Hamming codes

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x=randi(2,[1 1000]) - 1;

initialize	1
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initialize

```
clc;
clear all;
close all;
```

input data

```
x1=reshape(x,[250,4])
x1 =
      0
             1
                           0
      1
      0
             1
                    0
                           1
                    0
      1
      0
             0
                           0
      0
             1
                    0
                            1
      0
             0
                    0
                           0
      0
             1
                    1
      0
             1
                    0
                            1
             1
      0
             0
                            0
      1
             0
                    0
                            1
      1
             0
                    0
                            1
      0
             1
                            1
      1
             1
                    0
                            1
      0
             1
                            1
      1
                    0
      0
      0
             1
                    0
                           0
      0
             0
                    1
                            0
             1
      1
                    1
                            0
      0
             1
      0
             0
                    0
                           1
                    0
```

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1	1	1	0
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1	1	1 0	0
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0	0	1	1
0 0	0	1 1 0	0
0	0	0	1
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0	0	0	0

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0	1	0	0
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1	0	0	0

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0	1	0	0

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0	0	0	1

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

Generator matrix and hamming matrix

```
H=[1 1 1 0 1 0 0;1 1 0 1 0 1 0;1 0 1 1 0 0 1];
k=H';
D=x1(:,:)
cw=D*G
a=cw*k
D =
     1
           0
                 0
                       1
     0
           1
                 0
                       0
     1
           1
                 0
                       0
     0
           1
                 0
                       1
     1
           1
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1	0	1	0

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1	1 1 1 1 0	1 1 0	1 0
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0 0	0 1	0 0	1 0
0	0	0	0
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1	1	0	0

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CW	=						
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