This problem is optional.

1. A FIFO queue supports the following three update operations:
   - \texttt{create}(): create an empty queue.
   - \texttt{enqueue}(x): insert item \(x\) at the rear of the queue.
   - \texttt{dequeue}(): remove and return the item at the front of the queue.

   It supports the following query operation:
   - \texttt{empty}(): return a boolean indicating whether the queue is empty
   - \texttt{front}(): return the item at the front of the queue. Throw an exception if the queue is empty.

   Describe an implementation of a partially persistent FIFO queue with the following properties:
   - All updates and queries can be performed in \(O(1)\) worst-case time per operation.
   - All updates and queries can be performed in \(O(1)\) worst-case time per operation.
   - The space requirement is \(O(1)\) per update operation.