Construct Standard Array

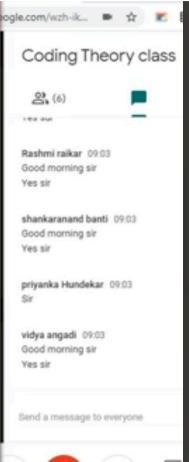- Construct the standard array For

$$G = \begin{matrix} 1 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 1 & 1 & 0 \end{matrix}$$

- Find the code words →

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Construct Standard Array

$$G = \begin{matrix} 1 & 0 & 0 & 1 & 0 & 1 \\ 0 & 1 & 0 & 0 & 1 & 1 \\ 0 & 0 & 1 & 1 & 1 & 0 \end{matrix}$$

- $H = P^T \; I_{n-k}$

$$H^T = \begin{matrix} 1 & 0 & 1 \\ 0 & 1 & 1 \\ 1 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{matrix}$$

$$H = \begin{matrix} 1 & 0 & 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 & 1 & 0 \\ 1 & 1 & 0 & 0 & 0 & 1 \end{matrix}$$

- Find the code words → Share in the chat box

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Codes are →

- 000000
- 001110
- 010011
- 011101
- 100101
- 101011
- 110110
- 111000

$$H^T = \begin{matrix} 1 & 0 & 1 \\ 0 & 1 & 1 \\ 1 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{matrix}$$

Coding Theory class

(6)

Rashmi raikar 09:03
Good morning sir
Yes sir

shankaranand banti 09:03
Good morning sir
Yes sir

priyanka Hundekar 09:03
Sir

vidya angadi 09:03
Good morning sir
Yes sir

Send a message to everyone

You are pres

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Standard Array

Syndrome (H^T)	Co set Leader	Ist bit Wrong	2	3	4	5	6	7
0 0 0	000000	001110	010011	011101	100101	101011	110110	111000
1 0 1								
0 1 1								
1 1 0								
1 0 0								
0 1 0								
0 0 1								

Write code words →

000000
001110
010011
011101
100101
101011
110110
111000

6/2/2021

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Standard Array

Reference

Syndrome (H^T)	Coset Leader	I^st bit Wrong	2	3	4	5	6	7
0 0 0	000000	001110	010011	011101	100101	101011	110110	111000
1 0 1	100000	← Write code words with first bit change						
0 1 1	010000	← Write code words with second bit change						
1 1 0								
1 0 0								
0 1 0								
0 0 1		← Write code words with sixth bit change						

6/2/2021

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Standard Array

Reference

Syndrome (H^T)	Coset Leader	I^st bit Wrong	2	3	4	5	6	7
0 0 0	000000	001110	010011	011101	100101	101011	110110	111000
1 0 1	100000	← Write code words with first bit change						
0 1 1	010000	← Write code words with second bit change						
1 1 0	001000							
1 0 0	000100							
0 1 0	000010							
0 0 1	000001	← Write code words with sixth bit change						

6/2/2021

SVV _SDMCET _PG_CT

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Standard Array

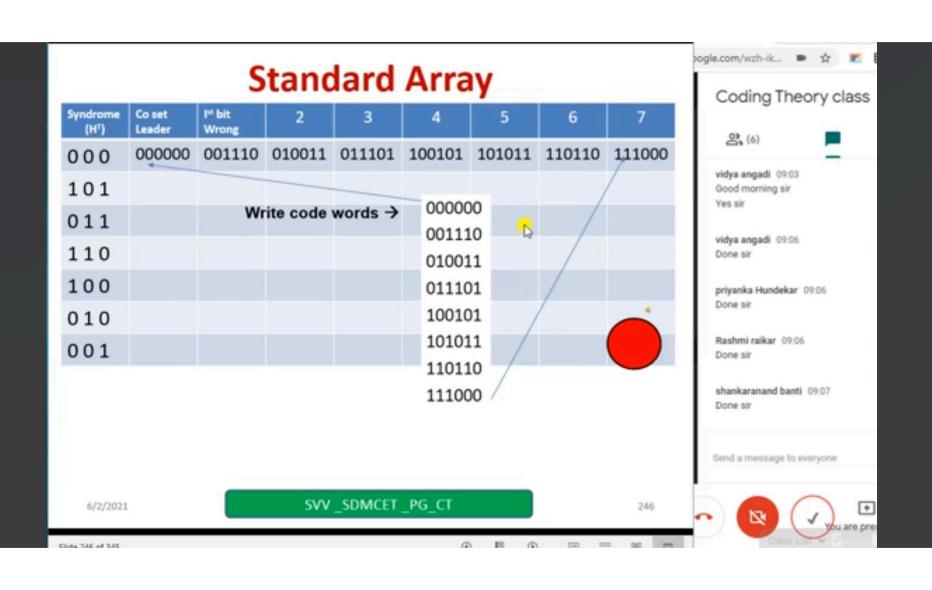| Syndrome	Co set Leader	Ist bit Wrong	2	3	4	5	6	7
0 0 0	000000	001110	010011	011101	100101	101011	110110	111000
1 0 1	100000	101110	110011	111101	000101	001011	010110	011000
0 1 1	010000	011110	000011	001101	110101	111011	100110	101000
1 1 0	001000	000110	011011	010101	101101	100011	111110	110000
1 0 0	000100	001010	010111	011001	100001	101111	110010	111100
0 1 0	000010	001100	010001	011111	100111	101001	110100	111010
0 0 1	000001	001111	010010	011100	100100	101010	110111	111001

Reference

6/2/2021

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Coding Theory class

(6)

Rashmi raikar 09:15
Same sir

vidya angadi 09:16
Same sir

shankaranand banti 09:16
Same sir

vidya angadi 09:18
Same sir

Rashmi raikar 09:19
Same sir

Send a message to everyone

Standard Array ...

