Construction and Verification of Software Project - 20/21

João Costa Seco Bernardo Toninho

May 26, 2021

Your project is to implement a concurrent bounded queue with positive numbers. You should start with a sequential queue implemented with two stacks, represented in arrays. Refer to the second handout for the implementation and specification. Note that it is not required to prove that the order elements are always maintained (5* exercise, caveat emptor, talk to us first!). Note that the interface for both ADTs is the plain enqueue/dequeue methods.

You should use monitors and conditions as discussed in class and using the specs distributed in lab 7.

You also need to implement a client that launches 100 threads to indefinitely enqueue and dequeue elements from the queue and print a log on the console.

Note that inconsistent predicates used as invariants or in preconditions of class methods, will let you incorrectly verify code. The symptom will be that you will be able to prove `false`, and that you will not be able to call those methods (because it is impossible to satisfy the precondition).

1 Practical issues

Please present your code using a single Java file and do not change the specs in verifast (unless we tell you to).

The project should be developed in teams of two. We expect you to abide by the department's code of conduct, and we will be paying special attention to instances of plagiarism. Project presentations and oral evaluations will be required.

2 Important Dates

Due date: 10th June 2021, 23h59.

3 Submission rules

The submission mechanism will be provided in a timely manner.