Template Week 3 – Hardware

Student number: 591658

Assignment 3.1: Examine your phone

What processor is in your phone?

Exynos 1380

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

ARM

How much RAM is in it?

6GB

How much storage does your phone have?

128GB

What operating system is running on your phone?

Android 16

Approximately how many applications do you have installed?

149

Which application do you use the most?

Chrome, Messenger, WhatsApp

With what type of plug can your phone be charged?

USB Type-C plug

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

Only USB type C port

Assignment 3.2: Examine your laptop

What processor is in your laptop?

AMD Ryzen 7 7735HS

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

How much storage does your laptop have?

477GB

Which operating system is running on your laptop?

Microsoft Windows [Version 10.0.26100.7171]

Approximately how many applications do you have installed?

79

Which application do you use the most?

Google Chrome, IntelliJ IDEA Community Edition, Word

With what type of plug can your laptop be charged?

USB-C plug

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

USB-A 5Gbps, USB-A 10Gbps, Ethernet, USB-C with PD and DP, Thunderbolt 4, HDMI, headphone jack (3.5mm)

Assignment 3.3: Power to the laptop

What is the input voltage?

100-240V

What is the output voltage?

5V/9V/15V/20V

How many watts can your power adapter deliver?

15W/65W

Is the input voltage AC or DC?

AC

Is the output voltage AC or DC?

DC (⎓ symbol means DC)

AC/DC what is that?

AC: Alternating Current

DC: Direct Current

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

For laptops that charge with barrel plug, reversing polarity can damage the laptop permanently (motherboard blows a fuse, sensitive components may get destroyed immediately). However, because my laptop charges with USB-C PD, the laptop is unlikely to be damaged.

When USB-C charger is plugged into a USB-C device, the charger doesn't send high power right away. The device and the charge communicate digitally and agree on the power level. Only after agreement is reached, power in high level is sent to the device. This prevent the danger of reversing polarity by design.

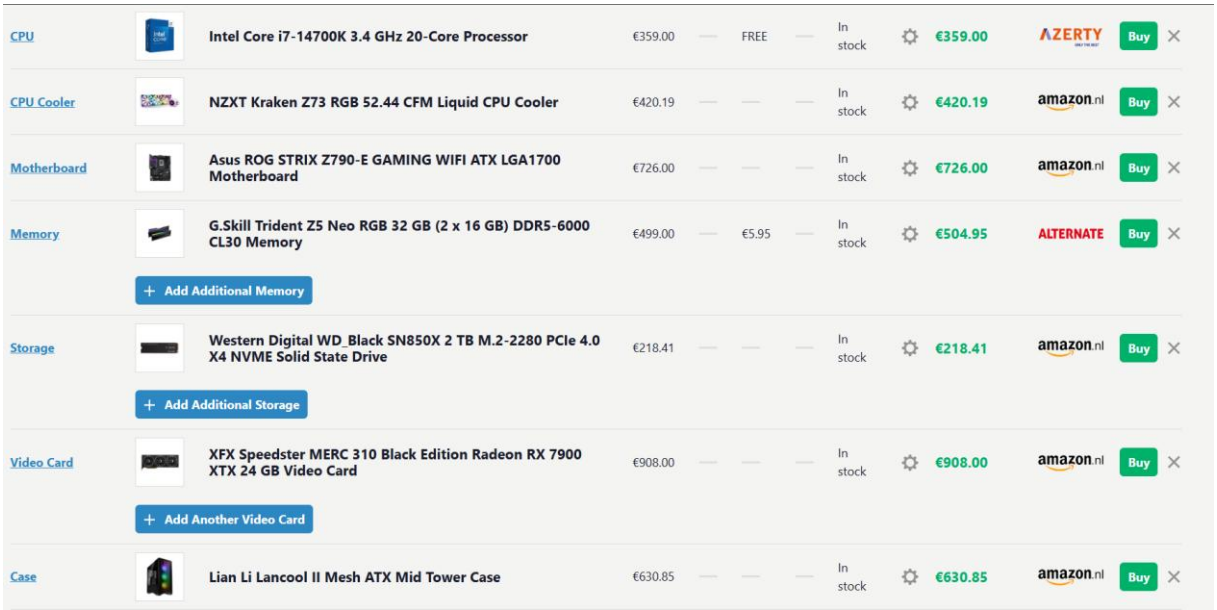
You forgot your power adapter, your laptop normally needs 15 watts. You will be loaned a power adapter that can deliver 50 watts. Voltage, polarity, etc. are all the same compared to the original power adapter. You can connect the borrowed power adapter to your laptop. What will happen? Also explain why you think that.

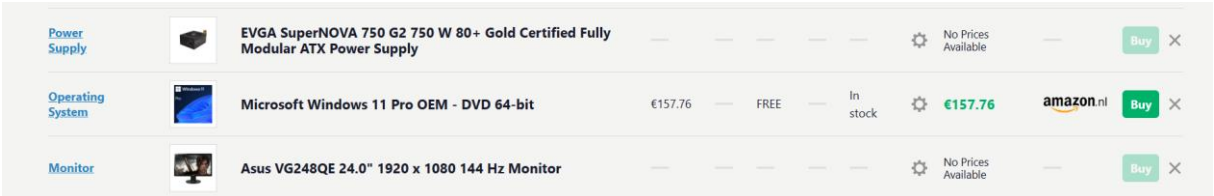
Nothing unusual happens as long as voltage, polarity are the same. My laptop will draw 15watts as it needs. The device's circuits are designed to draw the right current that goes into it at a specified voltage. Internal components should be able to regulate the current as long as the voltage is correct.

