

# Template Week 3 – Hardware

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## Assignment 3.1: Examine your phone

What processor is in your phone?

Apple A15 bionic system on chip

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

ARM 64

How much RAM is in it?

4GB

How much storage does your phone have?

128GB

What operating system is running on your phone?

iOS

Approximately how many applications do you have installed?

Around 100

Which application do you use the most?

WhatsApp

Can your phone be charged with what type of plug?

Lightning cable/ wireless charge is an option too

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

- Charging connector
- Sim entrance
- Physical buttons on the side
- (touch screen if it counts)

## Assignment 3.2: Examine your laptop

What processor is in your laptop?

Intel Core i5v pro 10<sup>th</sup> generation

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

My laptop uses a x64 bit processor which part of the x86 family and consequently of CISC architecture

How much RAM is in it?

16GB

How much storage does your laptop have?

238 GB

Which operating system is running on your laptop?

Windows 11 education

Approximately how many applications do you have installed?

57

Which application do you use the most?

Browser

Can your laptop be charged with what type of plug?

Type C

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

2 USB Type-A ports

2 USB-C ports

HDMI port

microSD card reader

Ethernet port

headphone/microphone port

A docking connector on the side

### **Assignment 3.3: Power to the laptop**

What is the input voltage?

AC 120 V / 230 V

What is the output voltage?

20V

How many watts can your power adapter deliver?

65W

Is the input voltage AC or DC?

AC (alternating current)

Is the output voltage AC or DC?

DC (direct current)

AC/DC what is that?

Alternating current is when the electricity current can change direction and direct current is when the electricity current flows steadily into one direction (safer for devices)

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

Yes because the components of the laptop are meant to work with specific polarity in order to perform the instructions and if we damage this balance we will consequently damage our laptop

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.

Assuming the adapter is performing his designed function and since the voltage and polarity are also similar the laptop will remain safe and will actually draw what it needs.

### Assignment 3.4: Build your dream PC

Screenshots PC configuration + motivation:

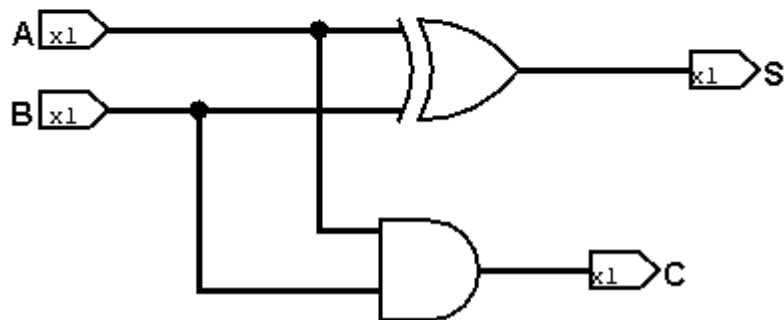
### Assignment 3.5: Adders

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.

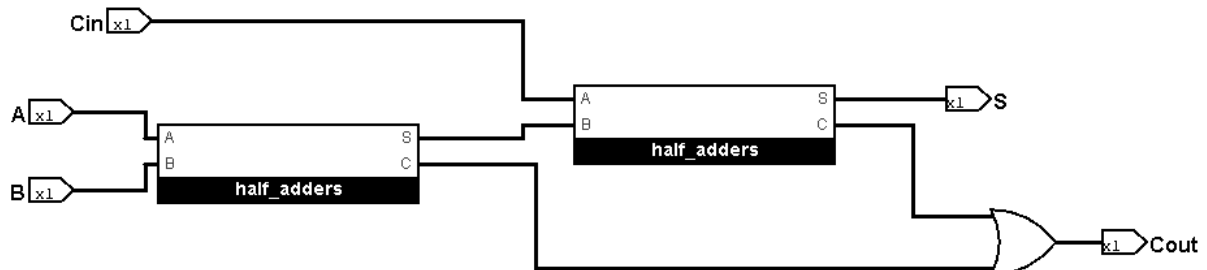
Paste the three exported PNG pictures in here.

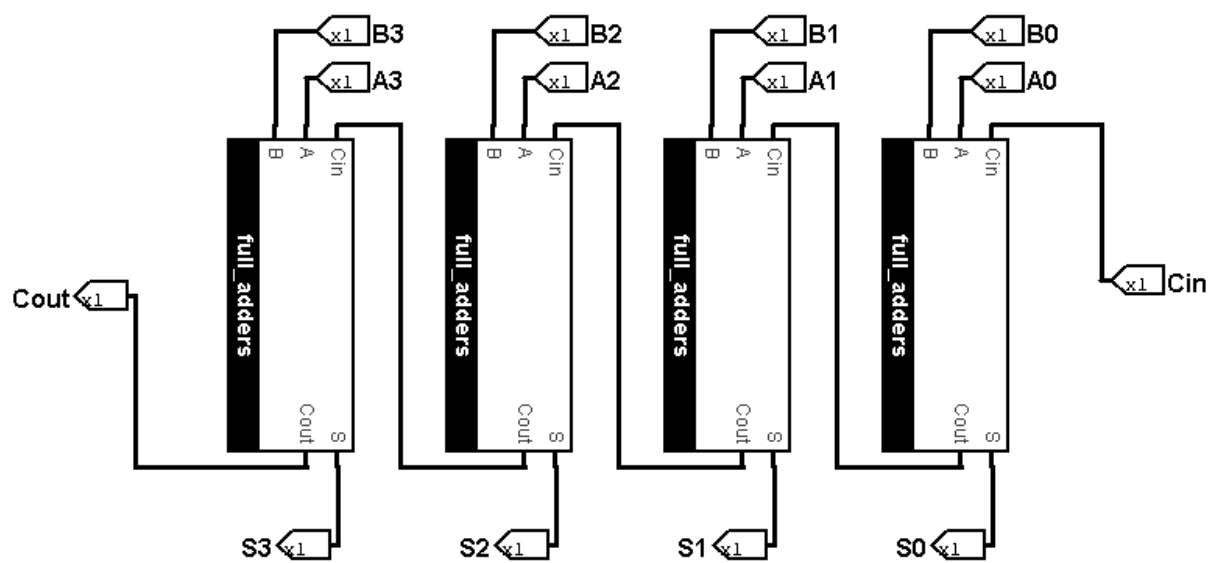
## Half adder

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