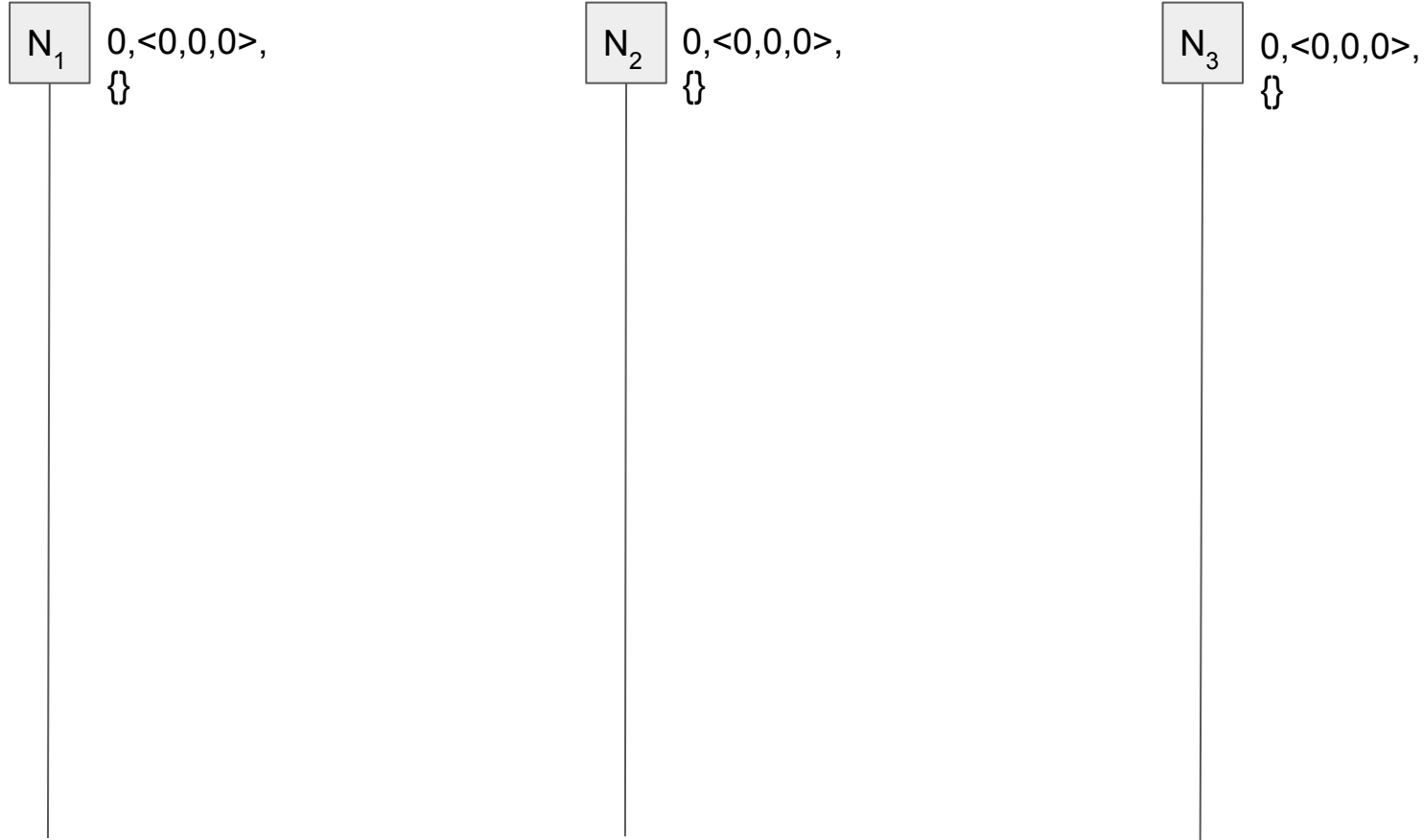
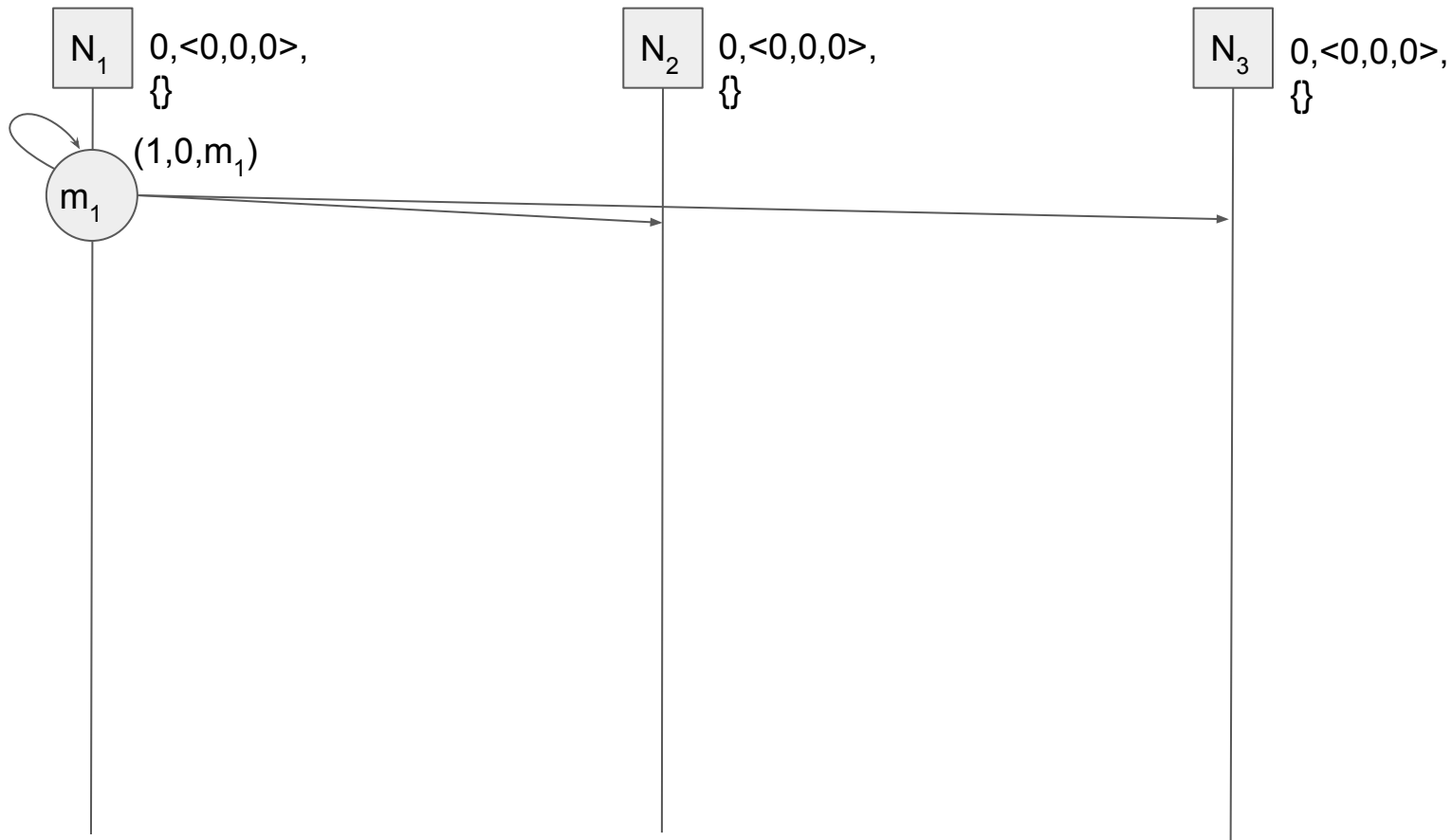


