

Template Week 3 – Hardware

Student number: 581429

Assignment 3.1: Examine your phone

What processor is in your phone?

Snapdragon 8 Gen 3

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?

12 GB

How much storage does your phone have?

256 GB

What operating system is running on your phone?

Android 16, One UI 8.0

Approximately how many applications do you have installed?

256

Which application do you use the most?

Internet

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

Assignment 3.2: Examine your laptop

What processor is in your laptop?

Intel Core i9-13500H

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

X86-64 ISA

How much RAM is in it?

13,8 GB

How much storage does your laptop have?

200GB

Which operating system is running on your laptop?

Windows 11

Approximately how many applications do you have installed?

82

Which application do you use the most?

Microsoft Edge

Can your laptop be charged with what type of plug?

USB Type C, DCIN

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

USB Type C, DCIN, HDMI, Audio jack, SD Card slot

Assignment 3.3: Power to the laptop

What is the input voltage?

100-240V

What is the output voltage?

20.0V

How many watts can your power adapter deliver?

120W

Is the input voltage AC or DC?

AC

Is the output voltage AC or DC?

DC

AC/DC what is that?

AC (Alternating Current) is electricity where the flow of charge changes direction periodically, like the power from wall outlets.

DC (Direct Current) is electricity where the flow of charge moves in one constant direction, like the power from batteries.

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












Yes, the internal power circuitry can be damaged instantly because components like capacitors, regulators, and protection circuits aren't built to handle reversed polarity.

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 happen; laptop will draw 15 watts normally. As stated, the loaned adapter can deliver 50 watts, which means that its maximum output is 50 watts, and if something requires lower than that (as in case with the laptop which needs only 15 watts), then it will receive the amount it needs without any problems, as voltage and polarity still match.

Assignment 3.4: Build your dream PC

Screenshots PC configuration + motivation:

| Component | Selection | Base | Promo | Shipping | Tax | Availability | Price | Where | |
|------------------|--|---------|-------|----------|-----|--------------|---------------------|-----------|-------|
| CPU |  AMD Ryzen 7 9800X3D 4.7 GHz 8-Core Processor | €439.00 | — | FREE | — | In stock | €439.00 | ALTERNATE | Buy X |
| CPU Cooler |  Noctua NH-D15 chromax.black 82.52 CFM CPU Cooler | €118.49 | — | Prime | — | In stock | €118.49 | amazon.nl | Buy X |
| Motherboard |  Asus ROG STRIX X870-A GAMING WIFI ATX AM5 Motherboard | €319.00 | — | FREE | — | In stock | €319.00 | bol. | Buy X |
| Memory |  TEAMGROUP T-Create Expert 32 GB (2 x 16 GB) DDR5-6000 CL30 Memory | €299.00 | — | FREE | — | | €299.00 | MEGEKHO | Buy X |
| Memory |  TEAMGROUP T-Create Expert 32 GB (2 x 16 GB) DDR5-6000 CL30 Memory | €299.00 | — | FREE | — | | €299.00 | MEGEKHO | Buy X |
| | + Add Additional Memory | | | | | | | | |
| Storage |  Western Digital WD_Black SN850X 2 TB M.2-2280 PCIe 4.0 X4 NVME Solid State Drive | €162.90 | — | Prime | — | In stock | €162.90 | amazon.nl | Buy X |
| Storage |  Western Digital WD_Black SN850X 2 TB M.2-2280 PCIe 4.0 X4 NVME Solid State Drive | €162.90 | — | Prime | — | In stock | €162.90 | amazon.nl | Buy X |
| | + Add Additional Storage | | | | | | | | |
| Video Card | + Choose A Video Card | | | | | | | | |
| Case |  NZXT H9 Elite ATX Mid Tower Case | €159.90 | — | FREE | — | In stock | €159.90 | ALTERNATE | Buy X |
| Power Supply |  be quiet! Straight Power 12 1000 W 80+ Platinum Certified Fully Modular ATX Power Supply | €212.78 | — | — | — | In stock | €212.78 | amazon.nl | Buy X |
| Operating System |  Microsoft Windows 11 Pro Retail - USB 64-bit | €222.95 | — | FREE | — | | €222.95 | MEGEKHO | Buy X |
| Monitor |  Dell S2719DGF 27.0" 2560 x 1440 155 Hz Monitor | — | — | — | — | | No Prices Available | — | Buy X |

