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CSC\_242\_Lab\_010\_QA

**(1) ( Limitations of an ADT Queue )**

According to the traditional operations of an ADT queue, can an item within a queue be removed if the item is located in the middle of the queue? Explain your answer.

**Nope! A queue is largely defined by its first in, first out protocol (FIFO). An item’s position in a queue is immutable… No cutting in line!   
  
However, in a priority queue, one can create a class of “comparable” items that enable items to be selectively inserted into a queue. But once in the queue, they cannot change places.**

**(2)** We have all had this happen to us. You are given your drive - in food order and you drive away. A few minutes later you notice that the " Zesty - Zing " sauce for your onion rings is missing from the bag. You return to the drive - through lanes to request some packets of the sauce. Would this action be considered as a type of Circular Queue? Explain your answer.

**Not quite. A circular queue is where a “rear” pointer references the “front” pointer when the queue has reached its capacity, so if the “front” of a queue is empty, we can utilize that space. This helps address the issue of empty, unutilized space caused by a normal queue after some insertion and deletion. I’m not sure the Zesto analogy holds up.**

**(3)** A programmer is using a list to implement a queue. Would a list sequence of code statements, shown below, accomplish the programmer's goal? Explain your answer.

**# reversing a list using reversed()**

**def Reverse(lst) :**

**return [elem for elem in reversed(lst)]**

**# driver code**

**lst = [11, 12, 13, 14, 15, 16]**

**# lst = Reverse(lst)**

**print (Reverse(lst))**

**lst.pop(0)**

**print (lst)**

**It seems that these statements demonstrate the behavior of queues if we assume that the left most item in the list (11) is the “front” of the queue, and the right most (16) is the rear. Popping the first element `list.pop(0)` would return the next item in the queue.**

**(4)** Provide an example for people waiting for multiple queues**.**

**One example would be, waiting in traffic while also waiting to get in touch with a Comcast representative on a hotline.   
  
To model this, there could be two queue instances, each dequeuing until the person is dequeued and notified.**

**(5)** Is a priority queue considered as a type of synchronized queue?

**If by “synchronized” you mean, “with time” and strictly according to the FIFO principle, then the priority queue is not a synchronized queue, as an item with higher priority could be inserted later than an item with lower priority, and yet be inserted into a position closer to the front of the queue.**