Template Week 3 – Hardware

Student number:569527

Assignment 3.1: Examine your phone

What processor is in your phone?

Qualcomm Snapdragon 778G+

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

ARM architecture (ARMv8-A)

How much RAM is in it?

8 GB RAM with option to expand it with storage (RAM Expansion)

How much storage does your phone have?

256GB

What operating system is running on your phone?

Nothing OS- Based on Android 14

Approximately how many applications do you have installed?

Approximately 40 apps

Which application do you use the most?

I use multiple applications very often: My Saxion, Instagram, Spotify

Can your phone be charged with what type of plug?

My phone has USB-C type connector.

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

The phone has a visible USB-C port and a SIM card slot

Assignment 3.2: Examine your laptop

What processor is in your laptop?

Apple M2 chip

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

ARM architecture family (ARMv8-A)

How much RAM is in it?

16 GB

How much storage does your laptop have?

512 GB SSD storage

Which operating system is running on your laptop?

macOS Ventura

Approximately how many applications do you have installed?

Approximately 60 apps.

Which application do you use the most?

Arc browser, Visual Studio Code, Discord

Can your laptop be charged with what type of plug?

My laptop can be charged using a **MagSafe 3 connector** or a **USB-C cable**

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

- **Two Thunderbolt/USB 4 ports**
- **MagSafe 3 charging port**
- **3.5mm headphone jack**.

Assignment 3.3: Power to the laptop

What is the input voltage?

100–240V

What is the output voltage?

20V

How many watts can your power adapter deliver?

70W

Is the input voltage AC or DC?

AC

Is the output voltage AC or DC?

DC

AC/DC what is that?

AC (Alternating Current): This is the type of electricity where the flow of charge keeps switching directions. It's what powers things like wall outlets and is used in power grids.

DC (Direct Current): This is when the electricity flows in just one direction all the time. It's what powers devices like phones, laptops, and batteries.

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

Yes, it's really bad for your laptop because it can damage its internal parts. Even though modern laptops nowadays often have safety features to handle this, it's not a guarantee, and reversing the polarity can still cause serious problems or permanent damage.

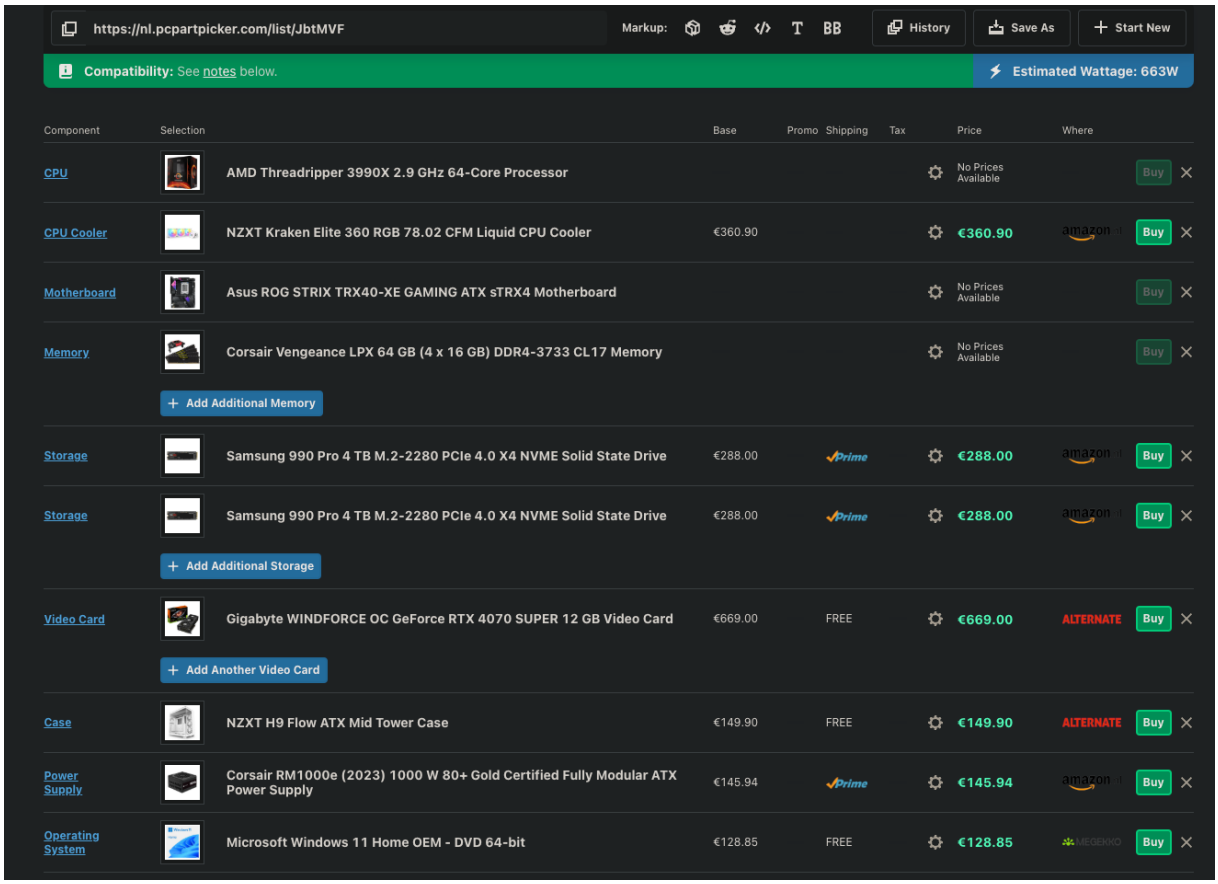
You forgot your power adapter, your laptop normally needs 15 watts. You will be loaned a power adapter that can deliver 50 watts. Voltage, polarity, etc. are all the same compared to the original power adapter. You can connect the borrowed power adapter to your laptop. What will happen? Also explain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

The laptop will work just fine with the 50W adapter. The 50 watts is just the maximum power the adapter can provide, but the laptop will only take the 15 watts it actually needs.

