CSE222 Computer Architecture

Homework Set 1

(**Review**)

1. Von Neumann Architecture; Components in a computer system; Stored program; Fetch-execute cycle;
2. Number systems
   A. decimal, binary, hexadecimal;
   B. hexadecimal digits (0-9, A, B, C, D, E, F) and their binary representations
   C. conversion numbers among different number systems

(**Exercise**)

1. Give a brief description about the following concepts:
   (a) Von Neumann architecture
   (b) Stored program
   (c) Fetch-execute cycle
2. Convert numbers:
   (1) Convert binary numbers to decimals **AND** hexadecimals
      (a) 1101 0110
      (b) 1010 1010
      (c) 1100 1011 1011 1001
      (d) 0101 0100 1100 0110
   (2) Convert decimal numbers to binaries **AND** hexadecimals
      (a) 2020
      (b) 789
      (c) 123
      (d) 999
   (3) Convert hexadecimal numbers to binaries **AND** decimals
      (a) CBA
      (b) 2020
      (c) 999
      (d) 321
3. Convert the following decimal numbers to numbers in other number systems:
   (1) 2020
   (2) 1919
      (a) Octal number system (Base 8 number system)
      (b) Base 3 number system
      (c) Base 7 number system
      (d) Base 13 number system
4. Specify the range of a 5-digit number in the following number systems, and how many numbers can be represented in these number systems:

(a) Binary
(b) Decimal
(c) Hexadecimal
(d) Octal decimal
(e) Base 7 number system
(f) Base 3 number system