

# Template Week 3 – Hardware

Student number:

## Assignment 3.1: Examine your phone

What processor is in your phone?

**Samsung Exynos 2100**

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

**ARMv8.3**

How much RAM is in it?

**12 GB**

How much storage does your phone have?

**224.81 GB (That is TOTAL, not used, idk why the number is like that, that's what AIDA64 says)**

What operating system is running on your phone?

**Android 15**

Approximately how many applications do you have installed?

**263 exactly**

Which application do you use the most?

**Telegram for messaging, Tik Tok/Youtube for videos, Chrome for browsing, Clash Royale for gaming.**

Can your phone be charged with what type of plug?

**USB-C charger plug.**

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

- **USB-C port for charging and data transfer**
- **SIM Card tray for SIM card**
- **Speaker holes for audio output**
- **Microphone holes for audio input**

## Assignment 3.2: Examine your laptop

What processor is in your laptop?

**11th Gen Intel Core i7-11800H 2.30GHz**

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

**x86- 64 (Intel 64) with support of many other instruction sets.**

How much RAM is in it?

**40 GB (DDR4)**

How much storage does your laptop have?

**476 GB + 464 GB disks = 940 GB**

Which operating system is running on your laptop?

**Windows 11 Home**

Approximately how many applications do you have installed?

**Exactly 49 (I reinstalled windows like 2 days ago)**

Which application do you use the most?

**Chrome for browsing, IntelliJ IDE for coding, Discord for chatting and Minecraft for gaming.**

Can your laptop be charged with what type of plug?

**Barrel- style DC jack (paired with high- wattage AC adapter)**

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

**Right side:**

- **RJ-45 Ethernet port: For wired network**
- **HDMI Output: Video output**
- **USB-C port (Only data transfer): For fast data transfer**
- **USB 3.2 Gen 1 Type- A port: USB**
- **Audio combo jack (3.5 mm): Audio output**
- **Battery status indicator: Battery status output**

**Left side:**

- **DC- in for barrel plug: For charging**
- **(2X) USB 3.2 Gen 1 Type- A port: USB**

### **Assignment 3.3: Power to the laptop**

What is the input voltage?

**100–240 V ~ 2.5 A 50/60 Hz**

**20.0 V – 9.0 A**

What is the output voltage?

**20.0 V DC**

How many watts can your power adapter deliver?

**20 \* 9 = 180 W**

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. Adapter takes AC in and converts it into DC so that AC wouldn't fry my laptop.**

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

**Super bad. It could cause permanent damage to laptop components that are sensitive to voltage orientation.**

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 bad will happen, as the power adapter only converts energy and doesn't actually push the energy inside the laptop. It's the laptop electronics that draw energy from the adapter and will only draw as much as they need.**

#### **Assignment 3.4: Build your dream PC**

Screenshots PC configuration + motivation:

**I want to make a well-rounded PC for daily use, the one that I would love to build myself.**

**CPU: A solid well-rounded CPU. Ten cores should be more than enough for most tasks.**

**CPU Cooler:** The main requirement was for it to be fast and have an ability to spin either slow or fast (so instead of, for example, fixed 1500 rpm, have a nice spread, like this cooler does: 650 - 2050 RPM), so that it could adapt speed when PC load is low and high.

