

Programming Assignment #2 — due Friday, December 1

General description

Implement Huffman's algorithm for constructing optimum prefix codes (Section 17.3 of CLR).

Input

The code you turn in should read *from the standard input* the number n of letters, on a line by itself, followed by n lines containing letter frequencies.

Sample input:

```
6
45
13
12
16
9
5
```

Output

Your code should print *to the standard output* one line for each letter, containing its frequency and the 0-1 encoding given by the Huffman algorithm. Also, the algorithm should print the total number of bits needed to encode the file from which the frequencies were extracted.

Sample output corresponding to the above sample input:

```
CODEWORDS :
45 0
13 101
12 100
16 111
 9 1101
 5 1100
TOTAL BITS: 224
```

Programming language

You may use C, C++, or Java for completing the project. Your code should compile and execute on acme. By default your code will be compiled using `gcc`. If your source code is spread over several files or you are using a compiler other than `gcc`, you must also submit the appropriate `make` file with your project.

Turn-in

E-mail your source code (attachments preferred) in a message with the subject "3500c project #2 submission" to `gte855t@prism.gatech.edu` by 11:59pm, Friday, December 1. If your code consists of several files, send a single `tar` file containing all of them.