

Week 3 – Hardware

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Assignment 3.1: Examine your phone

Assignment

What processor is in your phone?

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

How much RAM is in it?

How much storage does your phone have?

What operating system is running on your phone?

Approximately how many applications do you have installed?

Which application do you use the most?

Can your phone be charged with what type of plug?

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

Answer

Phone specs	
Processor	Qualcomm Snapdragon 8 Gen 3 (for Galaxy)
Architecture family/ISA	ARMv8-A (64-bit ARM architecture)
RAM	12 GB
Storage	512 GB
Operating System (OS)	Currently Android 16
Applications installed	200 system + user apps
Most used application	Instagram
Charging plug type	USB-C
Visible I/O ports	USB-C

Assignment 3.2: Examine your laptop

Assignment

What processor is in your laptop?

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

How much RAM is in it?

How much storage does your laptop have?

Which operating system is running on your laptop?

Approximately how many applications do you have installed?

Which application do you use the most?

Can your laptop be charged with what type of plug?

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

Answer











Laptop specs	
Processor	Intel Core i5-12500H
Architecture family/ISA	x86-64 architecture family, based on the Intel 64 Instruction Set Architecture
RAM	32 GB
Storage	2x 512 GB so about 1 TB in SSD storage
Operating System (OS)	Windows 11
Applications installed	~40
Most used application	Zen (Firefox based browser)
Charging plug type	DC barrel port
Visible I/O ports	2x USB-C 2x USB-A 1x HDMI Audio and microphone jacks, 1 each Ethernet port SD card reader DC barrel port

Assignment 3.3: Power to the laptop

Laptop power	
How many watts can your power adapter deliver?	180W
What is the input voltage?	100-240V
What is the output voltage?	20V
Is the input voltage AC or DC?	AC
Is the output voltage AC or DC?	DC
AC/DC what is that?	AC: alternating current: alternates direction (wall outlet) DC: direct current: DC flows one way (laptop circuits/batteries)
If you reverse the polarity of the output voltage, is that bad for your laptop?	Yes. It will fry components or prevent charging.
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 work fine. It will only draw the 15 watts it needs, regardless of the adapter's 50-watt capacity, as long as voltage, polarity, and connector match.

Assignment 3.4: Build your dream PC

Screenshots PC configuration + motivation:

CPU		AMD Ryzen 7 9800X3D 4.7 GHz 8-Core Processor	€649.00	—	FREE	—	⚙️	€649.00	ALTERNATE	Buy	×
CPU Cooler		NZXT Kraken X73 RGB 52.44 CFM Liquid CPU Cooler	€479.19	—	—	—	⚙️	€479.19	amazon.nl	Buy	×
Motherboard		Asus ROG STRIX X870-A GAMING WIFI ATX AMS Motherboard	€419.00	—	Prime	—	⚙️	€419.00	amazon.nl	Buy	×
Memory		Corsair Dominator Titanium 64 GB (4 x 16 GB) DDR5-6400 CL32 Memory	€386.00	—	Prime	—	⚙️	€386.00	amazon.nl	Buy	×
+ Add Additional Memory											
Storage		Samsung 990 EVO 2 TB M.2-2280 PCIe 5.0 X2 NVME Solid State Drive	€121.99	—	Prime	—	⚙️	€121.99	amazon.nl	Buy	×
+ Add Additional Storage											
Video Card		Asus ROG STRIX GAMING OC GeForce RTX 4090 24 GB Video Card	€3982.32	—	—	—	⚙️	€3982.32	amazon.nl	Buy	×
+ Add Another Video Card											
Case		Fractal Design North XL ATX Full Tower Case	€145.94	—	Prime	—	⚙️	€145.94	amazon.nl	Buy	×
Power Supply		Corsair RM850e (2023) 850 W 80+ Gold Certified Fully Modular ATX Power Supply	€106.90	—	Prime	—	⚙️	€106.90	amazon.nl	Buy	×
Operating System		Microsoft Windows 11 Pro Retail - Download 64-bit	€79.00	—	—	—	⚙️	€79.00	amazon.nl	Buy	×
Monitor		LG UltraGear 34G595QE-B 34.0\" data-bbox="191 420 211 434"/>	€799.00	—	FREE	—	⚙️	€799.00	ALTERNATE	Buy	×
+ Add Another Monitor											

Motivation: this list was created last year (2024-2025), at the time these were the generations best components, no budget thought was done here.

Assignment 3.5: Adders

Assignment

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.

Three PNG pictures

