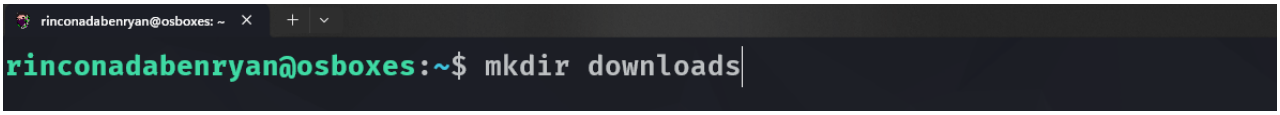
Rinconada, Ben Ryan A. **BSIT-4B**

System Administration and Maintenance **Mr. Ar-Jay Sacay**

LABORATORY L8

1. Downloads directory creation



2. Populating the downloads directory with a diverse range of file formats, such as .jpeg, .png, .txt, and others.

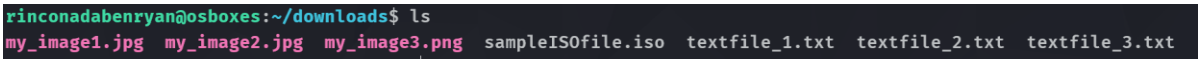
Downloading Files with CURL:

Printing the downloaded image with catimg:

Adding the .txt files:

Adding a file with a manually assigned .iso file extension (not an actual ISO file):

The contents of the downloads directory after the Addition of more images and an image in .png file type:



3. Create the script file:
    a. Creation of the script directory for the scripts to be placed:

```
rinconadabenryan@osboxes:~$ mkdir scripts
```

    b. Create a Bash script file named file_organizer.sh.

```
rinconadabenryan@osboxes:~/scripts$ touch file_organizer.sh
```

    c. Making the script file Executable:

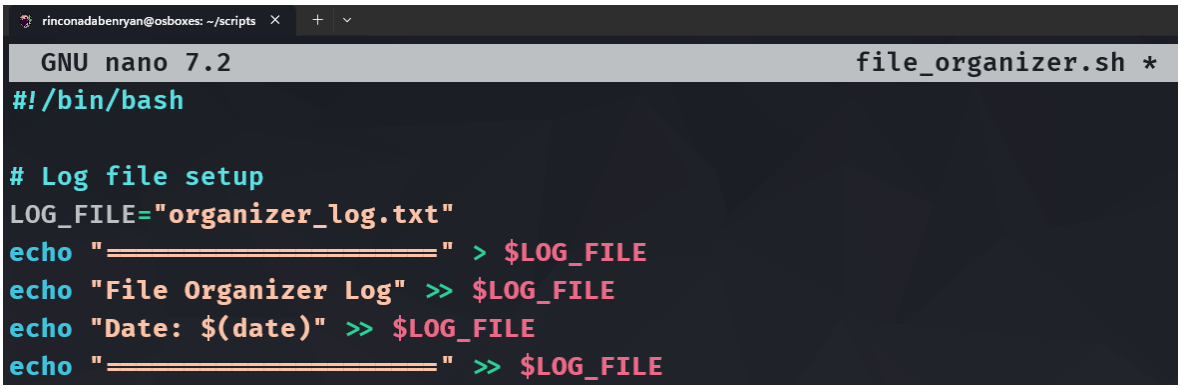
```
rinconadabenryan@osboxes:~/scripts$ chmod +x file_organizer.sh
```

4. **Define Task Requirements (Contents of the file_organizer.sh):**
    a. Opening and editing the file_organizer.sh with nano:

```
rinconadabenryan@osboxes:~/scripts$ nano file_organizer.sh
```

    b. **Log File Initialization:**

    A log file (organizer_log.txt) is created or overwritten with initial information, including the current date.