**Motherboard:** 2 Memory slots and 64 (Max) RAM is just great, especially for such a low price and great reviews.

**Memory:** A solid ram, with DDR4-3200 speed, which is enough, no DDR5 because it is expensive.

**Storage:** Probably an overkill, but 2 TB of Samsung NVMe sounds sooo awesome, and the price looks fine.

**GPU:** A budget but still a great choice.

**Case:** Look solid and has great reviews

**Power supply:** Great reviews, voltage and it's MSI.

**OS: I could never imagine that windows is so expensive in Europe. At this point I would just install Linux.**

**Monitor: 2k resolution, 180 Hz, sounds very nice.**

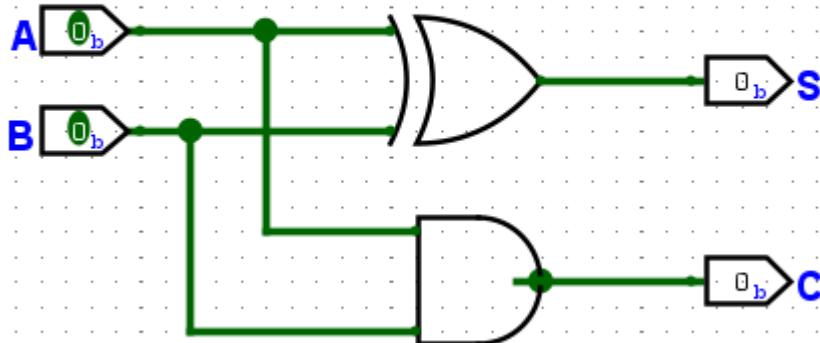
Component	Selection	Base	Promo	Shipping	Tax	Availability	Price	Where								
CPU	 Intel Core i5-12600K 3.7 GHz 10-Core Processor	€199.00	—	€5.95	—	In stock	⚙️ €204.95	ALTERNATE <a href="#">Buy</a> <a href="#">X</a>								
CPU Cooler	 Cooler Master Hyper 212 Halo 51.88 CFM CPU Cooler	€38.31	—	✓Prime	—	In stock	⚙️ €38.31	amazon.nl <a href="#">Buy</a> <a href="#">X</a>								
Motherboard	 MSI PRO H610M-G DDR4 Micro ATX LGA1700 Motherboard	€69.00	—	FREE	—	In stock	⚙️ €69.00	ALTERNATE <a href="#">Buy</a> <a href="#">X</a>								
Memory	 Corsair Vengeance RGB Pro SL 16 GB (2 x 8 GB) DDR4-3200 CL16 Memory	€88.99	—	✓Prime	—	In stock	⚙️ €88.99	amazon.nl <a href="#">Buy</a> <a href="#">X</a>								
<a href="#">+ Add Additional Memory</a>																
Storage	 Samsung 990 Pro 2 TB M.2-2280 PCIe 4.0 X4 NVME Solid State Drive	€159.00	—	✓Prime	—	In stock	⚙️ €159.00	amazon.nl <a href="#">Buy</a> <a href="#">X</a>								
<a href="#">+ Add Additional Storage</a>																
Video Card	 Asus DUAL EVO OC GeForce RTX 4060 8 GB Video Card	€369.00	—	FREE	—	In stock	⚙️ €369.00	<b>bol.</b> <a href="#">Buy</a> <a href="#">X</a>								
<a href="#">+ Add Another Video Card</a>																
Case	 Phanteks XT PRO ATX Mid Tower Case	€43.10	—	—	—	In stock	⚙️ €43.10	amazon.nl <a href="#">Buy</a> <a href="#">X</a>								
Power Supply	 MSI MAG A550BN 550 W 80+ Bronze Certified ATX Power Supply	€49.65	—	—	—	In stock	⚙️ €49.65	amazon.nl <a href="#">Buy</a> <a href="#">X</a>								
<hr/>																
Operating System	 Microsoft Windows 11 Home OEM - DVD 64-bit	€126.25	—	FREE	—	⚙️ €126.25	PARADIGIT <a href="#">Buy</a> <a href="#">X</a>									
Monitor	 AOC Q27G3XMN 27.0" 2560 x 1440 180 Hz Monitor	€249.00	—	✓Prime	—	In stock	⚙️ €249.00	amazon.nl <a href="#">Buy</a> <a href="#">X</a>								
<a href="#">+ Add Another Monitor</a>																
Expansion Cards / Networking	Sound Cards, Wired Network Adapters, Wireless Network Adapters															
Peripherals	Headphones, Keyboards, Mice, Speakers, Webcams															
Accessories / Other	Case Accessories, Case Fans, Fan Controllers, Thermal Compound, External Storage, Optical Drives, UPS Systems															
Base Total: <b>€1391.30</b>																
Shipping: <b>€5.95</b>																
<b>Total: €1397.25</b>																
<a href="#">Buy From Amazon Netherlands</a>																

### Assignment 3.5: Adders

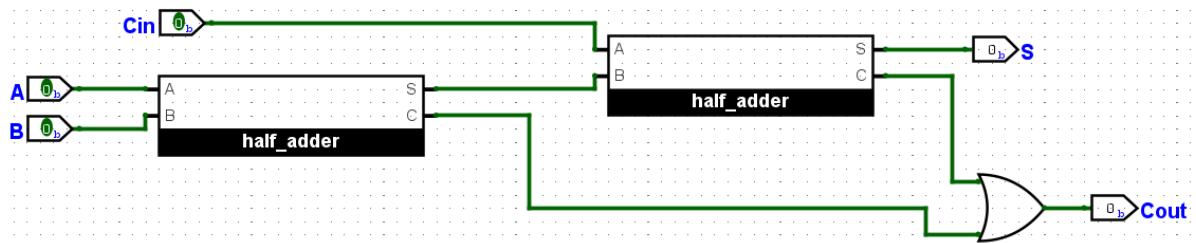
Complete the **half adder**, **full adder** and **4-bit adder** assignment as described in the PowerPoint slides of week 3 in Logisim. Save the chip design and also export three PNG pictures of the separate finished designs. See the PowerPoint slides of week 3.

Paste the three exported PNG pictures in here.

