Template Week 3 – Hardware

Student number: 579864

Assignment 3.1: Examine your phone

What processor is in your phone? Apple A18

To which architecture family does this processor belong? In other words, which Instruction Set Architecture (ISA) is used? ARMv9.2-A

How much RAM is in it? 8 GB

How much storage does your phone have? 128 GB

What operating system is running on your phone? iOS 18.6.2

Approximately how many applications do you have installed? 23

Which application do you use the most? Telegram, Camera

Can your phone be charged with what type of plug? USB-C

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

Assignment 3.2: Examine your laptop

What processor is in your laptop? Apple M2

To which architecture family does this processor belong? In other words, which Instruction Set Architecture (ISA) is used? ARMv8.6-A

How much RAM is in it? 8 GB

How much storage does your laptop have? 245,11 GB

Which operating system is running on your laptop? macOS Ventura 13.4 (22F66)

Approximately how many applications do you have installed? ~70

Which application do you use the most? Google Chrome

Can your laptop be charged with what type of plug? MagSafe 3

Which I/O ports can you visually see on your laptop? MagSafe 3, 2x Thunderbolt/USB 4, **3.5** mm headphone jack

Assignment 3.3: Power to the laptop

What is the input voltage? **100–240V**

What is the output voltage? **5V, 9V, 15V, and 20V depending on the charging phase**

How many watts can your power adapter deliver? 30W

Is the input voltage AC or DC? AC

Is the output voltage AC or DC? DC

AC/DC what is that? Alternating current and direct current.

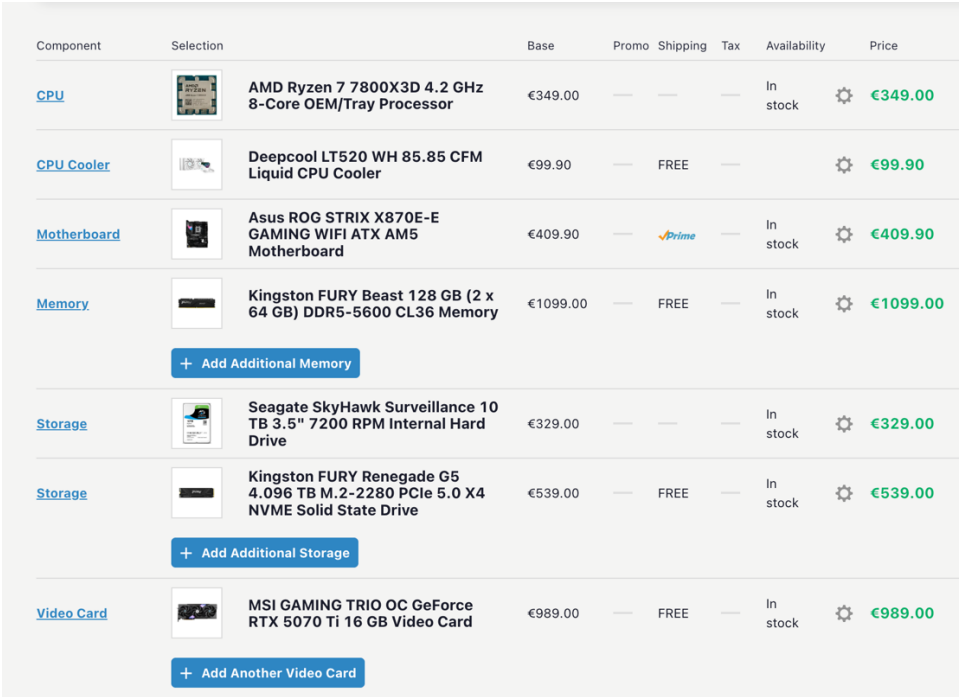
If you reverse the polarity of the output voltage, is that bad for your laptop? Yes, it might cause a short circuit because reversing the polarity means putting positive to negative and vice versa.

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.

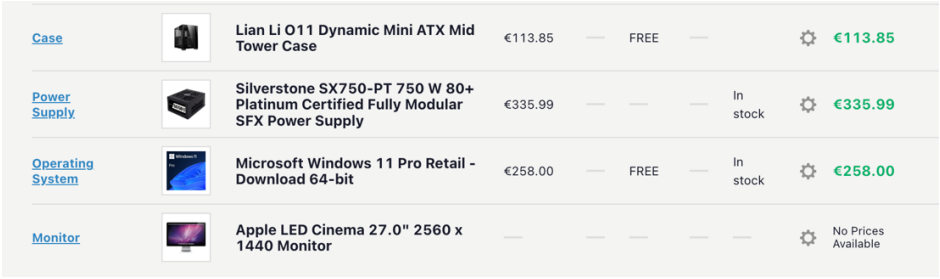
The laptop will charge normally because if it needs 15 watts it will use exactly this amount, and the adapter is powerful enough to provide up to 50 watts.

