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To find the 8-bit two's complement representation of -42, follow these steps:

1. Write the binary representation of the positive number 42 in 8 bits:

42 in binary is 00101010.

2. Invert all the bits (flip 0 to 1 and 1 to 0):

Inverted bits of 00101010 is 11010101.

3. Add 1 to the inverted bits:

11010101 + 1 = 11010110.

Thus, the 8-bit two's complement representation of -42 is 11010110.

For Verification:

To verify if the 8-bit two's complement binary number 11010110 represents -42 in decimal:

Since the leftmost bit is 1, it indicates a negative number in two's complement.

To find its decimal value, take the two's complement of 11010110:

Invert the bits: 00101001

Add 1: 00101010

00101010 in binary is 42 in decimal.

Therefore, 11010110 in two's complement represents -42 in decimal.

Hence, the binary number 11010110 correctly represents -42 in 8-bit two's complement form.

In [1]: