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Assignment 2b

Aim. Perform functions on a linear queue which follows FIFO (First in First out), we perform functions to insert, remove and display all elements in the queue.

Theory

There is a integer which stores the position of the last element in the queue. when an element is removed, all the elements are moved one space behind. The rear value is ~~defined~~ initialised as -1.

The ~~is~~ empty function checks if the rear is -1 and returns 1 if it is empty otherwize zero.

The is full function returns 1 if rear is equal to the max size -1 otherwise false.

enqueue adds a number to the end of the queue.

dequeue removes the number at the 0th index and shifts all the following numbers one space behind

A = | 10 | 20 | 30 | | |

remove 10 (dequeue)

A = | 20 | 30 | | | |

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display prints the entire queue from the oldest to latest number added.

Time complexity

~~isFull() - O(1) - It is constant as only one~~

enqueue() - O(1) - No shifting, only one function is performed

dequeue() - O(n) - All numbers are shifted one space behind

Conclusion

This program successfully implements a circular queue, following FIFO principles. The time complexity ~~shows it is not as~~ is also shown and the individual functions are explained.