

Create a folder named using your registration number and section, then navigate into that folder. For example, if your registration number is 241100123 and your section is AIDS-A, the folder name should be: *241100123_AIDS-A*. Create *random_file_gen.sh* script using *gedit* and paste the content of *random_file_gen.sh* from the last page of this assignment. Make the script executable and run it. Once *random_file_gen.sh* is executed successfully (without any error), use the terminal to complete the tasks described below:

Use the terminal to complete the following:

Part A: Basic File & Directory Exploration

1. Sort the file in reverse order
Command: `sort -r dir_*/file_*.txt`
2. Count the number of running shell processes for your user
Command: `ps -u $USER | wc -l`
3. List all files recursively with details
Command: `ls -lR lab_random_*`
4. Count lines, words, and characters in any `.txt` file
Command: `wc dir_*/file_*.txt`
5. Find lines containing the word DATE
Command: `grep "DATE" dir_*/file_*.txt`
6. Display the number of currently logged-in users
Command: `who | wc -l`

Part B: Directory Structure & File Statistics

1. Enter the generated directory
Command: `cd lab_random_*`
2. Display the directory tree using find
Command: `find . -type d | wc -l`
3. Count executable files
Command: `find . -type f -executable | wc -l`
4. Display full path and size of all text files
Command: `find . -name "*.txt" -exec ls -lh {} \;`
5. Display files modified in the last 1 day
Command: `find . -type f -mtime -1`

Part C: Content Inspection

1. Find files containing the word PWD
Command: `grep -ril "PWD" .`

2. Print only the file names that contain DATE
Command: `grep -ril "DATE" .`
3. Display the first 5 lines of any file
Command: `head -5 dir_*/file_*.txt`
4. Display the complete content of any one file
Command: `cat dir_*/file_*.txt`

Part D: File Permissions

1. List all file permissions:
`find . -type f -exec ls -l {} \;`
2. Find files with 777 permission:
`find . -type f -perm 0777`
3. Change permissions of all .txt files to 644:
`find . -name "*.txt" -exec chmod 644 {} \;`
4. Verify permissions again.

The content inside random_file_gen.sh is :

#!/bin/bash

```
# Number of folders and files to create (adjust as needed)
NUM_DIRS=$((RANDOM % 5 + 3)) # 3 to 7 directories
NUM_FILES=$((RANDOM % 10 + 5)) # 5 to 14 files

# Base directory
BASE_DIR="/lab_random_$(date +%s)"
mkdir "$BASE_DIR"
cd "$BASE_DIR" || exit

echo "Creating $NUM_DIRS directories inside $BASE_DIR..."

# Generate random directories
for ((i = 1; i <= NUM_DIRS; i++)); do
    DIR="dir_$RANDOM"
    mkdir "$DIR"
done

echo "Creating $NUM_FILES random files..."

# Random strings
random_string() {
    tr -dc A-Za-z0-9 </dev/urandom | head -c 12
```

```

}

# Get list of created directories
DIRS=$(ls -d */)

# Create random files and insert content
for ((j = 1; j <= NUM_FILES; j++)); do
    RAND_DIR=${DIRS[$((RANDOM % NUM_DIRS))]}
    FILENAME="file_${RANDOM}.txt"
    FULL_PATH="${RAND_DIR}${FILENAME}"

    echo "Creating file: $FULL_PATH"
    {
        echo "PWD: $(pwd)/$RAND_DIR"
        echo "WHO:"
        who
        echo "DATE: $(date)"
        echo "RANDOM STRING: $(random_string)"
    } > "$FULL_PATH"

    # Apply random chmod (e.g., 644, 600, 755, 777)
    MODES=("600" "644" "755" "777" "700")
    MODE=${MODES[$((RANDOM % ${#MODES[@]}))]}
    chmod "$MODE" "$FULL_PATH"
    echo "Applied chmod $MODE to $FULL_PATH"
done

echo "All done. Explore: $BASE_DIR"

```