    c. **Directory Management**

    This bash script organizes files in a specified directory by type (text, images, others), logs the actions performed, generates summaries, calculates disk usage, and sets specific file permissions.

```
# Directories
BASE_DIR="/home/rinconadabenryan/downloads"
TEXT_DIR="$BASE_DIR/TextFiles"
IMAGE_DIR="$BASE_DIR/Images"
OTHER_DIR="$BASE_DIR/Others"
```

    d. **Create Subdirectories:**

    If the directories do not exist, they are created using mkdir -p.

```
# Create subdirectories
mkdir -p $TEXT_DIR $IMAGE_DIR $OTHER_DIR

echo "Moved Files:" >> $LOG_FILE
echo "————————————" >> $LOG_FILE
```

e. File Organization

The script loops through all files in the base directory (/home/user/downloads), classifies them into text files (moved to the TextFiles directory), image files (moved to the Images directory), and other files (moved to the Others directory), while logging each move in organizer_log.txt.

```
# Organize files by type
for FILE in $BASE_DIR/*; do
    if [[ -f "$FILE" ]]; then
        FILENAME=$(basename "$FILE")
        if [[ $FILE == *.txt ]]; then
            mv "$FILE" "$TEXT_DIR/"
            echo "Moved $FILENAME to $TEXT_DIR/$FILENAME" >> $LOG_FILE
        elif [[ $FILE == *.jpg || $FILE == *.png ]]; then
            mv "$FILE" "$IMAGE_DIR/"
            echo "Moved $FILENAME to $IMAGE_DIR/$FILENAME" >> $LOG_FILE
        else
            mv "$FILE" "$OTHER_DIR/"
            echo "Moved $FILENAME to $OTHER_DIR/$FILENAME" >> $LOG_FILE
        fi
    fi
done
```

f. File Type Summary

The script counts the number of files in each category using ls and wc -l and logs these counts.

```
# File type summary
echo "" >> $LOG_FILE
echo "File Type Summary:" >> $LOG_FILE
echo "——————————————————" >> $LOG_FILE
echo "Text Files: $(ls $TEXT_DIR | wc -l)" >> $LOG_FILE
echo "Image Files: $(ls $IMAGE_DIR | wc -l)" >> $LOG_FILE
echo "Other Files: $(ls $OTHER_DIR | wc -l)" >> $LOG_FILE
```

g. Text File Analysis

The script creates a text_summary.txt file in the TextFiles directory to record line, word, and character counts for each text file, and logs a warning in organizer_log.txt if any text file is empty.

```
# Process text files
TEXT_SUMMARY="$TEXT_DIR/text_summary.txt"
echo "Text File Summary" > $TEXT_SUMMARY
echo "————————————————" >> $TEXT_SUMMARY
for TXT_FILE in $TEXT_DIR/*.txt; do
    if [[ -f "$TXT_FILE" ]]; then
        FILENAME=$(basename "$TXT_FILE")
        LINE_COUNT=$(wc -l < "$TXT_FILE")
        WORD_COUNT=$(wc -w < "$TXT_FILE")
        CHAR_COUNT=$(wc -m < "$TXT_FILE")
        echo "File: $FILENAME" >> $TEXT_SUMMARY
        echo "Lines: $LINE_COUNT" >> $TEXT_SUMMARY
        echo "Words: $WORD_COUNT" >> $TEXT_SUMMARY
        echo "Characters: $CHAR_COUNT" >> $TEXT_SUMMARY
        echo "" >> $TEXT_SUMMARY

        if [[ ! -s "$TXT_FILE" ]]; then
            echo "Warning: $FILENAME is empty." >> $LOG_FILE
        fi
    fi
done
```

h. Disk Usage Report

Calculate Directory Sizes:

The script calculates the total size of each subdirectory using du -sh and logs the results.

```
# Disk usage report
echo "" >> $LOG_FILE
echo "Disk Usage Report:" >> $LOG_FILE
echo "——————————————————" >> $LOG_FILE
echo "TextFiles/: $(du -sh $TEXT_DIR | cut -f1)" >> $LOG_FILE
echo "Images/: $(du -sh $IMAGE_DIR | cut -f1)" >> $LOG_FILE
echo "Others/: $(du -sh $OTHER_DIR | cut -f1)" >> $LOG_FILE
```

7. Set Permissions

Text Files:

Permissions are restricted to the owner (read and write) using chmod 600.

