# Week 3 – Hardware

Student number: **580521**

**Assignment 3.1: Examine your phone**

**Iphone 14 Pro Max**

What processor is in your phone?

**Apple A16**

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

**64-bit ARMv8.3-A**

How much RAM is in it?

**5638 MB**

How much storage does your phone have?

**256 GB**

What operating system is running on your phone?

**IOS 18.7.1**

Approximately how many applications do you have installed?

**112**

Which application do you use the most?

**Telegram, Spotify, TikTok, MijnSaxion**

Can your phone be charged with what type of plug?

**Lightning**

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

**Lightning connector port**

**Assignment 3.2: Examine your laptop**

What processor is in your laptop?

**12th Gen Intel(R) Core(TM) i7-12700H**

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

x64 Intel

How much RAM is in it?

**16 GB**

How much storage does your laptop have?

**931.5 GB**

Which operating system is running on your laptop?

**Microsoft Windows 11 Education, Version 10.0.26100**

Approximately how many applications do you have installed?

**120**

Which application do you use the most?

**Intelij IDEA**

Can your laptop be charged with what type of plug?

**Barrel-type DC charging plug**

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

**HDMI, USB-C, USB-A, Ethernet Port, Audio Jack**

**Assignment 3.3: Power to the laptop**

What is the input voltage?

**100~240V AC**

What is the output voltage?

**20V DC**

How many watts can your power adapter deliver?

**240W AC**

Is the input voltage AC or DC?

**AC**

Is the output voltage AC or DC?

**DC**

AC/DC what is that?

**AC (Alternative current)** - The electricity from your wall socket that constantly changes direction

**DC (Dirrect current)** - The electricity that flows in a single, constant direction

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

**Yes, because laptops are design to receive DC voltage with a specific polarity, so when you change it, the positive voltage goes where the negative should be, 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.

**Nothing will really happen, the laptop will just normally charge, because 50watts is the max the adapter can provide, but the laptop will still use only 15**

**Assignment 3.4: Build your dream PC**

Screenshots PC configuration + motivation:

| Component | Selection | Base | Promo | Shipping | Tax | Availability | Price | Where | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CPU | Intel Core i9-14900KF 3.2 GHz 24-Core Processor | €449.00 | — | FREE | — | In stock | €449.00 | ALTERNATE | Buy | × |
| CPU Cooler | Asus ROG Ryujin III 360 ARGB Extreme 89.73 CFM Liquid CPU Cooler | €386.58 | — | ✓Prime | — | In stock | €386.58 | amazon.nl | Buy | × |
| Motherboard | Gigabyte Z790 AORUS PRO X WIFI7 ATX LGA1700 Motherboard | — | — | — | — | — | No Prices Available | — | Buy | × |
| Memory | Corsair Dominator Titanium 64 GB (4 x 16 GB) DDR5-6400 CL32 Memory | €642.09 | — | ✓Prime | — | In stock | €642.09 | amazon.nl | Buy | × |
| | + Add Additional Memory | | | | | | | | | |
| Storage | Samsung 990 Pro 4 TB M.2-2280 PCIe 4.0 X4 NVME Solid State Drive | €359.00 | — | FREE | — | In stock | €359.00 | AZERTY | Buy | × |
| | + Add Additional Storage | | | | | | | | | |
| Video Card | NVIDIA Founders Edition GeForce RTX 5090 32 GB Video Card | €3589.00 | — | — | — | In stock | €3589.00 | amazon.nl | Buy | × |
| | + Add Another Video Card | | | | | | | | | |
| Case | Silverstone ALTA F2 ATX Full Tower Case | €934.97 | — | FREE | — | In stock | €934.97 | amazon.nl | Buy | × |
| Power Supply | Corsair HX1200i 1200 W 80+ Platinum Certified Fully Modular ATX Power Supply | €260.29 | — | ✓Prime | — | In stock | €260.29 | amazon.nl | Buy | × |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Operating System** | | Microsoft Windows 11 Home OEM - DVD 64-bit | €126.25 | FREE | — | | €126.25 | PARADIGIT | Buy |
| **Case Fan** | | Corsair ML140 PRO 55.4 CFM 140 mm Fans 2-Pack | €104.00 | — | — | In stock | €104.00 | amazon.nl | Buy |
| **Monitor** | | LG UltraGear 34GS95QE-B 34.0" 3440 x 1440 240 Hz Curved Monitor | €719.12 | ✓Prime | — | In stock | €719.12 | amazon.nl | Buy |
| **Monitor** | | MSI MAG 275QF 27.0" 2560 x 1440 180 Hz Monitor | — | — | — | No Prices Available | — | | Buy |
| **Keyboard** | | Razer BlackWidow V3 Mini HyperSpeed RGB Wireless Gaming Keyboard | — | — | — | No Prices Available | — | | Buy |
| **Mouse** | | Razer DeathAdder V3 Pro Wireless Optical Mouse | — | — | — | No Prices Available | — | | Buy |
| **Headphones** | | Razer BlackShark V2 Pro (2023) Headset | €137.00 | ✓Prime | — | In stock | €137.00 | amazon.nl | Buy |

