Project 7 - User Document

This program explores the concept of array- based stacks in respect to determining the prime factorization of a number that is entered by the user. The client program takes in an integer value from the user and outputs the prime factorization of the number that the user outputs. The factorization of the number is outputted to the terminal in decreasing order by utilizing a function that finds the smallest factor of the number, which coincidently is the lowest prime factor of the integer that the user enters and then utilizes a stack to store the factors of the integer so that they can be displayed in the correct order. This program will continue to run until the user enters a 0 or a negative value.

The program is split into 3 files. The main program is main.cpp, the header file is stack.h and the class file is stack.cpp. These files are located in the project7 folder underneath the programs folder.

To compile and link the files, enter:

g++ stack.h main.cpp stack.cpp

To run the program, enter a.out and respond to the program’s prompts for user input. This program will terminate after the list from the file are outputted to the terminal or a file that is not available is attempted to be opened.

After compiling the program and entering a.out an example run of the program would look something like this:

Enter a positive integer (0 to stop): 1776

Prime factors: 37 3 2 2 2 2

Enter a positive integer (0 to stop): 6463

Prime factors: 281 23

Enter a positive integer (0 to stop): 349856

Prime factors: 29 29 13 2 2 2 2 2

Note that the program terminates if the user enters 0 or a negative number.