Template Week 3 – Hardware

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Assignment 3.1: Examine your phone

What processor is in your phone? MediaTek Helio G80

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

How much RAM is in it? 4gb ram

How much storage does your phone have? 128GB

What operating system is running on your phone? Android 13

Approximately how many applications do you have installed? 40

Which application do you use the most? Whatsapp, Chrome, Discord

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 (Charging & data transfer) 3.5mm headphone jacks (wired headphones) microSD card slot (extra storage) sim card tray (dual sim)

Assignment 3.2: Examine your laptop

What processor is in your laptop? AMD Ryzen 5 5600H

To which architecture family does this processor belong? In other words, which Instruction Set Architecture (ISA) is used? x86-64

How much RAM is in it? 16gb ddr4 ram

How much storage does your laptop have? 512gb nvme ssd storage

Which operating system is running on your laptop? Windows 11

Approximately how many applications do you have installed? A15

Which application do you use the most? Chrome and GTA V

Can your laptop be charged with what type of plug? proprietary charging port (19.5V adapter) or USB Type-C (supports charging via USB Power Delivery).

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

USB Type-C 3.2 Gen2 port (for data transfer and charging)

USB 3.2 Gen1 Type-A (two or three ports for peripherals)

HDMI 2.1 (for connecting external monitors or displays)

RJ-45 Ethernet port (for wired networking)

3.5mm audio combo jack (headphone/microphone)

SD card reader (for media or storage transfer)

Assignment 3.3: Power to the laptop

What is the input voltage? 100-240V AC (standards are from 100v to 240v in most countries)

What is the output voltage? 19.5V DC

How many watts can your power adapter deliver? 150W

Is the input voltage AC or DC? AC

Is the output voltage AC or DC? DC

AC/DC what is that? AC: Alternating Current Type of electrical current delivered by power stations and found in electrical outlets.

DC: Direct Current is most used by electronic devices where the flow of current is in one direction The power adapter converts AC {wall outlet} into DC (for internal usage)

If you reverse the polarity of the output voltage, is that bad for your laptop? Yes it is bad because it could damage the internal components like motherboard, battery or ram. Always make sure polarity is correct when connecting power devices to avoid 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 only get the power it needs, eventhough the power adapter could supply more! Nothing will go wrong because the power adapter will just give the 15 wats in this case and 'keep' the other wats for another moment. When booting up the laptop it will operate as you expect it to.

Assignment 3.4: Build your dream PC

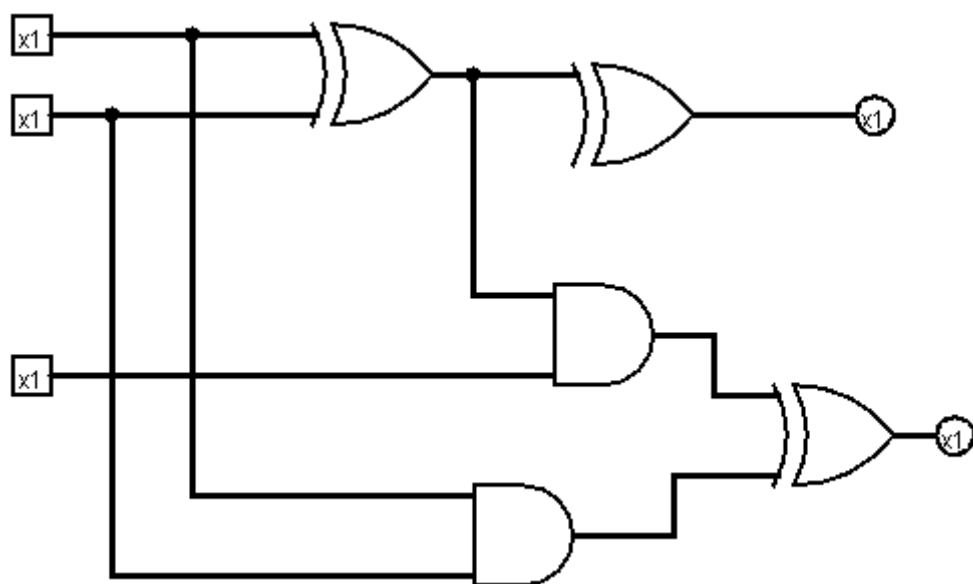Screenshots PC configuration + motivation:

