420-PRO-LCU Programming in Python - Lab1

January 30, 2022

Goals for this Exercise:

- Practice with hexadecimal and binary numbers.
- Note that all of the numbers are natural numbers (positive integers).
- Show your work

Submission You can either print the sheet and write by hand, scan and submit or annotate directly on PDF and submit. Show your work.

Part 1 - binary and hexadecimal

1. Convert the following decimal numbers to binary:

   (a) 10
   (b) 25
   (c) 42
   (d) 66
   (e) 105
   (f) 201

2. Convert the following binary numbers to decimal:

   (a) 1110
   (b) 1011
   (c) 10011
   (d) 10101010
   (e) 11111000
   (f) 1111
   (g) 111111
   (h) 1111111
   (i) 11111111
   (j) Any remarks about the values of f, g, h and i?

3. Convert the following decimal numbers to hexadecimal:

   (a) 16
   (b) 64
   (c) 101
   (d) 106
   (e) 255
   (f) 256

4. Convert the following hexadecimal numbers to decimal:

   (a) 16
   (b) 64
   (c) ABC
   (d) 3E4
   (e) 4D6
   (f) FF1

5. Convert the following binary numbers to hexadecimal:

   (a) 1010
   (b) 1101
   (c) 10011001
   (d) 11000111
   (e) 11110
   (f) 1111
   (g) 1010101
   (h) 1101100111
   (i) 10101010101000

6. Compute the results of the following addition operations. Write the result in the same base as the original numbers.

   (a) 1001 + 0101 (binary)
   (b) 10000000 + 11000000 (binary)
   (c) 1F0 + E1A (hexadecimal)
   (d) A2 + 1F (hexadecimal)