## My Gaming PC Build and Why I Chose These Components

### CPU: Intel Core i9-14900KF 3.2 GHz 24-Core Processor

I chose this CPU because it's extremely powerful and ideal for gaming, streaming, and multitasking. It doesn't include integrated graphics, which isn't a problem because I'm pairing it with a dedicated video card. The high core count ensures smooth performance in modern games and heavy applications.

### CPU Cooler: Asus ROG Ryujin III 360 ARGB Extreme

This liquid cooler was chosen to keep the CPU temperatures low even under heavy gaming or intense workloads. It's reliable, quiet, and looks fantastic with its ARGB lighting, which complements the aesthetic of my build.

### Motherboard: Gigabyte Z790 AORUS PRO X WIFI7

I selected this motherboard because it supports the latest CPUs, fast DDR5 memory, and PCIe 5.0 for futureproofing. It also has built-in Wi-Fi 7, which ensures fast and stable connectivity. While it may seem high-end, it guarantees compatibility with all my components and expansions in the future.

### Memory: Corsair Dominator Titanium 64 GB (4 x 16 GB) DDR5-6400

I opted for 64 GB of RAM to handle multiple games, applications, and background processes simultaneously. This ensures I don't have to constantly load and unload programs, which is perfect for a smooth gaming experience and multitasking.

### Storage: Samsung 990 Pro 4 TB NVMe SSD

I chose this drive for its massive 4 TB capacity and lightning-fast speeds. This is more than enough to store all my games, software, and files without worrying about running out of space. Fast NVMe storage ensures quick game load times and smooth operation.

### Video Card: NVIDIA GeForce RTX 5090 32 GB

I selected the latest generation video card to run all current and upcoming games at maximum settings. This card will also remain powerful for multiple years, allowing me to future-proof my system for new releases and high-resolution gaming.

### Case: Silverstone ALTA F2 ATX Full Tower

I picked this case primarily for its design—it looks amazing and allows for excellent airflow. The build quality is top-notch, which helps keep components cool while maintaining a clean aesthetic.

**Power Supply: Corsair HX1200i 1200 W 80+ Platinum**
I wanted a powerful, reliable, and efficient power supply to handle the high-end components and ensure stability under heavy load. 1200 W provides more than enough headroom for future upgrades.

**Operating System: Windows 11 Home**
I chose Windows 11 for gaming compatibility and the modern interface. It ensures all my games and applications run smoothly without issues.

**Case Fans: Corsair ML140 PRO 2-Pack**
Additional fans ensure better airflow and cooling, which is especially important in a high-performance gaming PC.

**Monitors:**

- **LG UltraGear 34GS95QE-B Curved 34" 3440x1440, 240 Hz** – This is my main gaming monitor. Its large, curved design provides an immersive experience and excellent refresh rate for smooth gameplay.

- **MSI MAG 275QF 27" 2560x1440, 180 Hz** – A secondary monitor for multitasking, chat, or other applications while gaming.

