Formal Methods

Assignment Two

Neam Farroukh 201820049

The main goal of this assignment is to modify the previous one in order to make sure this formula:

EG(N1)|EG(N2) holds.

As in the previous assignment I started with the initial state S0 where neither process one nor process two making a request.

If Process one made a request then there will be a transition to S3 where process one gets the mutex. Here we could have two scenarios, either process two requested before process one entering into the critical section or didn't make a request and process one entered the critical section.In the case of the first scenario, process one will still be the one entering the critical section due to fairness. After process one leaving the critical section :

If P2 is requesting then there will be transition to S2

If P2 not requesting then there will be transition back to S0

If Process two made the request (S2) same as S1 we could have two possible scenarios where process one would or wouldn't make a request. So as P2 leaves the critical section :

If P1 is requesting then there will be transition to S1

If P1 not requesting then there will be transition back to S0

If we entered one of those formulas : (AG(T1 => (AF(C1)))) & (AG(T2 => (AF(C2)))) or EG(N1)|EG(N2) for global modal check we will find the model is live and fair and correct.