```
t = [0:.1:2*pi];
sig = sin(t);
codebook = [-1.2:.2:1];
[partition2,codebook2]= lloyds(sig,codebook);
[index2,quant2,distor2]= quantiz(sig,partition2,codebook2);

%twelve level sig
Twelve_lvl= hist(quant2,12)
n=size(quant2)
p=Twelve_lvl/n(2)


dict  = huffmandict(codebook2,p);  % Create the dictionary.

hcode  =  huffmanenco(quant2,dict);  % Encode the data.
dhsig  =  huffmandeco(hcode,dict);

disp(hcode);
disp(dhsig);
```

```
Twelve_lvl =

    11     5     5     4     4     0     5     4     4     5     6
 10


n =

     1    63


p =

  Columns 1 through 7

    0.1746    0.0794    0.0794    0.0635    0.0635         0    0.0794

  Columns 8 through 12

    0.0635    0.0635    0.0794    0.0952    0.1587

  Columns 1 through 13

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

  Columns 14 through 26

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

Columns 27 through 39

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

Columns 40 through 52

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

Columns 53 through 65

0 0 0 0 0 0 0 0 0 0 0 0 0

Columns 66 through 78

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

Columns 79 through 91

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

Columns 92 through 104

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

Columns 105 through 117

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

Columns 118 through 130

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

Columns 131 through 143

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

Columns 144 through 156

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

Columns 157 through 169

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

```
 Columns 170 through 182

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

 Columns 183 through 195

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

 Columns 196 through 208

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

 Columns 209 through 221

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

 Columns 222 through 231

    1     0     1     1     1     1     0     1     0     1

 Columns 1 through 7

  -0.0000   -0.0000    0.2186    0.2186    0.4078    0.4078    0.5997

 Columns 8 through 14

   0.5997    0.7933    0.7933    0.7933    0.9590    0.9590    0.9590

 Columns 15 through 21

   0.9590    0.9590    0.9590    0.9590    0.9590    0.9590    0.9590

 Columns 22 through 28

   0.7933    0.7933    0.7933    0.5997    0.5997    0.5997    0.4078

 Columns 29 through 35

   0.4078    0.2186    0.2186   -0.0000   -0.0000   -0.2187   -0.2187

 Columns 36 through 42

  -0.4079   -0.4079   -0.6023   -0.6023   -0.6023   -0.7771   -0.7771

 Columns 43 through 49

  -0.8993   -0.8993   -0.9800   -0.9800   -0.9800   -0.9800   -0.9800

 Columns 50 through 56
```

```
  -0.9800   -0.9800   -0.8993   -0.8993   -0.7771   -0.7771   -0.7771

  Columns 57 through 63

  -0.6023   -0.6023   -0.4079   -0.4079   -0.2187   -0.2187   -0.0000
```

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