ECS 452: In-Class Exercise # 12.2

Instructions

- 1. Separate into groups of no more than three persons. The group cannot be the same as any of your former groups after the midterm.
- Write down all the steps that you have done to obtain your answers. You may not get full credit even when your answer is correct without showing how you get your answer.
- 3. Do not panic.

Consider a block code whose generator matrix is

	(1)	0	0	1	0	1)
G =	0	1	0	0	1	1
G =	0	0	1	1	1	0)

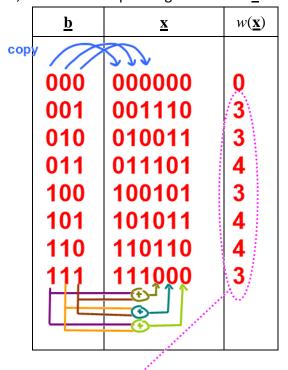
1. Find the code length *n*

The #columns of G is 6

2. Find the length *k* of each message block

The #rows of G is 3

In the table below, list all possible data (message) vectors <u>b</u> in the leftmost column (one in each row).
 Then, find the corresponding codewords <u>x</u> and their weights in the second and third columns, respectively.



4. Find the minimum distance d_{\min} for this code.

 Date:
 30 / 03 / 2018

 Name
 ID (last 3 digits)

 Prapun
 5
 5

 0
 0

$$\frac{2}{2} = \frac{1}{2} \frac{1}{6} = \frac{1}{2} \frac{1}{6} \frac{1}{6} \frac{1}{2} \frac{1}{6} \frac{1}{3} \frac{1}{6} \frac{1}{6} \frac{1}{6} \frac{1}{3} \frac{1}{6} \frac{1}{6}$$

The 5th column of 6 is $[0 \ 1 \ 1]^T$. Therefore, the 5th element of \underline{x} is the sum of the 2nd and 5rd elements of \underline{b} . The 6th column of G is $[1 \ 1 \ 0]^T$. Therefore, the 6th element of \underline{x} is the sum of the 1st and 2nd elements of \underline{b} .