

Day2

Inside `iot_logger`, create `logs/temperature.log` and `scripts/sensor_script.py`

```
tosson@LAPTOP-8TFQP2MT: ~$ cd iot_logger
tosson@LAPTOP-8TFQP2MT:~/iot_logger$ cd logs
tosson@LAPTOP-8TFQP2MT:~/iot_logger/logs$ touch temperature.log
tosson@LAPTOP-8TFQP2MT:~/iot_logger/logs$ cd ~
tosson@LAPTOP-8TFQP2MT:~$ cd /iot_logger/scripts
-bash: cd: /iot_logger/scripts: No such file or directory
tosson@LAPTOP-8TFQP2MT:~$ cd iot_logger
tosson@LAPTOP-8TFQP2MT:~/iot_logger$ cd scripts
tosson@LAPTOP-8TFQP2MT:~/iot_logger/scripts$ touch sensor_script.py
tosson@LAPTOP-8TFQP2MT:~/iot_logger/scripts$ cd ..
tosson@LAPTOP-8TFQP2MT:~/iot_logger$ tree
.
├── data
├── logs
│   └── temperature.log
└── scripts
    └── sensor_script.py

4 directories, 2 files
tosson@LAPTOP-8TFQP2MT:~/iot_logger$ |
```

Copy `/etc/services` into `data` and search for patterns like `ssh` or `http`.

```
tosson@LAPTOP-8TFQP2MT: ~$ tree
├── data
├── logs
│   └── temperature.log
└── scripts
    └── sensor_script.py

4 directories, 2 files
tosson@LAPTOP-8TFQP2MT:~/iot_logger$ cp /etc/services ~/data/
cp: cannot create regular file '/home/tosson/data/': Not a directory
tosson@LAPTOP-8TFQP2MT:~/iot_logger$ cd ~
tosson@LAPTOP-8TFQP2MT:~$ cp /etc/services ~/iot_logger/data/
tosson@LAPTOP-8TFQP2MT:~$ grep ssh ~/iot_logger/data/services
ssh                22/tcp                          # SSH Remote Login Protocol
tosson@LAPTOP-8TFQP2MT:~$ grep http ~/iot_logger/data/services
# Updated from https://www.iana.org/assignments/service-names-port-numbers/service-names-port-numbers.xhtml .
http               80/tcp                www                # WorldWideWeb HTTP
https              443/tcp               # http protocol over TLS/SSL
https              443/udp               # HTTP/3
http-alt           8080/tcp              webcache           # WWW caching service
tosson@LAPTOP-8TFQP2MT:~$
```

Use regex to find lines starting with `t` or containing numbers.

```
tosson@LAPTOP-8TFQP2MT: ~$ grep -E "^t" ~/iot_logger/data/services
tcpmux      1/tcp          # TCP port service multiplexer
telnet      23/tcp
time        37/tcp          timserver
time        37/udp          timserver
tacacs      49/tcp          # Login Host Protocol (TACACS)
tacacs      49/udp
tftp        69/udp
talk        517/udp
tinc        655/tcp          # tinc control port
tinc        655/udp
telnet      992/tcp          # Telnet over SSL
tproxy      8081/tcp          # Transparent Proxy
tfido       60177/tcp        # fidonet EMSI over telnet
tosson@LAPTOP-8TFQP2MT: ~$ grep -E "[0-9]" ~/iot_logger/data/services
tcpmux      1/tcp          # TCP port service multiplexer
echo        7/tcp
echo        7/udp
discard     9/tcp          sink null
discard     9/udp          sink null
sysstat     11/tcp          users
daytime     13/tcp
daytime     13/udp
netstat     15/tcp
qotd        17/tcp          quote
chargen     19/tcp          ttytst source
chargen     19/udp          ttytst source
ftp-data    20/tcp
ftp         21/tcp
fsp         21/udp          fspd
ssh         22/tcp          # SSH Remote Login Protocol
telnet      23/tcp
smtp        25/tcp          mail
time        37/tcp          timserver
time        37/udp          timserver
```

