Bounded

Buffer

Problem

Diagram

Description automatically generated

**Problem Description:**

Bounded buffer problem, which is also called **producer consumer problem**, is one of the classic problems of synchronization.

There is a buffer of N slots, and each slot is capable of storing one unit of data. There are two processes running, namely, **producer** and **consumer**, which are operating on the buffer.

Chart

Description automatically generated

A producer tries to insert data into an empty slot of the buffer. A consumer tries to remove data from a filled slot in the buffer. As you might have guessed by now, those two processes won't produce the expected output if they are being executed concurrently.

There needs to be a way to make the producer and consumer work in an independent manner.

Real World Problem Description:

Pizza restaurant

Suppose that we have cook shelf in pizza restaurant

That we put the meals on it ,so cook shelf has a capacity

That can take for meals, and also we have here cooker which he cook the meal and servant which is serve the meal, so producer here is the cooker which he produce the meals and servant is the consumer which is serve the meal to customers, so when the cook shelf reach the limit the cooker(producer) must wait until free space is available after servant(consumer) take meal to customer to free space ,as same as for servant(consumer) he must wait for the cooker (producer) to make meals if the cook shelf is empty .