XOR CRYPTOLOGY

One method of encoding and decoding involves the use of a slight variation on the XOR function. Lets look at an example using the message “HI”.

Encoding

The ASCII code for “H” is 72 = 01001000 and the ASCII code for I is 73 = 01001001
We select a key which is 8 bits. Let the key in this case be 01101101

Now “H” XOR key = 01001000 XOR 01101101 = 00100101
And “I” XOR key = 01001001 XOR 01101101 = 00100100

So, “HI” encrypted using the XOR cryptology function and the above key is 00100101 00100100

Decoding

The exact same operation is used to decode.

00100101 XOR 01101101 = 01001000 = “H”
00100100 XOR 01101101 = 01001001 = “I”

The input file for this problem will be called **code.txt.** The data will contain two lines. The first line will contain a single character, the decoded first character of the encrypted message. The second line will contain the encrypted message. The encrypted message will contain groups of 8 bits separated by a single space. There will be at least one group of 8 bits and no more than 100 groups.

Sample input data (code.txt) Note: the encrypted binary message is actually one long line

```
H
10001011 10100110 10101111 10101111 10101100 11100011 10000111 10010100 10001010
10010111 10000110
```

Sample Output:

Hello DWITE

Judge Data Set 1 – Input

C
10011000 10111010 10110101 10111111 10100010 11111011 10011010 10101011 10101011
10110111 10111110 11111011 10001001 10111110 10111111

Judge Data Set 1 – Output (100 marks)

```
Candy Apple Red
```

Judge Data Set 2 – Input

L
01011000 01110001 01110000 00110100 01001110 01110001 01100100 01100100 01111000
01111101 01111010 00110011 01100111 00110100 01000111 01100000 01110101 01111101
01100110 01100011 01110101 01101101 00110100 01100000 01111011 00110100 01011100
01110001 01110101 01100010 01110001 01111010

Judge Data Set 2 – Output (100 marks)

Led Zepplin's Stairway to Heaven