

Lab 3 ReadMe

We presented our algorithm with 4 cases to test its effectiveness:

1. Stress Test with Zero Delay:
 - In this case, we test our programs performance with no artificial delay.
2. High Consumer to Producer Ratio:
 - Test how the program handles more consumers than producers.
3. High Producer to Consumer Ratio:
 - Test how program handles more producers than consumers.
4. Single Producer and Consumer:
 - Ensure the program can handle a simple one consumer and one producer case.

When our program runs properly, each producer produces the specified number of messages, and each message is consumed by a consumer. An error free execution results in an empty buffer and the following message printed:

“All producers and consumers have finished.”

When the program does not execute properly and the buffer is not empty, this message is printed:

“ERROR: Buffer not empty”

Each of our test cases result in a successful execution message which can be observed below:

1. Stress test with zero delay:

Producer 0 produced: Message 0 from Producer 0
Producer 0 produced: Message 1 from Producer 0
Producer 0 produced: Message 2 from Producer 0
Producer 0 produced: Message 3 from Producer 0
Producer 0 produced: Message 4 from Producer 0
Consumer 0 consumed: Message 0 from Producer 0
Producer 1 produced: Message 0 from Producer 1
Consumer 0 consumed: Message 2 from Producer 0
Consumer 0 consumed: Message 0 from Producer 1
Producer 3 produced: Message 0 from Producer 3
Consumer 3 consumed: Message 4 from Producer 0
Consumer 1 consumed: Message 1 from Producer 0
Consumer 1 consumed: Message 0 from Producer 4
Consumer 0 consumed: Message 1 from Producer 1
Producer 4 produced: Message 0 from Producer 4

Producer 2 produced: Message 0 from Producer 2
Consumer 3 consumed: Message 0 from Producer 2
Consumer 2 consumed: Message 3 from Producer 0
Consumer 1 consumed: Message 1 from Producer 3
Producer 1 produced: Message 1 from Producer 1
Producer 2 produced: Message 1 from Producer 2
Consumer 3 consumed: Message 1 from Producer 2
Consumer 3 consumed: Message 2 from Producer 1
Producer 3 produced: Message 1 from Producer 3
Producer 2 produced: Message 2 from Producer 2
Producer 1 produced: Message 2 from Producer 1
Producer 3 produced: Message 2 from Producer 3
Consumer 1 consumed: Message 2 from Producer 3
Consumer 3 consumed: Message 3 from Producer 2
Consumer 2 consumed: Message 2 from Producer 2
Consumer 0 consumed: Message 3 from Producer 1
Consumer 4 consumed: Message 0 from Producer 3
Producer 4 produced: Message 1 from Producer 4
Consumer 1 consumed: Message 3 from Producer 3
Producer 1 produced: Message 3 from Producer 1
Producer 3 produced: Message 3 from Producer 3
Producer 3 produced: Message 4 from Producer 3
Producer 4 produced: Message 2 from Producer 4
Consumer 3 consumed: Message 1 from Producer 4
Consumer 2 consumed: Message 2 from Producer 4
Producer 4 produced: Message 3 from Producer 4
Producer 1 produced: Message 4 from Producer 1
Consumer 4 consumed: Message 4 from Producer 1
Producer 2 produced: Message 3 from Producer 2
Consumer 0 consumed: Message 4 from Producer 3
Consumer 1 consumed: Message 3 from Producer 4
Producer 2 produced: Message 4 from Producer 2
Consumer 2 consumed: Message 4 from Producer 2
Consumer 3 consumed: Message 4 from Producer 4
Producer 4 produced: Message 4 from Producer 4
All producers and consumers have finished.

2. **High consumer to producer ratio**

Producer 0 produced: Message 0 from Producer 0
Producer 1 produced: Message 0 from Producer 1
Consumer 0 consumed: Message 0 from Producer 0
Consumer 1 consumed: Message 0 from Producer 1
Producer 0 produced: Message 1 from Producer 0
Consumer 2 consumed: Message 1 from Producer 0
Producer 1 produced: Message 1 from Producer 1

Consumer 3 consumed: Message 1 from Producer 1
Producer 1 produced: Message 2 from Producer 1
Consumer 4 consumed: Message 2 from Producer 1
Producer 0 produced: Message 2 from Producer 0
Consumer 0 consumed: Message 2 from Producer 0
Producer 1 produced: Message 3 from Producer 1
Consumer 1 consumed: Message 3 from Producer 1
Producer 0 produced: Message 3 from Producer 0
Consumer 3 consumed: Message 3 from Producer 0
Producer 1 produced: Message 4 from Producer 1
Consumer 2 consumed: Message 4 from Producer 1
Producer 0 produced: Message 4 from Producer 0
Consumer 4 consumed: Message 4 from Producer 0
All producers and consumers have finished.

3. High producer to consumer ratio:

Producer 0 produced: Message 0 from Producer 0
Producer 1 produced: Message 0 from Producer 1
Producer 2 produced: Message 0 from Producer 2
Consumer 0 consumed: Message 0 from Producer 0
Producer 3 produced: Message 0 from Producer 3
Consumer 1 consumed: Message 0 from Producer 1
Producer 4 produced: Message 0 from Producer 4
Consumer 1 consumed: Message 0 from Producer 2
Producer 1 produced: Message 1 from Producer 1
Consumer 0 consumed: Message 0 from Producer 3
Producer 0 produced: Message 1 from Producer 0
Consumer 1 consumed: Message 0 from Producer 4
Producer 2 produced: Message 1 from Producer 2
Consumer 0 consumed: Message 1 from Producer 1
Producer 3 produced: Message 1 from Producer 3
Consumer 1 consumed: Message 1 from Producer 0
Producer 4 produced: Message 1 from Producer 4
Consumer 0 consumed: Message 1 from Producer 2
Producer 1 produced: Message 2 from Producer 1
Consumer 1 consumed: Message 1 from Producer 3
Producer 0 produced: Message 2 from Producer 0
Consumer 0 consumed: Message 1 from Producer 4
Producer 2 produced: Message 2 from Producer 2
Consumer 1 consumed: Message 2 from Producer 1
Producer 3 produced: Message 2 from Producer 3
Consumer 0 consumed: Message 2 from Producer 0
Producer 4 produced: Message 2 from Producer 4
Consumer 1 consumed: Message 2 from Producer 2
Producer 1 produced: Message 3 from Producer 1

Consumer 0 consumed: Message 2 from Producer 3
Producer 0 produced: Message 3 from Producer 0
Consumer 1 consumed: Message 2 from Producer 4
Producer 2 produced: Message 3 from Producer 2
Consumer 0 consumed: Message 3 from Producer 1
Producer 3 produced: Message 3 from Producer 3
Consumer 1 consumed: Message 3 from Producer 0
Producer 4 produced: Message 3 from Producer 4
Consumer 0 consumed: Message 3 from Producer 2
Producer 1 produced: Message 4 from Producer 1
Consumer 1 consumed: Message 3 from Producer 3
Consumer 0 consumed: Message 3 from Producer 4
Producer 2 produced: Message 4 from Producer 2
Producer 0 produced: Message 4 from Producer 0
Consumer 1 consumed: Message 4 from Producer 1
Consumer 0 consumed: Message 4 from Producer 2
Producer 3 produced: Message 4 from Producer 3
Producer 4 produced: Message 4 from Producer 4
Consumer 1 consumed: Message 4 from Producer 0
Consumer 0 consumed: Message 4 from Producer 3
Consumer 0 consumed: Message 4 from Producer 4
All producers and consumers have finished.

4. Single producer and consumer:

Producer 0 produced: Message 0 from Producer 0
Consumer 0 consumed: Message 0 from Producer 0
Producer 0 produced: Message 1 from Producer 0
Consumer 0 consumed: Message 1 from Producer 0
Producer 0 produced: Message 2 from Producer 0
Consumer 0 consumed: Message 2 from Producer 0
Producer 0 produced: Message 3 from Producer 0
Consumer 0 consumed: Message 3 from Producer 0
Producer 0 produced: Message 4 from Producer 0
Consumer 0 consumed: Message 4 from Producer 0
All producers and consumers have finished.