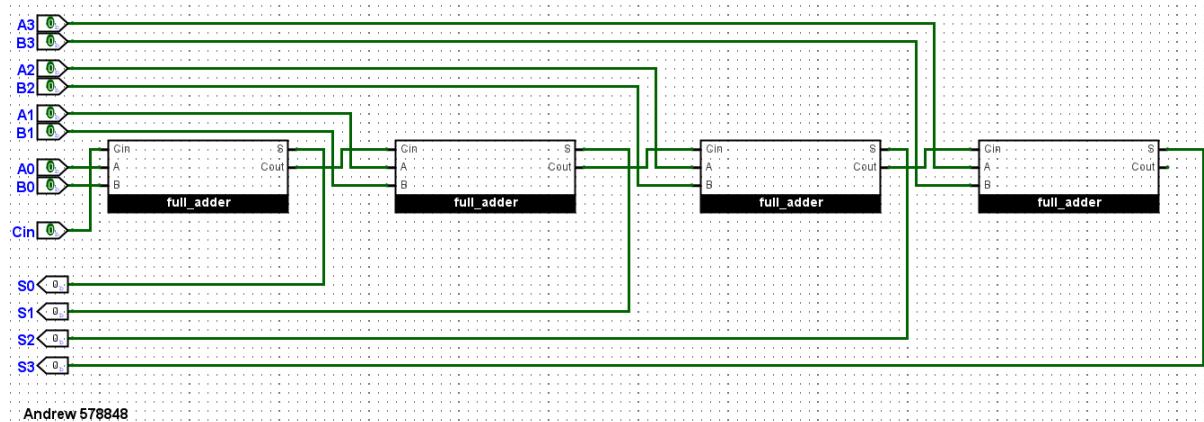
## Andrew 578848



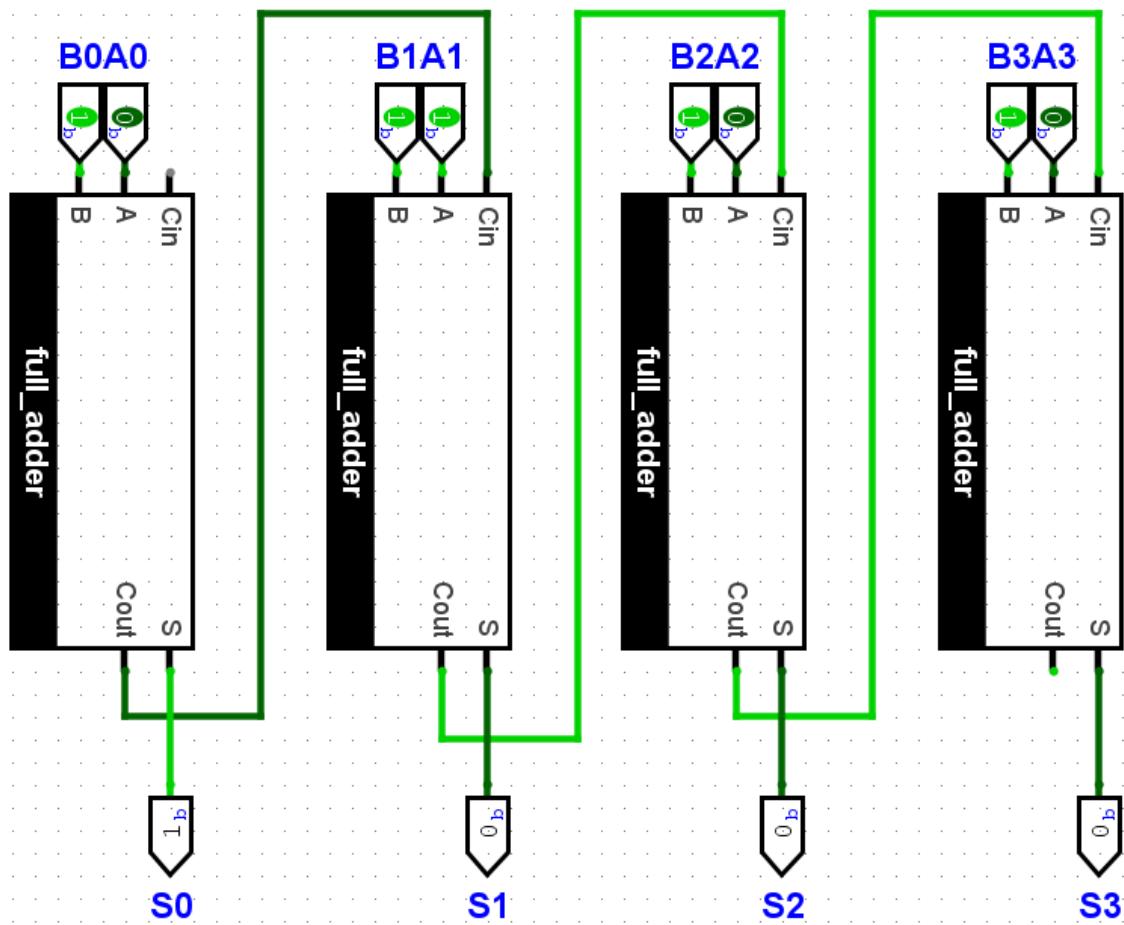
Andrew 578848



Here is a 4-bit adder that looks like total ABOMINATION, but it does work!



And here is a nice looking version



**Andrew 578848**

Ready? Save this file and export it as a pdf file with the name: [week3.pdf](#)