(10 pts) 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 $s3$
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
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:


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:
  \(7f\text{ff} \text{ff}a_{\text{hex}}\)?

• What decimal number does it represent?

(10 pts) Exercise 2-9

Show the \textit{hexadecimal} representation of this MIPS instruction:

\[
\text{add } \$t0, \ $t1, \ $zero
\]
(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:
  \[ \text{if} (j == h) \ g = i + j; \]

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

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(5 pts) Exercise 2-13

• What is the MIPS assembly code for the following:
  \[ \text{if} (j == h) \&\& (f != i) \ g = i + j; \]

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

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<td>j</td>
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Exercise 2-14

What is the MIPS assembly code for the following:

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

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