Quiz I

SeruLand Company

The **SeruLand** amusement park has recently launched its newest attraction, the **Roller Coaster Xtreme**, which has become a major crowd-puller. Due to the high demand, the management has implemented **two types of queues** for visitors who want to experience the ride:

1. **Priority Queue (VIP Pass)**
   Visitors with a **VIP Pass** have priority access and are usually served before regular visitors.
2. **Regular Queue**
   Visitors without a **VIP Pass** must wait in the regular queue.

To ensure fairness and efficiency, **SeruLand uses the following queue management system:**

Hybrid Alternating Queue (HAQ) System:

1. If both VIP and regular customers are in the queue, they will be served **alternately** on a **First Come First Serve (FCFS)** basis.
2. If one queue runs out of customers first, the remaining customers from the other queue will continue to be served.
3. If there is a visitor who cancelled their visit, the order will be reordered. Then they will be served **alternately** on a **First Come First Serve (FCFS)** basis.

Input:

1. The first line of input will use format:

   $$N\ M$$

   where N is an integer for number of **VIP Visitors** and M is an integer for number of **Regular Visitors**.

2. The second line of input will use format:

   $$vn\ vn\ vn\ vn\ \dots vn$$

   where vn is a **string** VIP Visitors ID, consist of V as VIP code and n as a reservation order. Assume that ids are always unique so no need to validate the id.

3. The third line of input will use format:

   $$rn\ rn\ rn\ rn\ \dots rn$$

   where rn is a **string** Regular Visitors ID, consist of R as Regular code and n as a **reservation order**. Assume that ids are always unique so no need to validate the id.

4. The fourth line of input will use format:

   $$L$$

   Where L is the number of visitors who cancelled. Assume that this number always has maximum value of $N + M - 1$ (no case where all visitors cancelled), so no need to validate whether the number is less than $N + M$ or not

5. The fifth line of input will use format:

   $$c_1\ c_2\ \dots\ c_L$$

   Where each c is a string for a unique id of the customer who cancelled. Assume that each id input always exists, so there is no need to validate whether the id exist or not.

Output:

List out the id of the customers in the order of serving until all visitors are served, starting from the VIP Customer. The customer who cancelled will be gone from this list.

Quiz I

Input	Output
2 2 V1 V2 R1 R2 0	V1 R1 V2 R2
Explanation: 1. First, we have 2 VIP Pass and 2 Regular customers. 2. V1 and V2 are inputted as the id of VIP Pass, then R1 and R2 are inputted as the id of walk- in customers. 3. With both of those id, we can set the order alternately starting from online customer which resulted in V1, R1, V2, R2. 4. There are 0 visitors which cancelled, so the program will skip the fifth input line and print the output.	
3 4 V1 V5 V3 R9 R8 R10 R18 2 V5 R10	V1 R8 V3 R9 R18
Explanation: 5. First, we have 3 VIP Visitors and 4 Regular Visitors. 6. V1, V5, and V3 are input as the VIP Pass of VIP Visitors, then R9, R8, R10, R18 are inputted as the id of regular visitors. 7. With both of those id, we can set the order alternately starting from VIP Visitor which resulted in V1, R8, V3, R9, V5, R10, and R18. Because there are no more VIP Visitors after R10, visitor id R18 can be served. 8. However, there are 2 customers which cancelled with id V5 and R10, so we delete the id from the previous order to become V1, R8, V3, R9, and R18.	
6 3 V10 V8 V9 V20 V19 V16 R34 R27 R11 3 V10 V16 R11	V8 R27 V9 R34 V20
Explanation: 1. First, we have 6 VIP Visitors and 3 Regular Visitors. 2. V10, V8, V9, V20, V19, and V16 are inputted as the VIP Pass of VIP Visitors, then R34, R27, and R11 are inputted as the id of Regular Visitors. 3. With both of those id, we can set the order alternately starting from VIP Visitors which resulted in V8, R11, V9, R27, V10, R34, V16, V20. Because there are no more Regular Visitors after R34, VIP Visitors V16 and V20 can be served. 4. However, there are 3 visitors which cancelled with id V10, V16 and R11, so we delete the id from the previous order to become V8, V9, R27, R34, V20. But **SeruLand wants to keep visitors served alternately so the order becomes** V8, R27, V9, R34, V20	

Your code must use **Double Linked List** data structures to:

a. **Enqueue** (Insert) the Visitor Ids into **two separate queues**.
b. **Enqueue** the Ids from two queues above **alternatingly** into a **new queue**.
c. **Delete** specific values from the **new queue**.
d. Print out the value in the new queue.