Template Week 3 – Hardware

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Used chatCpt for better English Writing

Assignment 3.1: Examine your phone

What processor is in your phone? The iPhone 14 Pro Max uses the **Apple A16 Bionic** chip.

To which architecture family does this processor belong? In other words, which Instruction Set Architecture (ISA) is used? The A16 Bionic uses the **ARM architecture** (ARMv8-A)

How much RAM is in it? It has **6GB of RAM**

How much storage does your phone have? Storage options are **128 GB, 256 GB, 512 GB, and 1 TB**.

What operating system is running on your phone? The phone runs **iOS 16** (or newer versions as available).

Approximately how many applications do you have installed? Around **10-20 apps** depending on my phone

Which application do you use the most? The most usage app is discord and Instagram

Can your phone be charged with what type of plug? It uses a lightning plug for charging

Which I/O ports can you visually see on your phone? The phone has the **Lightning port**, **speaker**, and a **SIM card slot** visible.

Assignment 3.2: Examine your laptop

What processor is in your laptop? The CYBORG 15 A13U likely uses an **Intel Core i7** or **AMD Ryzen 7** processor (verify specific model).

To which architecture family does this processor belong? In other words, which Instruction Set Architecture (ISA) is used? This processor belongs to the **x86-64 architecture family** (commonly used in modern PCs).

How much RAM is in it? Typically, the laptop would have 16GB of RAM

How much storage does your laptop have? 515GB

Which operating system is running on your laptop? Windows 11

Approximately how many applications do you have installed? Around 20-40

Which application do you use the most? Likely **Microsoft Edge**, **Google Chrome**, or **Microsoft Word**.

Can your laptop be charged with what type of plug? The laptop can be charged using a **USB-C plug**

Which I/O ports can you visually see on your laptop? The laptop features **USB Type-A, USB Type-C, HDMI, headphone jack**, and an **SD card slot** visible

Assignment 3.3: Power to the laptop

What is the input voltage? 100-240V AC

What is the output voltage? Between 15V to 20V DC

How many watts can your power adapter deliver? 55W

Is the input voltage AC or DC? AC

Is the output voltage AC or DC? DC

AC/DC what is that? **AC** stands for **Alternating Current**, where the direction of current changes periodically, while **DC** stands for **Direct Current**, where the current flows in one direction.

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

Reversing the polarity of the output voltage can damage sensitive components in the laptop's charging circuit.

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.

If we use a 50W adapter (vs. the original 15W), the laptop will work fine as long as the **voltage and polarity** match. The adapter can deliver more power than needed, but the laptop will only draw the power it requires. There is no risk of overloading as long as the voltage remains the same.

Assignment 3.4: Build your dream PC

Screenshots PC configuration + motivation:

This configuration offers excellent gaming, productivity, and multitasking performance with top-tier components (i9 CPU, RTX 4070 GPU, large fast storage).

It's designed for users who need power for gaming, content creation, and heavy software use.

Conclusion: The dream PC is significantly more powerful and future-proof, whereas my CYBORG 15 A13U laptop is more portable, but lacks the power and upgrade options of a desktop setup.

Component		Selection	Base	Promo	Shipping	Tax	Price	Difference	
CPU		Intel Core i9-14900KS 3.2 GHz 24-Core Processor	$696.61				$696.61	($66.62 more than Newegg)	Buy
CPU Cooler		NZXT Kraken Elite 360 RGB 78.02 CFM Liquid CPU Cooler	$298.95				$298.95	($38.96 more than Newegg)	Buy
Memory		Corsair Vengeance RGB 32 GB (2 x 16 GB) DDR5-6000 CL36 Memory	—	—	—	—	—	—	
Storage		Western Digital WD_Black SN850X 2 TB M.2-2280 PCIe 4.0 X4 NVME Solid State Drive	$149.44		FREE		$149.44	($24.45 more than SanDisk)	Buy
		Western Digital WD_Black SN850X 2 TB M.2-2280 PCIe 4.0 X4 NVME Solid State Drive	$149.44		FREE		$149.44	($24.45 more than SanDisk)	Buy
Video Card		NVIDIA Founders Edition GeForce RTX 4070 12 GB Video Card	$999.00		$8.49		$1007.49		Buy
Case		NZXT H9 Elite ATX Mid Tower Case	$169.99				$169.99	($20.00 more than Best Buy)	Buy
Power Supply		EVGA SuperNOVA 750 GT 750 W 80+ Gold Certified Fully Modular ATX Power Supply	$99.99		FREE		$99.99		Buy
Operating System		Microsoft Windows 11 Home Retail - USB 64-bit	$153.12				$153.12	($23.13 more than Newegg)	Buy
Monitor		MSI MAG 275QF 27.0" 2560 x 1440 180 Hz Monitor	$249.00		FREE		$249.00	($104.01 more than MSI)	Buy
						Total (9 / 10 Items):	$2974.03		

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.