

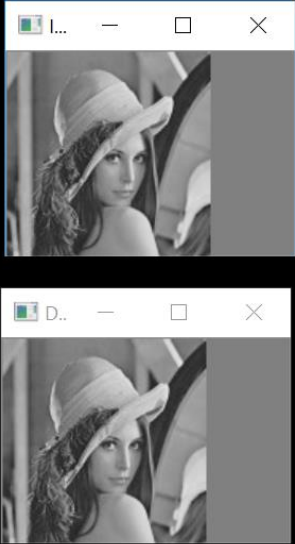
18153187

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Assignment 2

SAMPLE OUTPUT:

```
File encoded successfully
The encoded file is stored in encoded.huf
=====
Beginning the process of decoding . . .
image row count : 128image column count : 128
=====
Image is successfully decoded and saved as decoded.jpg
Press any key to exit
```



**The image I.. represents the input image and D.. represents the decoded image in the above picture.

Below is a snapshot of the encoded.huf file.

```
encoded.huf - Notepad
File Edit Format View Help
99988567128 128#10111100 10111100 10111011 11100110 11111101 11111110 11111100 11111011 11101110 10111011 10101000
10 11010001 11000100 11010010 11000111 11100101 11101010 11010001 11000100 11101010 11110100 11100101 11111001 1011
1010 11101110 11111011 11101110 01010101 01011010 01010010 01010011 10000011 10110111 10101110 10101010 10111111 11
010111 11111101 11111101 11111100 11111110 11111011 11111110 11101110 11111110 11111100 11111011 11111011 11111011
11110100 11110100 11111001 11110100 11100010 11100010 11110100 11100101 11010010 10110110 10111010 10110111 1100000
0 11110010 11111000 11111111 11100010 11110010 11001001 11011001 11001001 11111000 11111111 11111000 11111000 11110
111 11111111 11110010 11111000 11111000 11111111 11111111 11110010 11110010 11110010 11111111 11111111 11111111 111
00000 10110100 11000010 11010010 11000111 11100101 11110100 11110100 11111001 11111001 11100010 11111111 11111111 1
1001000 11100110 11100011 10111110 10101100 10001110 11101000 11011011 11011011 10110111 11011011 11000101 11000101
11011101 11000011 11001000 11111101 11101110 10111011 10111011 11000110 10101000 10100010 10101111 10100000 1110111
1 10110100 10111101 11010010 11010001 11010001 11101010 11001110 10001000 11011101 11100111 11011101 11100001 11100
110 11111100 11111100 11111011 11110101 11011000 11110011 11101101 10101001 01110011 01001100 00111111 01110000 110
01010 11001100 11110011 11010101 11100000 11111100 11111110 11111101 11111100 11111100 11111100 11111110 11111110 1
1110100 11110100 11111001 11101010 11110100 11110100 11101010 11010001 10111101 10101010 10100011 10111110 10011000
10000100 01011011 10011010 10011110 10000011 01100110 10011010 11111010 11110010 10111111 11000100 11000111 1100010
0 11101010 11110100 11110010 11100010 11100101 11110010 11111011 11110011 11011000 11011000 11011000 11110101 10111
010 10110100 10111111 10111101 11000100 11000111 11010001 11010001 11100101 11101010 11110100 11110100 11111001 111
00110 11100110 11101101 10110011 10000110 10000110 10001110 10111000 11101000 11101011 11101011 11101001 11011010 1
1001011 11010000 10000100 01111111 10101111 11100000 10111101 10011111 11001101 11101101 11111101 10100010 10100000
10101111 11100001 01100010 10100100 11100111 10100101 11100001 11000011 10100100 11011111 10110000 11110001 1101110
0 11110000 11110011 11101111 11101101 11101100 11101111 11010101 11100011 11110110 11101110 11100000 11010111 01100
111 11101100 11110101 11111011 11111100 11100000 11101100 11001111 11111001 11111111 11100011 11011110 11011000 111
01110 10010011 01001011 01000100 01011010 11100101 11101011 11000101 10111010 10101011 10110101 11011011 11010011 1
```

STEPS:

A histogram is obtained, and the values are sorted based on the frequency.

Binary codes are generated. The pixel value that occurs frequently are assigned a value with smaller length than the ones with less frequent occurrences.

This is stored in a map.

The values are matched with its key, and the binary codes are written in a .huf file.

If the magic number matches, we read from the file using vectors and decode the values back.

The decoded image is stored in decoded.jpg

REFERENCES:

<http://www.cplusplus.com/reference/map/map/>

<http://www.cplusplus.com/reference/cstdlib/qsort/>

<http://www.cplusplus.com/reference/vector/vector/begin/>

<http://en.cppreference.com/w/cpp/utility/bitset/bitset>

//Thanks to Sherd for suggesting some ideas.