As long as the voltage and polarity are the same, using an adapter with a higher wattage is completely safe because the laptop nowadays controls how much power it pulls.

Assignment 3.4: Build your dream PC

Screenshots PC configuration + motivation:



I chose this dream PC configuration because it offers unmatched performance with a 64-core processor, 64 GB of RAM, dual 4 TB SSDs for fast and ample storage, a powerful RTX 4070 SUPER GPU, and a stunning 57-inch curved monitor, making it perfect for gaming, rendering, and multitasking, compared to my MacBook Air 2022, which is portable and efficient but limited in performance and storage capacity.

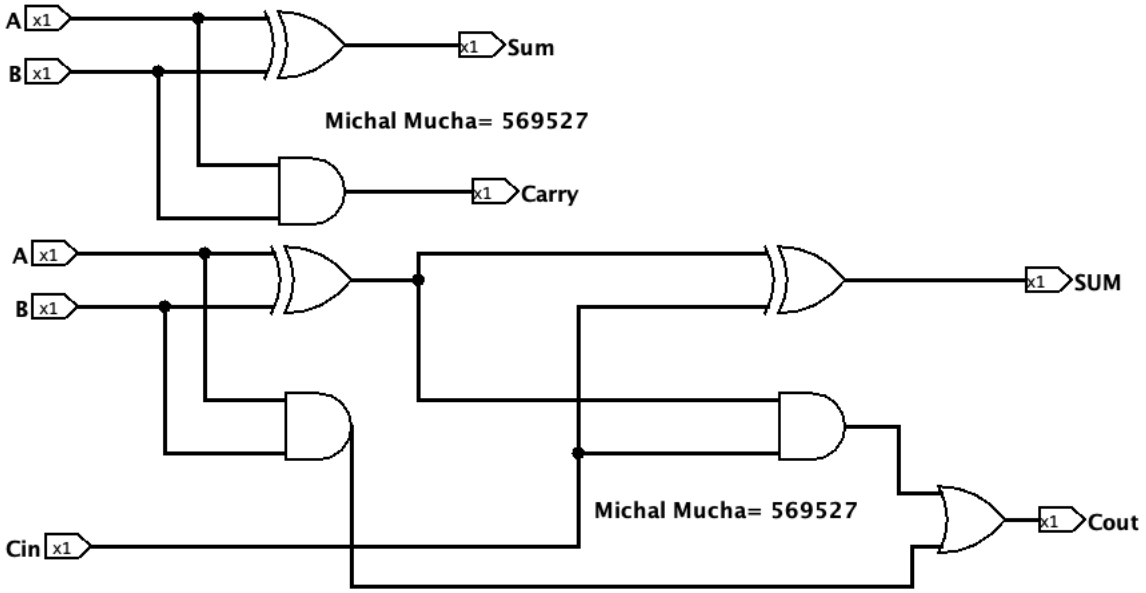
Comparison:

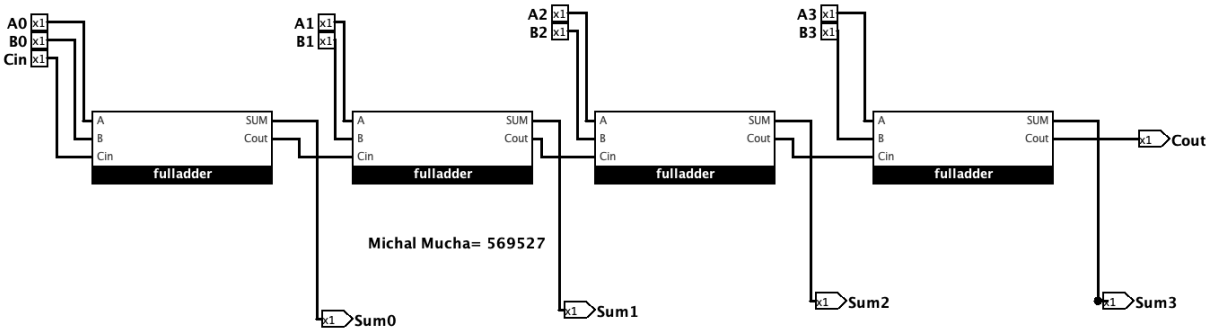
Comparing my dream PC to my MacBook Air 2022 reveals substantial differences. The dream PC is built for optimal performance, boasting a 64-core AMD Threadripper processor, 64 GB of high-speed RAM, and a robust RTX 4070 SUPER GPU, making it perfect for gaming, 3D rendering, and managing multiple demanding applications at once. It features dual 4 TB NVMe SSDs, providing a total of 8 TB of rapid storage, ideal for large files and efficient operating system performance. In contrast, my MacBook Air 2022, while extremely portable and energy-efficient, has only an 8-core Apple M2 processor, 16 GB of unified memory, and 512 GB of SSD storage, making it better suited for everyday tasks, web browsing, and lighter creative work. Moreover, the dream PC's 57-inch 4K curved monitor delivers an immersive experience that the MacBook's 13.6-inch Retina display can't compete with. While the MacBook shines in portability and battery life, the dream PC is a formidable machine designed for high performance and longevity, capable of executing tasks that my current laptop cannot fulfill.

Bonus point assignment – week 3

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**