Implement a queue class which should have basic functionalities of standard queue with operations like pop\_front, push\_back , front, rear.

The type of element which this queue will store will be a template argument to this class. The memory allocator of this queue will also be a template argument to this class. The allocator will decide where this queue will be storing the items pushed to it.

The queue size should be provided as argument to the initialization API.

With the implementation of queue class please provide an e.g. of allocator class as well. You can choose the allocation of memory between either of these three modes

Shared memory.

Heap memory

Memory mapped file.

You can assume a single producer and single consumer for this queue. One thread adding elements to the queue and other retrieving from it.