

Template Week 3 – Hardware

Student number:

Assignment 3.1: Examine your phone

What processor is in your phone?

Snapdragon 8 elite mobile platform octa core max 4.32GHZ

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

ARMv9-A

How much RAM is in it?

12.0+6.0 GB

How much storage does your phone have?

512 +16GB

What operating system is running on your phone?

Android met xiaomi's HyperOs

Approximately how many applications do you have installed?

97

Which application do you use the most?

youtube

Can your phone be charged with what type of plug?

usbc

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

Usbc

Sim card

Microphone Pinholes

Speaker Grilles

Infrared (IR) Blaster

Assignment 3.2: Examine your laptop

What processor is in your laptop?

Intel® Core™ i7-13620H

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 of DDR5 RAM

How much storage does your laptop have?

477 gb

Which operating system is running on your laptop?

Microsoft Windows 11 education

Approximately how many applications do you have installed?

94

Which application do you use the most?

brave

Can your laptop be charged with what type of plug?

DC Barrel Plug

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

Left Side: DC-in (Power Jack), USB Type-A port, HDMI port, USB Type-C port (with DisplayPort support).

Right Side: Two USB Type-A ports, a 3.5mm Combo Audio Jack (for headphone/microphone), and an Ethernet (RJ-45) port.

Assignment 3.3: Power to the laptop

What is the input voltage?

100-240v

What is the output voltage?

19.5v

How many watts can your power adapter deliver?

240W

Is the input voltage AC or DC?

AC

Is the output voltage AC or DC?

DC

AC/DC what is that?

- AC (Alternating Current / Wisselstroom): De spanning verandert voortdurend van richting (polariteit), zoals een sinusgolf. Dit is wat uit je stopcontact komt. Het is efficiënt voor transport over lange afstanden.
- DC (Direct Current / Gelijkstroom): De spanning heeft een vaste, constante richting (polariteit), zoals van een batterij. Dit is wat elektronica, zoals je laptop, intern nodig heeft om te werken.

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

Ja, dat is zeer slecht en kan je laptop permanent beschadigen.

- Waarom? De stroom moet in de juiste richting door de circuits van je laptop lopen. De meeste elektronische componenten (zoals condensatoren, geïntegreerde schakelingen) zijn ontworpen voor één specifieke stroomrichting.
- Als je de polariteit omkeert (plus en min verwisselt), wordt de stroom geforceerd in de verkeerde richting. Dit kan componenten onmiddellijk en onherstelbaar laten doorbranden of "rookmagie" laten produceren.

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?: Je laptop werkt perfect en laadt op.

Waarom?: Je laptop neemt 15W, de adapter kan leveren tot 50W. Een adapter levert alleen wat het apparaat vraagt. Het is zoals een grote watertank (50W) waar je een klein glas (15W) uit vult.

Voorwaarde: Spanning (bijv. 19.5V) en polariteit moeten exact hetzelfde zijn.

Assignment 3.4: Build your dream PC

Screenshots PC configuration + motivation:

Component	Selection	Base	Promo	Shipping	Tax	Availability	Price	Where	
CPU	AMD Ryzen 9 7950X 4.5 GHz 16-Core Processor	€754.00				In stock	€754.00	amazon.nl	<button>Buy</button> <button>X</button>
CPU Cooler	ARCTIC Liquid Freezer III Pro 360 77 CFM Liquid CPU Cooler	€64.99				In stock	€64.99	amazon.nl	<button>Buy</button> <button>X</button>
Motherboard	Asus ROG CROSSHAIR X670E HERO ATX AM5 Motherboard					No Price Available			<button>Buy</button> <button>X</button>
Memory	G.Skill Trident Z5 Neo 64 GB (2 x 32 GB) DDR5-6000 CL30 Memory	€699.00		€5.95		In stock	€694.95	ALTERNATE	<button>Buy</button> <button>X</button>
	+ Add Additional Memory								
Storage	Solidigm P44 Pro 1 TB M.2-2280 PCIe 4.0 x4 NVMe Solid State Drive	€296.35				In stock	€296.35	amazon.nl	<button>Buy</button> <button>X</button>
	+ Add Additional Storage								
Video Card	NVIDIA Founders Edition GeForce RTX 5090 32 GB Video Card	€3899.99				In stock	€3869.99	amazon.nl	<button>Buy</button> <button>X</button>
	+ Add Another Video Card								
Case	Fractal Design North XL ATX Full Tower Case	€156.00				In stock	€156.00	amazon.nl	<button>Buy</button> <button>X</button>
Power Supply	be quiet! Dark Power 13 1000 W 80+ Titanium Certified Fully Modular ATX Power Supply	€263.99		€5.95		In stock	€269.94	AZERTY	<button>Buy</button> <button>X</button>
Operating System	Microsoft Windows 11 Home OEM - DVD 64-bit	€125.00		FREE		No Price Available	€125.00	PARADIGHT	<button>Buy</button> <button>X</button>
Monitor	MSI MAG 275QF 27.0" 2560 x 1440 180 Hz Monitor					No Price Available			<button>Buy</button> <button>X</button>
	+ Add Another Monitor								

Ik wil de beste gaming-ervaring die momenteel mogelijk is

De RTX 5090 (32 GB) is tot 3x sneller dan mijn huidige RTX 4060-laptop-GPU en levert 120–144 fps op 4K ultra of 240 fps op 1440p competitive settings. Met die kaart kan ik ray-tracing games op maximaal draaien zonder DLSS-compromissen.

Ik wil nooit meer “CPU-bottleneck” horen

De Ryzen 9 7950X (16 cores / 32 threads, 5,7 GHz boost) geeft genoeg overhead voor high-refresh gaming én tegelijk streamen, Discord, Spotify en browser-tabbladen zonder framedrops.

64 GB DDR5-6000 CL30 = voorbereid op de toekomst

Mijn laptop heeft 16 GB; ik draai nu al tegen het plafond aan in Unreal/Blender en modded Minecraft-packs. Met 64 GB hoef ik jarenlang geen RAM-upgrade te doen.

1 TB is voor OS + favoriete games, de rest komt later

De 1 TB Solidigm P44 Pro is razendsnel (7 GB/s) en voldoende voor Windows + 5-6 AAA-titels. Binnen een jaar schuif ik een tweede 4 TB NVMe in het gratis M.2-slot – upgrade-pad blijft open.

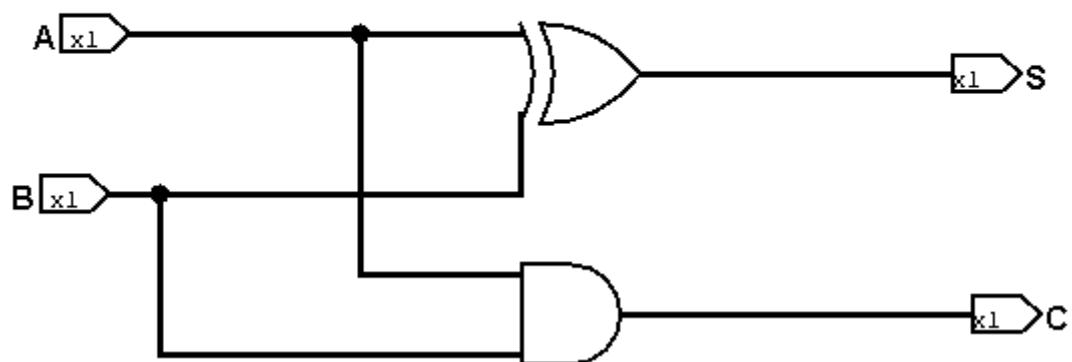
Assignment 3.5: Adders

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.

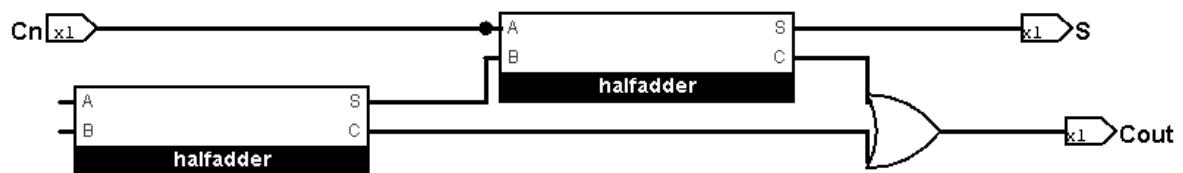
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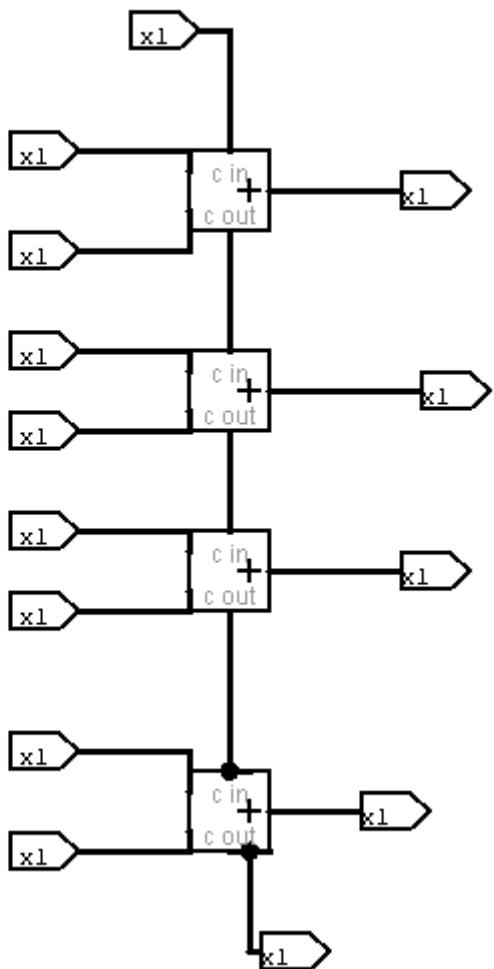
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