ANNEX A · PRACTICAL 5.6 · SERVICES & SYSTEMD

Name: _____ **Date:** _____ **Group:** _____

Work in `deb-lab` (tasks 1–8) and `win11` (task 9). Hand in: this sheet, and on Classroom the report `practical-5.6-surname.md` with your unit file and the commands and outputs of tasks 5–8. Marking: tasks 1–4: 3 · task 5: 1 · task 6: 2.5 · task 7: 1.5 · task 8: 1 · clear report: 1.

PART A · MEET A SERVICE: CRON

Task 1 · What is running? (Leave long screens with `q`.)

```
systemctl list-units --type=service --state=running
systemctl --failed
```

Running services: _____ Failed units: _____ Two that you recognise: _____

Task 2 · Read the status. Run `systemctl status cron` and fill in.

Unit file (path): _____ Starts at boot? _____

`Active:` _____ Main PID: _____ Now `ps -p PID -o pid,ppid,comm` → its PPID: _____

DONE WHEN you can say who the parent of `cron` is.

Task 3 · Stop and start. First without `sudo`, then with it. After each line, look at the status.

```
systemctl stop cron
sudo systemctl stop cron
systemctl is-active cron
sudo systemctl start cron
```

Without `sudo`: _____ `Active:` after the stop: _____ Same PID after the start? _____

Task 4 · Two switches. Disable the service and ask both questions. Then reboot and ask again.

```
sudo systemctl disable cron
systemctl is-enabled cron ; systemctl is-active cron
sudo reboot
systemctl is-enabled cron ; systemctl is-active cron
sudo systemctl enable --now cron
```

	`is-enabled`	`is-active`
After `disable`		
After the reboot		
After `enable --now`		

DONE WHEN the last row says `enabled` and `active`.

PART B · YOUR OWN SERVICE: THE TRAMUNTANA HEARTBEAT

Every machine of Tramuntana Apps must write one line every 10 seconds, so the administrator can see that it is alive.

Task 5 · The program. Create `/usr/local/bin/heartbeat.sh` with `sudo nano` and this content:

```
#!/bin/bash
while true; do
    echo "heartbeat from $(hostname): load $(cut -d" " -f1 /proc/loadavg)"
    sleep 10
done
```

```
sudo chmod +x /usr/local/bin/heartbeat.sh
/usr/local/bin/heartbeat.sh
```

DONE WHEN it prints a line, and another one 10 seconds later. Stop it with `Ctrl+C`.

Task 6 · The unit file. Create `/etc/systemd/system/heartbeat.service` with `sudo nano`:

```
[Unit]
Description=Tramuntana heartbeat

[Service]
ExecStart=/usr/local/bin/heartbeat.sh
Restart=on-failure

[Install]
WantedBy=multi-user.target
```

```
sudo systemctl daemon-reload
sudo systemctl start heartbeat
systemctl status heartbeat
```

`Active:` _____ Main PID: _____ Enabled? _____

DONE WHEN the status is `active (running)` and shows heartbeat lines that you did not redirect anywhere.

Task 7 · Kill it. Use the Main PID of task 6. Look at the status immediately after.

```
sudo kill -9 PID
systemctl status heartbeat
```

`Active:` now: _____ New PID: _____ Line of your unit file that did this: _____

Now `sudo systemctl stop heartbeat`. Does it come back? _____ Why not? _____

Task 8 · Survive a reboot.

```
sudo systemctl enable --now heartbeat
sudo reboot
systemctl is-active heartbeat
```

What did `enable` print (first two words)? _____ After the reboot: _____

DONE WHEN the service is active after a reboot and you did not start it. **Leave it enabled for tomorrow.**

PART C · WINDOWS

Task 9 · The print spooler. In `win11`, open PowerShell with **Run as administrator**.

```
Get-Service Spooler
Stop-Service Spooler
Get-Service Spooler
Start-Service Spooler
Set-Service Spooler -StartupType Manual
```

Status at first: _____ after `Stop-Service`: _____ Display name of the service: _____

Press `Win+R`, type `services.msc`, find the service. Startup type: _____

Put it back: `Set-Service Spooler -StartupType Automatic`.

DONE WHEN the spooler is Running and its startup type is Automatic again.

EXIT TICKET (NO VM, ALONE)

1. What is a service (daemon)?

☐ **a)** A program with administrator rights
☐ **b)** Any program installed with `apt`
☐ **c)** A background process the system starts and watches
☐ **d)** A script that runs once at boot

2. A service is running. You run `sudo systemctl disable` on it. What happens?

☐ **a)** It keeps running; it will not start at the next boot
☐ **b)** It stops now and never starts again
☐ **c)** It stops now and starts at the next boot
☐ **d)** Nothing: `disable` needs a reboot first

3. You changed a line in `/etc/systemd/system/heartbeat.service`. What must you run before restarting the service?

☐ **a)** `systemctl enable heartbeat`
☐ **b)** `systemctl reload heartbeat`
☐ **c)** `chmod +x` on the unit file
☐ **d)** `systemctl daemon-reload`

4. You `kill -9` the main process of your service and a second later it is running again with a new PID. Why?

☐ **a)** `kill -9` does not work on services
☐ **b)** The kernel restarts every process
☐ **c)** The unit has `Restart=on-failure`
☐ **d)** The service was enabled