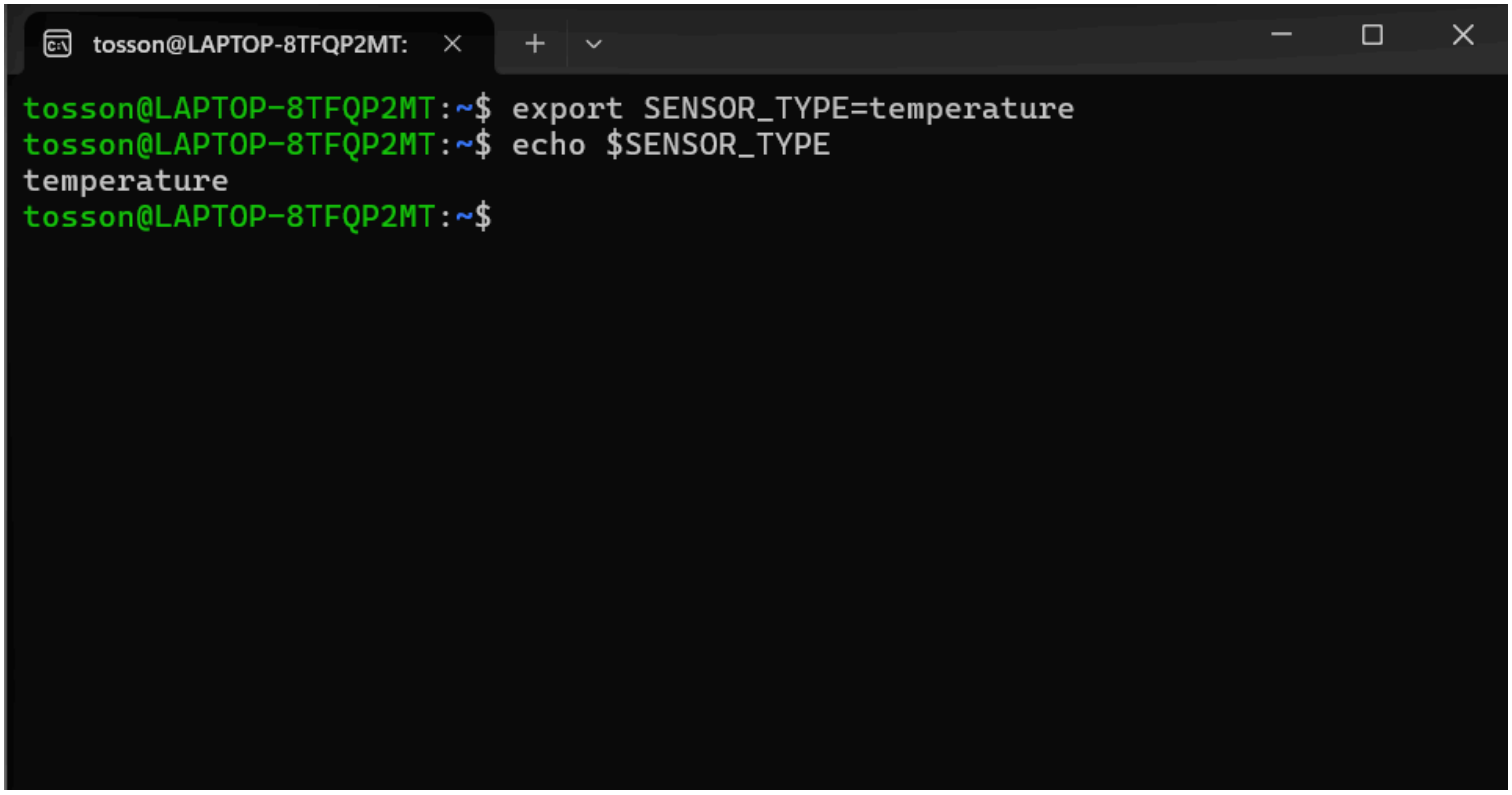
