

Lecture 33 ()

1 When to use Locks

When multiple threads access same memory location and perform conflicting and concurrent accesses.

2 Data Race

Pair of conflicting and concurrent accesses to the same regular variable constitute a data race.

- SC does not imply data race freedom
- Data race freedom implies SC

2.1 Theorem

If we have a data race in a program (any memory model, any EW), we can construct an SC execution that also has a data race. Contrapositive is more important: if we cannot construct an SC EW that has a data race, then the program is data race free.

Had I known I could have made money by professional anti-vaxxing, I would have done it as well