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The goal of this exercise is to gain some more experience in designing, describing, implementing, and analyzing algorithms, using a very simple problem as an example.

- 1. List the members of your group below:
- 2. Describe clearly, in English, an algorithm for generating (listing) all permutations of the set $[n] = \{1, 2, ..., n\}$ in lexicographic order, given a positive integer n as input. Your description should be detailed enough to permit easy implementation by inexperienced programmers with no specialized knowledge of this problem.

3. . Provide a complete C implementation of the algorithm of Question 2. Include suitable assertions and comments to enable easy understanding of your code by others.

4. Analyze the space and time complexity of the code of Question 3, both asymptotically and concretely (bytes and seconds). Be as accurate as you can, given the constraints. (If you have a computer handy, you are welcome to run a few quick experiments, but you do not have to.)

5. Describe your Capstone project to others in your group. Then, have each person write down, in their own words, a description of the project of someone else in the group, using at most 50 words per description.