**Keyboard & Mouse:**

- **Razer BlackWidow V3 Mini HyperSpeed** and **Razer DeathAdder V3 Pro** – I chose devices I'm already comfortable with, based on versions I currently own. Familiar peripherals improve my gaming performance and comfort.
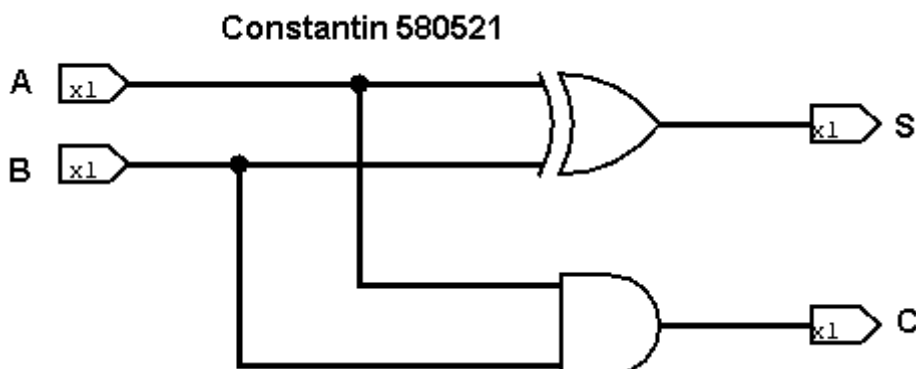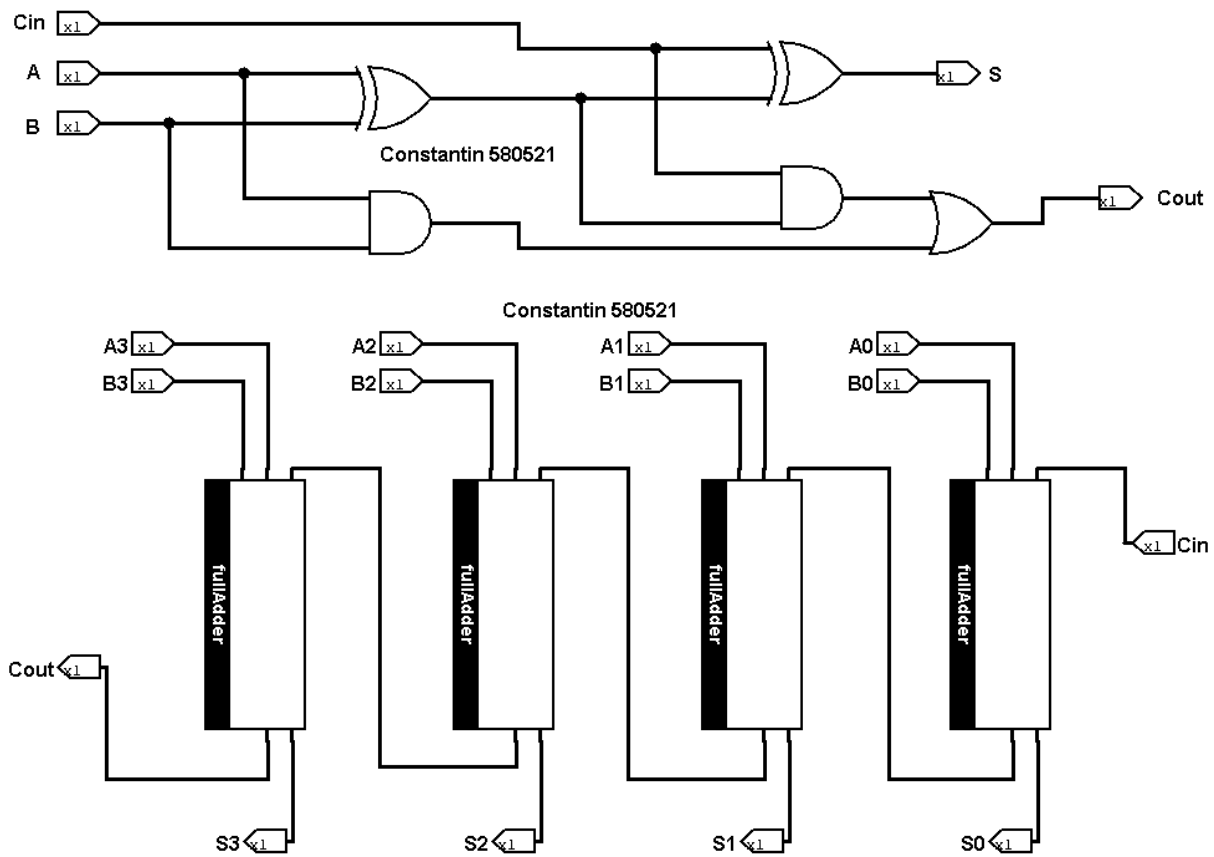
**Headset: Razer BlackShark V2 Pro**
I picked this headset for clear, immersive sound and comfort during long gaming sessions.

**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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Ready? Save this file and export it as a pdf file with the name: **week3.pdf**