**BCH CODE**

clc; clear all;

pkg load communications;

m =input('Enter degree of generator poly-> ');

n = 2^m -1;

k = input('Enter length of msg -> ');

t = input('Enter error correcting capability -> ');

msg = input('Enter message(each of length k bits) -> ');

printf("\n");

disp('\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* BCH encoding \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*');

code = bchenco(msg, n, k);

disp('bch encoded message is ');

disp(code);

printf("\n");

disp('\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* noisy \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*');

noisy = mod(randerr(size(msg),n) + code,2);

disp('received message (after error)is ');

disp(noisy);

printf("\n");

disp('\*\*\*\*\*\*\*\*\*\*\*\*\* BCH decoding \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*');

[dec err] = bchdeco(noisy, k, t);

disp('after decoding, obtained msg is ');

disp(dec);

printf("\n");

disp('\*\*\*\*\*\*\*\*\*\*\*\*\*\* Error \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*');

disp('Error is ');

disp(err);

OUTPUT:

octave:12> bch7

============== Expt-7:BCH ====================

Enter degree of generator poly-> 3

Enter length of msg -> 4

Enter error correcting capability -> 1

Enter message(each of length k bits) -> [1 0 1 0;1 1 0 1]

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* BCH encoding \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

bch encoded message is

0 0 1 1 0 1 0

0 0 0 1 1 0 1

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* noisy \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

warning: implicit conversion from real matrix to real scalar

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received message (after error)is

0 0 0 1 0 1 0

0 0 0 1 1 1 1

\*\*\*\*\*\*\*\*\*\*\*\*\* BCH decoding \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

after decoding, obtained msg is

1 0 1 0

1 1 0 1

\*\*\*\*\*\*\*\*\*\*\*\*\*\* Error \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

Error is

1

1

https://octave.sourceforge.io/communications/function/bchdeco.html