For this homework you will write a response and upload your pdf result. Responses can be handwritten or typed but you will need to make sure to run a pdf conversion on either. For hand written submissions, you will get the best result by using black ink on white paper and placing the sheet on a flat surface before using your phone to take a picture. From there you should be able to convert to pdf with an app if it is not built in already. For typed responses using Microsoft Word (all students get this for free via IS) you can simply do a *save as* and then pick pdf. Moodle allows TAs and your instructor to view the pdf rendering without downloading which is an efficient way to grade and provide feedback. Each response should be a paragraph at minimum (3-5 sentences).

[Preface] One aspect that we would like to grow is our understanding of computing hardware. In this assignment, we are very interested about the specifications of different forms of computational devices. A computational device will have the CPU (control processing unit), RAM (Random Access Memory which is volatile), Storage (usually SSD or Flash based that is much larger than RAM and is non-volatile meaning it keeps or stores the data during power off). All of this follows from the computational model we covered in CH1 of your text.

For the CPU we want to know if it is a 64-bit processor (they usually are now), how many cores (usually 4 or more now), and how fast it is (in GHz or billions of cycles per second), for RAM we want to know the capacity (in GB) and the speed (DDR5 is 4800 MHz or 4.8 GHz), for storage we want to know the size in (TB or trillions of bytes). A GPU is a graphics processing unit and there may be other special-use processors such as the Neural Engine. A good way to get some additional information about a chip (processor) is to search for a Wikipedia page on it such as the new A16 chip. The apple page has very limited information but a wiki search will provide the detail that this assignment requires: https://en.wikipedia.org/wiki/Apple_A16

[1 20pts] Research the hardware specifications for your current phone.

⇒ **Model:** iPhone 15 Pro
⇒ **CPU:** Apple A17 Pro
  - o 3nm, 64-bit ARM-based SoC
  - o Core Count: 6 (4 efficiency, 2 performance)
  - o Transistors: 19 billion
  - o Max CPU Clock Rate: Up to 3.78GHz
  - o L2 cache: 16MB (performance cores) / 4MB (efficiency cores)
  - o L4 cache: 24MB (system-level cache)
⇒ **GPU:** Apple-designed 6-core GPU
  - o 16-core neural engine (35 trillion operations per second)
  - o Ray-tracing support
⇒ **RAM:** 8GB (LPDDR5, 3.70GHz)
⇒ **Storage Size:** 128GB

My resource for information: https://en.wikipedia.org/wiki/Apple_A17

[2 20pts] Research the hardware specifications for your next phone (dream phone).

Because I bought my phone last week, I currently have my dream phone. I'd like to respond with my previous phone to this question.

⇒ **Model:** iPhone 12 Pro Max
⇒ **CPU:** Apple A14 Bionic
  o 5nm, 64-bit ARM-based SoC
  o Core Count: 6 (4 efficiency "little", 2 performance "big")
  o Transistors: 11.8 billion
  o Max Clock Rate: Up to 3.1GHz
  o L2 cache: 8MB (performance cores) / 4MB (efficiency cores)
  o L4 cache: 16MB (system cache)
⇒ **GPU:** Apple-designed 4-core GPU
  o 16-core neural engine (11 trillion operations per second)
⇒ **RAM:** 6GB (LPDDR4X, 2750MHz)
⇒ **Storage Size:** 128GB

My resource for information: https://en.wikipedia.org/wiki/Apple_A14

[3 20pts] Research the hardware specifications for your current laptop/desktop.

⇒ **Model:** MacBook Pro 14-inch
⇒ **CPU:** M2 Max
  o 5nm, 64-bit ARM64 architecture
  o Core Count: 12 (8 performance + 4 efficiency)
  o Transistors: 67 billion
  o Max Clock Rate: Up to 3.49GHz
  o L2 cache: 32MB (performance cores) / 4MB (efficiency cores)
⇒ **GPU:** Integrated GPU
  o Core count: 30
  o 16-core neural engine
⇒ **RAM:** 32GB (LPDDR5, 400GB/s bandwidth)
⇒ **Storage Size:** 1TB

My resource for information: https://en.wikipedia.org/wiki/Apple_M2

[4 20pts] Research the hardware specifications for your dream laptop/desktop.

⟹ **Model:** Mac Studio
⟹ **CPU:** M2 Ultra
   - o 5nm, 64-bit ARM64 architecture
   - o Core Count: 24 (16 performance + 8 efficiency)
   - o Transistors: 134 billion
   - o Max Clock Rate: Up to 3.49GHz
   - o L2 cache: 64MB (performance cores) / 8MB (efficiency cores)
⟹ **GPU:** Integrated GPU
   - o Core count: 76
   - o 32-core neural engine
⟹ **RAM:** 192GB Unified Memory (LPDDR5, 800GB/s bandwidth)
⟹ **Storage Size:** 8TB

My resource for information: https://en.wikipedia.org/wiki/Apple_M2

[5 20pts] research another computational device specification (XBOX, PS, Quest, Apple AR, etc)

⟹ **Product:** PlayStation 5
⟹ **CPU:** Custom 8-core AMD Zen 2
   - o 7nm, 64-bit SoC (Also supports 32 and 16-bit operations)
   - o Variable frequency up to 3.5 GHz
   - o 8 cores / 16 threads
⟹ **GPU:** Custom AMD RDNA 2-based graphics engine
   - o 10.28 Teraflops
   - o 36 compute units
   - o Frequency up to 2.23 GHz
   - o Hardware-accelerated ray tracing
⟹ **RAM:** 16GB (GDDR6, 448GB/s bandwidth)
⟹ **Storage Size:** 825GB

My resource for information: https://en.wikipedia.org/wiki/PlayStation_5

https://www.androidauthority.com/ps5-specs-1133031/