

Template Week 3 – Hardware

Student number: 580606

Assignment 3.1: Examine your phone

What processor is in your phone? Apple A15 Bionic

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

How much RAM is in it? 6 GB

How much storage does your phone have? 512 GB

What operating system is running on your phone? IOS 18.6.2

Approximately how many applications do you have installed? 140

Which application do you use the most? Telegram

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

Which I/O ports can you visually see on your phone? Display, microphone, camera, buttons, speakers

Assignment 3.2: Examine your laptop

What processor is in your laptop? Apple M2 Max

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

How much RAM is in it? 32 GB

How much storage does your laptop have? 1 TB

Which operating system is running on your laptop? Mac OS Sequoia

Approximately how many applications do you have installed? 130

Which application do you use the most? Google Crome

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

Which I/O ports can you visually see on your laptop? Display, microphone, camera, buttons, speakers, keyboard, touchpad

Assignment 3.3: Power to the laptop

What is the input voltage? 230 V (the standard is Europe, but it accepts any voltage in the 100-240 range)

What is the output voltage? 20-28 V (My adapter uses USB-C PD technology, so the output voltage fluctuates to optimize charging speed)

How many watts can your power adapter deliver? 140 Watts

Is the input voltage AC or DC? AC

Is the output voltage AC or DC? DC

AC/DC what is that?

AC (alternating current) is a type of electrical current in which the flow of electrons periodically changes direction. DC (direct current), on the other hand, flows steadily in one direction.

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

Yes, if the polarity of the voltage is reversed, the voltage might damage the charging circuit or burn the components of my laptop.

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.

My device will charge with no issues, because the laptop can draw only the power it needs to charge from the adapter.

Assignment 3.4: Build your dream PC

Screenshots PC configuration + motivation:

I aimed to construct a fast and reliable PC for study, coding and general use. Currently I only use a laptop, so I'll be comparing it with the build.

Compatibility Notes							
CPU	AMD Ryzen 9 3950X 3.5 GHz 16-Core Processor	€637.73	—	—	In stock	€637.73	amazon.nl
CPU_Cooler	Noctua NH-D15 82.5 CFM CPU Cooler	€99.90	—	Prime	In stock	€99.90	amazon.nl
Motherboard	MSI B550M PRO-VDH WIFI Micro ATX AM4 Motherboard	€108.99	—	Prime	Available soon	€108.99	amazon.nl
Memory	Corsair Vengeance RGB Pro 32 GB (2 x 16 GB) DDR4-3600 CL18 Memory	€209.90	—	FREE	—	€209.90	MEGHHO
+ Add Additional Memory							
Storage	Samsung 870 EVO 1 TB 2.5" Solid State Drive	€114.00	—	Prime	Available soon	€114.00	amazon.nl
+ Add Additional Storage							
Video_Card	NVIDIA Founders Edition GeForce RTX 2070 SUPER 8 GB Video Card	—	—	—	No Prices Available	—	
+ Add Another Video Card							
Case	Silverstone SETA A1 ATX Mid Tower Case	—	—	—	No Prices Available	—	
Power_Supply	MSI MAG A850GL PCIE5 850 W 80+ Gold Certified Fully Modular ATX Power Supply	€119.00	—	Prime	In stock	€119.00	amazon.nl
Operating_System	Microsoft Windows 11 Pro Retail - Download 64-bit	€258.00	—	FREE	In stock	€258.00	bol.
Monitor	Philips Eviia 8000 27M2N8500 26.5" 2560 x 1440 360 Hz Monitor	€499.00	—	Prime	In stock	€499.00	amazon.nl
+ Add Another Monitor							

CPU - AMD Ryzen 9 3950X - I chose this CPU because I wanted a very fast system for multitasking, compiling code, and running virtual machines. The 16 cores make the PC faster than my current laptop which has 12 cores.

Cooler - Noctua NH-D15 - I picked this cooler because the CPU is powerful and needs good cooling. The NH-D15 is quiet and reliable.

Motherboard - MSI B550M PRO-VDH WIFI - This motherboard supports the CPU, has built-in Wi-Fi, and gives me all the features I need without being too expensive.

Memory - 32 GB Corsair Vengeance - I chose 32 GB so I can run many programs and browser tabs at once. It helps with smooth multitasking and development work. It is the same as my current laptop and I am fully satisfied with its performance.

Storage - Samsung 870 EVO 1 TB SSD - I picked this SSD because it is fast and reliable. It makes the system load programs quickly, I chose 1TB of data, because usually I have about 300 GB used up, so it will be plenty.

Video Card - NVIDIA RTX 2070 SUPER - Even though this is not a gaming PC, I chose this GPU because it helps with video editing and multitasking.

Case - Silverstone SETA A1 - I picked this case because it has good airflow and enough space for all components. I also enjoy the sleek look of silver and pink.

Power Supply - MSI A850GL (850 W) - I chose this PSU because it is efficient and gives more than enough power for the system, which helps with stability and future upgrades.

Operating System - Windows 11 Pro - I chose Windows 11 Pro because it supports all the software and tools I need for my studies. Now I use macOS, so I'll have to adapt, but Windows allows for more customization and flexibility.

Monitor - Philips Evnia 8000 (27", 1440p) - I picked this monitor because the resolution gives good workspace for coding and general use. It is also much larger than my 14" laptop monitor.

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.

