

# Template Week 3 – Hardware

Student number: 593250 Furkan Yildirim

## Assignment 3.1: Examine your phone

What processor is in your phone?

**iPhone 17 Pro Max gebruikt de Apple A19 Pro.**

To which architecture family does this processor belong? In other words, which Instruction Set Architecture (ISA) is used?

**Deze chip is gebaseerd op de ARM-architectuur (64-bit ARM-ISA)**

How much RAM is in it?

**Phone 17 Pro Max 12 GB LPDDR5X RAM.**

How much storage does your phone have?

**512GB**

What operating system is running on your phone?

**IOS 26**

Approximately how many applications do you have installed?

**33 Applications**

Which application do you use the most?

**Instagram**

Can your phone be charged with what type of plug?

**USB- C**

Which I/O ports can you visually see on your phone?

**USB-C alleen**

### **Assignment 3.2: Examine your laptop**

What processor is in your laptop?

**Intel Core i5-1135G7**

To which architecture family does this processor belong? In other words, which Instruction Set Architecture (ISA) is used?

**x86-64 (64-bit)**

How much RAM is in it?

**16 GB DDR4**

How much storage does your laptop have?

**1TB SSD Nvme**

Which operating system is running on your laptop?

**Windows 11 Home (64-bit)**

Approximately how many applications do you have installed?

**39 Applications**

Which application do you use the most?

**Spotify Application**

Can your laptop be charged with what type of plug?

**DC-Barrel connector**

Which I/O ports can you visually see on your laptop?

- 2 × USB-A 3.2
- 1 × USB-C 3.2
- 1 × HDMI
- 1 × 3.5 mm audiojack
- 1 x USB- C
- 1 x DC-Opladerpoort

### **Assignment 3.3: Power to the laptop**

What is the input voltage?

**100-240V AC**

What is the output voltage?

**19V DC**

How many watts can your power adapter deliver?

**65 Watt**

Is the input voltage AC or DC?

**AC (wisselstroom)**

Is the output voltage AC or DC?

**DC (gelijkstroom)**

AC/DC what is that?

**AC (Alternating Current / wisselstroom):** stroom wisselt voortdurend van richting, zoals uit een stopcontact.

**DC (Direct Current / gelijkstroom):** stroom loopt één kant op, zoals de laptop gebruikt.

If you reverse the polarity of the output voltage, is that bad for your laptop?

**Ja, dat is slecht voor de laptop; kan schade veroorzaken.**

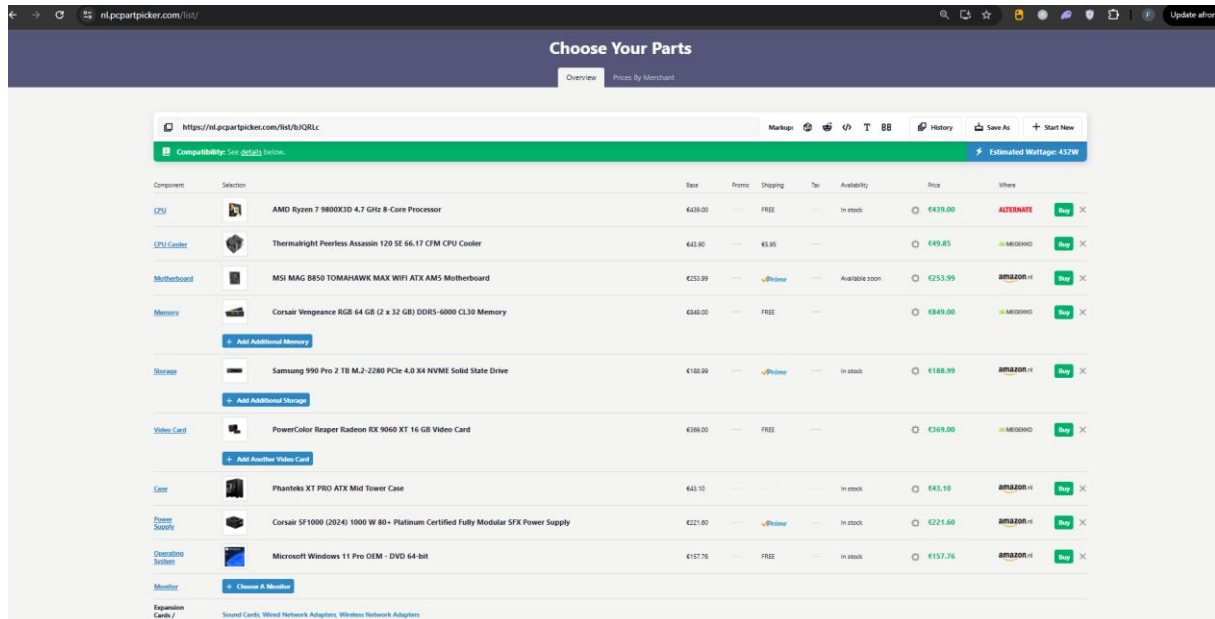
You forgot your power adapter, your laptop normally needs 15 watts. You will be loaned a power adapter that can deliver 50 watts. Voltage, polarity, etc. are all the same compared to the original power adapter. You can connect the borrowed power adapter to your laptop. What will happen? Also explain why you think that.

