



Welcome to the CoGrammar

Cron Jobs using Linux

The session will start shortly...

Questions? Drop them in the chat. We'll have dedicated moderators answering questions.

Cyber Security Session Housekeeping

- The use of disrespectful language is prohibited in the questions, this is a supportive, learning environment for all - please engage accordingly.
(Fundamental British Values: Mutual Respect and Tolerance)
- No question is daft or silly - **ask them!**
- There are **Q&A sessions** midway and at the end of the session, should you wish to ask any follow-up questions.
- If you have any questions outside of this lecture, or that are not answered during this lecture, please do submit these for upcoming Academic Sessions. You can submit these questions here: [Questions](#)

Cyber Security Session Housekeeping cont.

- For all **non-academic questions**, please submit a query: www.hyperiondev.com/support
- We would love your **feedback** on lectures: [Feedback on Lectures](#)
- Find all the lecture **content** in you [Lecture Backpack](#) on GitHub.
- If you are hearing impaired, please kindly use your computer's function through Google chrome to enable captions.

Safeguarding & Welfare

We are committed to all our students and staff feeling safe and happy; we want to make sure there is always someone you can turn to if you are worried about anything.

If you are feeling upset or unsafe, are worried about a friend, student or family member, or you feel like something isn't right, speak to our safeguarding team:



Ian Wyles
Designated Safeguarding
Lead



Simone Botes



Nurhaan Snyman



Rafiq Manan



Ronald Munodawafa



Tevin Pitts

Scan to report a
safeguarding concern



or email the Designated
Safeguarding Lead:
Ian Wyles

safeguarding@hyperiondev.com

Stay Safe Series:

Mastering Online Safety One week at a Time

While the digital world can be a wonderful place to make education and learning accessible to all, it is unfortunately also a space where harmful threats like online radicalization, extremist propaganda, phishing scams, online blackmail and hackers can flourish.

As a component of this BootCamp the ***Stay Safe Series*** will guide you through essential measures in order to protect yourself & your community from online dangers, whether they target your privacy, personal information or even attempt to manipulate your beliefs.

Security Tip

Close unused accounts

Delete old online accounts you no longer use. They may have weak passwords or poor data protection, making them easy targets for hackers. Clean up your digital footprint to protect your personal information.

CoGrammar

Cyber Security Tools: Bash Scripting

November 2024

Learning Objectives & Outcomes

By the end of the lecture, everyone should be able to:

- Define what a cron job is and explain its purpose in Linux systems.
- List the basic components of a crontab syntax (minute, hour, day, month, weekday, and command).
- Identify the difference between foreground and background processes in Linux.
- Schedule a cron job to execute a script at a specific time and frequency using `crontab`.

Learning Objectives & Outcomes

How do you think the bash scripts learnt from the previous lecture are automatically scheduled to run on a computer?

Polls

Please have a look at the poll notification and select an option.

What do you think happens to processes (like playing music or downloading files) when you close the terminal or app?

- A. The process stops immediately.
- B. The process continues running in the background.
- C. It depends on the process type.
- D. I don't know.

Introduction to Cron and Process Management

- **What is Cron?**

- **Cron:** A daemon for scheduling tasks
- **Daemon:** A unix/linux program that executes in the background ready to perform an operation when required.
- **Cron Job:** A linux utility that schedules tasks for specified intervals

Use cases of cron jobs.

- **System maintenance:**
 - Log rotation
 - Backup tasks
 - System updates
- **Web application development**
 - Sending notifications
 - Data synchronization
 - Cache management
 - Log clean up

Use cases of cron jobs.

- **Security**
 - Log review
 - Certificate management
 - Permission reset
- **Monitoring and alerts**
 - Health checks
 - Resource monitoring

Process Management

- **Foreground Processes**
 - These are interactive tasks (e.g ls -la)
 - Terminal waits for completion before new commands can be executed
- **Background processes**
 - These are Non-interactive tasks (daemons)
 - Usually initiated by the system or another process.

Systemd

- **Key feature:** Ability to start to start processes in parallel, significantly improving boot times.
- **Configuration files for systemd:**
 - **/lib/systemd/system:** Has OS default configuration
 - **/etc/systemd/system:** Config files override the default ones.
 - **/run/systemd/system:** Config files override the installed ones.

systemd

- **Commands:**

- `systemctl start [service]`
- `systemctl stop [service]`
- `systemctl restart [service]`
- `systemctl status [service]`

Setting up cron job

- Write a bash script in a .sh file

```
#!/bin/bash
coding_ cronjob1.sh
$ echo "Log entry at $(date)" >> /home/walobwad/logs/cron_log.txt
```

- Make the file executable using the chmod command:
 - **chmod +x cronjob.sh**

Setting up a cron job

- Edit the crontab
 - a. Insert the command in your terminal:
 - i. **crontab -e**
- Add the cron job in your crontab
 - a. Example:
 - i. **30 15 *** /home/[user]/Desktop/cronjob.sh**
- **Crontab common commands:**
 - a. Crontab -l: list all scheduled cron jobs
 - b. Crontab -r: clear the crontab

Cron job syntax

- Format:
 - a. **minute hour day month weekday script_location**
- Example:
 - a. **0 9 * * 6 /path/to/cronjob.sh**
- The above example executes the cronjob.sh script every Saturday at 9:00 AM

Practical example: Automated Daily Backup

- **Scenario**
- You manage a directory `/home/user/documents` containing important files. To ensure data safety, you want to create a daily backup of this directory at 2:00 AM.

Practical example: Automated Daily Backup

```
#!/bin/bash
# Create backup directory if it doesn't exist
mkdir -p /home/walobwad/backups

# Generate a timestamp
timestamp=$(date +%Y-%m-%d_%H-%M-%S)

# Compress the directory
tar -czf /home/walobwad/backups/document_backup_${timestamp}.tar.gz /home/walobwad/Documents

echo "Backup created at $(date)" >> /home/walobwad/backups/backup_log.txt
```

Polls

Please have a look at the poll notification and select an option.

What is the purpose of the following crontab entry?

```
0 6 * * 1 /home/user/backup.sh
```

- A. Runs `backup.sh` every day at 6 AM
- B. Runs `backup.sh` every Monday at 6 AM
- C. Runs `backup.sh` every month at 6 AM
- D. Runs `backup.sh` every minute on Monday

Polls

Please have a look at the poll notification and select an option.

Which task is best suited for automation using a cron job?

- A. Running a one-time script to delete old files
- B. Sending periodic email reminders
- C. Manually starting a service when needed
- D. Viewing logs interactively with `htop`

Questions and Answers



Thank you for attending



Department
for Education

CoGrammar

