Exercise 1.

Two possible binary representations of $(-1)_{10}$ are (10000001) and (11111111). One of them belongs to the sign-bit magnitude format and the other to the 2's complement format. Identify.

Exercise 2.

1. *Determine the 8-bit or 16-bit; SM, 1C and 2C of the following numbers.*

$$+17, -65, \ -47_8, -23F_{16}, \ -9E_{16} \ -128.$$

2. *Convert the following numbers to decimal representation.*
   $00001001_{SM}, \ 10000111_{SM}, \ 00101000_{1C}, \ 11001001_{1C}, \ 10000000_{2C}, \ 00101000_{2C},$
   $11111000_{2C}, \ 10000000_{2C}.$

Exercise 3.

Perform the following addition operations ; using 1's complement format, then 2's complement format in 8-bit representation. Indicate the reason for any errors.

$$+72 - 39, \ -127 - 1, \ -17 + 17, \ -127 - 4.$$

Exercise 4.

Let X be an unsigned n-bit integer. Prove that $2^n - X$ represents the 2C of $-X$.

Exercise 5.   1. *Represent -118.625 in the $IEEE$ 754 single-precision format,*

2. *Decode the number $F0CCAA_{16}$, written in the $IEEE$ 754 single-precision format*