CPU		AMD Ryzen 7 7700X 4.5 GHz 8-Core Processor	$329.00	—	✓Prime	—	⚙	$329.00	amazon.com	Buy	✕
CPU Cooler		Deepcool LE720 85.85 CFM Liquid CPU Cooler	—	—	—	—	⚙	No Prices Available	—	Buy	✕
Motherboard		Asus ROG STRIX B650-A GAMING WIFI ATX AM5 Motherboard	$209.99	—	✓Prime	—	⚙	$209.99	amazon.com	Buy	✕
Memory		Kingston FURY Beast 32 GB (2 x 16 GB) DDR5-6000 CL30 Memory	$139.21	—	✓Prime	—	⚙	$139.21	amazon.com	Buy	✕
		+ Add Additional Memory									
Storage		Samsung 980 Pro 2 TB M.2-2280 PCIe 4.0 X4 NVME Solid State Drive	$169.99	—	✓Prime	—	⚙	$169.99	amazon.com	Buy	✕
		+ Add Additional Storage									
Video Card		MSI GeForce RTX 3060 Ventus 2X 12G GeForce RTX 3060 12GB 12 GB Video Card	$279.99	—	✓Prime	—	⚙	$279.99	amazon.com	Buy	✕
		+ Add Another Video Card									
Case		NZXT H9 Flow ATX Mid Tower Case	$149.97	—	✓Prime	—	⚙	$149.97	amazon.com	Buy	✕
Power Supply		Corsair SF1000 (2024) 1000 W 80+ Platinum Certified Fully Modular SFX Power Supply	$229.99	—	✓Prime	—	⚙	$229.99	amazon.com	Buy	✕
Operating System		Microsoft Windows 11 Pro Retail - USB 64-bit	$142.85	—	✓Prime	—	⚙	$142.85	amazon.com	Buy	✕
Monitor		Asus TUF Gaming VG27AQ 27.0" 2560 x 1440 165 Hz Monitor	$229.00	—	✓Prime	—	⚙	$229.00	amazon.com	Buy	✕

This is well balanced because it is ideal for gaming, content creation and multitasking, the AMD ryzen 7 provides multi core performance, supported by 32gb of ddr5 RAM. The RTX 3060 offers solid 1440 & 1080p gaming performance. It also has a 2TB NVME SSD storage so no need to worry about long booting times, or running out of storage. The monitor gives the build high refresh rates for gaming.
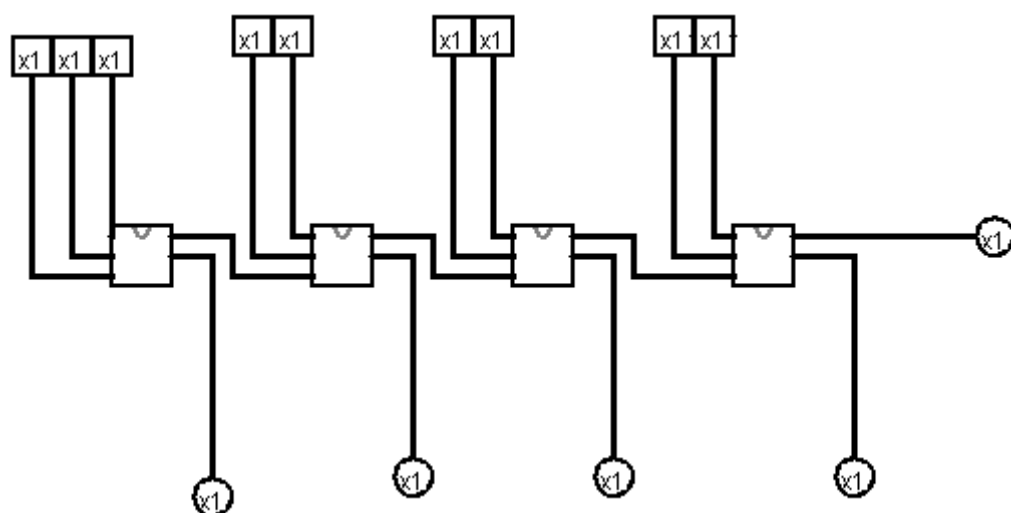
Bonus point assignment – week 3

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.

Full adder

4 bit adder:

Half adder: