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 PostgerSQL 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?

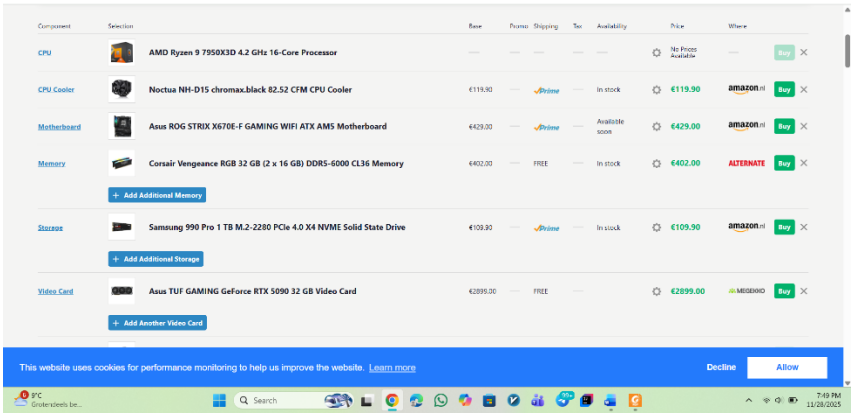
- **Yes.** If the adapter's polarity is reversed (i.e. positive/negative swapped), it can damage the laptop's internal circuitry.

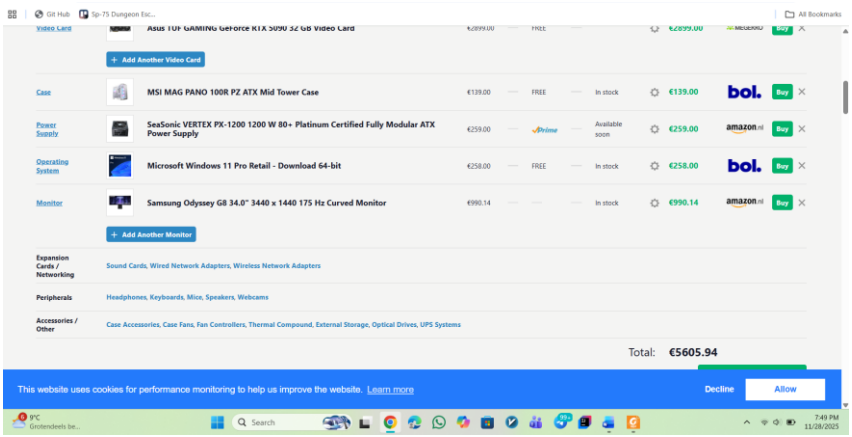
You forgot your power adapter, your laptop normally needs 15 watts. You will be loaned a power adapter that can deliver 50 watts. Voltage, polarity, etc. are all the same compared to the original power adapter. You can connect the borrowed power adapter to your laptop. What will happen? Also explain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





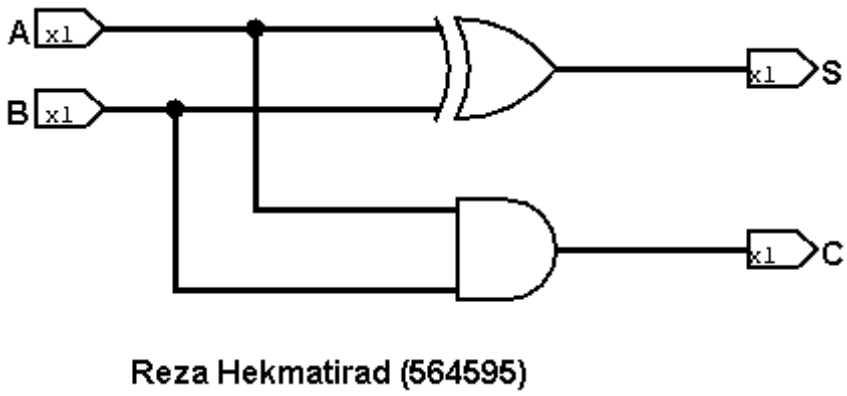
My dream PC is built for high-end gaming, creative work, and future-proofing. It features a Ryzen 9 7900X CPU, Radeon RX 7900 XTX GPU, 64 GB DDR5 RAM, 2 TB NVMe SSD plus 4 TB HDD, and a 32" 4K OLED monitor. Compared to my current Asus Vivobook Pro M5600QH laptop, this configuration delivers vastly higher 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



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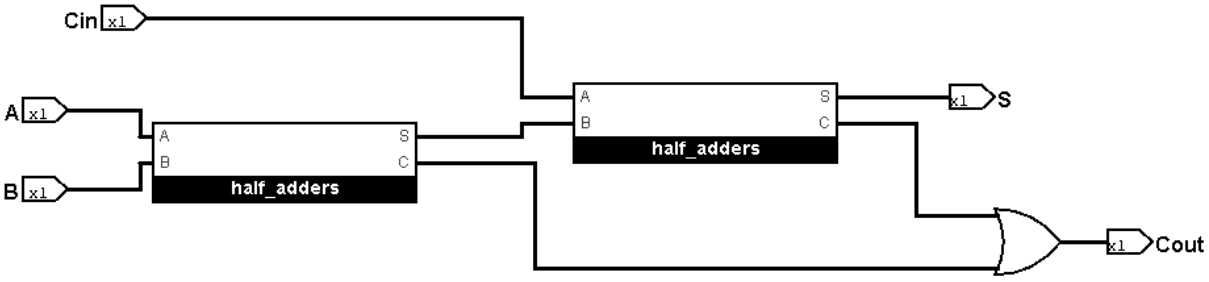
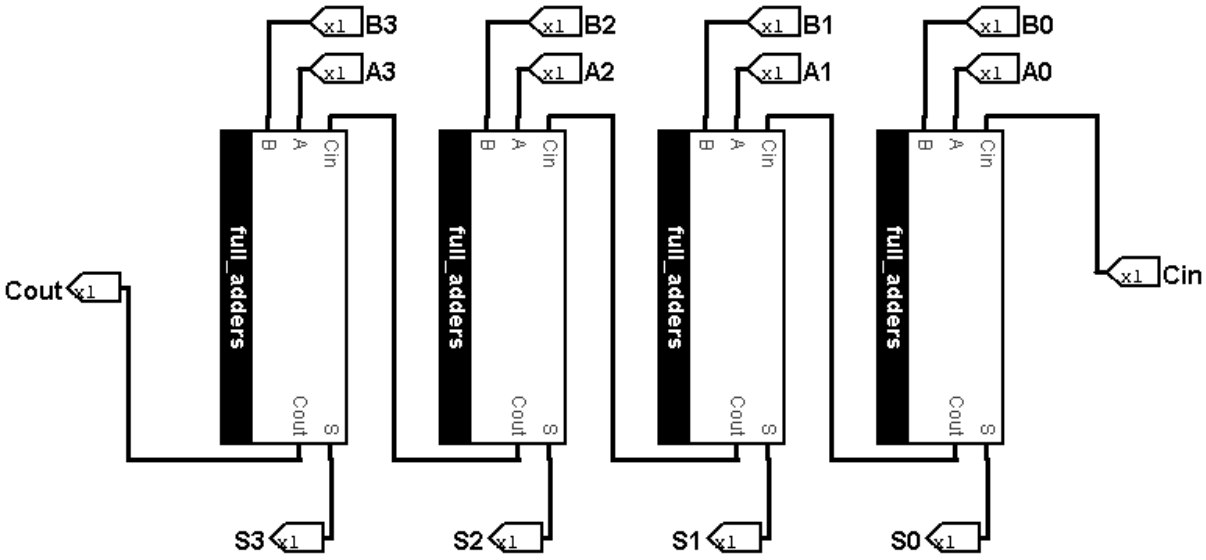
- full adder



Reza Hekmatirad (564595)

-4-bit adder



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