

Problem A 5-bit binary string “10110” is to be transmitted using Hamming code. I have shown below where the data bits are to be placed. Compute the values of the check bits, which go into the unfilled positions below.

bit index	9	8	7	6	5	4	3	2	1
bit value	1		0	1	1		0		

Solution Positions where the data bits are 1:

$$\begin{array}{r}
 1\ 0\ 0\ 1 \quad (=9) \\
 \oplus \\
 0\ 1\ 1\ 0 \quad (=6) \\
 \oplus \\
 0\ 1\ 0\ 1 \quad (=5) \\
 = 1\ 0\ 1\ 0 \quad \square
 \end{array}$$

Hence the check bits are “1010” and they are placed in the positions marked with * in sequence.

bit index	9	8	7	6	5	4	3	2	1
bit value	1	1	0	1	1	0	0	1	0
		*				*		*	*