

CS 3304 Introduction to Data and Information Structures

Lab Exercise – Chapter 7 Stacks

This programming exercise is adapted from Programming Problems # 4 for Chapter 7 in page 387. The problem to solve is: For a given integer $n > 1$, the smallest integer $d > 1$ that divides n is a prime factor. We can find the prime factorization of n if we find d and then replace n by the quotient of n divided by d , repeating this until n becomes 1. Write a program that determines the prime factorization of n in this manner, but that displays the prime factors in descending order. For example, for $n = 3960$, your program should produce $11 * 5 * 3 * 3 * 2 * 2 * 2$.

Requirements:

1. Use linked stack to store the factors. Implement all necessary functions of the stack class.
2. Read input value n from keyboard with proper prompting message.
3. Print prime factors with proper labeling and in descending order connected with “*”, as shown in the previous example.
4. Use Visual Studio 2012 to test your C++ program before submission in Blackboard.