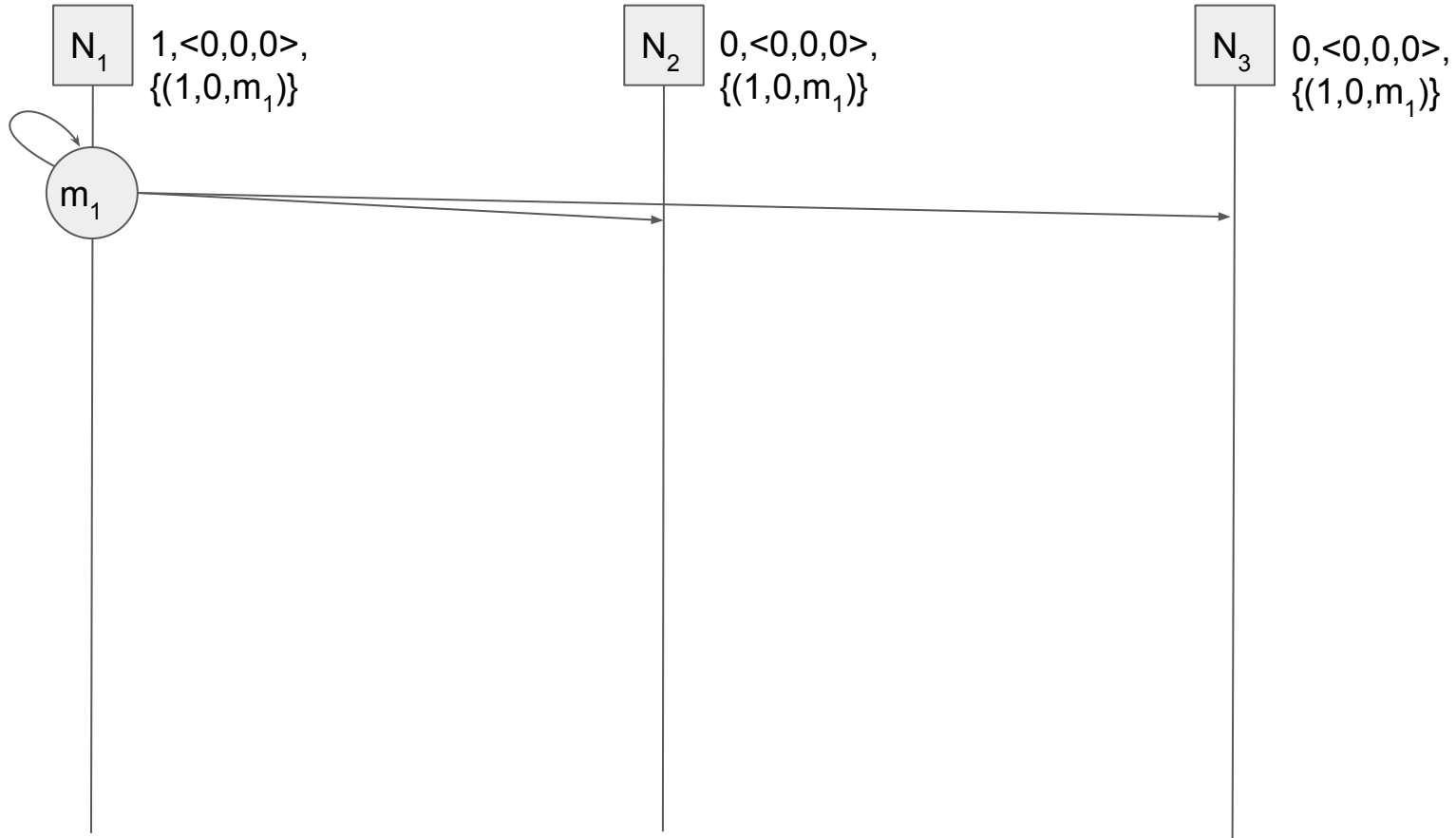
FIFO example which is not an execution of causal broadcast.



