

Overview

Stacks (LIFO) are very useful for its backtracking features. Queues (FIFO) are used for serving requests on a single shared resource. The purpose of this assignment is to give you some experience using stack and queue in one program.

Description

In this assignment, you will be implementing a program that:

1. Reads values until zero is entered. (**Use a queue**)

Example: **80 1 2 3 4 5 -1 20 30 40 50 6 7 8 9 10 -2 11 12 -3 33 22 -5**

2. Scans the inputs to do the following: (**Use a stack**)
 - a. If a negative number is entered, the program must backtrack and print the five numbers that come before that negative number. Then, remove the five numbers and the negative number.
 - b. If there are fewer numbers than five, print an error message and stop the program.
 - c. repeat until scanning all inputs or an error occurs.

Output: 5 4 3 2 1 **10 9 8 7 6** 12 11 50 40 30 **22 33 20 80**

Error: less than 5 numbers left

3. Test your program with several inputs, such as:
 - a. **80 1 2 3 4 5 -1 20 30 40 50 6 7 8 9 10 -2 11 12 -3 33 22**
 - b. **80 1 2 3 4 5 -1 20 30 40 50 6 7 8 9 10 -2 11 12 -3 33 22 7 -5**
 - c. **80 1 2 4 5 -1 20 30 40 50 6 7 8 9 10 -2 11 12 -3 33 22 7 -5**

Deliverables:

A compressed file of your project that must contain the whole project folder.

Hints:

1. You must follow the Google guide when you implement your solution. Failing to follow this coding guidelines will cost you **10%** of your grade. Here is the link of the Google guide:
<https://google.github.io/styleguide/cppguide.html#Scoping>.
2. Comments are essential to keeping our code readable. The file-level comment should broadly describe the contents of the file and must start with the author line (your name, student ID, and email) followed by the assignment #, title, description.

You must have detailed comments/documentation within each function or part of your program and not at the file level. Be consistent with how you comment and what style you use where. Not enough comments/documentation will cost you another **5%** of your grade.

Late Policy:

Assignments received after due date will be marked down 10%, and 2% more per day that assignment is late. No credit will be given for work turned in more than one week late.