# Unix Shell Moderate Practice Problems

# 1. File and Directory Management 1 You are working on a project and need to create a directory named | data | inside your project directory (| project3 |) and a file named info.txt inside it. This is your current terminal session: user@computer:~/project3/scripts\$ pwd /home/user/project3/scripts user@computer:~/project3/scripts\$ Select and order the following commands to accomplish this task. Select from the list below by dragging Drop code here in the correct order echo info.txt mkdir data cd scripts cd data ls touch info.txt HIDE SOLUTIONS SOLUTION: user@computer:~/project3/scripts\$ cd .. user@computer:~/project3\$ mkdir data user@computer:~/project3\$ cd data user@computer:~/project3/data\$ touch info.txt We start off in the scripts directory. First, we need to navigate to the project root directory using cd . . - (|project3| is the parent directory of |scripts|) Then, we can create the data directory and navigate into it. Finally, we create the info.txt file. we can also list the contents of the current directory using 1s to check if the data directory and info.txt file was created

successfully

# 2. File and Directory Management 2

Create a directory structure for a project with the following hierarchy:

```
cd project
mkdir src data; touch README.md
cd src; touch main.py utils.py
cd ../data; touch input.csv output.csv
```

### HIDE SOLUTIONS

### SOLUTION:

To create the directory structure, you can use the following commands.

mkdir -p project/src project/data
touch project/src/main.py project/src/utils.py project/data/input.csv project/data/output.csv project/README.md

- o Since the problem asks us to create this in the current directory, we don't need to cd anywhere.
- mkdir -p creates the directories and any necessary parent directories.
- touch creates the files in the specified directories.

### Alternative solution:

```
mkdir project
mkdir project/src
touch project/src/main.py
touch project/src/utils.py
mkdir project/data
touch project/data/input.csv
touch project/data/output.csv
touch project/README.md
```

- o In this longer example, we create the project directory first, then create the src and data directories inside it.
- touch is called individually for each file

### Additionally:

o cd can also be used to change into each directory before creating files, but it is not necessary

# 3. Output Redirection

Which command correctly redirects the standard output of ls to a file named filelist.txt without overwriting?

- Is >> filelist.txt
- Is > filelist.txt
- Is < filelist.txt
- Is filelist.txt

HIDE SOLUTIONS

#### SOLUTION:

The correct command is:

```
ls >> filelist.txt
```

This sends the output of 1s into filelist.txt, without overwriting the file if it exists.

- ls > filelist.txt : This command **overwrites** the contents of filelist.txt | with the output of | ls |.
- Is < filelist.txt : This command tries to read from filelist.txt as input, which is not what we want. (not covered in the main session)
- Is filelist.txt : This command tries to list the contents of filelist.txt , instead of writing to it.

# 4. Debugging 1

You are trying to run a script but encounter an error. The script is supposed to print the current date and time. However, it fails with the following error:

bash: ./script.sh: No such file or directory

What is the likely cause of this error?

- O The script does not have execute permissions.
- $\bigcirc$  There is a syntax error in the script.
- The script is not in your PATH.
- $\, \bigcirc \,$  The script does not exist in the current directory.

HIDE SOLUTIONS

### SOLUTION:

The script does not exist in the current directory.

- The script does not have execute permissions: If this were the case, the error would be permission denied, not No such file or directory.
- The script is not in your PATH: The error message indicates that the script is being called with . / , which means it is expected to be in the current directory, not in the PATH.
- There is a syntax error in the script: A syntax error would occur after the script is found and executed, not before.

# 5. Debugging 2

Suppose this is the contents of a directory on your computer:

```
user@computer:~$ ls ~
   myfile.txt mydata.csv myscript.sh myfolders/
```

When you type the following commands, you get an error:

```
user@computer:~$ mv mydata.csv myfolder/
    mv: cannot move 'mydata.csv' to 'myfolder/': No such file or directory
user@computer:~$ mv myfile.txt myfolder/
    mv: cannot move 'myfile.txt' to 'myfolder/': No such file or directory
user@computer:~$ mv myscript.sh myfolder/
    mv: cannot move 'myscript.sh' to 'myfolder/': No such file or directory
```

How can you fix this error?

```
mv mydata.csv myfolders/
mv myfile.txt myfolders/
mv myscript.sh myfolders/
```

HIDE SOLUTIONS

### SOLUTION:

```
user@computer:~$ mv mydata.csv myfolders/
user@computer:~$ mv myfile.txt myfolders/
user@computer:~$ mv myscript.sh myfolders/
```

The error indicates that the directory <code>myfolder/</code> does not exist. Ordinarily, we could create the directory using the <code>mkdir</code> command, but in this case, it looks like the directory is already created as <code>myfolders/</code>. To fix the error, we can either create the directory <code>myfolder/</code> or move the files to <code>myfolders/</code> instead.

Note the spelling of myfolders/

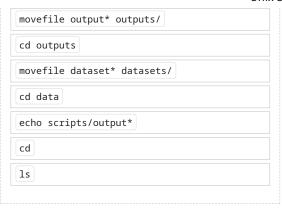
# 6. Organizing files

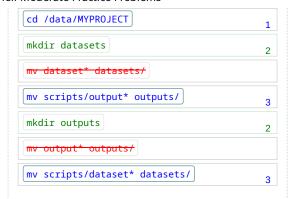
Suppose this is the contents of a folder on your computer:

You've just opened a new terminal and want to organize the files by moving datasets and outputs in separate folders. Select and order the following commands to accomplish this task.

Select from the list below by dragging

Drop code here in the correct order





HIDE SOLUTIONS

### SOLUTION:

```
user@computer:~$ cd /data/MYPROJECT
user@computer:/data/MYPROJECT$ mkdir datasets
user@computer:/data/MYPROJECT$ mkdir outputs
user@computer:/data/MYPROJECT$ mv scripts/dataset* datasets/
```

user@computer:/data/MYPROJECT\$ mv scripts/output\* outputs/

dataset and output files into their respective directories.

First, we need to navigate to the project directory, then create the datasets and outputs directories. After that, we can move the

- $\circ$  Running [mv] dataset\* datasets/ won't work, because the [dataset\*] files are in the [scripts] directory, not the current directory.
- The command 1s can be run to check the contents of the current directory, but it is not necessary to accomplish the task.

## 7. Text files

Suppose you have the following script:

When your project had fewer data files, this script worked fine. But now, the output is too long to read. What are some approaches to fix this?

```
cat mydata/*.txt | head --n 5
```

HIDE SOLUTIONS

SOLUTION:

There are several ways to fix this issue. Here are a few options:

Redirect the output to a file for later review with less

cat mydata/\*.txt > preview.txt

less preview.txt

More advanced strategies not covered in the main session:

Use the pipe operator to pipe the output to less directly.

cat mydata/\*.txt | less

Use head or tail to preview only the first or last few lines of each file.

head mydata/\*.txt
tail mydata/\*.txt