**Wat gebeurt er:** Laptop werkt gewoon normaal.

**Waarom:** Laptop trekt alleen de stroom die hij nodig heeft (15 W), de adapter kan meer leveren (50 W) zonder schade, zolang **spanning en polariteit correct** zijn.

## Assignment 3.4: Build your dream PC

Screenshots PC configuration + motivation:



The screenshot shows the nl.pcpartpicker.com website with a PC build configuration. The build is titled "Choose Your Parts" and has an estimated wattage of 432W. The components listed are:

Component	Selection	Base	Promo	Shipping	Tax	Availability	Price	Where
CPU	AMD Ryzen 7 9800X3D 4.7 GHz 8-Core Processor	€439.00	---	FREE	---	In stock	€439.00	ADRENALIN
CPU Cooler	Thermakritter Peerless Assassin 120 SE 66.17 CFM CPU Cooler	€43.90	---	€5.95	---	In stock	€49.85	MICROSOFT
Motherboard	MSI MAG B650 TOMAHAWK MAX WIFI ATX AM5 Motherboard	€231.99	---	Prime	---	Available soon	€253.99	amazon.nl
Memory	Corsair Vengeance RGB 64 GB (2 x 32 GB) DDR5-6000 CL30 Memory	€849.00	---	FREE	---	In stock	€849.00	MICROSOFT
Storage	Samsung 990 Pro 2 TB M.2-2280 PCIe 4.0 NVMe Solid State Drive	€189.99	---	Prime	---	In stock	€189.99	amazon.nl
Video Card	PowerColor Ripper Radeon RX 9060 XT 16 GB Video Card	€369.00	---	FREE	---	In stock	€369.00	MICROSOFT
Case	Phanteks XT P60 ATX Mid Tower Case	€43.10	---	---	---	In stock	€43.10	amazon.nl
Power Supply	Corsair SF1000 (2024) 1000 W 80+ Platinum Certified Fully Modular SFX Power Supply	€221.80	---	Prime	---	In stock	€221.60	amazon.nl
Operating System	Microsoft Windows 11 Pro OEM - DVD 64-bit	€157.76	---	FREE	---	In stock	€157.76	amazon.nl

Below the table, there are links to "Add Additional Memory", "Add Additional Storage", "Add Another Video Card", and "Choose A Monitor". At the bottom, there is a link to "Expansion Cards / Networking" and a note about "Sound Cards, Wired Network Adapters, Wireless Network Adapters".

Mijn huidige laptop, de Asus VivoBook 15 X515EA, is een basislaptop. Hij heeft een Intel i5-processor, 16 GB RAM, 512 GB opslag en geen echte videokaart, alleen geïntegreerde grafische chip. Deze laptop is vooral geschikt voor school, internet en lichte programma's.

Mijn droom-pc uit de lijst is veel krachtiger. Die heeft een AMD Ryzen 7 9800X3D processor, 64 GB snel DDR5-geheugen, een Samsung 990 Pro 2TB SSD en een Radeon RX 9060 XT videokaart. Dat zijn onderdelen die geschikt zijn voor zwaar gamen, videobewerking, 3D-werk en andere zware taken.

Ook de koeling en voeding zijn veel beter: de droom-pc heeft een grote luchtkoeler en een 1000W voeding, terwijl mijn laptop een kleine laptopkoeler en een veel zwakkere voeding heeft.

