**Max Score = 15 points**

CS 250 2018 Spring Homework 08

This assignment is due at 11:59:00 pm Thursday, March 22, 2018.

Upload your typewritten answer document in either PDF or Word format to Blackboard. Then, download from Blackboard to be sure that your upload was successful.

Your last upload that is not marked “LATE” by Blackboard is the upload that will be graded. There is no “grace” period for late uploads.

1. Text exercise 9.3.

If a program contains an if-then-else statement, how many branch instructions will be performed if the condition is true? If the condition is false?

**If the condition is true there will be one branch that occurs after the then\_part is performed as it will branch to the next statement in order to skip the else\_part. If it is false then it will branch one time in order to skip the then\_part.**

1. Text exercise 9.9.

In Figure 9.12, if an instruction is inserted following label4 that jumps to label2, to what address will it jump? Will the address change if the new instruction is inserted before label1?

**It would jump to address 0x10. Yes the address would change if it was inserted before label1.**

1. Text exercise 10.2.

What are the two key choices an architect makes when designing a memory system?

**The two key choices an architect makes when designing a memory system are memory technology and memory organization.**

1. Text exercise 11.1.

Smart phones and other portable devices typically use DRAM rather than SRAM. Explain why.

**The reason that they typically use DRAM rather than SRAM is because SRAM has a high power consumption which not only generates a lot of heat but drains the small battery that most portable devices have.**

1. Text exercise 11.3.

Assume a computer has a physical memory organized into 64-bit words. Give the word address and offset within the word for each of the following byte addresses: 0, 9, 27, 31, 120, and 256.

**0 can be found in word 0 at offset 0. 00000000 0000**

**9 can be found in word 1 at offset 1. 00000001 0001**

**27 can be found in word 3 at offset 3. 00000011 0011**

**31 can be found in word 3 at offset 7. 00000011 0111**

**120 can be found in word 15 at offset 0. 00001111 0000**

**256 can be found in word 32 at offset 0. 00100000 0000**

1. Text exercise 11.6.

If a computer has 64-bit addresses, and each address corresponds to one byte, how many gigabytes of memory can the computer address?

**It would be able to address 264 unique addresses.**