

# Assignment 3 – Non-programming

---

Here are the non-programming questions for assignment 3. Feel free to edit this document, inserting your answers into the Word file. Alternatively, use any other method for which you can submit a Word document or a pdf file (hand-written and scanned is perfectly acceptable). Show how you got to your answer, not just the answer. E.g., for question 3, what is the general form of the equation? Then insert the specific values for the question that was asked.

## Question 1

Convert each binary number below into its decimal equivalent:

(a)  $00001010_2$

(b)  $01000011_2$

(c)  $00110001_2$

## Question 2

Convert each 8-bit two's complement number below into its signed decimal equivalent:

(a) 01010101

(b) 11111111

(c) 11001100

## Question 3

What is the range of valid numbers that can be represented in an 8-bit two's complement representation?

## Question 4

What is the 8-bit two's complement representation of  $-16_{10}$  in binary?

## Question 5

Perform the following additions in 8-bit two's complement binary. Show the same addition in decimal (i.e., convert each value to decimal and repeat the addition).

(a)  $01010101 + 00011011$

(b)  $11110000 + 00001111$