

1. Write a program which implements an unbounded queue (a First-In-First-Out structure using sequential memory storage), aimed at storing real numbers, and a set of methods operating on this structure:

- the default constructor (with some starting memory allocation),
- the destructor (with memory deallocation),
- the copy-constructor (with memory allocation),
- the assignment operator= (with memory dellocation and allocation),
- the comparison operator==,
- push – adding a real number to the queue (with memory allocation if necessary),
- pop – removing from the queue a real number placed there as first or throwing an empty queue exception,
- front – returning the first number or throwing an empty queue exception,
- back – returning the last number or throwing an empty queue exception,
- print – printing the values which are in the queue currently in the order of placement,
- empty – informing whether the queue is empty,
- size – returning the number of items in the queue,
- clear – removing all the items from the queue.

The program should use all these methods to make the operations as follows:

- 1) create a queue containing the numbers given by the user,
- 2) print the contents of the queue,
- 3) remove two values from the queue and print them,
- 4) print the first and the last number,
- 5) print the number of values in the queue if it is nonempty, or an appropriate message otherwise,
- 6) clear the queue.