

Lab 3 - Producer Consumer

Testing

Verifying correctness of our solution to the producer consumer problem involves varying the number of both producers and consumers. We considered the cases of one producer with one consumer, as well as 1 to many, many to 1 and many to many.

The first case tests many to many which involved three producers (t10.dat, t11.dat, and t12.dat) and two consumers (out10.dat, out11.dat), where the data was correctly handled (locking, waiting, releasing and signaling as desired) by each to correctly output the consumed data into the files without duplication, and in the correct order.

The second tested case was one to one producer (t20.dat) and consumer (out20.dat), which appeared in the output with the same order that it was read by the producers, thus demonstrating expected and correct functionality.

The third case uses one to many, where we use one producer (t30.dat) and three consumers (out30.dat, out31.dat, and out32.dat). Since each output file for the three consumers had a third of the values from the producer in ordered intervals of three, it is shown that each consumer takes turns taking the producer data, which is expected.

The final case demonstrates many to one, where there are two producers (t40.dat, and t41.dat) and one consumer (out40.dat). The first producer data is fully consumed before the second producer is used and consumed as well.

Throughout testing all four cases of varying producers and consumers, the output is structured to show that all of the data from the producer(s) are read and output by the consumer(s). None of the data is duplicated, and it all appears in the output in the same order that it was read by the producers.