**Lab 2 Instructions**

Imagine that there are two agents, A1 and A2. Both of them can be in two states, S(1) and S(2). The environment has discrete time steps. At a particular time A1 and A2 can decide to stay in their current state or decide to jump to the other state. The rules are as given below.

A1 likes A2. So, if A2 is in state S(i) then A1 also jumps to state S(i) if it is in state S(j) currently. On the other hand, if A1 is in state S(i) currently and A2 is also in state S(i) then A1 will remain in S(i).

A2 dislikes A1. So, if A1 is in state S(i) currently and A(2) is also in state S(i) then A2 jumps to state S(j). On the other hand, if currently A1 and A2 are in different states then A2 does not change its state.

In the above i ≠ j and 1 ≤ i, j ≤ 2.

Create the two agents whose decision-making process is as described above. Let both agents go through 20 time steps each. See if you can observe any pattern in their state transitions.

Now change the initial conditions and see if some other pattern evolves. Possible initial conditions are that both agents are in the same state initially or both agents are in different initial states. Does your result change if we change the order in which the decisions are taken i.e. whether A1 takes the first decision and then A(2) or vice versa, at each time step?

Submit the output and the analysis of your studies by email.