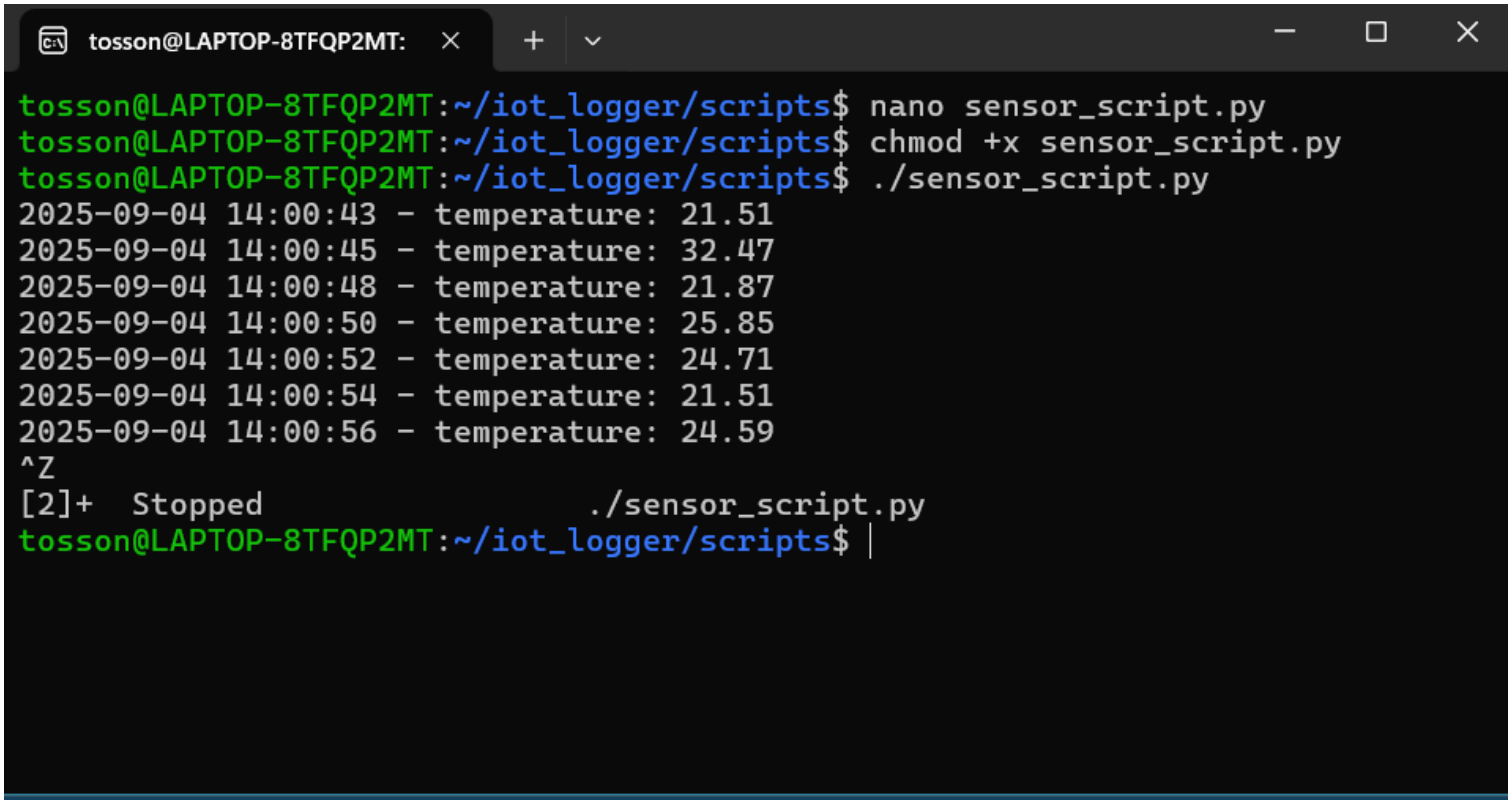
Day5