This PC build was designed to deliver exceptional gaming performance, long-term reliability, and a premium aesthetic. At its core is the AMD Ryzen 7 9800X3D, chosen for its outstanding gaming capabilities thanks to AMD's 3D V-Cache technology. It offers some of the highest frame-rates available today while keeping power consumption and temperatures low. To support this processor, I selected the Noctua NH-D15 chromax.black, a cooler known for unmatched thermal performance and near-silent operation. Its blacked-out design also fits perfectly with a modern, clean-looking build.

For the motherboard, I went with the ASUS ROG STRIX X870-A Gaming WiFi. This board provides a strong balance of premium features and longevity: PCIe 5.0 support for future GPUs and SSDs, robust VRMs for stability, high-quality audio, and reliable connectivity such as WiFi and Bluetooth. It provides everything needed for a high-end system while leaving room to upgrade later.

The memory configuration consists of 64GB of TEAMGROUP T-Create Expert DDR5-6000 CL30. This RAM hits the ideal performance zone for Ryzen processors, delivering high bandwidth and low latency. Beyond gaming, 64GB ensures smooth multitasking, content creation, and long-term future-proofing. For storage, I chose two 2TB Western Digital Black SN850X NVMe SSDs. These drives offer extremely fast load times and excellent reliability, giving me 4TB of high-speed storage—ideal for large game libraries, applications, and project files. Splitting them allows one drive for the OS and software, and the other for games and heavier workloads.

The system is housed in the NZXT H9 Elite, a visually striking dual-chamber case that provides excellent airflow and cable management. Its panoramic glass design makes it ideal for showcasing components while maintaining functionality. To power everything, I selected the be quiet! Straight Power 12 1000W 80+ Platinum power supply. This unit ensures rock-solid stability, high efficiency, and extremely quiet operation, while the 1000W capacity allows plenty of headroom for future high-end GPUs or upgrades.

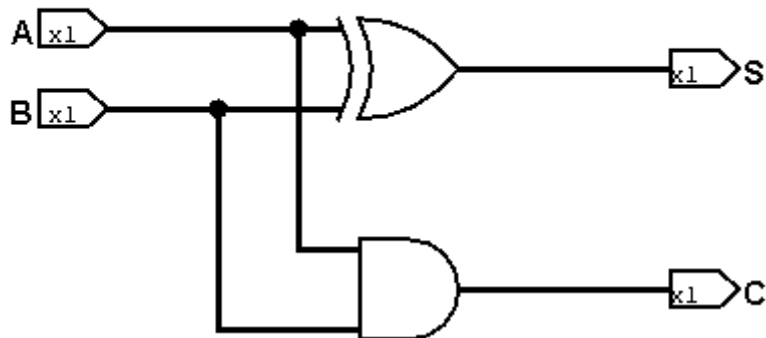
For the operating system, I chose Windows 11 Pro because it offers the best modern gaming performance and includes advanced features like BitLocker and improved virtualization support. Finally, the display of choice is the Dell S2719DGF, a 27-inch 1440p monitor with a 155Hz refresh rate. It offers an excellent balance of sharp resolution and smooth motion, making it ideal for both immersive single-player games and fast, competitive titles.

