CS62: Spring 2025 | Lecture #10 (Stacks & Queues) worksheet | Jingyi Li

1. Suppose you use a stack to perform an intermixed sequence of push and pop operations. The push operations put the integers 0 through 9 in order onto the stack. You can pop the top of the stack at any time. Which of the following sequence(s) of pops are valid?

   a. 4 3 2 1 0 9 8 7 6 5

   b. 4 6 8 7 5 3 2 9 0 1

   c. 2 5 6 7 4 8 9 3 1 0

   d. 0 4 6 5 3 8 1 7 2 9

2. Suppose you use a queue to perform an intermixed sequence of enqueue and dequeue operations. The enqueue operations put the integers 0 through 9 in order in the queue. You can dequeue at any time. Which of the following sequence(s) of dequeues are valid?

   a. 4 3 2 1 0 9 8 7 6 5

   b. 0 1 2 3 4 5 6 7 8 9

   c. 0 4 6 5 3 8 1 7 2 9

   d. 0 1 2 3 5 6 7 9 8 4

3. Think of a common real life application for a stack. How would it change if we used a queue?

   Think of a common real life application for a queue. How would it change if we used a stack?

4. Match the description to the Java code snippet.

a. To-do list b. Inserts a task into a to-do list c. Retrieves a task from a to-do list d. Can be used to reverse characters in a word e. A list of to-do lists f. Inserts a to-do list into a list	1. `q2.enqueue(q1);` 2. `Queue<Queue<String>> q2 = new Queue<Queue<String>>();` 3. `Queue<String> q1 = new Queue<String>();` 4. `q1.enqueue("Pay bills.");` 5. `String s = q1.dequeue();` 6. `Stack<Character> s1 = new Stack<Character>();`