LESSON 11



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cron & getopts

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BASH & ZSH SCRIPTING

LESSON 11

Automation: getopts, cron and Real Scripts

Command-line options, scheduling with cron, logging and locking

Options with getopts

tool.sh

```
verbose=0; out="report.txt"
while getopts "vo:h" opt; do
    case $opt in
        v) verbose=1 ;;
        o) out="$OPTARG" ;;
        h|*) echo "usage: $0 [-v] [-o FILE] DIR"; exit 1 ;;
    esac
done
shift $((OPTIND - 1))
```

- getopts parses short options like dash v and dash o file for you. The option string lists …
- After the loop, shift away the options so dollar at holds only the remaining arguments.

01

Scheduling with cron

terminal

```
$ crontab -e
# m  h  dom mon dow  command
  30 2  *   *   *    /home/mariam/bin/backup.sh >> /home/mariam/backup.log 2>&1
  */15 * *   *   *    /home/mariam/bin/check_disk.sh
  0  8  *   *   1    /home/mariam/bin/weekly_report.sh
$ crontab -l
```

- cron runs commands on a schedule. Edit your schedule with crontab dash e. Each line has …
- Cron jobs have a minimal environment, so use full paths and send output to a log file.

02

Logging and Locking

job.sh

```
log() { echo "$(date '+%F %T') $*" >> /var/log/myjob.log; }

exec 9> /tmp/myjob.lock
flock -n 9 || { log "already running"; exit 0; }

log "backup started"
rsync -a /data/ /backup/data/ && log "backup ok" || log "backup FAILED"
```

- Give your script a log function that adds a timestamp to every line. When something fails …
- flock prevents two copies of the same job from running at once, a common problem when a …

03

A Complete Backup Script

nightly_backup.sh

```
#!/bin/bash
set -euo pipefail
src="${1:?usage: $0 SRC [DAYS]}"; days="${2:-14}"
dest="/backup"; name="$(basename "$src")-$(date +%F).tar.gz"
tar -czf "$dest/$name" -C "$(dirname "$src")" "$(basename "$src")"
find "$dest" -name "*.tar.gz" -mtime +"$days" -delete
echo "$(date '+%F %T') saved $name"
```

- This script brings the course together: strict mode, options, a dated archive with tar, old …
- Schedule it with cron and you have a real, professional nightly backup.

04

System Report Script

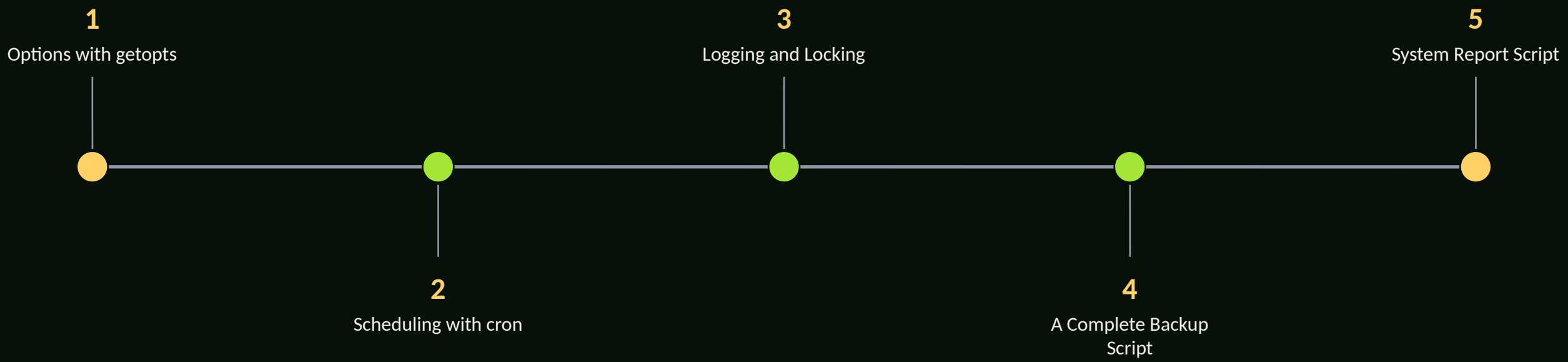
health.sh

```
echo "== $(hostname) — $(date '+%F %T') =="
echo "uptime: $(uptime -p)"
free -h | awk '/Mem:/ { print "memory:", $3, "of", $2 }'
df -h --output=target,pcent | awk 'NR > 1 && $2+0 > 80'
ps -eo pid,comm,%cpu --sort=-%cpu | head -6
```

- A health report collects uptime, load, memory, disk use and the top processes into one …
- Email it, save it, or show it on login: it is the kind of tool every system administrator …

05

Lesson Map


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Options with getopts
2
Scheduling with cron
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Logging and Locking
4
A Complete Backup Script
5
System Report Script

Sources and Further Reading

tool.sh

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Thank you for watching

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