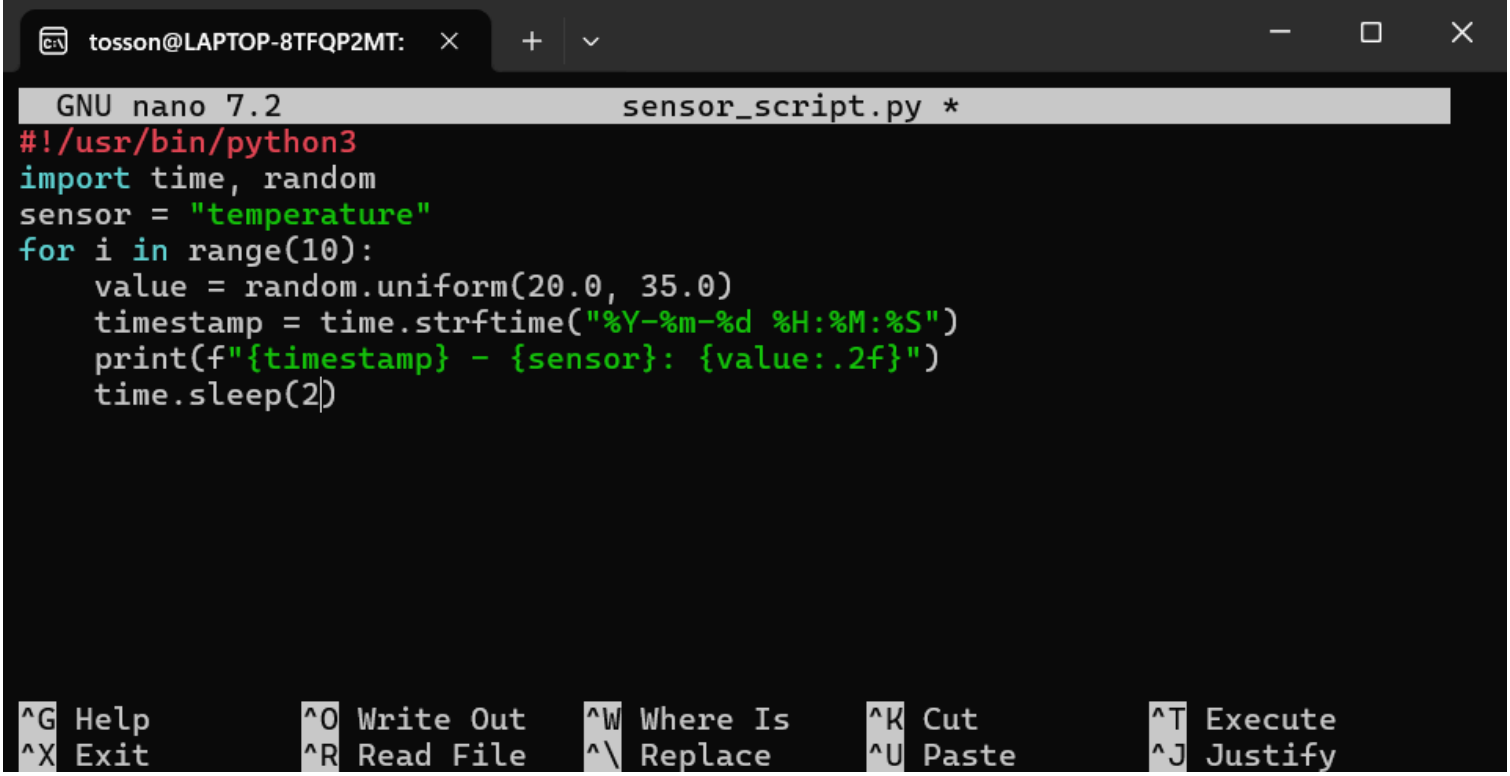
Set an environment variable for sensor type.



