Files to submit: newAlphabet.cpp
Time it took Matthew to complete: 5 mins

- All programs must compile without warnings when using the -Wall and -Werror options
- Submit only the files requested
  - Do **NOT** submit folders or compressed files such as .zip, .rar, .tar, .targz, etc
- If submitting in a group on Grade Scope please make sure to mark your partner.
  - Only one of you has to submit there
- Your program must match the output exactly to receive credit.
  - Make sure that all prompts and output match mine exactly.
  - Easiest way to do this is to copy and paste them
- All input will be valid unless stated otherwise
- Print all real numbers to two decimal places unless otherwise stated
- The examples provided in the prompts do not represent all possible input you can receive.
- All inputs in the examples in the prompt are underlined
  - You don't have to make anything underlined it is just there to help you differentiate between what you are supposed to print and what is being given to your program
- If you have questions please post them on Piazza

You have decided to create an alternative representation for letters of the alphabet. In your scheme the first 26 bits of an unsigned integer representing a character of the alphabet and the 27th bit representing either lowercase or uppercase. The least significant bit (bit 0) is a, the next bit (bit 1) represents b, and so on with the last bit (bit 25) representing z. If the capital bit (bit 26) is 1 it means the letter is uppercase and if it is 0 it means the letter is lowercase. You are to write a program that accepts "letters" in your new representation and then prints out their meaning.

Inputs
- Input will be given on the command line
- Each "letter" will be represented as an unsigned int
- Some examples

Letter	Numerical Representation	Binary Representation
a	1	000 0000 0000 0000 0000 0000 0001
A	67108865	100 0000 0000 0000 0000 0000 0001
b	2	000 0000 0000 0000 0000 0000 0010
B	67108866	100 0000 0000 0000 0000 0000 0010
c	4	000 0000 0000 0000 0000 0000 0100
C	67108868	100 0000 0000 0000 0000 0000 0100
d	8	000 0000 0000 0000 0000 0000 1000

D	67108872	100 0000 0000 0000 0000 0000 1000
e	16	000 0000 0000 0000 0000 0001 0000
E	67108880	100 0000 0000 0000 0000 0001 0000

Restrictions
1. You must use bitwise operators to solve this problem
2. You cannot just have a chain of if statements comparing against the numeric value of each letter. For example something similar to the below would not be allowed

    if(letter == 1)
      cout << 'a';
    else if (letter) == 2
      cout << 'b'
    else if (letter) == 4
      cout << 'c'
    …

3. If you do the above you will receive 0 credit for this problem

Examples

1. ./newAlphabet.out <u>4 1 524288</u>
   You entered the word: cat
2. ./newAlphabet.out <u>100663296 16 67108866 131072 1</u>
   You entered the word: ZeBra