A1 (20 marks)

***Focus**: basic terminology, binary system*

Q1. (*Adapted from Exercise 1.1 in the 4th edition of the textbook*):
Find the word or phrase from the list below that best matches the description in the following questions. Use the numbers to the left of words in the answer. Each answer should be used only once.
(0.5 mark each)

high-level language	operating system	desktop computers	supercomputers	embedded computers
servers	bit	terabyte	petabyte	multicore processors
assembly language	machine language	instruction	assembler	compiler
CPU				

(1) Computer used to run large problems and usually accessed via a network: _____

(2) 2^{40} bytes: _____

(3) 2^{50} bytes: _____

(4) A class of computers composed of hundred to thousand processors and terabytes of memory and having the highest performance and cost: _____

(5) Central processor unit: _____

(6) Microprocessors containing several processors in the same chip: _____

(7) A computer used to running one predetermined application or collection of software: _____

(8) Personal computer delivering good performance to single users at low cost: _____

(9) Program that translates statements in high-level language to assembly language: _____

(10) Program that translates symbolic instructions to binary instructions: _____

(11) Binary language that the processor can understand: _____

(12) Commands that the processors understand: _____

(13) Symbolic representation of machine instructions: _____

(14) Interface between user's program and hardware providing a variety of services and supervision functions: _____

(15) Binary digit (value 0 or 1): _____

(16) Portable language composed of words and algebraic expressions that must be translated into assembly language before run in a computer: _____

Q2. Covert the following numbers to the destination system. Use 16-bit two's complement representation to read/write binary and hexadecimal numbers. **Marks will not be awarded unless you show the steps you followed to reach the answer**; few, simple steps will do! (1.5 mark each)

(1) 4096_{ten} → (?)$_{hex}$

(2) -2046_{ten} → (?)$_{hex}$

(3) 4096_{hex} → (?)$_{ten}$

(4) 1110111000010001_{two} → (?)$_{ten}$

(5) $101010011110\ 0101_{two}$ → (?)$_{hex}$

(6) 0x9105 → (?)$_{ten}$

(7) 0xD1A3 → (?)$_{two}$

(8) 0xA1F3 → (?)$_{hex}$

Submission Instructions

This is a written assignment. Solve it on paper, scan it, and then submit it to Canvas before the deadline (check the syllabus for the deadline). Type your answers or write clearly in legible handwriting. Answers that are impossible to read will be deducted marks. You can also solve it on the computer, but this will take much more time thank hand-writing it.

Questions are based on / taken from the exercises and examples listed in the textbook used by the course.