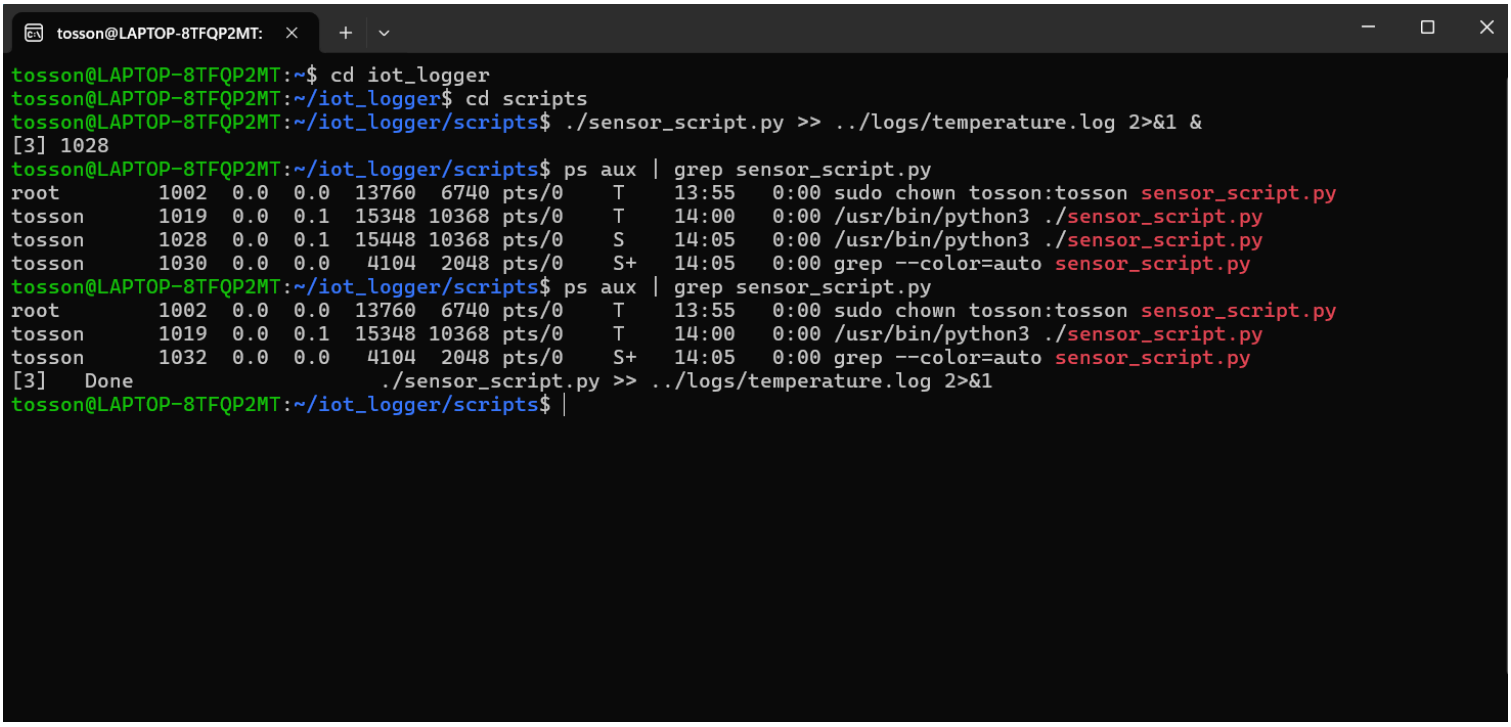
Write scripts/sensor_script.py to simulate data logging (timestamps + random values).



