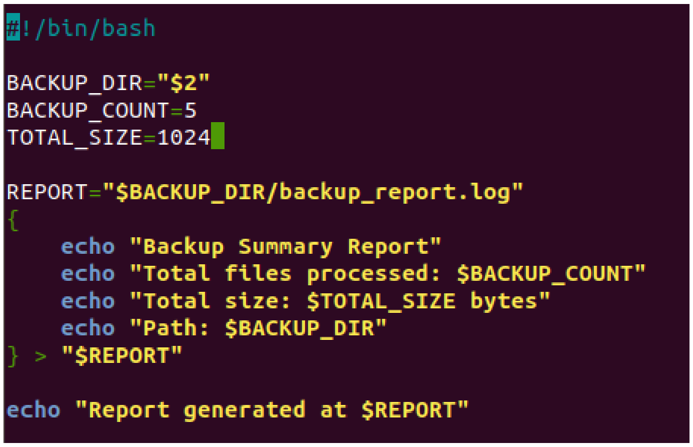
Total size of files backed up.

The path to the backup directory.

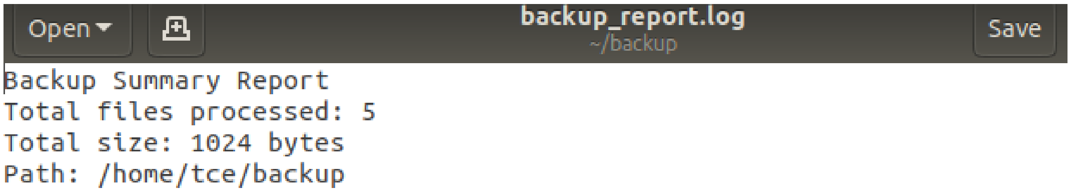
The report should be saved in the backup directory as backup_report.log.



```
tce@tce-VirtualBox:~$ ./m3q6.sh dummy "/home/tce/backup"
Report generated at /home/tce/backup/backup_report.log
```



```
#!/bin/bash

BACKUP_DIR="$2"
BACKUP_COUNT=5
TOTAL_SIZE=1024

REPORT="$BACKUP_DIR/backup_report.log"
{
    echo "Backup Summary Report"
    echo "Total files processed: $BACKUP_COUNT"
    echo "Total size: $TOTAL_SIZE bytes"
    echo "Path: $BACKUP_DIR"
} > "$REPORT"

echo "Report generated at $REPORT"
```



```
Backup Summary Report
Total files processed: 5
Total size: 1024 bytes
Path: /home/tce/backup
```