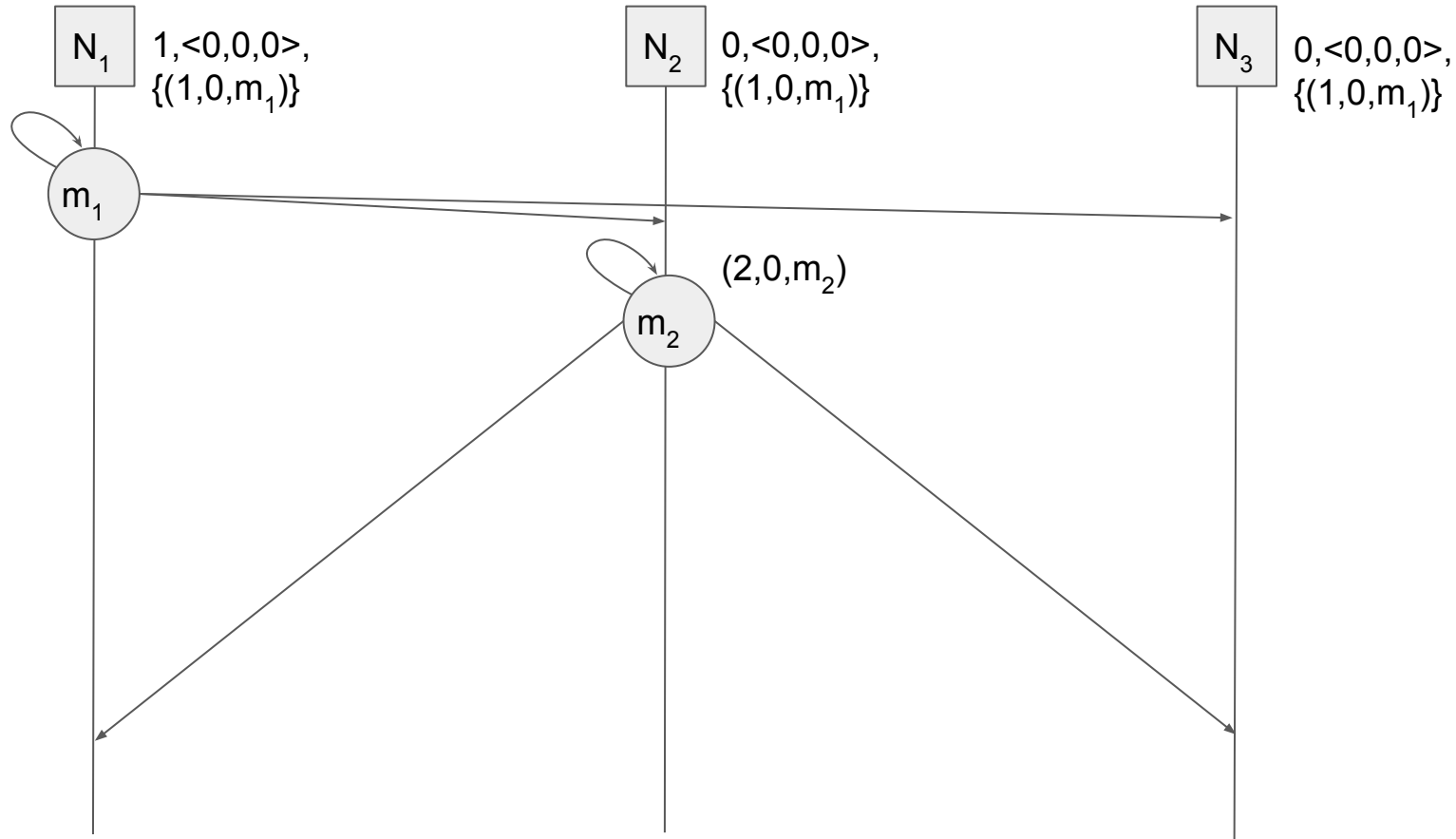
FIFO example which is not an execution of causal broadcast.