nano:



Redirect script output to logs/temperature.log while running as a background process.



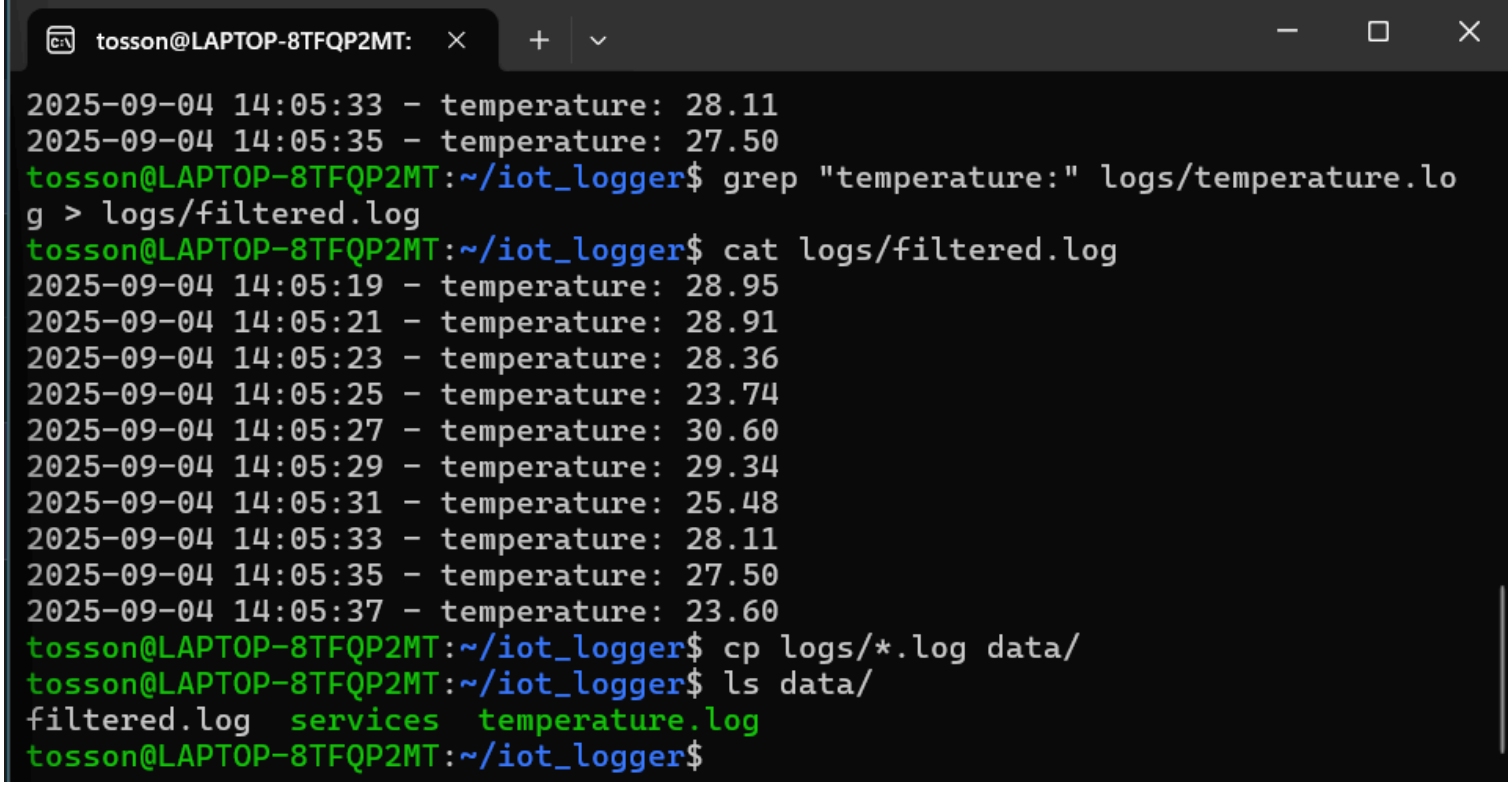
Find the PID of the process, inspect file descriptors in /proc//fd

```
tosson@LAPTOP-8TFQP2MT:
tosson      1019  0.0  0.1  15348 10368 pts/0    T    14:00   0:00 /usr/bin/
python3 ./sensor_script.py
tosson      1032  0.0  0.0   4104  2048 pts/0    S+   14:05   0:00 grep --co
lor=auto sensor_script.py
[3]   Done                    ./sensor_script.py >> ../logs/temperature.log
2>&1
tosson@LAPTOP-8TFQP2MT:~/iot_logger/scripts$ ps aux | grep sensor_script.py
root        1002  0.0  0.0  13760  6740 pts/0    T    13:56   0:00 sudo chow
n tosson:tosson sensor_script.py
tosson      1019  0.0  0.1  15348 10368 pts/0    T    14:00   0:00 /usr/bin/
python3 ./sensor_script.py
tosson      1035  0.0  0.0   4104  2048 pts/0    S+   14:08   0:00 grep --co
lor=auto sensor_script.py
tosson@LAPTOP-8TFQP2MT:~/iot_logger/scripts$ ls -l /proc/1019/fd
total 0
lrwx------ 1 tosson tosson 64 Sep  4 14:09 0 -> /dev/pts/0
lrwx------ 1 tosson tosson 64 Sep  4 14:09 1 -> /dev/pts/0
lrwx------ 1 tosson tosson 64 Sep  4 14:09 2 -> /dev/pts/0
tosson@LAPTOP-8TFQP2MT:~/iot_logger/scripts$
```