Assignment 3.4: Build your dream PC

Screenshots PC configuration + motivation:

I choose top of the line components to get the best performance. Bigger screen for watching movie and play computer game.



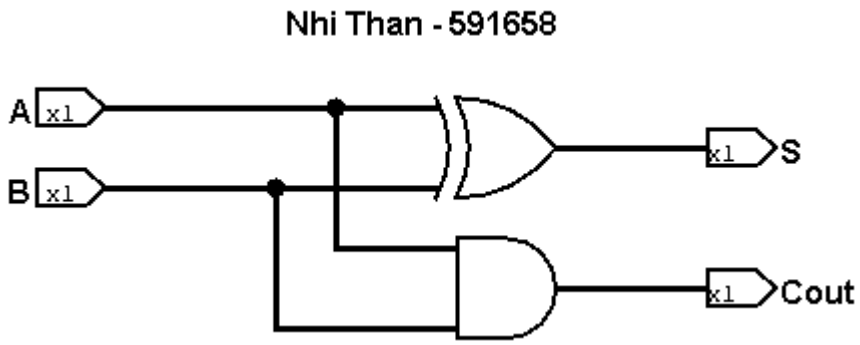


Assignment 3.5: Adders

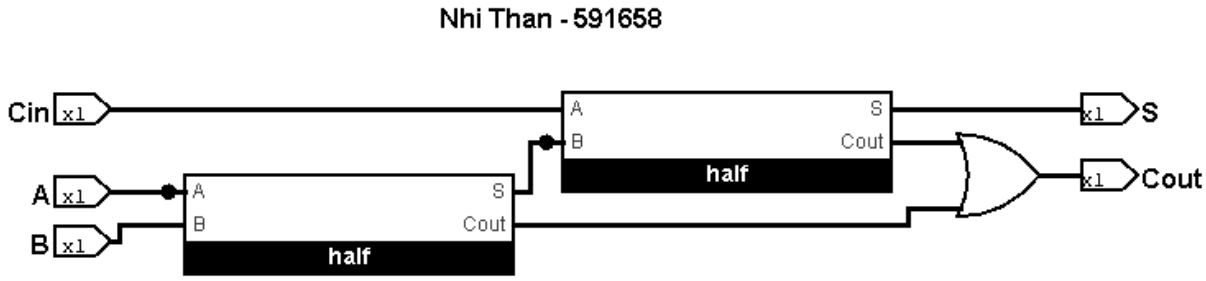
Complete the **half adder**, **full adder** and **4-bit adder** assignment as described in the PowerPoint slides of week 3 in Logisim. Save the chip design and also export three PNG pictures of the separate finished designs. See the PowerPoint slides of week 3.

Paste the three exported PNG pictures in here.

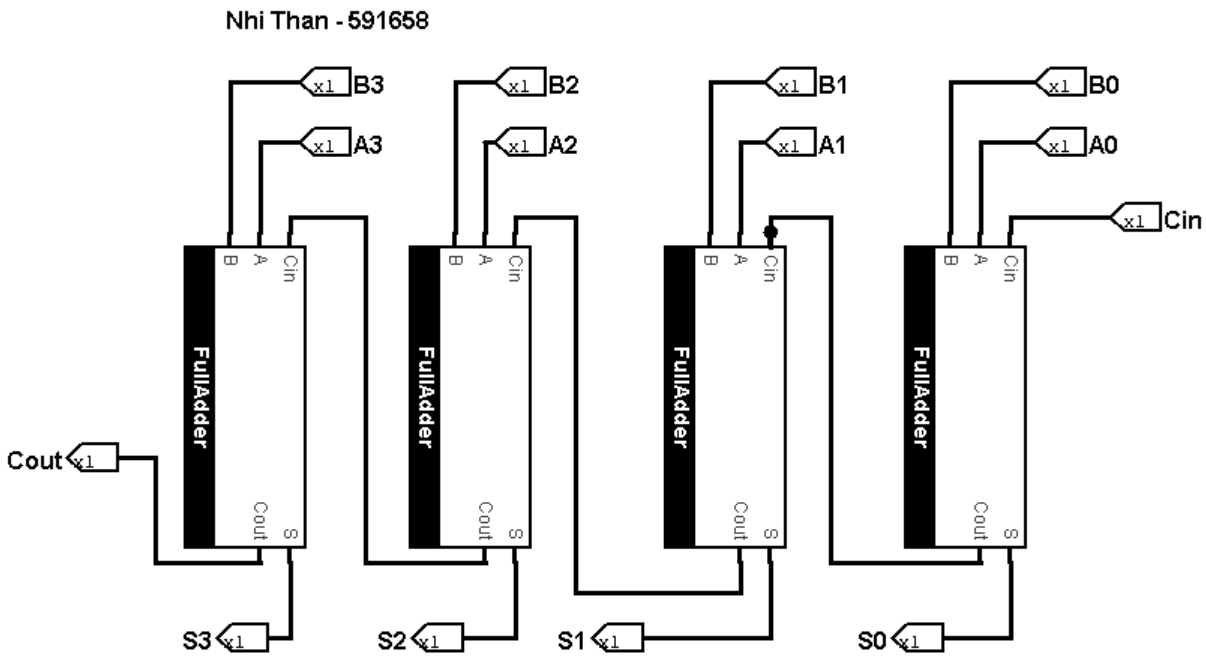
Half-adder



Full-adder



4-bit-adder



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