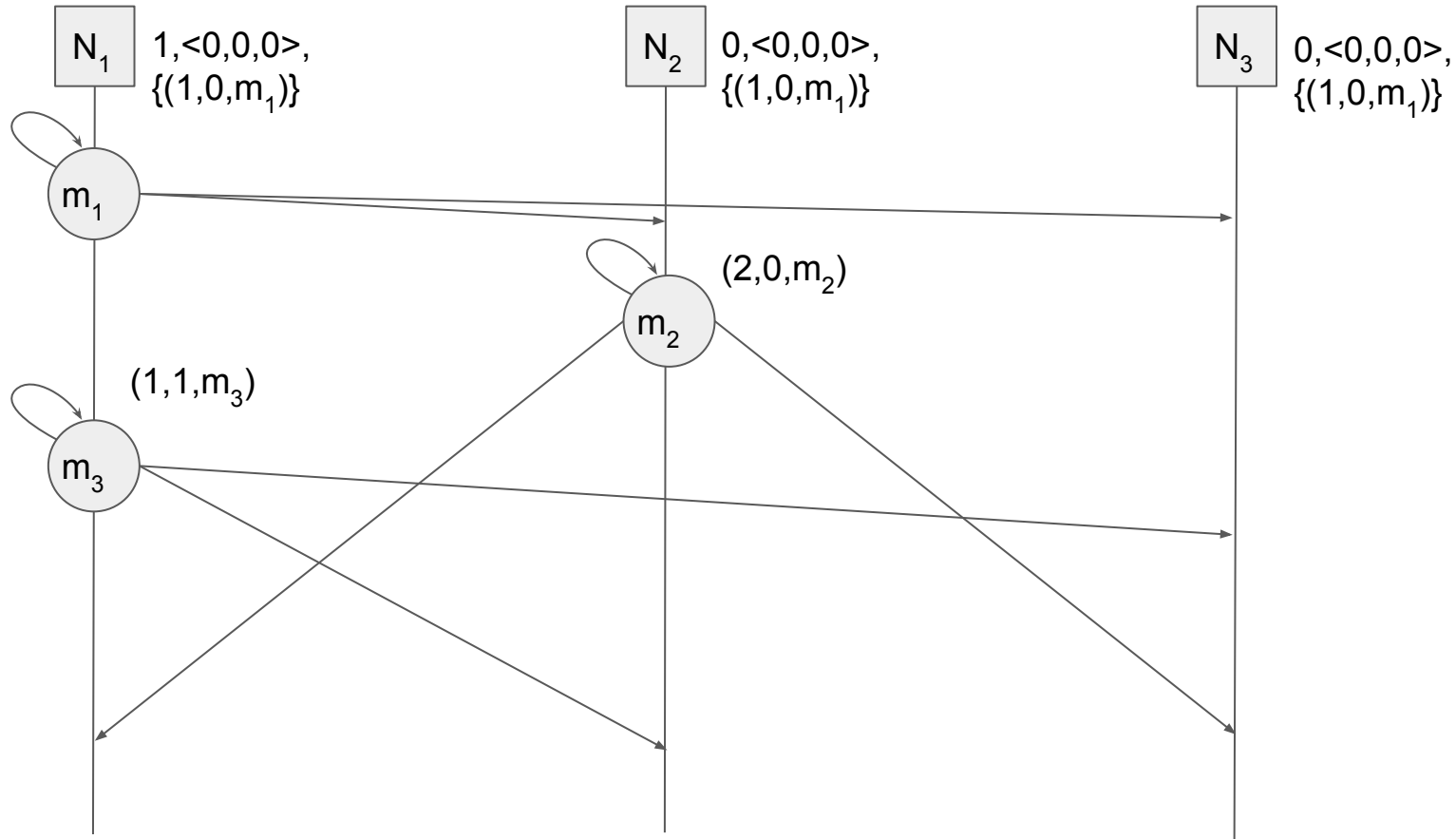
FIFO example which is not an execution of causal broadcast.



