**Lab 2**

**Lab conditions:**

This lab exercise to be completed by the end of the class. No late submission will be accepted.

Work as group of two students or individually.

Submit a Word document file or a PDF file on D2L at Activities >> Assignments >> Lab2.

Make sure your following naming format as listed below:

Last name, First Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Student ID: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Questions:**

1. Research, discuss Explain the purpose of different personal computer (PC) hardware components. Make sure to address all the aspect of the topic. [Hint: you could just put in a photo of your Activity Sheet here. Make sure you type in anything you want to add on.]

2. What’s lossless compression? What’s lossy compression?

**3. Desktop Computer DIY**. Suppose you decide to build a desktop by yourself and your budget is around $1000 (without OS). Discuss with your team members and list all the parts and tools you have to purchase with price. List the technical Details and explain what your desktop will be used for, such as listen to music, word document, 3D design, software development, watch movie and so on.

4. Download and run CPU-Z. Paste your screenshots (technical details) below.

5. Review PPT for Diagnosis problems, make an example or make your own notes

6. **Challenge Question**

Consider the hypothetical machine:

Instruction Format: 16 bits (bits 0 to 3 for the opcode; 4 to 15 for the address).

Integer format: 2’s complement on 16 bits.

Partial list of opcodes:

0001 Load AC from memory

0010 Store AC to memory

0100 Add AC and R1, result will be in AC

0101 Add to AC from memory address

0111 Load register R1 from memory

0110 Load AC from I/O

1000 Store AC to I/O

1001 Move R1 to AC

Consider that the memory address (7A9)H has the contents 16 in decimal represented in 2’s complement; memory address (7AA)H has contents (-11) in decimal represented in 2’s and the program starts at address (B2F)H. The address is word addressable (1 word = 16 bits).

Consider the following program:

Load R1 from memory address 7A9H

Move R1 to AC

Load R1 from memory address 7AAH

Add AC and R1

Store AC to address 7ABH