

# Template Week 3 – Hardware

Student number: 591007

## Assignment 3.1: Examine your phone

### What processor is in your phone?

Snapdragon 8 Gen 3

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

ARM-architectuur met ARMv9 ISA

### How much RAM is in it?

12 GB RAM

### How much storage does your phone have?

256 GB

### What operating system is running on your phone?

Android 16 met One UI 8.0

### Approximately how many applications do you have installed?

210

### Which application do you use the most?

YouTube staat altijd op nummer 1, Maar voor de rest licht aan wat ik kijk. Momenteel is dit HBO max maar vorige week was dit Netflix. En daarna komt Instagram.

### Can your phone be charged with what type of plug?

USB-C of draadloos

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

USB-C poort

SIM-kaart gleuf

Luidsprekers

## Assignment 3.2: Examine your laptop

### What processor is in your laptop?

11th Gen Intel(R) Core(TM) i7-11370H @ 3.30GHz

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

x86-64

**How much RAM is in it?**

16 GB

**How much storage does your laptop have?**

512 GB

**Which operating system is running on your laptop?**

Windows 11 Education

**Approximately how many applications do you have installed?**

Ongeveer 70

**Which application do you use the most?**

Google, Word, Steam en Discord

**Can your laptop be charged with what type of plug?**

ADP-200JB 200 watt

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

Stroom port, Ethernet port, HDMI, 3 USB-A, 1 USB-C en Koptelefoon

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

**What is the input voltage?**

100-240 volt

**What is the output voltage?**

20 volt

**How many watts can your power adapter deliver?**

200 watt

**Is the input voltage AC or DC?**

AC

**Is the output voltage AC or DC?**

DC

## AC/DC what is that?

AC is wisselstroom dit komt uit het stopcontact. DC is gelijkstroom dit gaat in de laptop.

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

Ja dat is erg slecht voor de laptop.

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.

Dit lijkt me geen probleem. De laptop blijft gewoon normaal werken en laat langzamer op met de 15 watt.

## Assignment 3.4: Build your dream PC

Screenshots PC configuration + motivation:

Component	Selection	Price	
CPU		AMD Ryzen 7 9800X3D 4.7 GHz 8-Core Processor	€489.00 <a href="#">Buy</a>
CPU Cooler		Thermalright Peerless Assassin 120 SE WHITE ARGB 66.17 CFM CPU Cooler	€49.90 <a href="#">Buy</a>
Motherboard		Asus ROG STRIX B650E-F GAMING WIFI ATX AM5 Motherboard	€185.00 <a href="#">Buy</a>
Memory		Kingston FURY Beast RGB 32 GB (2 x 16 GB) DDR5-6000 CL30 Memory	€230.95 <a href="#">Buy</a>
Storage		Western Digital WD Black SN850X 2 TB M.2-2280 PCIe 4.0 X4 NVME Solid State Drive	€169.90 <a href="#">Buy</a>
Video Card		MSI VENTUS 3X OC GeForce RTX 5070 Ti 16 GB Video Card	€799.00 <a href="#">Buy</a>
Case		NZXT H9 Flow (2025) ATX Mid Tower Case	€149.90 <a href="#">Buy</a>
Power Supply		MSI MAG A850GL PCIE5 850 W 80+ Gold Certified Fully Modular ATX Power Supply	€124.00 <a href="#">Buy</a>
Operating System		Microsoft Windows 11 Home Retail - USB 64-bit	€4.70 <a href="#">Buy</a>
Monitor		Asus TUF Gaming VG27AQML1A 27.0" 2560 x 1440 260 Hz Monitor	€290.90 <a href="#">Buy</a>
Total (Purchased):			€2493.25

Deze computer heb ik toevallig een paar weken geleden net voor de RAM crisus uit de hand liep in elkaar gezet. Ik heb dit gehaald omdat ik eerst op mijn school laptop gamede en dit gewoon nutteloos was. Ik kreeg lage FPS op lage settings en hier was ik helemaal klaar mee.

Het verschil tussen mijn laptop en droom pc is heel groot.

**Laptop GPU:** NVIDIA GeForce RTX 3060 Laptop GPU

**Droom PC GPU:** MSI VENTUS 3X OC GeForce RTX 5070 Ti 16 GB

De GPU van mijn laptop is nu 5 jaar oud. En de GPU van mijn droom pc is uit de allernieuwste RTX-5000 serie. De VRAM van mijn nieuwe GPU is meer dan verdubbeld van 6 GB naar 16 GB.

**Laptop CPU:** 11th Gen Intel(R) Core(TM) i7-11370H @ 3.30GHz

**Droom PC CPU:** AMD Ryzen 7 9800X3D 4.7 GHz 8-Core Processor

Ik ben van Intel naar AMD gegaan. De AMD CPU is uit 2024 dat is 3 jaar jonger dan de Intel CPU. Ook is het een upgrade van 4 naar 8 cores en is het van 3.3GHz naar 4.7GHz gegaan.

