

Template Week 3 – Hardware

Student number:

Assignment 3.1: Examine your phone

What processor is in your phone?

-**Snapdragon 8 Gen 3 for Galaxy.**

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

- It uses the **ARM** architecture family

How much RAM is in it?

- It has **12 GB of RAM**.

How much storage does your phone have?

- It has **256 GB of storage**.

What operating system is running on your phone?

- It runs **Android**

Approximately how many applications do you have installed?

- Approximately **100 applications**.

Which application do you use the most?

- The most used application is **Instagram**.

Can your phone be charged with what type of plug?

- It can be charged via a **USB-C** plug.

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

-It has **USB-C port** and **SIM card tray slot**

Assignment 3.2: Examine your laptop

What processor is in your laptop?

- Its processor is **AMD Ryzen 7 5000 Series**.

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

-It belongs to the **x86-64** architecture family (also called **x64**)

How much RAM is in it?

- It has **16 GB of RAM**.

How much storage does your laptop have?

- It has **512 GB** of storage.

Which operating system is running on your laptop?

- It runs **Windows 11**.

Approximately how many applications do you have installed?

- Approximately **40 applications**.

Which application do you use the most?

-At the moment PostgreSQL 18.

Can your laptop be charged with what type of plug?

- It can be charged via a **USB-C or proprietary DC barrel** plug

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

- **USB-A ports (3)**

- **USB-C port**

-**HDMI port**

-**3.5 mm audio jack**

-**SD card reader**

-**Power input (DCin)**

Assignment 3.3: Power to the laptop

What is the input voltage?

- **100–240 V**

What is the output voltage?

- **~19 V**

How many watts can your power adapter deliver?

- **~120 W**

Is the input voltage AC or DC?

-**AC**

Is the output voltage AC or DC?

-**DC**

AC/DC what is that?

- **AC** (alternating current) means the voltage periodically reverses direction; this is the standard for wall-outlets. **DC** (direct current) means the voltage flows in a constant direction; laptops require DC internally and the adapter converts AC → DC.

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

- **Yes.** If the adapter's polarity is reversed (i.e. positive/negative swapped), it can damage the laptop's internal circuitry.

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.

- I can safely use the borrowed 50 W adapter because the laptop only **draws what it needs**. It normally needs 15 W, and the adapter can deliver up to 50 W. Since the **voltage and polarity are correct**, the laptop will just draw 15 W as usual. The extra capacity of the adapter (50 W) does **not force more power into the laptop**; it just means the adapter isn't stressed and can handle heavier loads if needed.

Assignment 3.4: Build your dream PC

Screenshots PC configuration + motivation:

This screenshot shows a component selection interface for building a PC. The table lists the following components and their details:

Component	Selection	Base	Power	Shipping	Tax	Availability	Price	Where	Action
CPU	AMD Ryzen 9 7950X3D 4.2 GHz 16-Core Processor	—	—	—	—	No Price Available	—	amazon.nl	Buy X
CPU Cooler	Noctua NH-D15 chromax.black.82.52 CFM CPU Cooler	€119,90	—	Prime	—	In stock	€119,90	amazon.nl	Buy X
Motherboard	Asus ROG STRIX X670E-F GAMING WIFI ATX AM5 Motherboard	€429,00	—	Prime	—	Available soon	€429,00	amazon.nl	Buy X
Memory	Corsair Vengeance RGB 32 GB (2 x 16 GB) DDR5-6000 CL36 Memory	€402,00	—	FREE	—	In stock	€402,00	ALTERNATE	Buy X
+ Add Additional Memory									
Storage	Samsung 990 Pro 1 TB M.2-2280 PCIe 4.0 X4 NVME Solid State Drive	€109,30	—	Prime	—	In stock	€109,90	amazon.nl	Buy X
+ Add Additional Storage									
Video Card	Asus TUF GAMING GeForce RTX 5090 32 GB Video Card	€2899,00	—	FREE	—	—	€2899,00	MSI.COM	Buy X
+ Add Another Video Card									

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This screenshot shows another component selection interface for building a PC. The table lists the following components and their details:

Component	Selection	Base	Power	Shipping	Tax	Availability	Price	Where	Action
Video Card	ASUS TUF GAMING GeForce RTX 3090 32 GB Video Card	€2899,00	—	FREE	—	—	€2899,00	MSI.COM	Buy X
+ Add Another Video Card									
Case	MSI MAG PANO 100R PZ ATX Mid Tower Case	€139,00	—	FREE	—	In stock	€139,00	bol.com	Buy X
Power Supply	Santacool VERTIX PX-1200 1200 W 80+ Platinum Certified Fully Modular ATX Power Supply	€259,00	—	Prime	—	Available soon	€259,00	amazon.nl	Buy X
Operating System	Microsoft Windows 11 Pro Retail - Download 64-bit	€258,00	—	FREE	—	In stock	€258,00	bol.com	Buy X
Monitor	Samsung Odyssey G8 34,0" 3440 x 1440 175 Hz Curved Monitor	€990,14	—	—	—	In stock	€990,14	amazon.nl	Buy X
+ Add Another Monitor									
Expansion Cards / Networking	Sound Cards, Wired Network Adapters, Wireless Network Adapters								
Peripherals	Headphones, Keyboards, Mice, Speakers, Webcams								
Accessories / Other	Case Accessories, Case Fans, Fan Controllers, Thermal Compound, External Storage, Optical Drives, UPS Systems								