### Processor (CPU)

#### VivoBook:

- Intel Core i5-1135G7
- 4 cores / 8 threads
- Ontworpen voor licht werk, school, internet, lichte multitasking

#### Droom-pc:

- AMD Ryzen 7 9800X3D
- 8 cores / 16 threads
- Veel sneller, meer cache, betere prestaties in games en zware taken

## RAM

**VivoBook:** 16 GB DDR4

**Droom-pc:** 64 GB DDR5-6000

### Vershil:

Droom-pc heeft **vier keer zoveel RAM** én veel sneller (DDR5 in plaats van DDR4).

## Grafische kaart (GPU)

**VivoBook:** geïntegreerde Intel Iris Xe graphics (zeer beperkt)

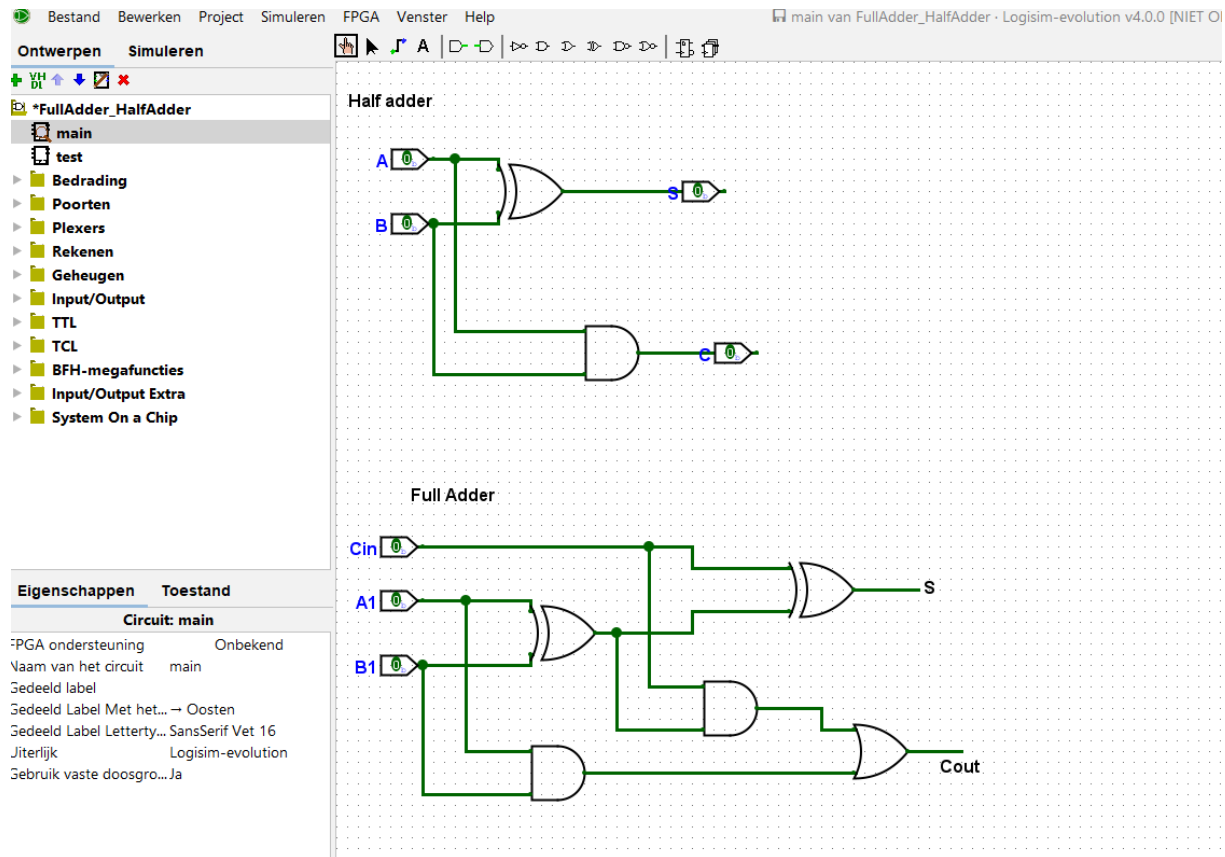
**Droom-pc:** Radeon RX 7900 XT 16 GB (high-end videokaart)