**Laptop RAM:** Samsung 16GB DDR4 3200MHz SODIMM RAM

**Droom PC RAM:** Kingston FURY Beast RGB 32 GB (2 x 16 GB) DDR5-6000 CL30 Memory

Ik ben van DDR4 naar DDR5 gegaan en van 16GB naar 32GB. De snelheid is ook bijna verdubbeld van 3200MT/s naar 6000MT/s

**Laptop Schijf:** SAMSUNG MZVLQ512HBLU-00B00 (PM991a)

**Droom PC Schijf:** Western Digital WD\_Black SN850X 2 TB M.2-2280 PCIe 4.0 X4 NVME SSD

De opslag is van 512 GB maar 2 TB gegaan dit is 4x zoveel opslagruimte. De Sequential Read is van 3.100 naar 7.300MB/s, Sequential Write van 1.800 naar 6.600MB/s, Random Read van 350.000 naar 1.200.000 IOPS en Random Write van 320.000 IOPS naar 1.100.00 IOPS. Dit betekent dat de nieuwe schijf ongeveer 3x sneller is dan de schijf van mijn laptop.

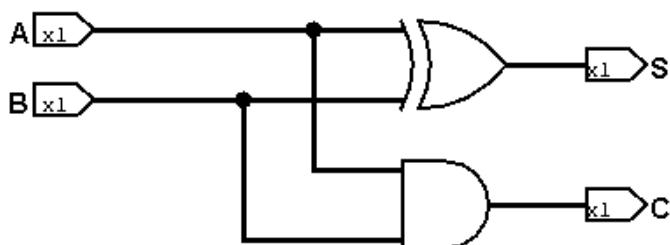
### Assignment 3.5: Adders

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.

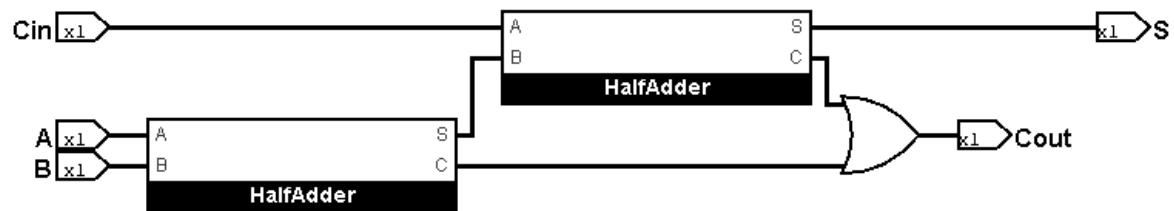
**Half Adder:**

Tijn Luttkholt 591007



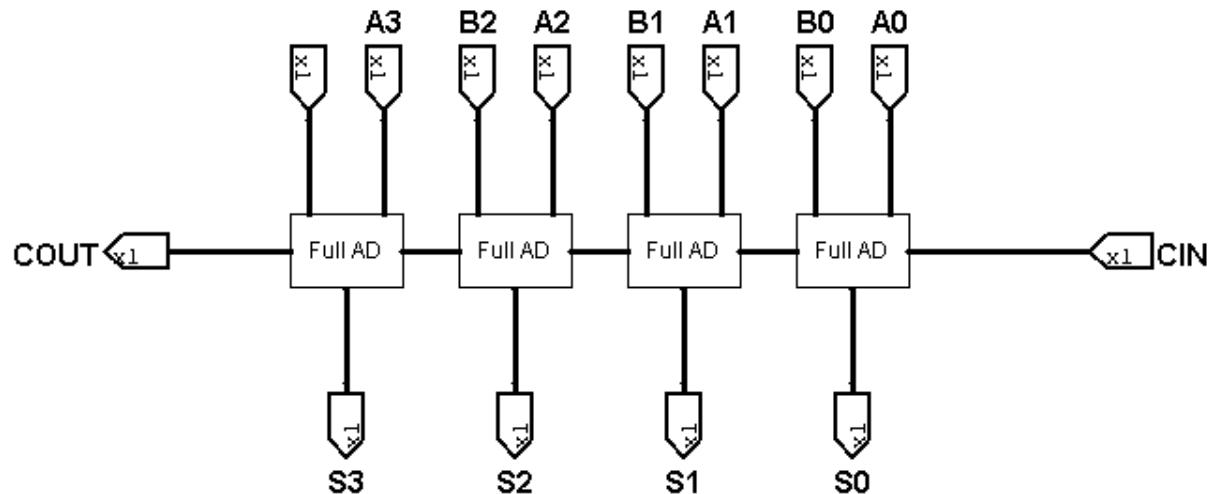
### Full Adder:

Tijn Luttikholt 591007



### 4-bit Adder:

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