Assignment 3.4: Build your dream PC

Screenshots PC configuration + motivation:



Component	Selection	Base	Promo	Shipping	Tax	Availability	Price
CPU	AMD Ryzen 7 7800X3D 4.2 GHz 8-Core OEM/Tray Processor	€349.00	—	—	—	In stock	€349.00
CPU Cooler	Deepcool LT520 WH 85.85 CFM Liquid CPU Cooler	€99.90	—	FREE	—		€99.90
Motherboard	Asus ROG STRIX X870E-E GAMING WIFI ATX AM5 Motherboard	€409.90	—	Prime	—	In stock	€409.90
Memory	Kingston FURY Beast 128 GB (2 x 64 GB) DDR5-5600 CL36 Memory	€1099.00	—	FREE	—	In stock	€1099.00
	+ Add Additional Memory						
Storage	Seagate SkyHawk Surveillance 10 TB 3.5" 7200 RPM Internal Hard Drive	€329.00	—	—	—	In stock	€329.00
Storage	Kingston FURY Renegade G5 4.096 TB M.2-2280 PCIe 5.0 X4 NVME Solid State Drive	€539.00	—	FREE	—	In stock	€539.00
	+ Add Additional Storage						
Video Card	MSI GAMING TRIO OC GeForce RTX 5070 Ti 16 GB Video Card	€989.00	—	FREE	—	In stock	€989.00
	+ Add Another Video Card						



Case		Lian Li O11 Dynamic Mini ATX Mid Tower Case	€113.85	—	FREE	—	€113.85
Power Supply		Silverstone SX750-PT 750 W 80+ Platinum Certified Fully Modular SFX Power Supply	€335.99	—	—	In stock	€335.99
Operating System		Microsoft Windows 11 Pro Retail - Download 64-bit	€258.00	—	FREE	In stock	€258.00
Monitor		Apple LED Cinema 27.0" 2560 x 1440 Monitor	—	—	—	—	No Prices Available

- Processor AMD Ryzen 7 7800X3D 4.2 Ghz 8-core – a modern processor powerful enough for any tasks no matter the complexity. Also good for gaming.
- Motherboard Asus ROG STRIX X870E-E GAMING WIFI ATX AM5 – covers all the needs of our processor and RAM, SSD/HDD. It has enough ports for all the needed devices.
- MSI GeForce RTX 5070 GAMING TRIO OC 16 GB – new video card, has a lot of VRAM for any needs.
- Kingston DDR5-5600 128GB (2x64GB) – large amount of fast memory, matches the needs of my system.
- SSD drive Kingston FURY Renegade G5 4TB – extremely fast storage.
- Seagate SkyHawk Surveillance 10 TB 3.5" 7200 RPM Internal Hard Drive needed to store imortant data I don’t use too often (like photo albums)
- Water cooling Deepcool LT520– this cooling system will be enough to cool such a powerful processor.
- Silverstone SX750-PT 750 W 80+ Platinum Certified Fully Modular SFX Power Supply – compatible with my setup.
- Monitor Apple 27" LED Cinema – I really like the color rendering, resolution and contrast of this model. Screen dimensions are comfortable for my eyesight.
- Software Microsoft Windows 11 Pro FPP 64-bit Eng Intl non-EU/EFTA USB – the newest possible OS for pro users.

This setup creates a powerful system that will be extremely time resistant and useful for any type of work or entertainment (e.g. gaming).

My current laptop, a MacBook Air M2 (2022), is very different from my dream setup. The MacBook uses an ARM processor, which works well for everyday tasks but isn’t designed for demanding or highly complex work. In contrast, the Ryzen processor in my dream setup can handle intensive graphics processing and run advanced applications such as professional video editing software.

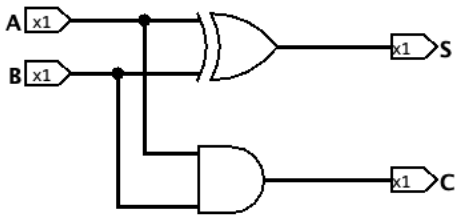
Another major difference is the graphics capability. My MacBook has an integrated 8-core GPU, which is far less powerful than the dedicated graphics card I would include in the dream PC. Memory is also a limitation on my laptop—its 8 GB of RAM is fixed and cannot be upgraded, while the dream setup would have significantly more, offering much better performance. Storage is also a big improvement: the large SSD and HDD in the dream PC would be perfect for keeping thousands of travel photos that my family currently has no space for.

Finally, the operating system and display also differ. The dream setup would run Windows 11 Pro, an excellent choice for a modern workstation, and would use a large, high-quality Apple monitor. This would be a big upgrade from the 13-inch display on my MacBook Air.

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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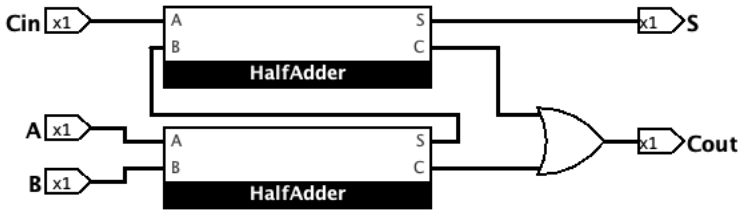

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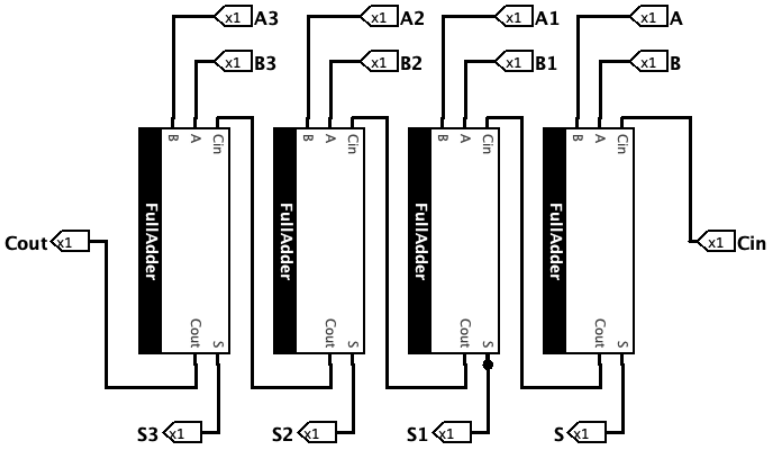

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