Problemas de Sincronización

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Race Condition

A race condition is a behavior which occurs in software applications or electronic systems, such as logic systems, where the output is dependent on the timing or sequence of other uncontrollable events. [3]

Productor - Consumidor

- Two types of processes, producers and consumers, wish to communicate.
- Producers have information to send to the consumers. They place the information items to be communicated in a bounded (that is, limited size) buffer, as long as there is space available. If there is insufficient space, the producer must wait.
- Consumers can extract an item from the buffer, but only if the buffer isn't empty. If the buffer is empty, the consumer must wait.
- The buffer is a shared resource; use of the buffer must be synchronized.

[2]

Productor - Consumidor

- Since the buffer is a shared resource, each access to it must be done in a critical section.
- When the buffer is full, producers cannot place any more items in it. They therefore go to sleep, to be awakened when a consumer removes an item—which makes an empty "slot" in the buffer.
- Similarly, consumers must go to sleep when the buffer is empty. Eventually they will be awakened when a producer places an item in a previously empty "slot".

[2]

Escritor - Lector

The readers/writers problem is defined as follows: There is a data area shared among a number of processes. The data area could be a file, a block of main memory, or even a bank of processor registers. There are a number of processes that only read the data area (readers) and a number that only write to the data area (writers). The conditions that must be satisfied are as follows: [1]

Escritor - Lector

1. Any number of readers may simultaneously read the file.

2. Only one writer at a time may write to the file.

3. If a writer is writing to the file, no reader may read it. [1]

Escritores tienen Prioridad

Once a single reader has begun to access the data area, it is possible for readers to retain control of the data area as long as there is at least one reader in the act of reading. Therefore, writers are subject to starvation.[1]

Bibliografía

[1] W. Stallings, Operating systems. Boston: Prentice Hall, 2012.

[2] S. Wileman, "he Producer-Consumer Problem and Solution Methods", Omaha, NE 68182-0500, USA, 2017.

[3] "What is a Race Condition? - Definition from Techopedia", Techopedia.com. [Online]. Available: https://www.techopedia.com/definition/10313/race-condition. [Accessed: 04- Oct- 2018].