The Tasks

- We previously discussed about the possibility of generating permutations of a string without recursion. Well, there are multiple ways of doing this. I mentioned the use of a "NextPermutation" function in the discussion board. Here we will try a more straightforward approach: Using a **stack** to replace recursion, which uses the function call stack.
- Specifically, you need to modify the `perm` function in chapter 1. Let us name the new function `non_recursive_perm`. You should use a stack within the function.
  - Each `push` corresponds to a call to `perm` in the recursive form.
  - Each `pop` corresponds to returning from a call to `perm` in the recursive form.

The Tasks

- Something important: What information should you keep in each stack item? Think about it and decide for yourself. If you need a structure or a class for the stack items, define it yourself.
- Here, you are required to use the STL class template **`stack`**. This is a practice for those of you who are not familiar with STL. Look for information on this template yourself. Note: Its exact behaviors of its functions might be different from the **`Stack`** template in the textbook.
- Your **`non_recursive_perm`** function should have the same argument list as the **`perm`** function in the textbook.

The Guidelines

- Allowed environments: VS2012/2013/2015, Dev-C++. Indicate your environment at the beginning of your code.
- You need to write your own **`main`** function to test your permutation generation function. You do not need to include this **`main`** function in your submission. The instructor will provide a test **`main`** function for you.
- No usage of STL class templates (except for **`stack`**) allowed.
- Include documentation; this will be part of your grade.
- Demo: Only a randomly selected subset of students; will be announced separately after the due date.

The Guidelines

- Submission:
  - Use E3 only.
  - Submit all your code in a single header file (`.h`). Name it `P2_xxxxxx.h`, where `xxxxxx` is your ID. **Do not** submit your `main` function or any file that is not your code (such as the *.sln file). No compressed file (*.zip, *.rar, etc.). **Only the header file!!!**
  - Due date: **11/3/2015**. There's a grace period of 4 days with 10% deduction per day. (The deduction kicks in only when you have accumulated more than three days of delay during the semester.)