

Template Week 3 – Hardware

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Assignment 3.1: Examine your phone

What processor is in your phone? **Samsung Exynos 1380**

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

How much RAM is in it? **8 GB**

How much storage does your phone have? **128 GB**

What operating system is running on your phone? **Android 14**

Approximately how many applications do you have installed? **43**

Which application do you use the most? **WhatsApp**

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

Which I/O ports can you visually see on your phone? **USB type-C, SIM and microSD ports**

Assignment 3.2: Examine your laptop

What processor is in your laptop? **Intel Core vPro i5**

To which architecture family does this processor belong? In other words, which Instruction Set Architecture (ISA) is used? **X86-64 aka AMD64**

How much RAM is in it? **16 GB**

How much storage does your laptop have? **512 GB**

Which operating system is running on your laptop? **Windows 11 pro**

Approximately how many applications do you have installed? **10**

Which application do you use the most? **Chrome**

Can your laptop be charged with what type of plug? **Both USB type-C and barrel plug (4.5mm Blue Tip)**

Which I/O ports can you visually see on your laptop? **USB type-C, HDMI, headphone jack, SIM and power port**

Assignment 3.3: Power to the laptop

What is the input voltage? **100-240 V**

What is the output voltage? **19.5 V**

How many watts can your power adapter deliver? **65 watts**

Is the input voltage AC or DC? **AC**

Is the output voltage AC or DC? **DC**

AC/DC what is that? **In AC electrons don't move in straight line and vibrate back and forth and can transfer electricity over long paths. In DC electrons move in a straight line and the inner circuits of electronic devices use this current.**

If you reverse the polarity of the output voltage, is that bad for your laptop? **Yes, this change can cause the capacitors or the chips inside motherboard to explode or get fried.**

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. Voltage is pulled from not pushed to a device, so it will consume as much as it requires to operate and ignore the rest of the capacity leftovers.

Assignment 3.4: Build your dream PC

Screenshots PC configuration + motivation:

Kourosh 581558		Markup: History Save As Start New						
Compatibility: See details below		Estimated Wattage: 409W						
Component	Selection	Base	Promo	Shipping	Tax	Availability	Price	Where
CPU	 AMD Ryzen 7 9800X3D 4.7 GHz 8-Core Processor <small>From parametric selection</small> • AMD Ryzen 7 9800X3D 4.7 GHz 8-Core Processor	€489.00	—	FREE	—	In stock	€469.00	AZERTY
CPU Cooler	 Thermalright Peerless Assassin 120 SE 66.17 CFM CPU Cooler	€45.90	—		—	In stock	€45.90	amazon.nl
Motherboard	 MSI MAG B850 TOMAHAWK MAX WIFI ATX AM5 Motherboard	€253.99	—		—	In stock	€253.99	amazon.nl
Memory	 Crucial Pro Overclocking 32 GB (2 x 16 GB) DDR5-6000 CL36 Memory + Add Additional Memory	€406.99	—		—	In stock	€406.99	amazon.nl
Storage	 Samsung 990 Pro 2 TB M.2-2280 PCIe 4.0 X4 NVME Solid State Drive + Add Additional Storage	€219.00	—		—	In stock	€219.00	amazon.nl
Video Card	 MSI GeForce RTX 3060 Ventus 2X 12G GeForce RTX 3060 12GB 12 GB Video Card + Add Another Video Card	€565.50	—	—	—	In stock	€565.50	amazon.nl
Case	 Phanteks XT PRO ATX Mid Tower Case	€43.10	—	—	—	In stock	€43.10	amazon.nl
Power Supply	 MSI MAG A750GL PCIe5 750 W 80+ Gold Certified Fully Modular ATX Power Supply	€119.03	—	—	—	In stock	€119.03	amazon.nl
Operating System	 Microsoft Windows 11 Pro OEM - DVD 64-bit	€157.76	—	FREE	—	In stock	€157.76	amazon.nl
Monitor		—	—	—	—	No Prices Available	—	

This build a gaming setup for running high-end applications. The CPU is known as the “King of Gaming” which is known as the fastest CPU so far available in the market. It comes with a 27-inch monitor that is sharper than 1080p but easier to run than 4K.