Total: €5605,94

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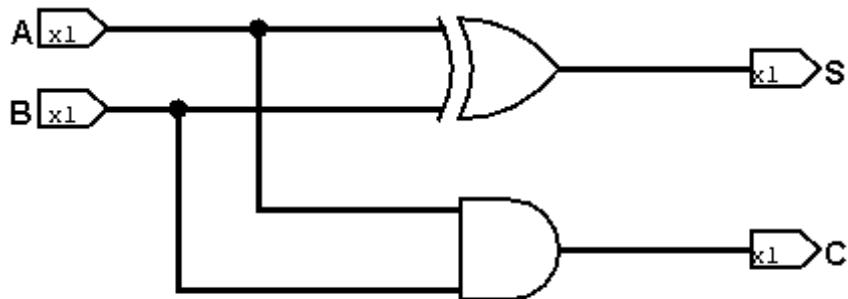
My dream PC is built for high-end gaming, creative work, and future-proofing. It features a Ryzen 9 7900X CPU, Radeon RX 7900 XTX GPU, 64 GB DDR5 RAM, 2 TB NVMe SSD plus 4 TB HDD, and a 32" 4K OLED monitor. Compared to my current Asus Vivobook Pro M5600QH laptop, this configuration delivers vastly higher performance, superior cooling, and better multitasking capabilities. The desktop's modular components allow upgrades to CPU, GPU, RAM, and storage, while the laptop is fixed. Networking is faster with 2.5 GbE and WiFi 6E, and the larger, high-refresh display improves gaming and editing experiences. Overall, the dream PC transforms a portable mid-tier system into a powerful, future-proof desktop workstation.

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.

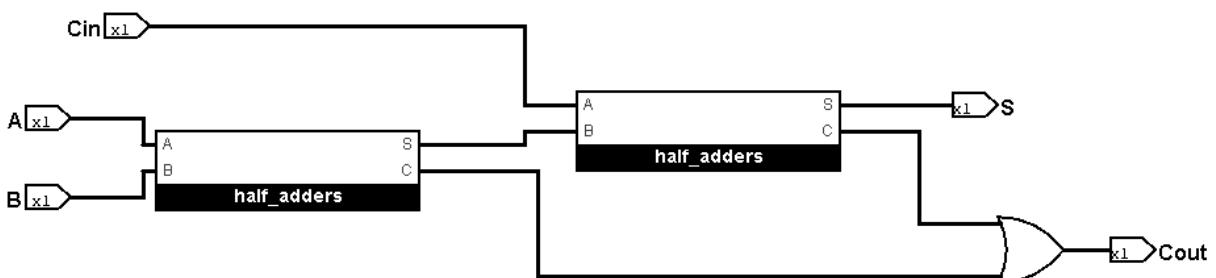
Paste the three exported PNG pictures in here.

- half adder



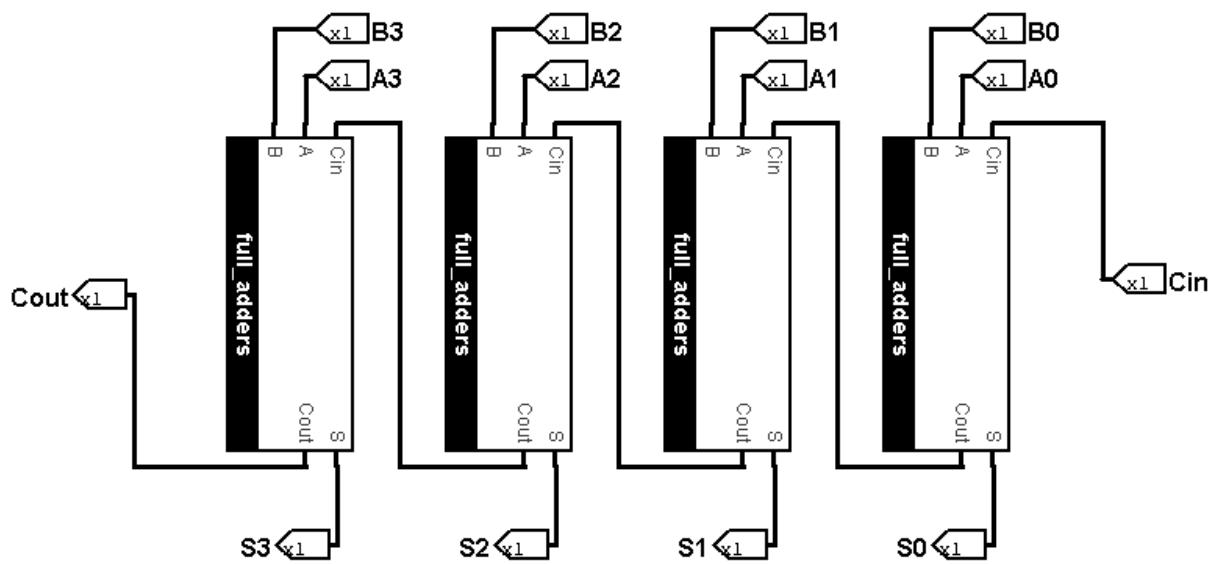
Reza Hekmatirad (564595)

- full adder



Reza Hekmatirad (564595)

-4-bit adder



Reza Hekmatirad (564595)

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