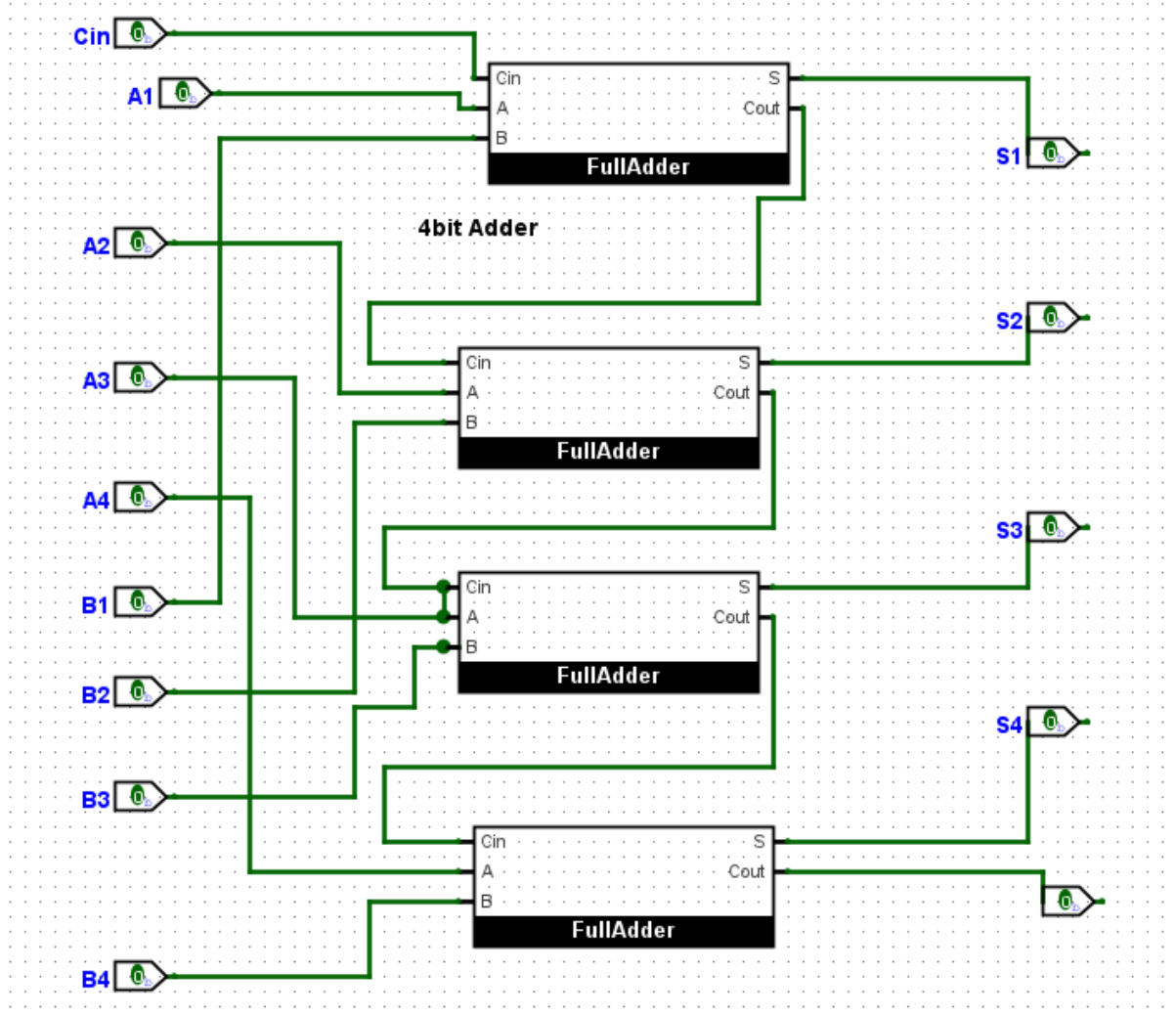
VivoBook is niet geschikt voor moderne games of zware grafische taken.

### Assignment 3.5: Adders

Complete the **half adder**, **full adder** and **4-bit adder** assignment as described in the PowerPoint slides of week 3 in Logisim. Save the chip design and also export three PNG pictures of the separate finished designs. See the PowerPoint slides of week 3.

Paste the three exported PNG pictures in here.





Ready? Save this file and export it as a pdf file with the name: [week3.pdf](#)