Carefully do assigned reading for Chapter 1 (1.1-1.5, 1.7-1.8) (especially important b/c much of this chapter not covered in class).

Then answer the following questions.
→ Exercise 1.1 from the book (see end of chapter). Place your answers below (list and briefly describe).

1. 

2. 

3. 

4. 

(3 pts) Exercise 1-2

• Do exercise 1.2 from the textbook. Follow example below, where some answers are provided for you. Use each term exactly once.

a. 

b. (Hint: think about what these cables are made of)

c. Performance via Prediction

d. 

e. Hierarchy of Memories

f. 

g. 

h. 
(5 pts) Exercise 2-1

- What is the MIPS assembly code for the following:
  \[ g = g + h - i; \]
  Variables g, h, & i are assigned registers $s1$, $s2$, and $s4$

(5 pts) Exercise 2-2

- What is the MIPS assembly code for the following:
  \[ g = h + A[3]; \]
  Variables g, h, & i are assigned registers $s1$, $s2$, and $s4$
  Array A base address is assigned register $s3$
(5 pts) Exercise 2-3

• What is the MIPS assembly code for the following:
  \[ g = h + A[i]; \]
  Variables g, h, & i are assigned registers $s1$, $s2$, and $s4$
  Array A base address is assigned register $s3$
(10 pts) Exercise 2-4: Assume variables a, b, and c are assigned registers $s1, s2, and $s3, and the address of array A is in $s5. Write the code for the following:


(10 pts) Exercise 2-5: Assume variables a, b, and c are assigned registers $s1, s2, and $s3, and the address of array A is in $s5. Write the code for the following:

\[ b = A[2 \times c]; \]
(6 pts) Exercise 2-8

(See number discussion in Section 2.5)
• What binary number does this hexadecimal number represent:
  \[7ffe \text{ ffa}_{\text{hex}}\]?

• What decimal number does it represent?

(10 pts) Exercise 2-9

Show the hexadecimal representation of this MIPS instruction:

\[
\text{add} \; \text{t0} \; , \; \text{t1} \; , \; \text{zero}
\]
(10 pts) Exercise 2-10

What MIPS instruction is represented by this binary entry:
(Tip: start by figuring out what the opcode is, then the instruction type)

1000 1101 0000 1001 0000 0000 0100 0100

(5 pts) Exercise 2-11

• What is the MIPS assembly code for the following:

  if (g != j) h = g - h;
  else h = g + h;

Variables f to j are assigned to registers $s0 to $s4
(5 pts) Exercise 2-12

- What is the MIPS assembly code for the following:
  
  `if (j == h)  g = i + j;`

  Variables f to j are assigned to registers $s0$ to $s4$

(5 pts) Exercise 2-13

- What is the MIPS assembly code for the following:
  
  `if ( (j == h) && (f != i) )  g = i + j;`

  Variables f to j are assigned to registers $s0$ to $s4$
(10 pts) Exercise 2-14

- What is the MIPS assembly code for the following:

```
if ( ( (g != h) && (f == i) ) ||
    (g == i) )
    g = i + j;
```

Variables f to j are assigned to registers $s0 to $s4