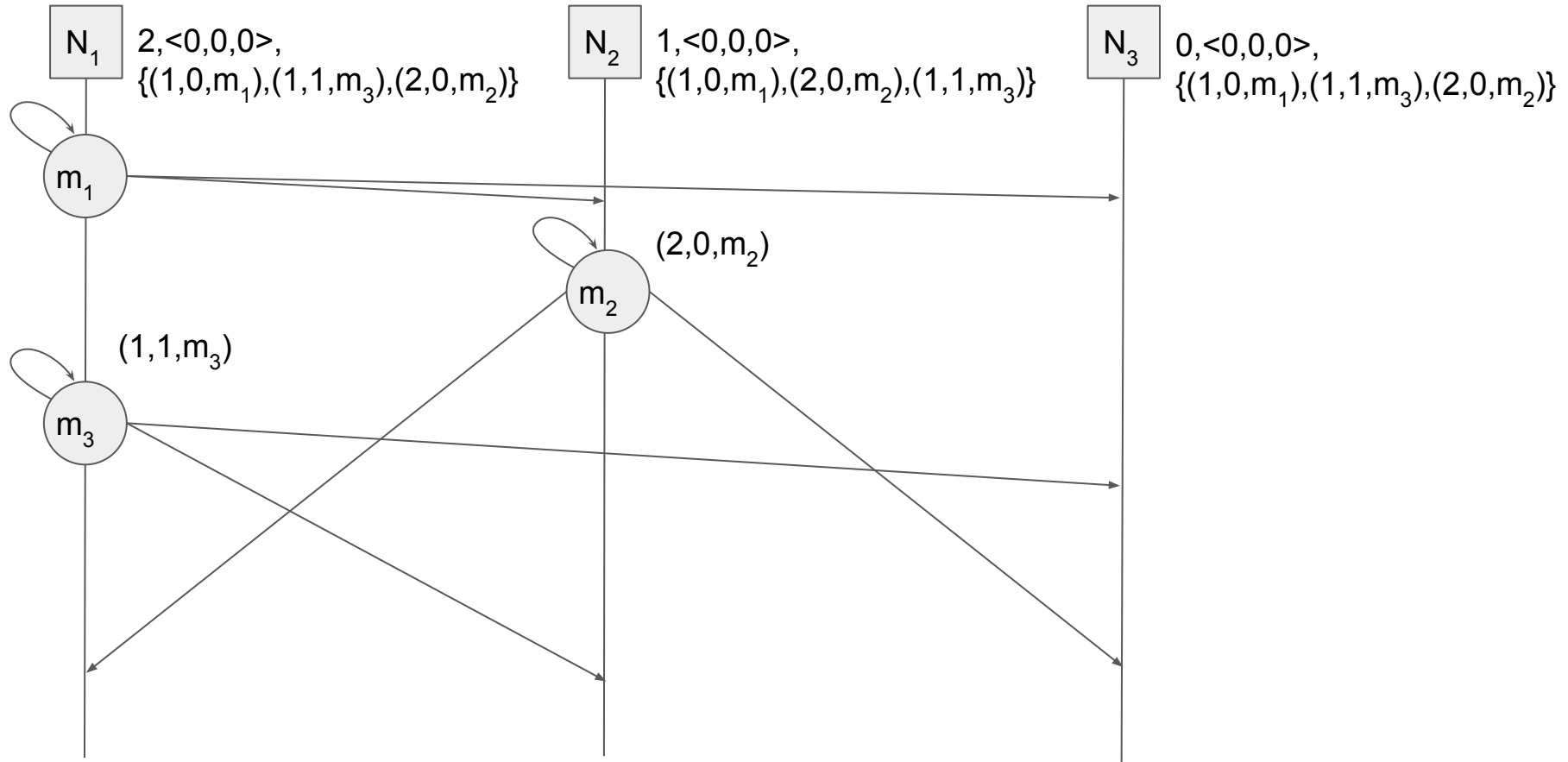
FIFO example which is not an execution of causal broadcast.