Assignment 3.5: Adders

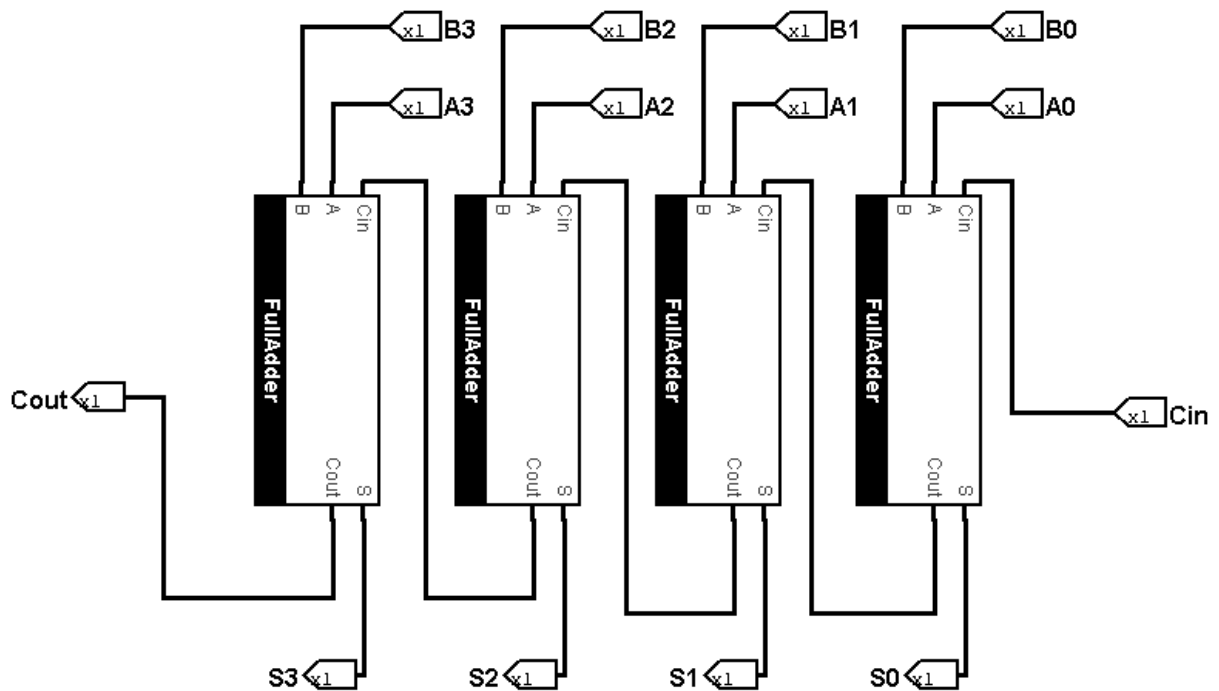
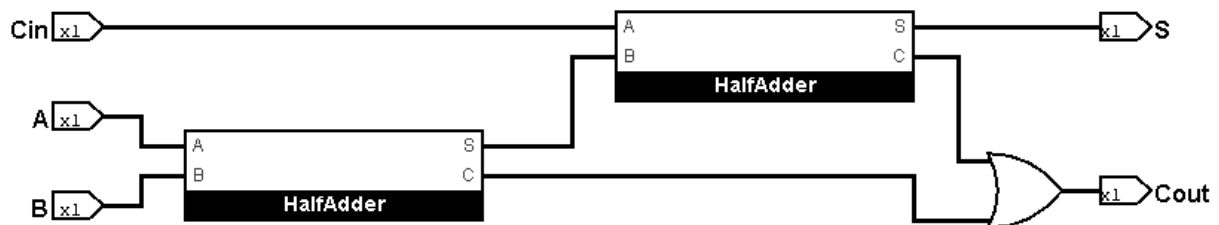
Complete the **half adder**, **full adder** and **4-bit adder** assignment as described in the PowerPoint slides of week 3 in Logisim. Save the chip design and also export three PNG pictures of the separate finished designs. See the PowerPoint slides of week 3.

Paste the three exported PNG pictures in here.

Half Adder Volodymyr581429



Volodymyr581429



Volodymyr581429

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