[20] **Homework 4**: *Stacks and Queues*

Due: February 16, by the end of class.

- [10] Show how to implement a queue using two stacks. Specifically, give the pseudo-code for `enqueue(Q, x)`, `dequeue(Q)`, `initQueue(Q)` and `emptyQueue(Q)` using only the `initStack(S)`, `emptyStack(S)`, `push(S, x)`, and `pop(S)` stack operations.

  Analyze the running time of the queue operations (i.e., what is their big-O).

- [10] Show how to implement a stack using two queues. This is the converse of the problem above.

  Analyze the running time of the stack operations.