Image Files:

Permissions are set to allow reading by all users using chmod 644.

Log Permission Changes:

The script logs the permissions set for each file.

```
# Set permissions
echo "" >> $LOG_FILE
echo "Permission Changes:" >> $LOG_FILE
echo "———————————————————" >> $LOG_FILE
for TXT_FILE in $TEXT_DIR/*.txt; do
    chmod 600 "$TXT_FILE"
    echo "Set read/write permissions for $(basename $TXT_FILE) to user only." >> $LOG_FILE
done
for IMG_FILE in $IMAGE_DIR/*; do
    chmod 644 "$IMG_FILE"
    echo "Set read permissions for $(basename $IMG_FILE) for all users." >> $LOG_FILE
done
```

Executing the Bash Script(file_organizer.sh):

```
rinconadabenryan@osboxes:~/scripts$ ./file_organizer.sh
```

Results after Bash Script(file_organizer.sh) Execution:

Contents of the resulting file(organizer_log.txt):

```
rinconadabenryan@osboxes:~/scripts$ cat organizer_log.txt
========================
File Organizer Log
Date: Fri Nov 22 06:28:01 UTC 2024
========================
Moved Files:
-------------
Moved my_image1.jpg to /home/rinconadabenryan/downloads/Images/my_image1.jpg
Moved my_image2.jpg to /home/rinconadabenryan/downloads/Images/my_image2.jpg
Moved my_image3.png to /home/rinconadabenryan/downloads/Images/my_image3.png
Moved sampleISOfile.iso to /home/rinconadabenryan/downloads/Others/sampleISOfile.iso
Moved textfile_1.txt to /home/rinconadabenryan/downloads/TextFiles/textfile_1.txt
Moved textfile_2.txt to /home/rinconadabenryan/downloads/TextFiles/textfile_2.txt
Moved textfile_3.txt to /home/rinconadabenryan/downloads/TextFiles/textfile_3.txt

File Type Summary:
--------------------
Text Files: 3
Image Files: 3
Other Files: 1
Warning: textfile_1.txt is empty.
Warning: textfile_2.txt is empty.
Warning: textfile_3.txt is empty.

Disk Usage Report:
--------------------
TextFiles/: 8.0K
Images/: 76K
Others/: 4.0K

Permission Changes:
---------------------
Set read/write permissions for text_summary.txt to user only.
Set read/write permissions for textfile_1.txt to user only.
Set read/write permissions for textfile_2.txt to user only.
Set read/write permissions for textfile_3.txt to user only.
Set read permissions for my_image1.jpg for all users.
Set read permissions for my_image2.jpg for all users.
Set read permissions for my_image3.png for all users.
```

Contents of the resulting file(organizer_log.txt):

```
rinconadabenryan@osboxes:~/downloads/TextFiles$ cat text_summary.txt
Text File Summary
──────────────────

File: text_summary.txt
Lines: 2
Words: 4
Characters: 36

File: textfile_1.txt
Lines: 6
Words: 163
Characters: 1168

File: textfile_2.txt
Lines: 1
Words: 7
Characters: 53

File: textfile_3.txt
Lines: 1
Words: 280
Characters: 2085
```

Contents of the Download Directory:

```
rinconadabenryan@osboxes:~/downloads$ tree
.
├── Images
│   ├── my_image1.jpg
│   ├── my_image2.jpg
│   └── my_image3.png
├── Others
│   └── sampleISOfile.iso
└── TextFiles
    ├── text_summary.txt
    ├── textfile_1.txt
    ├── textfile_2.txt
    └── textfile_3.txt

4 directories, 8 files
```