ACM Recruitment - Quetline-5

2's complement

Q Find the 8-bit, 2's complement representation of -42.

$$
\begin{array}{r|l}
2 & 42 \\
2 & 21 \quad 0 \\
2 & 10 \quad 1 \\
2 & 5 \quad 0 \\
2 & 2 \quad 1 \\
 & 1 \quad 0
\end{array}
\Rightarrow 101010
$$

* Converting them to 8 bits.

0 0 1 0 1 0 1 0

* Swapping them $\Rightarrow$ 1 1 0 1 0 1 0 1

* Adding 1 to it to get 2's complement.

$$
\begin{array}{r}
1\ 1\ 0\ 1\ 0\ 1\ \overset{0}{\overset{\oplus}{0}}\ 1 \\
\qquad\qquad\qquad\qquad\quad 1\ (+) \\
\hline
1\ 1\ 0\ 1\ 0\ 1\ 1\ 0
\end{array}
$$

∴ The 8-bit, 2's complement of -42 is 11010110