Template Week 3 – Hardware

Student number:570350

Assignment 3.1: Examine your phone

What processor is in your phone?

- The Apple A17 Pro processor

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

- The A17 Pro processor uses the ARM architecture, specifically ARMv8 or higher (64-bit)

How much RAM is in it?

- 8 GB

How much storage does your phone have?

- 256 GB

What operating system is running on your phone?

- IOS 18.1.1

Approximately how many applications do you have installed?

- Nearly 60

Which application do you use the most?

- Instagram

Can your phone be charged with what type of plug?

- USB-C

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

- USB-C Port
- Speaker grille
- Microphone openings

Assignment 3.2: Examine your laptop

What processor is in your laptop?

- Intel Core i7- 13650HX

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

- AMD64

How much RAM is in it?

- 24 GB

How much storage does your laptop have?

- 512 GB

Which operating system is running on your laptop?

- Windows 11 Education

Approximately how many applications do you have installed?

- 70

Which application do you use the most?

- Opera GX

Can your laptop be charged with what type of plug?

- DC barrel plug

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

- USB Type-A ports
- USB Type-C ports
- HDMI 2.1
- RJ45 Ethernet port
- 3.5mm headphone/microphone combo jack
- DC charging port

Assignment 3.3: Power to the laptop

What is the input voltage?

- The voltage the power adapter takes in from the wall outlet

What is the output voltage?

- The voltage the power adapter delivers to the device

How many watts can your power adapter deliver?

- 135 W

Is the input voltage AC or DC?

- The input voltage is AC

Is the output voltage AC or DC?

- The output voltage is DC

AC/DC what is that?

AC = Electrical current that periodically reverses direction. It's commonly used in household power supply because it's easier to transmit over long distances.

DC = Electrical current that flows in one direction. It's used in most electronic devices like laptops, phones, and batteries.

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

- Yes, reversing the polarity is very bad for my laptop because reversed polarity can damage internal components like the motherboard or cause the device to malfunction.

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 only draw the power it needs (15W) as long as the voltage and polarity match the requirements. The higher wattage rating of the borrowed adapter simply indicates its maximum capacity. It won't force extra power into the laptop, as power delivery is demand-driven, not supply-driven.

Assignment 3.4: Build your dream PC

Screenshots PC configuration + motivation:

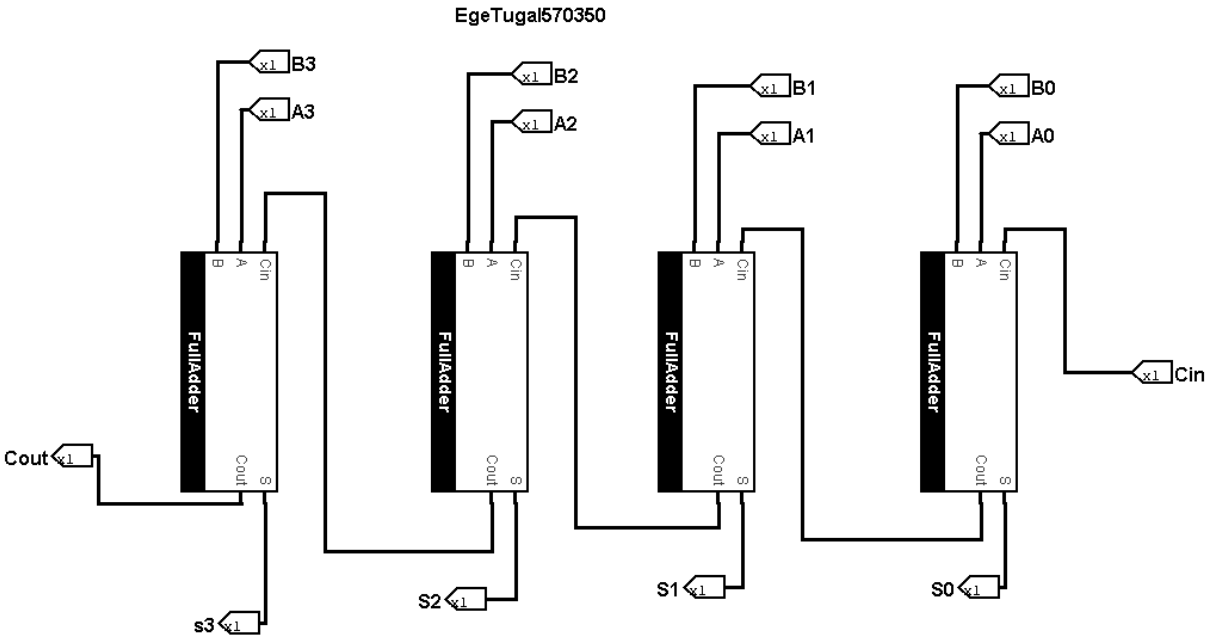
https://nl.pcpartpicker.com/list/V2WfHW

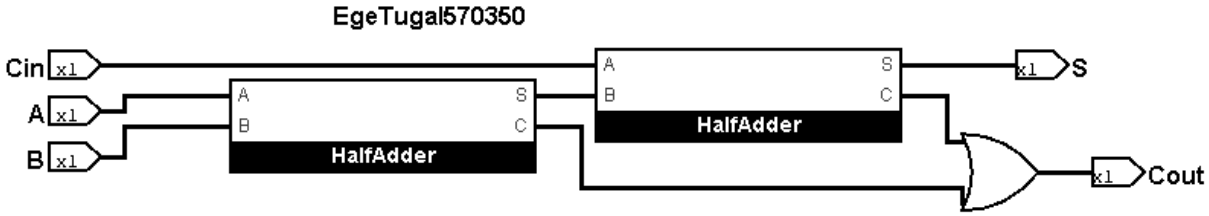
- My dream computer should empower a software engineering student to efficiently learn, code, and build projects, while also being adaptable to future career requirements.

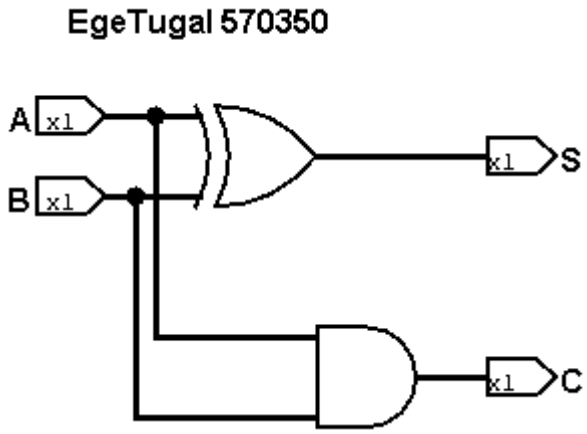
Bonus point assignment – week 3

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**