Sample Problems

1. The figure shows a set of processes contending for the token to implement a tree based distributed mutual exclusion algorithm. All processes can communicate directly with each other. It takes 1 unit of time for a request from one processor to reach any other processor. At $t = 0$, the tokenpointers at each process are as shown in the figure with the token at process $D$. The sequence of requests are as follows: 1) at $t = 0$, $G$ requests the token, 2) at $t = 1$, $B$ requests the token, 3) at $t = 4$, $A$ requests the token. $D$ executes in the critical section for 7 time units.

2. Describe all the steps in the total order delivery protocol. Suppose you have received a commit message with time stamp $t$ from processor $p$. Is it possible for a new message from processor $q$ with a smaller logical timestamp than $t$ to arrive after this commit message? Explain why or why not. If so, what happens to the message for which the commit message has been received?