ANNEX A · TYPES OF NETWORKS

Name: _____ Date: _____ Group: _____

You need: your PC (Ubuntu), a terminal (`Ctrl+Alt+T`), a browser and a partner.

TASK 1 The network doors of your PC

Run `ip -br link`. Each line is one network door (**interface**) of your PC.

Name	UP or DOWN?	What is it? (loopback / Ethernet / Wi-Fi / virtual)

Is your PC on the network by cable or by radio right now? _____

DONE WHEN you have one line per door and you know which one carries your traffic.

TASK 2 How far does it reach?

Write **PAN**, **LAN**, **MAN** or **WAN**.

1 Phone + wireless earbuds _____

2 The PCs of this classroom _____

3 Laptops and phones on your home Wi-Fi _____

4 A city council linking its libraries _____

5 A bank linking its branches all over Spain _____

6 Game controller + console _____

7 An operator's 4G / 5G mobile network _____

8 The undersea cable Virginia Beach – Bilbao _____

DONE WHEN all eight have an answer and you agree with your partner, or you can say why not.

TASK 3 The string network

Watch each shape at the front. Draw it with three PCs, then answer.

Topology	Drawing	One cable is cut: who is offline?	Its weak point
Bus			
Star			
Ring			
Mesh			

Which topology is this classroom? _____

DONE WHEN the table is full and you can say why almost every LAN is a star.

TASK 4 How fast is your cable?

Run `cat /sys/class/net/NAME/speed`, with the name of your Ethernet door from Task 1 instead of `NAME`. The answer is in Mbit/s.

Link speed: _____ Mbit/s ÷ 8 = _____ MB/s

A film of 4,000 MB needs at least _____ seconds to cross this link.

DONE WHEN you have a speed in MB/s and a time in seconds, with the division written down.

TASK 5 Be a server

Type these lines one by one. Put your own name in the third.

```
mkdir ~/shop
cd ~/shop
echo "Hello from YOUR NAME" > menu.txt
hostname -I
python3 -m http.server 8000
```

Your address (the first one that `hostname -I` printed): _____

Give it to your partner. In their browser they open `http://YOUR-ADDRESS:8000/menu.txt`. Now look at your terminal: a new line appeared.

Who asked (the first number of the line)? _____ Code at the end: _____

Your partner asks for `nothing.txt`, a file that does not exist. Code now: _____

In this experiment, your PC is the _____ and your partner's browser is the _____.

DONE WHEN your partner read your message on their screen and you saw their request in your terminal.

If the browser cannot connect: check `http` (not `https`) and the address. Then try `http://localhost:8000/menu.txt` on your own PC and call the teacher.

TASK 6 Peers

Keep your server running and visit your partner's server too. What is each PC now: client, server, or both?

_____

This way of working is called _____.

Stop the server with `Ctrl+C` and clean up: `cd ~` and then `rm -r ~/shop`.

DONE WHEN both of you read each other's message, and the folder `shop` is gone.

EXIT TICKET One answer per question. Alone, no notes.

1. Your laptop and your phone are on the Wi-Fi at home. What type of network is it?

☐ A. A PAN ☐ B. A WLAN ☐ C. A MAN ☐ D. A WAN

2. In a bus topology, the shared cable is cut in the middle. What happens?

☐ A. Only one PC is offline ☐ B. The two nearest PCs are offline

☐ C. Nothing: traffic goes around ☐ D. The whole network stops

3. Which system is wireless, reaches about 10 m and makes a PAN?

☐ A. Bluetooth ☐ B. Ethernet ☐ C. Wi-Fi ☐ D. 4G / 5G

4. You watch a video on YouTube on your phone. What is your phone?

☐ A. The server ☐ B. A peer ☐ C. The client ☐ D. The medium

5. A link works at 100 Mbit/s. How many MB/s is that, at most?

☐ A. 100 MB/s ☐ B. 12.5 MB/s ☐ C. 800 MB/s ☐ D. 10 MB/s