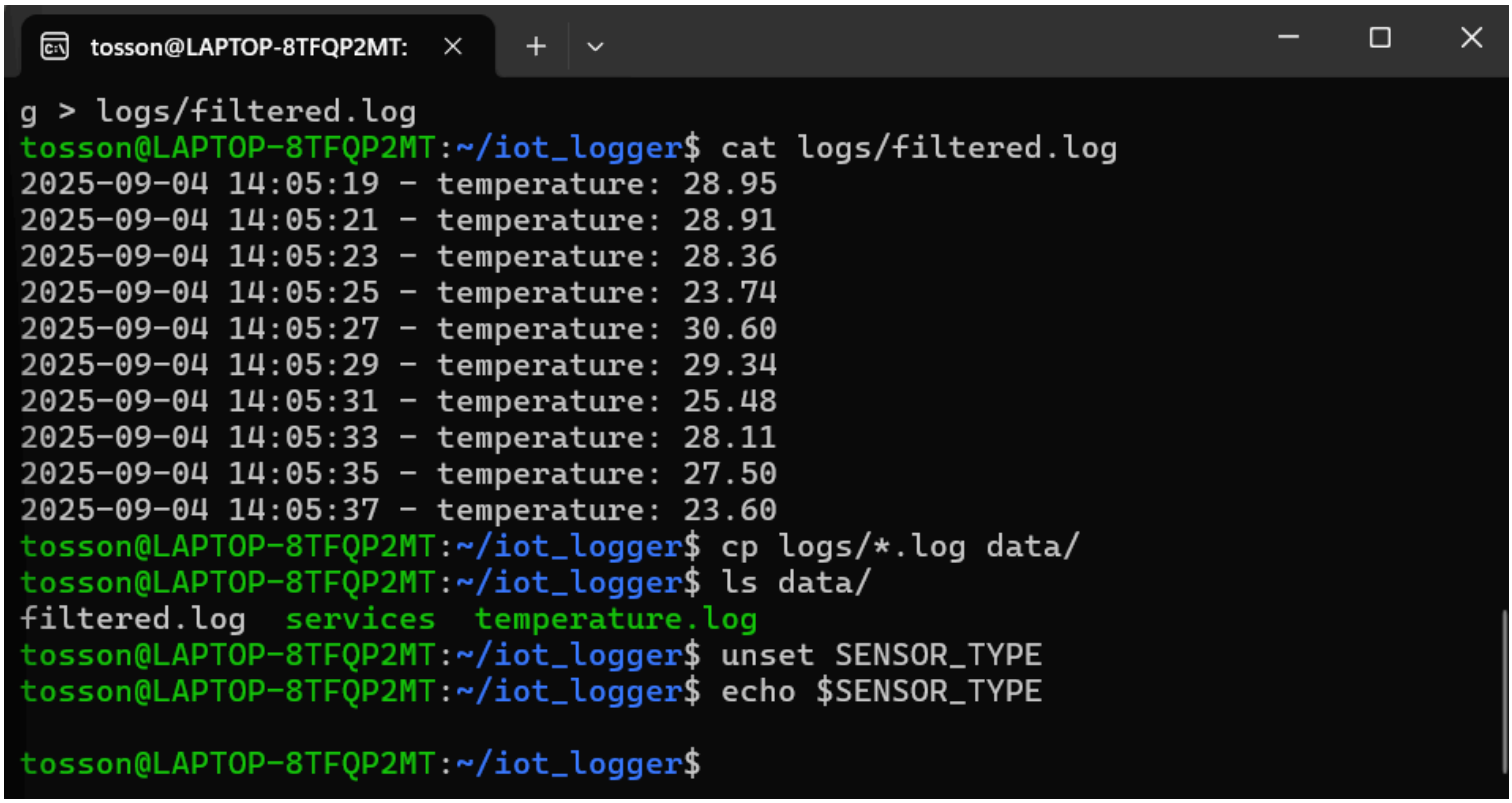
Filter log data into another file.

```
tosson@LAPTOP-8TFQP2MT:
tosson@LAPTOP-8TFQP2MT:~/iot_logger/scripts$ cd ~/iot_logger
tosson@LAPTOP-8TFQP2MT:~/iot_logger$ grep "temperature" logs/temperature.log
 > logs/filtered.log
tosson@LAPTOP-8TFQP2MT:~/iot_logger$ head logs/temperature.log
test line from developer
2025-09-04 14:05:19 - temperature: 28.95
2025-09-04 14:05:21 - temperature: 28.91
2025-09-04 14:05:23 - temperature: 28.36
2025-09-04 14:05:25 - temperature: 23.74
2025-09-04 14:05:27 - temperature: 30.60
2025-09-04 14:05:29 - temperature: 29.34
2025-09-04 14:05:31 - temperature: 25.48
2025-09-04 14:05:33 - temperature: 28.11
2025-09-04 14:05:35 - temperature: 27.50
tosson@LAPTOP-8TFQP2MT:~/iot_logger$ grep "temperature:" logs/temperature.lo
g > logs/filtered.log
tosson@LAPTOP-8TFQP2MT:~/iot_logger$ cat logs/filtered.log
2025-09-04 14:05:19 - temperature: 28.95
2025-09-04 14:05:21 - temperature: 28.91
```

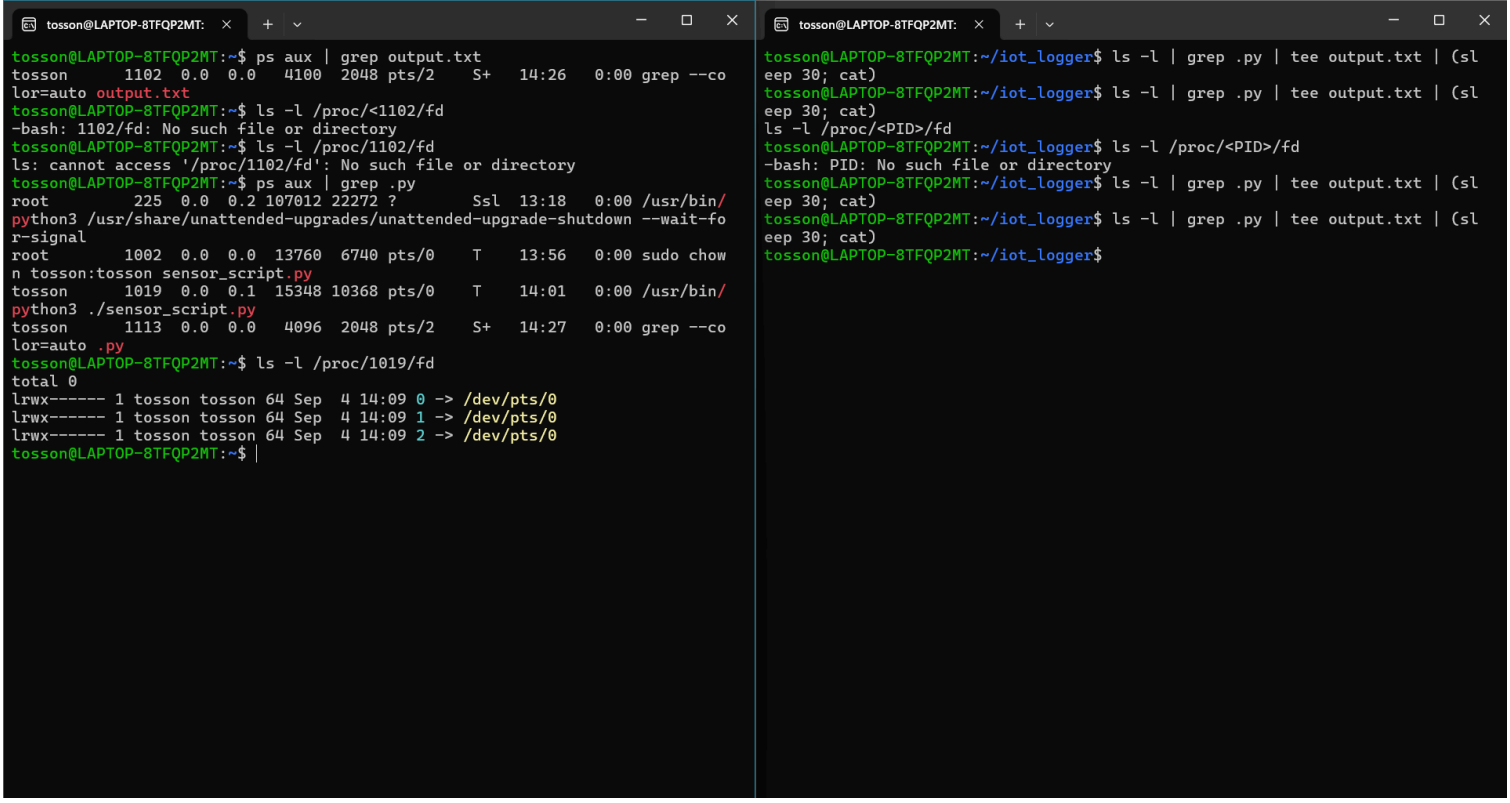
Use wildcards to copy logs to data/.



