

Homework 4

Problem 1:

Write a version of the bounded queue using locks that is based on a circular array. Follow the linked list approach from Herlihy / Shavit expounded in lecture as close as possible. You need to develop the enqueue and dequeue methods in addition to defining the data structure.

Problem 2:

Prove that the lock-free queue from Herlihy / Shavit is linearizable. Hint: you have to prove that all operations behave as if they are ordered. Make four case distinctions based on the nature of the operation.