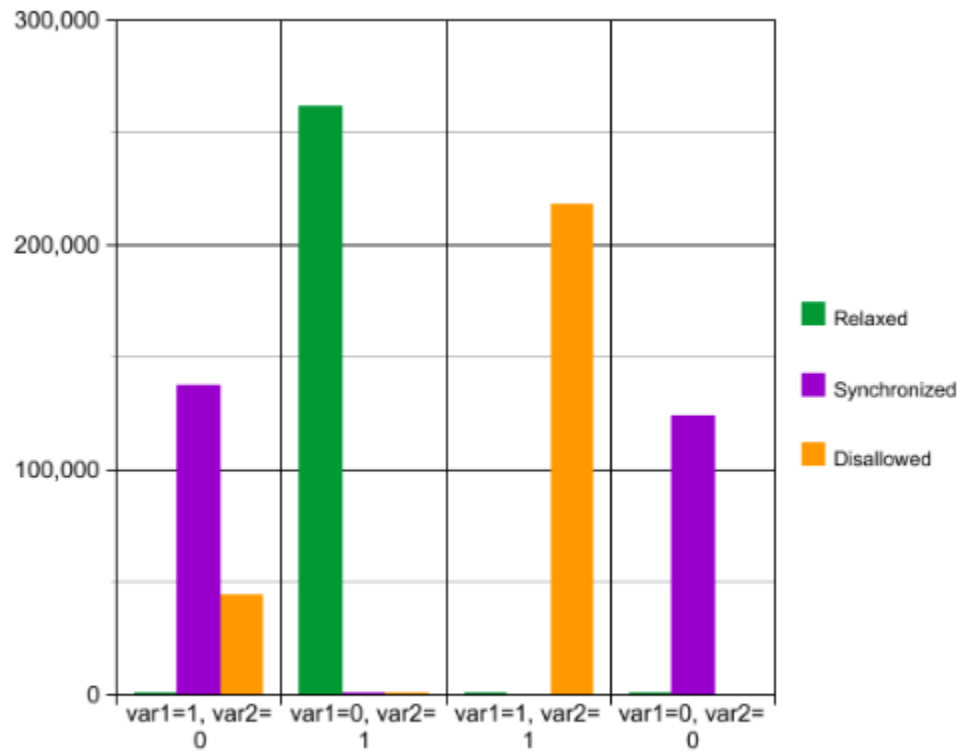Ari 'aith' Iramanesh

Result outcomes based on concurrency model



Average number of litmus test outputs

| outcomes | Relaxed | Synchronized | Disallowed |
|---|---|---|---|
| var1=1, var2=0 | 511 | 137522 | 44106 |
| var1=0, var2=1 | 261631 | 586 | 107 |
| var1=1, var2=1 | 1 | 0 | 217931 |
| var1=0, var2=0 | 1 | 124036 | 0 |
| Relaxed behaviour freq. | ~0 | 0.47316 | 0 |

The Relaxed Store Buffering implementation doesn't exhibit much relaxed behaviour due the higher chance that instructions given earlier in the program order still having a higher chance of being performed first.

For Synchronized Store Buffering: In order to clamp the instruction reordering possibility space to skew the retrieval of x = y = 0, I added a barrier at the start of the thread functions to ensure threads start closer in time- increasing the likelihood of var1 and var2 being assigned to x = y = 0. This is because the threads' function instructions are interdependent on each other for that outcome.

In Disallowed Store Buffering, we force Sequential Consistency on the thread functions, which makes instruction execution follow program order. Thus, it's not possible that var1 == var2 == 0.