Locate .txt files in /home/ and remove temporary ones if needed.

```
tosson@LAPTOP-8TFQP2MT: ~$ find ~ -name "*.txt"
tosson@LAPTOP-8TFQP2MT: ~$ find /home/tosson -name "*.txt"
tosson@LAPTOP-8TFQP2MT: ~$
```

```
binkp      24554/tcp          # binkp fidonet p
rotocol
asp        27374/tcp          # Address Search
Protocol
asp        27374/udp
csync2     30865/tcp          # cluster synchro
nization tool
dirproxy   57000/tcp          # Detachable IRC
Proxy
tfido      60177/tcp          # fidonet EMSI ov
er telnet
fido       60179/tcp          # fidonet EMSI ov
er TCP
```

Create hard and symbolic links for temperature.log.

```

asp                27374/udp
csync2             30865/tcp                                # cluster synchro
nization tool
dircproxy          57000/tcp                                # Detachable IRC
Proxy
tfido              60177/tcp                                # fidonet EMSI ov
er telnet
fido               60179/tcp                                # fidonet EMSI ov
er TCP
tosson@LAPTOP-8TFQP2MT:~$ find ~ -name "*.txt"
tosson@LAPTOP-8TFQP2MT:~$ find /home/tosson -name "*.txt"
tosson@LAPTOP-8TFQP2MT:~$ ln ~/iot_logger/logs/temperature.log ~/
iot_logger/hard_temp.log
tosson@LAPTOP-8TFQP2MT:~$ ln -s ~/iot_logger/logs/temperature.log
~/iot_logger/sym_temp.log
tosson@LAPTOP-8TFQP2MT:~$ |

```

Display directory structure to confirm organization.

```

tosson@LAPTOP-8TFQP2MT:~$ ln -s ~/iot_logger/logs/temperature.log
~/iot_logger/sym_temp.log
tosson@LAPTOP-8TFQP2MT:~$ cd iot_logger
tosson@LAPTOP-8TFQP2MT:~/iot_logger$ tree
.
├── data
│   └── services
├── hard_temp.log
├── logs
│   └── temperature.log
├── scripts
│   └── sensor_script.py
└── sym_temp.log -> /home/tosson/iot_logger/logs/temperature.log

4 directories, 5 files
tosson@LAPTOP-8TFQP2MT:~/iot_logger$ |

```

Explain the different types of files in Linux (regular, directory, symbolic link, device, etc.) and how to check them with commands

1-Regular file: Normal files containing data (text, images, videos, executables, etc.).

command:

```
ls -l sensor_script.py
```

2-Directory (d): its considered a folder that can stores other folders (subdirectories) and files
command:

```
ls -l iot_logger
```

3-Symbolic Link: a link to a specific directory or file
command:

```
ls -l sym_temp.log
```

4-Device files: its hardware devices (/dev) , like:

Character device: can handle data character by character (keyboard)

command:

```
ls -l /dev/tty
```

Block device: can handle data in blocks not characters

```
ls -l /dev/sda
```

What's the difference between a hard link and a symbolic link? Give real examples of when to use each.

hard link is like another file contain the same data of the original file , while softlink is just a shortcut for the file.

example: if I need to make a copy of the file as a backup also if the original is deleted i can keep the file I use the hard link

```
tosson@LAPTOP-8TFQP2MT:~$ ln ~/iot_logger/logs/temperature.log ~/iot_logger/hard_temp.log
```

if I just need a shortcut for the file I use soft link

```
tosson@LAPTOP-8TFQP2MT:~$ ln -s ~/iot_logger/logs/temperature.log ~/iot_logger/sym_temp.log
```

Is rmdir the same as rm -r when deleting directories? Explain

No, rmdir can only delete empty directories , but cant delete directories have subdirectories or files inside it,

while rm -r can delete a directory with everything inside it