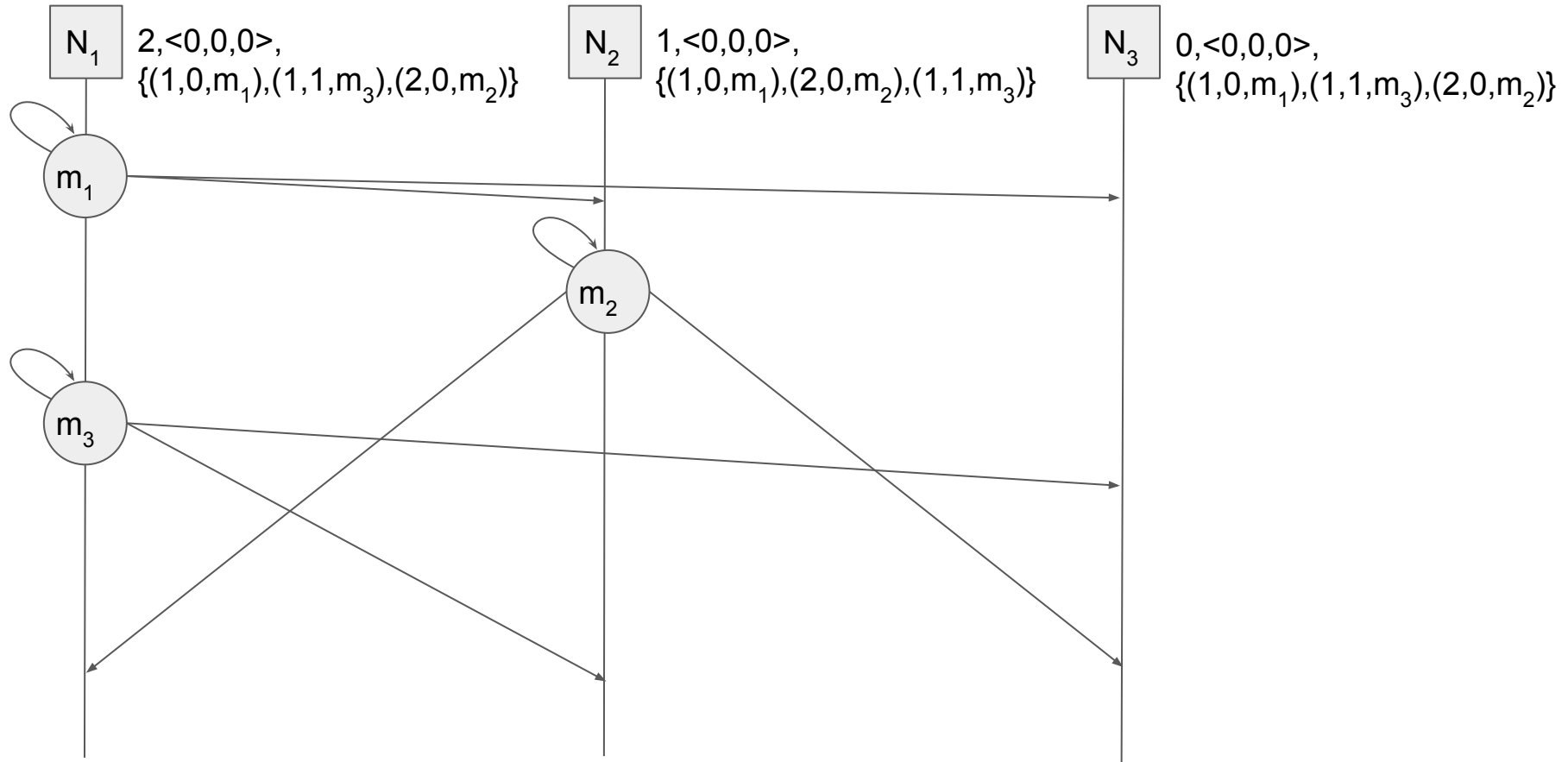
FIFO example which is not an execution of causal broadcast.



