CSCI 2510 Computer Organization 2018-19
Assignment 1
Deadline: October 2, 2018 (TUE) 14:30pm (before the Tutorial session)

Submission Notes:

(1) For each of the following written exercises (*for Question 1-3*), please show your steps, and explain in detail when needed to receive full credit.

(2) Submit two files named **CSCI2510_Assignment1.pdf** (*for Question 1-3*) and **info.asm** (*for Programming Exercise*) to Blackboard Assignment Collection Box before the deadline.

(3) Late submission per day is subject to **10%** of penalty.

Question 1 (20 pts)

(a) What is the difference between cache/primary memory/secondary storage (e.g. usage/storage characteristics differences)?

(b) Describe the relationship among high-level programming language (e.g. C/C++), assembly language, and machine language (machine code).

Question 2 (25 pts)

Consider a 32-bit word **BE4F3F64h**:

(a) What is it if interpreted as a string of characters (according to the ASCII table below)?

(b) What is its value in decimal if interpreted as an unsigned integer?

(c) What is its value in decimal if interpreted as a signed integer using 2's-complement?

(d) What is its value in decimal if interpreted as a signed integer using 1's-complement?

(e) What is its value in decimal if interpreted as a signed integer using sign-and-magnitude?

Question 3 (25 pts)

Consider a computer system of word size 32 bits and has a main memory system of 8GB.

(a) How many bits, bytes, and words are there in the memory system?

(b) If the system is byte addressable, what is the minimum number of required bits for memory addresses?

(c) Suppose a hexadecimal number "**3B12AA27h**" is stored at location 100. Please show the contents of the memory locations at 100, 101, 102, and 103 when 1) little-endian system and 2) big-endian system are adopted, respectively.

Programming Exercise (30 pts)

Write a complete MASM IA-32 assembly program named **info.asm** to print your name, student ID, college, and major to screen (Hint: Please see reference in Tutorial 2).