

Exercise 5

Suppose that **A = 45** and **B = -13**, **C = 0** and **D** is a given number.

Notice: The placeholder for A, B, C and D is one byte (8 bits).

D is **unknown** and can be any number between **0** and **255**.

| D7 | D6 | D5 | D4 | D3 | D2 | D1 | D0 |

1. Convert A, B and C to **binary** and **hexadecimal**
2. Calculate A + B, A - B, C - A and B - A.
3. Perform the following operations.
 - a. A | B
 - b. A & B
 - c. A ^ B
 - d. A << 3
 - e. B >> 2
 - f. C >> 5
 - g. (A << 3) >> 3
 - h. (~A & B) ^ (~C | A)
4. Using bitwise operators and masks
 - a. Set the first and last bits of A
 - b. Toggle (Flip) the third bit of B
 - c. Read the value of 3rd and 4th bits of D (D2 and D3)
 - d. Change the 3rd and 4th bits of D to 10 (D3 to 1 and D2 to 0)