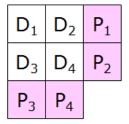Courseware   Course Info   Course Outline   Grading Scheme   Instructors   Resources   Discussion   Progress

11.2 QUIZ QUESTION 1 (1/1 point)

Consider the **(8, 4, 3)** parity bit block code introduced in the lecture where 4 data bits **[D1 D2 D3 D4]** are appended with 4 parity bits **[P1 P2 P3 P4]** to form a codeword. The parity bits are computed by ensuring that each row and column in the figure below has even parity.

D_1	D_2	P_1
D_3	D_4	P_2
P_3	P_4	

If we want to transmit the data bits **[1 0 0 1]**, what is the resulting codeword?

Please key in the numerical value of your answer, without brackets, in the box provided below. Input the bit sequence in series of 1's and 0's with no spaces between. (e.g. 0101...)

> 10011111

> 10011111

Answer: 10011111

EXPLANATION

The received codeword is given as below according to the table given in the question.

```
1  0  1
0  1  1
1  1
```

The resulting codeword **[D1 D2 D3 D4 P1 P2 P3 P4] = 10011111**

Check   Save   Hide Answer   *You have used 1 of 3 submissions*

11.2 QUIZ QUESTION 2 (1/1 point)

Suppose that we were using the **(8, 4, 3)** block code described above and we received the following bit sequence:

00101100. Assuming that there was at most one bit error in the received codeword, what was the originally transmitted eight bit codeword?

Please key in the numerical value of your answer in the box provided below. Input the eight bit sequence as a series of 1's and 0's with no spaces between. (e.g. 0101...)
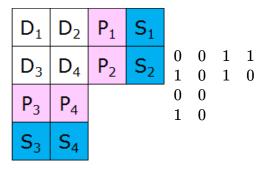
Help

10101100

10101100

Answer: 10101100

EXPLANATION

We compute the syndrome bits as follows:

D_1	D_2	P_1	S_1
D_3	D_4	P_2	S_2
P_3	P_4		
S_3	S_4		

$$\begin{array}{cccc} 0 & 0 & 1 & 1 \\ 1 & 0 & 1 & 0 \\ 0 & 0 & & \\ 1 & 0 & & \end{array}$$

Since **S1=1** and **S3=1**, there is an error in bit **D1**. The originally transmitted codeword was 10101100.

Final Check   Save   Hide Answer   *You have used 2 of 3 submissions*

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