

SIC-IOT702 / task 03 : capstone Task / phase 5

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Day 6 – Phase 6: Log Rotation, Scheduling, Archiving

Boss's Request: Prepare the system for production use.

Tasks:

- Configure log rotation for temperature.log (rotate at 1 MB, compress).

```
zawawy34@zawawy34-VirtualBox:~$ sudo nano /etc/logrotate.d/temperature_log
```

```
/home/<your_username>/iot_logger/logs/temperature.log {  
    size 1M  
    rotate 4  
    compress  
    missingok  
    notifempty  
    create 0644 root root  
}
```

- Test by forcing a rotation.

```
zawawy34@zawawy34-VirtualBox:~$ sudo logrotate --force /etc/logrotate.d/temperature_log
```

- Schedule the Python script to run every 5 minutes with cron.

```

zawawy34@zawawy34-VirtualBox:~$ crontab -e
no crontab for zawawy34 - using an empty one

Select an editor. To change later, run 'select-editor'.
 1. /bin/nano      <---- easiest
 2. /usr/bin/vim.tiny
 3. /bin/ed

Choose 1-3 [1]: 1
crontab: installing new crontab

```

- Verify log growth over time.

```

zawawy34@zawawy34-VirtualBox:~$ nohup: ignoring input and appending output to 'nohup.out'
zawawy34@zawawy34-VirtualBox:~$ ls -lh ~/iot_logger/logs/temperature.log
-rw-rw---- 2 1001 iot_team 119K 20:44 5 سبت /home/zawawy34/iot_logger/logs/temperature.log
zawawy34@zawawy34-VirtualBox:~$

```

- Compress old logs into .tar.gz in data/.

```

zawawy34@zawawy34-VirtualBox:~$ tar -czvf ~/iot_logger/data/logs_archive_$(date +%F).tar.gz ~/iot_logger/logs/
tar: Removing leading '/' from member names
/home/zawawy34/iot_logger/logs/
/home/zawawy34/iot_logger/logs/temperature.log
tar: Removing leading '/' from hard link targets
/home/zawawy34/iot_logger/logs/high_temp.log

```

- Simulate sending archives to /home/<username>/server/ using cp, scp, or rsync.

```

zawawy34@zawawy34-VirtualBox:~$ mkdir ~/server
zawawy34@zawawy34-VirtualBox:~$ cp ~/iot_logger/data/*.tar.gz ~/server/

```

Open-Ended Questions:

1. How cron Scheduling Works and a crontab Entry:

- cron is a time-based job scheduler in Linux that automates the execution of commands or scripts at specified intervals. The

crontab command is used to edit the schedule. A

crontab entry is a single line with five time fields followed by the command to be run.

- **The five time fields, in order, are:**

1. Minute (0-59)
2. Hour (0-23)
3. Day of the month (1-31)
4. Month (1-12)
5. Day of the week (0-6, where 0 and 7 are Sunday)

- A crontab entry to run a script every 5 minutes:

```
* /5 * * * * /path/to/script.sh
```

2. Why Log Rotation is Needed and a logrotate Example:

- Log rotation is necessary to prevent log files from growing indefinitely and consuming all available disk space. By periodically compressing, moving, or deleting old log files, log rotation ensures that log data is managed efficiently for both storage and analysis.
- An example

logrotate configuration for temperature.log:

Bash

```
/var/log/temperature.log {  
    daily  
    rotate 7  
    compress  
    missingok  
    notifempty  
}
```

3. Virtual Machines vs. Containers:

- **Virtual Machine (VM):** A VM is a full-fledged operating system that runs on top of a physical server using a hypervisor. Each VM includes its own kernel, libraries, and applications, making it completely isolated.
- **Container:** A container shares the host operating system's kernel and runs as an isolated process. It bundles the application and its dependencies, but it does not have a separate operating system.
- **OS Usage:** Containers **must** use the same OS as the host because they share the host kernel. They cannot run on a different OS because they rely on the host's kernel for all operations. In contrast, a VM can run a different OS than the host because it provides a complete, virtualized environment.