- Let R= 100 100

$$H^T = \begin{matrix} 1 & 0 & 1 \\ 0 & 1 & 1 \\ 1 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{matrix}$$

- $RH^T = ?$

- Type s in chat box →

6/2/2021

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Coding Theory class

👥 (6)

Rashmi raikar 09:19
Same sir

priyanka Hundekar 09:19
Same sir

shankaranand banti 09:20
Same sir

Rashmi raikar 09:20
Same sir

vidya angadi 09:20
Same sir

Send a message to everyone

You are pres

You are pres

Slide 265 of 345

- Let R= 100 100

$$H^T = \begin{matrix} 1 & 0 & 1 \\ 0 & 1 & 1 \\ 1 & 1 & 0 \\ 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{matrix}$$

- $RH^T = 001$

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Standard Array

Copy

Syndrome	Co set Leader	Ist bit Wrong	2	3	4	5	6	7
0 0 0	000000	001110	010011	011101	100101	101011	110110	111000
1 0 1	100101 100000	101110	110011	111101	000101	001011	010110	011000
0 1 1	010000	011110	000011	001101	110101	111011	100110	101000
1 1 0	001000	000110	011011	010101	101101	100011	111110	110000
1 0 0	000100	001010	010111	011001	100001	101111	110010	111100
0 1 0	000010	001100	010001	011111	100111	101001	110100	111010
0 0 1	000001	001111	010010	011100	100100	101010	110111	111001

R= 100101

Search it in the table which row and which col?

6/2/2021
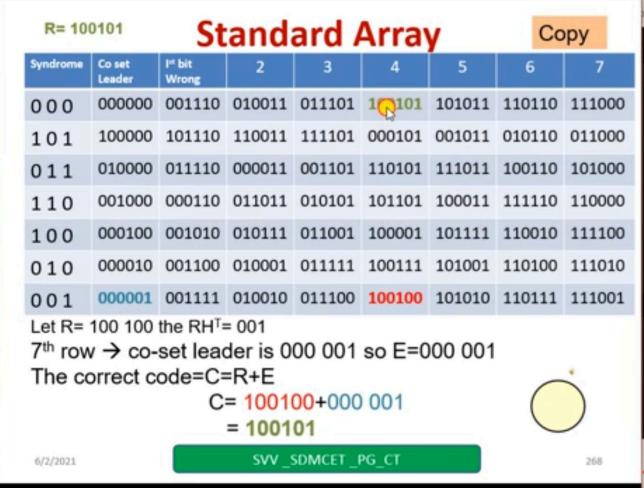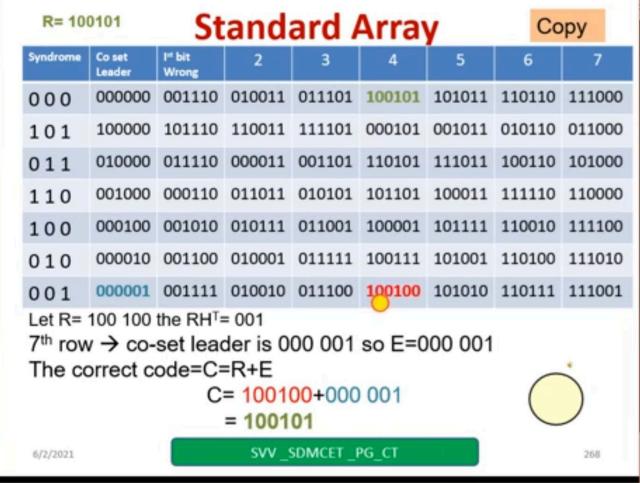
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Coding Theory class

(6)

priyanka Hundekar 09:21
001

Rashmi raikar 09:22
6th

vidya angadi 09:22
Last bit

shankaranand banti 09:22
6

priyanka Hundekar 09:22
6

Send a message to everyone

R= 100101

Standard Array

Copy

Syndrome	Co set Leader	Ist bit Wrong	2	3	4	5	6	7
0 0 0	000000	001110	010011	011101	100101	101011	110110	111000
1 0 1	100000	101110	110011	111101	000101	001011	010110	011000
0 1 1	010000	011110	000011	001101	110101	111011	100110	101000
1 1 0	001000	000110	011011	010101	101101	100011	111110	110000
1 0 0	000100	001010	010111	011001	100001	101111	110010	111100
0 1 0	000010	001100	010001	011111	100111	101001	110100	111010
0 0 1	000001	001111	010010	011100	100100	101010	110111	111001

Let R= 100 100 the RH^T= 001

7th row → co-set leader is 000 001 so E=000 001

The correct code=C=R+E

C= 100100+000 001

= 100101

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Coding Theory class

(6)

shankaranand banti 09:22
6

priyanka Hundekar 09:22
6

vidya angadi 09:23
4 row 1st col

priyanka Hundekar 09:23
4th col 1st row

vidya angadi 09:24
4col 1st row

Send a message to everyone

Standard Array

Syndrome	Co set Leader	Ist bit Wrong	2	3	4	5	6	7
0 0 0	000000	001110	010011	011101	100101	101011	110110	111000
1 0 1	100000	101110	110011	111101	000101	001011	010110	011000
0 1 1	010000	011110	000011	001101	110101	111011	100110	101000
1 1 0	001000	000110	011011	010101	101101	100011	111110	110000
1 0 0	000100	001010	010111	011001	100001	101111	110010	111100
0 1 0	000010	001100	010001	011111	100111	101001	110100	111010
0 0 1	000001	001111	010010	011100	100100	101010	110111	111001

Let R= 100 100 the RH^T= 001

7th row → co-set leader is 000 001 so E=000 001

The correct code=C=R+E

C= 100100+000 001

= 100101