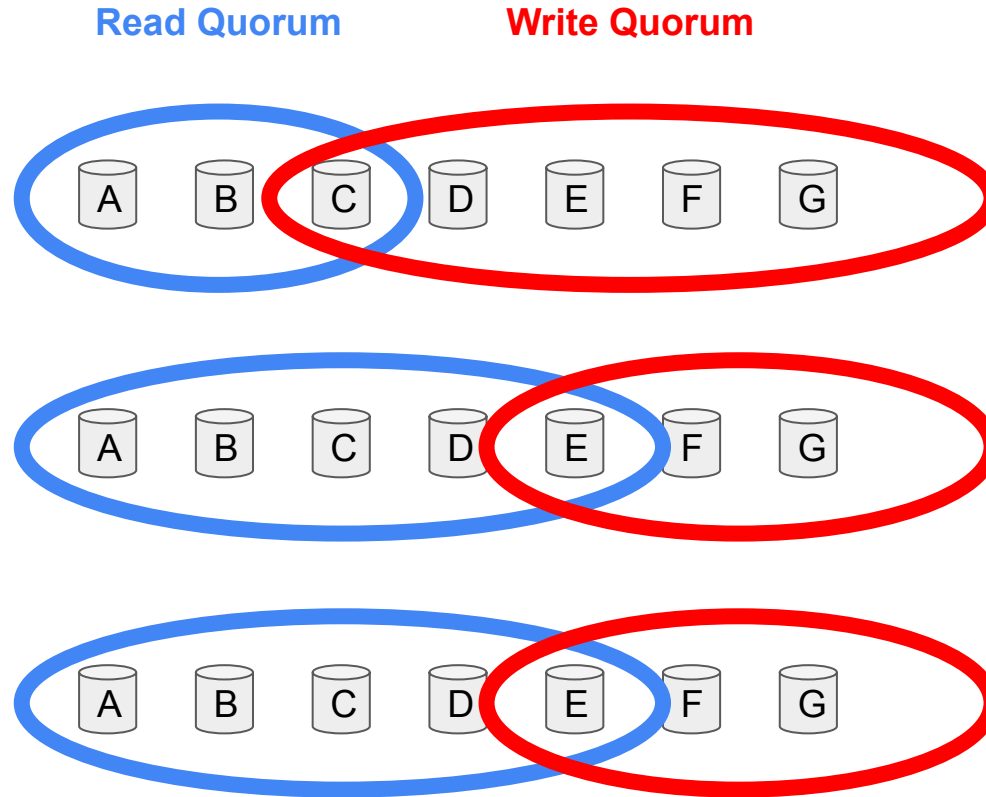
FIFO example which is not an execution of causal broadcast.



FIFO example which is not an execution of causal broadcast.

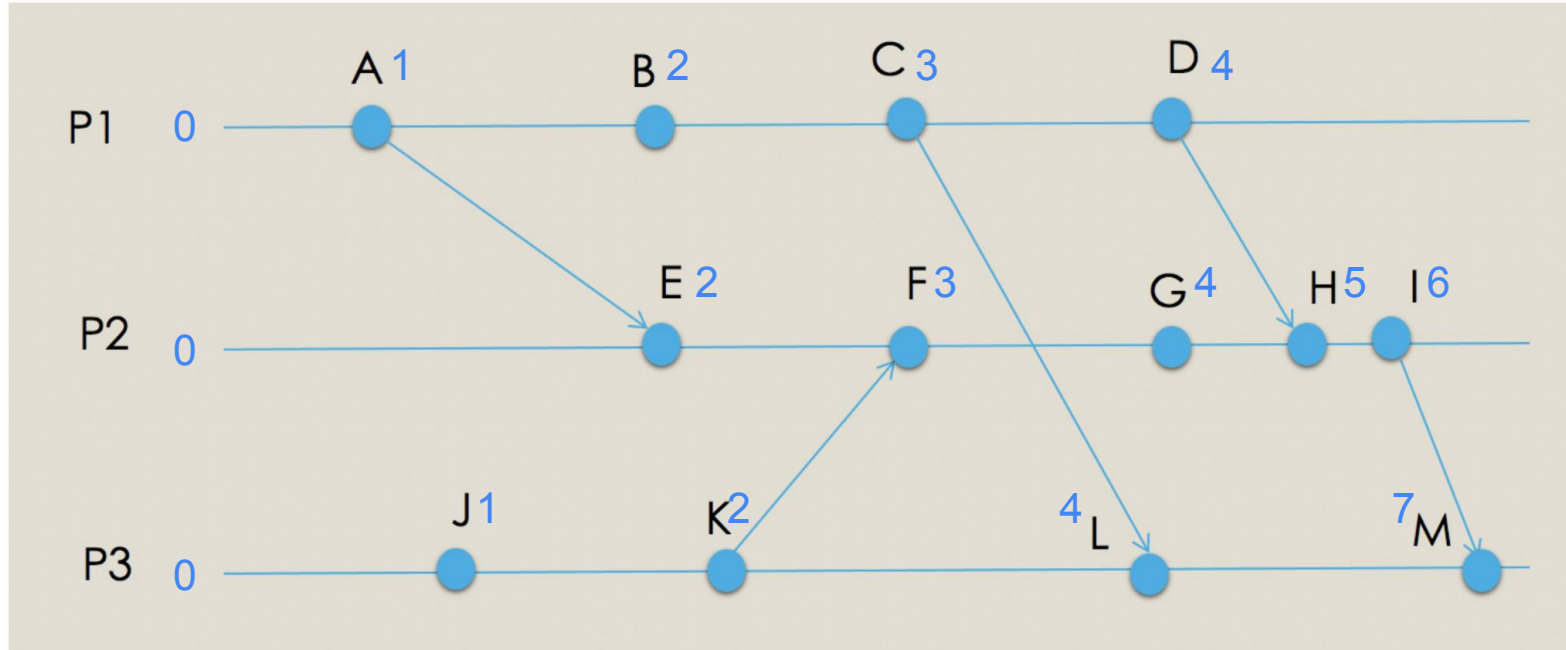


All the combinations of read quorum and write quorum that guarantee read-after-write consistency for a system with 7 replicas.

