The grading of the project will be based on scenarios such as the following. I can't promise you I will use the *exact* same scenario (since your code could then be modified to detect these specific scenarios) but in general the scenarios will look as follows.

0 - 40 pts, depending on effort, if none of the below scenarios works :)

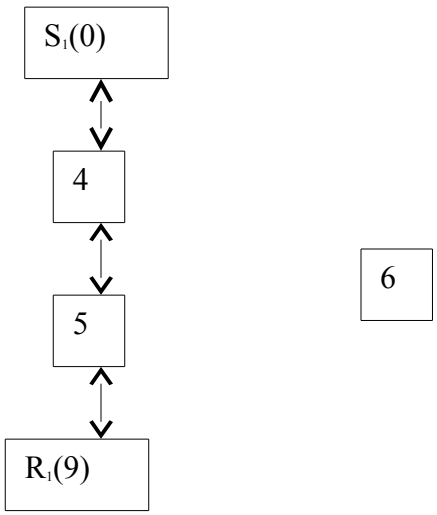
Otherwise, the grade is 40 + how many points you get by successfully running each of the following scenarios. 15 more points for each of the following scenarios.

We are looking of course that link state packets propagate throughout the network, and that multicast data propagates along the correct path, and that if there are changes in the network (nodes die or come to life) then the multicast tree should adapt to the new structure of the network.

The topology file will look like this (By the way, the topology file is never changed during a simulation)

0 4
4 0
4 5
5 4
5 9
9 5
0 8
8 0
0 3
3 5
5 3
3 9
1 3
3 1

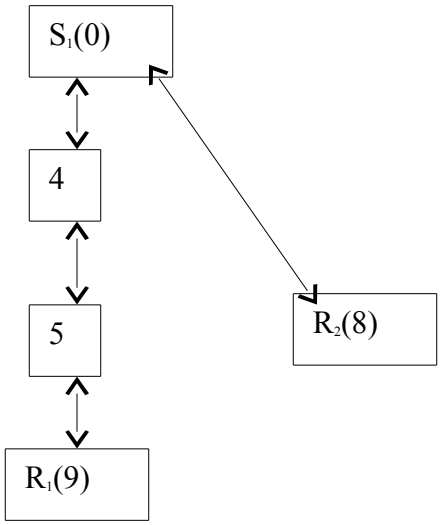
Case 1.



Execute command like these:

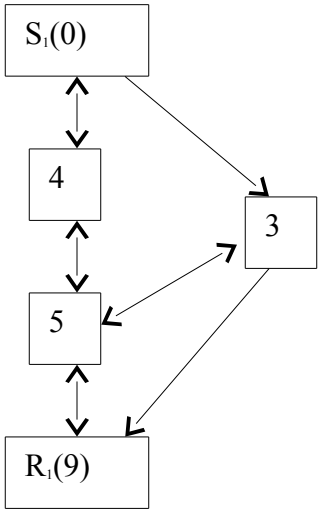
>controller &
>node 4 &
>node 5 &
>node 6 &
>node 9 receiver 0 &
>node 0 sender “this is node 0 multicast message” &

Case 2.



Execute command like these:
>controller &
>node 4 &
>node 5 &
>node 9 receiver 0 &
>node 0 sender “this is node 0 multicast message” &
>node 8 receiver 0 &

Case 3.

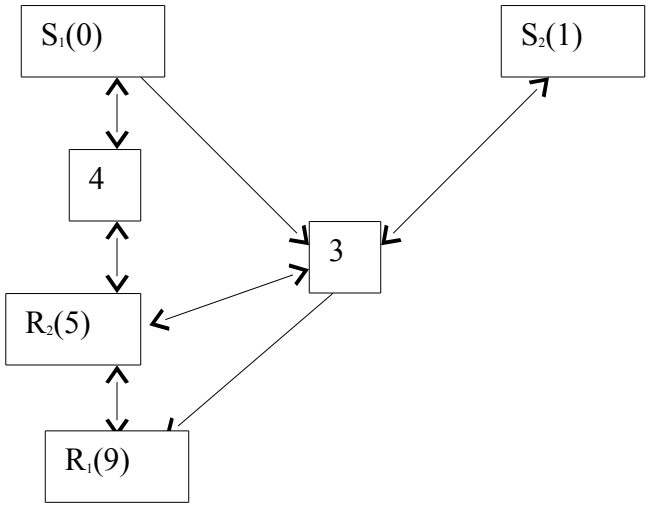


Execute command like these:
>controller &
>node 4 &
>node 5 &
>node 9 receiver 0 &
>node 0 sender “this is node 0 multicast message” &
>node 3 &

After 40 seconds, kill the process of node 3. The routing tree should modify itself automatically and use the path via 4 and 5.

Case 4.

Test two multicast groups.
First, we just have $S_1(0)$, 3, 4, $R_2(5)$, $R_1(9)$ running. Then, $S_2(1)$ begins to run. $R_2(5)$ then joins multicast group $S_2(1)$.



Execute command like these:
>controller &
>node 4 &
>node 5 receiver 1 &
>node 9 receiver 0 &
>node 0 sender “this is node 0 multicast message” &
>node 3 &

Wait 40 seconds and then execute the command
>node 1 sender “this is node 1 multicast message” &

Node 5 should join the tree of node 1