CS52'(; HW#5.
Tenghuan Li; 933638707;
Viten @ oregon state edu.
a. Because we need to find the maximum
1. Because we need to find the maximum number of non-systematic code nods
h=2 ; $m=8$; $D=4$
SD , $[c] = \begin{bmatrix} m & 7 & N \\ D & T \end{bmatrix}$
<u> </u>
$= \begin{bmatrix} 8 \\ 7 \end{bmatrix} = 4 \qquad \forall = 1.$
So. C= { (00), (04), (40), (44) }
· · · · · · · · · · · · · · · · · · ·
b. Because this question, ne know that
K=4; L=3; M=8 we want to
find the number of check digite required to correct all limited magnitude.
to correct all limited magnitude.
(
SO. 77 K-4; L=3; m=8 Ly [m] D=4
i. => rz 4 604 = 8. => rz8
<u> </u>

C. Because as a and b part, we get that k24, m28, (=3, D24, 728.
For now, X=(7246) () (7246) mod (1+1)
$=> (7246) \mod 4 => (3202)$
$3 \cdot 3 \cdot 2 = (2x_1, 2x_2 - 2)$ by binary.
50. 2 = ((,(, 0, 0, 0, 1, 0)) Deck symbol:
(1+1). 2 = 4. (1,1,1,0,0,0,1,0).
D. Beeause as c part me know that
(7.2,4.6,4,4,0,0,0,4,0) Then get the code (5134).

and check digits have -l emors in all positions.
(44400040) = (11100010)
Then 2 - 1.27 + 1.26 + 1.25 + 0-24 + 0.27 + 0.27 + 1.2 + 0.2
Then $2 = 1.2^{7} + 1.2^{6} + 1.3^{5} + 0.2^{4} + 0.2^{3} + 0.2^{2} + 1.2 + 0.2^{9}$ $= 226.$ Then decimal to quaternary. $126 \longrightarrow (3, 2, 0.2) \rightarrow \hat{E} = (2, 1.1, 2)$
·.' we get is (5, 1, 3, 4).
X = (5 34) + (2 12) = 7246
2. For the question, me can get n= length of the code; r= number of the bits. a. n=1b. because. n < 2 -1.
ne can get Y=5.
50. $\gamma = 5 = 5$ (\$) + (\$) + (\$) = 16.
Table at next page)

		2	3	4	2	(7	8	9	Lo	11	(1)	(3	14	15	16.
4=	O	((0	0	<u>ෆ</u>	((1	/ r	1	O	ଚ	0	O
	ට	1	ŀ	((0	0	D	(O	(0	Ö	6
	((O	ଚ	((Ø	0	((ţ	O	0	{	\bigcirc	0
	l	6	(6	\bigcirc	(ĺ	(ſ	0	(O	0	0	(ව
		\bigcirc														

b. For the question, we need to show that.

this code is capable of correcting single errors

and letecting bomble errors,

So, we need to find the min distance of code.

dmin = 4 => t+d+l=4

Then re know that t21, 2=2.

O single envy: assume A'= E+A.

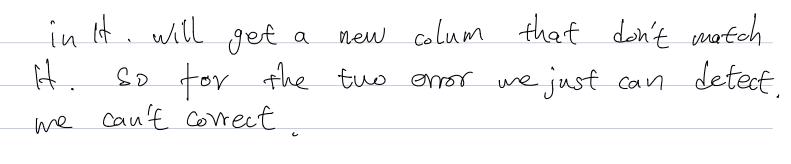
SO A'HT= EHT + AHT

· AMT=0=) A'HT= EHT.

So me have one error, the match's result by EHT will find the location of the single error:

D. Souble error:

Same as 1) part, but in this puble, we will have two error, So in this if we add this two



3. as the question;
$$G = \begin{bmatrix} 1 & 0 & 1 & 0 & 1 & 1 \\ 0 & 1 & 1 & 1 & 0 & 1 \\ 0 & 0 & 0 & 1 & 1 & 1 & 1 \end{bmatrix}$$

$$C = A = (12041123)$$

 $C = A \cdot G$ (part b into this)
 $= (12041123J \cdot G8XII)$
 $= (12041123J \cdot G8XII)$

d. .. as Cquestion me get that C=[1204 1123333] now the 4 to 2. we get new C. C'= [120] 1123333] So. S= C. H = [10 837] mols = [0 32] = 3 [3] = 3 44. So. C= C-E = [1202112333] - [0003000000]=[120 d 1123333] mods -[12041123333] 5. I don't know how to do