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Assignment - 2 FOC 192210640

1's complement

→ The 1's complement is a mathematical operation that involves reversing all the bits in a binary number.

→ It is used as a method to represent negative numbers in a system called signed magnitude notation.

→ The 1's complement of a binary number is obtained by flipping all the 0s to 1s and all the 1s to 0s

example:

1 1 0 1

1s complement : 0 0 1 0

→ The 1's is changed to 0 and zero is changed to 1's.

2's complement

→ It is the most commonly used method in digital computing for handling negative numbers and simplifying arithmetic operations.

→ In the 2's complement representation, the most significant bit (MSB), which is the leftmost bit, serves as the sign bit, with 0 representing a positive number and 1 representing a negative num.

For example: 1 1 0 1 0 1 0 1

Step 1:
Change it to 1's complement: 0 0 1 0 1 0 1 0

+ 1

Step 2: 0 0 1 0 1 0 1 1 → 2's complement
Add 1

→ The 2's complement representation ensures that there is a unique representation for 0, unlike one's complement.