Clear variable when done.



Challenge – Pipes & FD inspection



What's the difference between ' ' and " " in shell?

single quotes (`' '`) preserve text exactly as written without expanding variables or commands, while double quotes (`" "`) allow expansion.
example:
`echo 'Hello $USER'` prints `Hello $USER`
`echo "Hello $USER"` prints `Hello tosson`

Explain [-f filename] vs [-d dirname].

`[ -f filename ]` checks if a file exists and is a regular file, while `[ -d dirname ]` checks if a directory exists.

Explain stdout/stderr redirection, appending vs overwrite. How can you confirm redirection using file descriptors

stdout is normal output and **stderr** is error output. Using `>` sends output to a file and overwrites it, while `>>` adds output to the end of the file
Example:
`ls > out.txt` replaces the file's content, and `ls >> out.txt` appends to it

You can confirm redirection by checking the process's file descriptors in `/proc/pid/fd` .

Show an example of a for loop in bash. Then, write a simple bash calculator that does add/subtract

tosson@LAPTOP-8TFQP2MT:

```
  GNU nano 7.2                          loop.sh *
#!/bin/bash
for i in {1..5}
do
  echo "Number: $i"
done
```

```
^G Help      ^O Write Out   ^W Where Is    ^K Cut       ^T Execute
^X Exit      ^R Read File   ^\ Replace     ^U Paste     ^J Justify
```

tosson@LAPTOP-8TFQP2MT:

```
  GNU nano 7.2                          calc.sh *
#!/bin/bash

echo "Enter first number:"
read a
echo "Enter operator (+ or -):"
read op
echo "Enter second number:"
read b

if [ "$op" = "+" ]; then
  echo "Result = $((a + b))"
elif [ "$op" = "-" ]; then
  echo "Result = $((a - b))"
else
  echo "Invalid operator"
fi
```

```
^G Help      ^O Write Out   ^W Where Is    ^K Cut       ^T Execute   ^C Location
^X Exit      ^R Read File   ^\ Replace     ^U Paste     ^J Justify   ^/ Go To Line
```

```
tosson@LAPTOP-8TFQP2MT:~/iot_logger$ cd scripts
tosson@LAPTOP-8TFQP2MT:~/iot_logger/scripts$ nano loop.sh
tosson@LAPTOP-8TFQP2MT:~/iot_logger/scripts$ chmod +x loop.sh
tosson@LAPTOP-8TFQP2MT:~/iot_logger/scripts$ ./loop.sh
Number: 1
Number: 2
Number: 3
Number: 4
Number: 5
tosson@LAPTOP-8TFQP2MT:~/iot_logger/scripts$ nano calc.sh
tosson@LAPTOP-8TFQP2MT:~/iot_logger/scripts$ chmod +x calc.sh
tosson@LAPTOP-8TFQP2MT:~/iot_logger/scripts$ ./calc.sh
Enter first number:
1
Enter operator (+ or -):
+
Enter second number:
3
Result = 4
tosson@LAPTOP-8TFQP2MT:~/iot_logger/scripts$
```