**Exercise 7**

//Exercise 7

#include <iostream>

using namespace std;

int main()

{

int value;

cin >> value;

cout << "the value x is "

<< ((value & (value - 1)) == 0 ? "" : "not ")

<< "an exact power of two" << "\n";

}

This code tests if the number entered is an exact power of two. It makes use of the fact, that an exact power of two has only a single bit as One. For example, the integer “8” in binary is “1000”. When an exact power of two is subtracted by One, all bits that were Zero will become One and the original bit will go from One to Zero. The number seven is “0111” in binary.

If the two numbers “8” and “8-1” are then compared with a bitwise “and” operator, the result will always be Zero.

For other numbers, the result of the bitwise comparison will never be zero.