In this assignment, we will write C program to find X^n for two positive integers X and n. Take X and n as input from the users.

Part I: Successive Multiplication Algorithm (40% marks)

In this part, you calculate X^n by simply multiplying X n times.

Part II: Successive Squaring (60% marks)

You find $X, X^2, X^4, X^8, \ldots, X^{2^k}$ by successive squaring such that $2^k \leqslant n$ and $2^{k+1} > n$. Then multiply appropriate numbers from above to find X^n. For example, suppose $X = 2$ and $n = 11$. Then you first calculate $2, 2^2, 2^4, 2^8$ by successive squaring. Now to compute 2^11, you multiply $2^8, 2^2$, and 2.

structure of main function

A skeleton of your main function is below.

1. Take X and n as input from users. You can assume that both are positive integers.
2. Compute X^n using algorithm in Section 1 and output the answer.
3. Compute X^n using algorithm in Section 2 and output the answer.

Submit single .c file.

Sample Output

Write X : 2
Write n : 11
Output computed by successive multiplication: 2048
Output computed by successive squaring: 2048