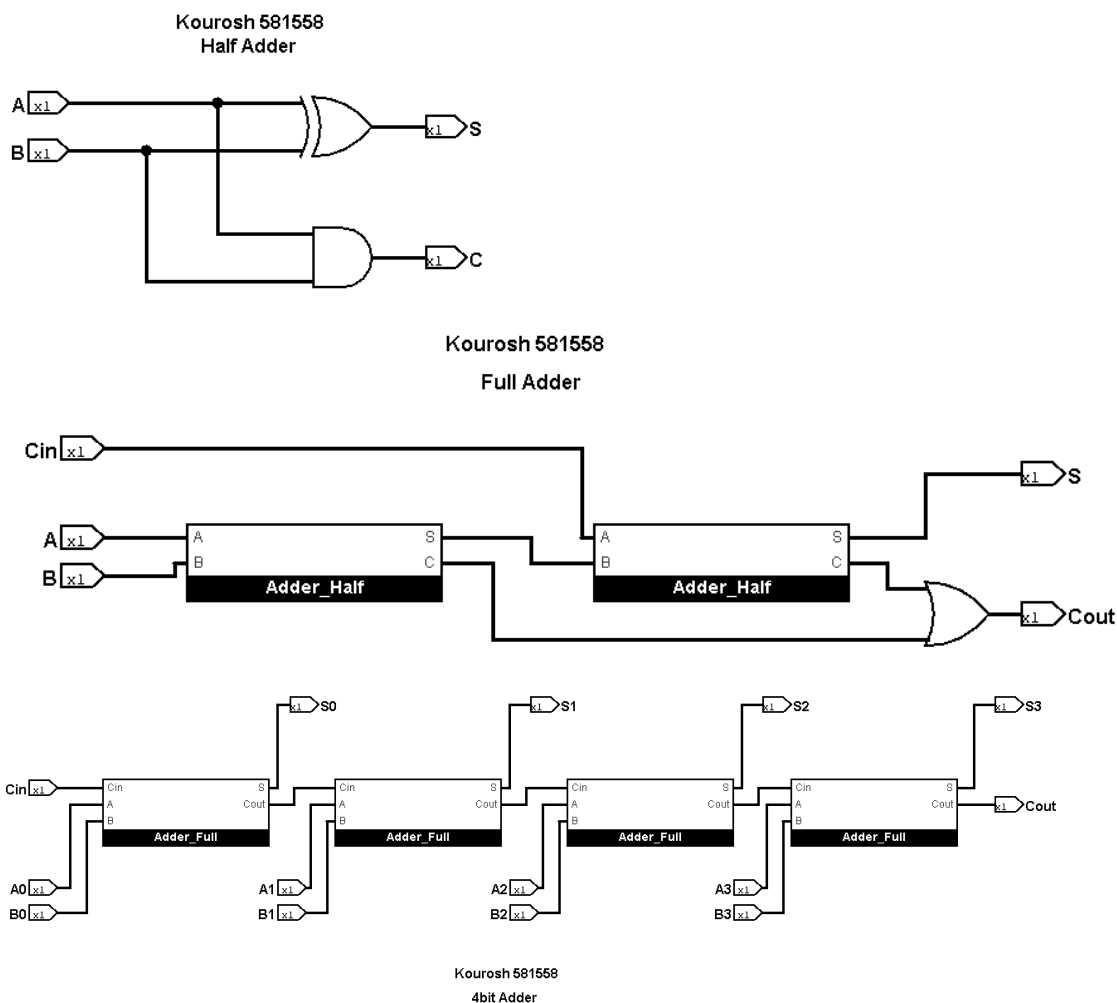
The dream PC processor is a desktop chip that draws 120+ watts of power, however the elitebook processor is a mobile chip for 15-28 watts power and being under pressure for 10 minutes it will get hot and slow down.

The other significant comparison is graphic performance. The dream PC graphic processor is a dedicated card with its own brain and VRAM. It can render the most complex 3D animation easily. On the other hand, laptop graphic hardware is integrated which means it borrows memory and brain from RAM, therefore it is excellent for office work, coding or watch 4k videos but not sufficient for rendering heavy animations.

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.



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