Race Conditions

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Race conditions occur when the outcome of some code assumes a deterministic outcome but the code is written in such a way that outcomes are actually non-deterministic. Specifically, the code might assume that processes or threads need to execute in a certain order. This means that if the code assumes a specific order of commands and depends on the interleavings in multi-threaded being consistent. If those commands can somehow get out of order, then undesirable behaviours such as bugs can occur.

Race conditions are especially difficult to manage because they are hard to reproduce. So, we should take extra special care to code in such a way that they can’t occur. We call this type of code thread-safe.