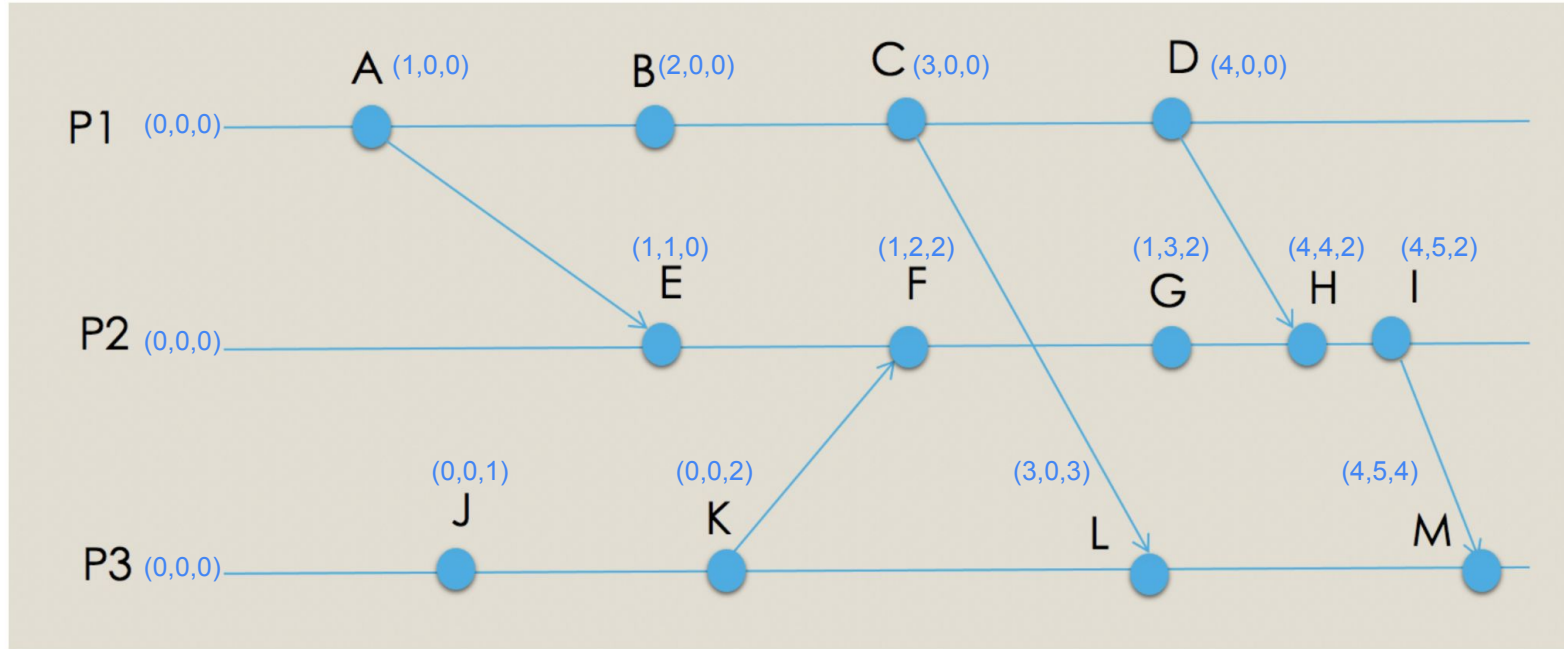




## Lamport timestamps



## Vector timestamps



Concurrent Events:

$A \parallel J, A \parallel K, B \parallel E, B \parallel F, B \parallel G, B \parallel J, B \parallel K, C \parallel E, C \parallel F, C \parallel G, C \parallel J, C \parallel K, D \parallel E, D \parallel F, D \parallel G, D \parallel J, D \parallel K, D \parallel L,$   
 $E \parallel J, E \parallel K, E \parallel L, F \parallel L, G \parallel L, H \parallel L, I \parallel L$