Assignment-3

To sort the elements in a queue using limited space (equivalent to one stack), you can follow these steps:

Use the Queue as the Main Data Structure:

Keep the original queue as the main data structure to hold the elements

Create a Temporary Stack:

Create a temporary stack to assist in sorting the elements. This stack will be used to store partially sorted elements temporarily.

Sorting Algorithm:

Use a sorting algorithm that can operate with limited space. One such algorithm is the "Selection Sort" algorithm, which works well with queues and limited space.

Selection Sort Algorithm:

- Iterate through the queue while it's not empty.
- For each element in the queue:

1. Find the minimum element in the queue and dequeue it.
2. While the temporary stack is not empty and the top element is greater than the current minimum element, enqueue the top element of the stack to the queue.
3. Enqueue the current minimum element to the queue.

- Repeat until the queue is empty.

Repopulate the Queue from the Stack:

After the sorting is done, if there are any elements remaining in the temporary stack, enqueue them back to the queue.