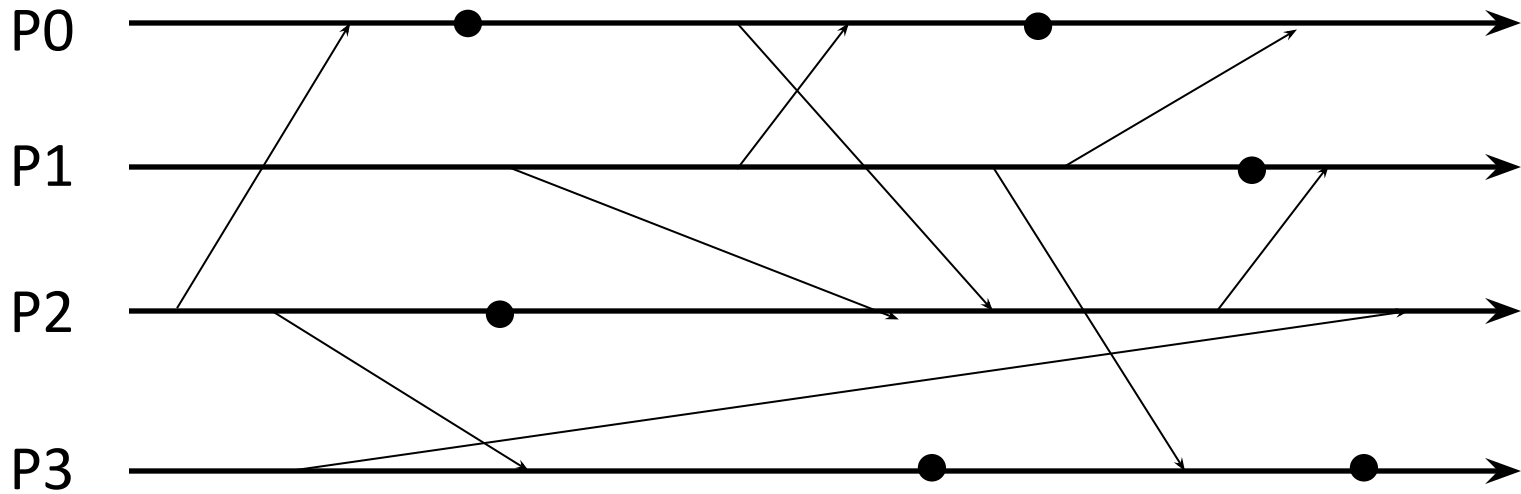
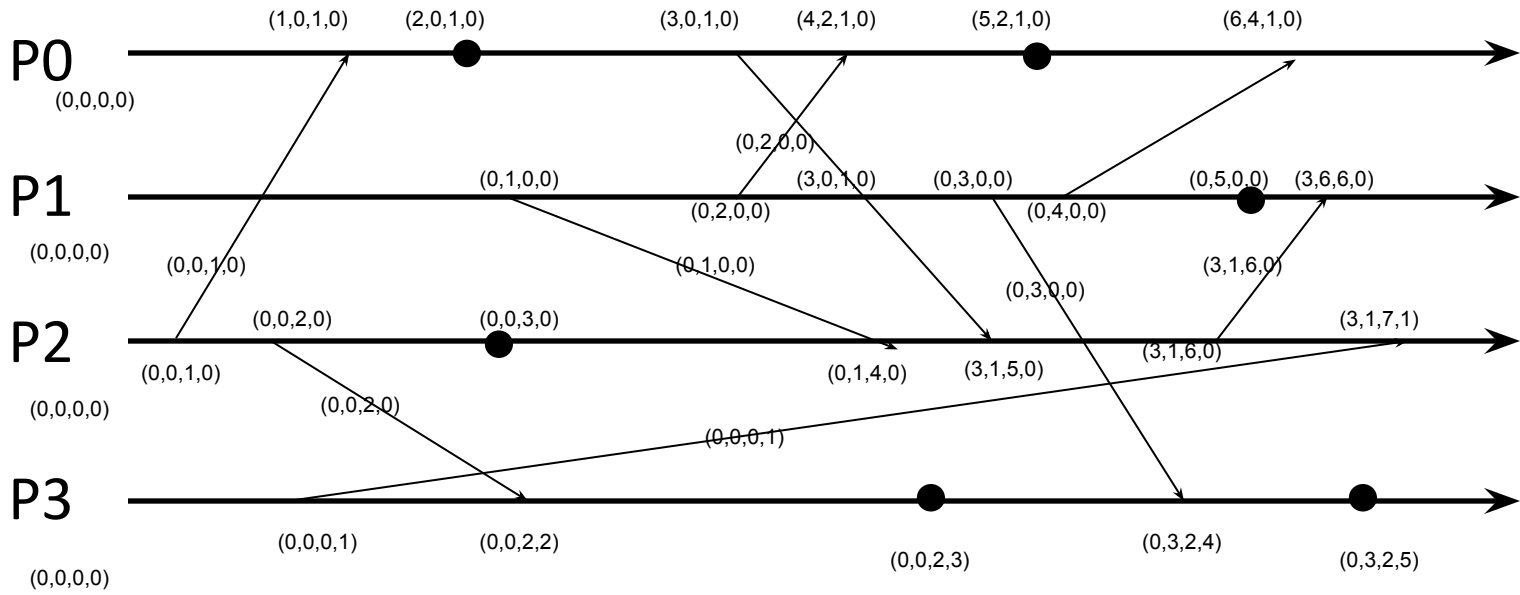


I. Mark one pair of events that are concurrent with each other.



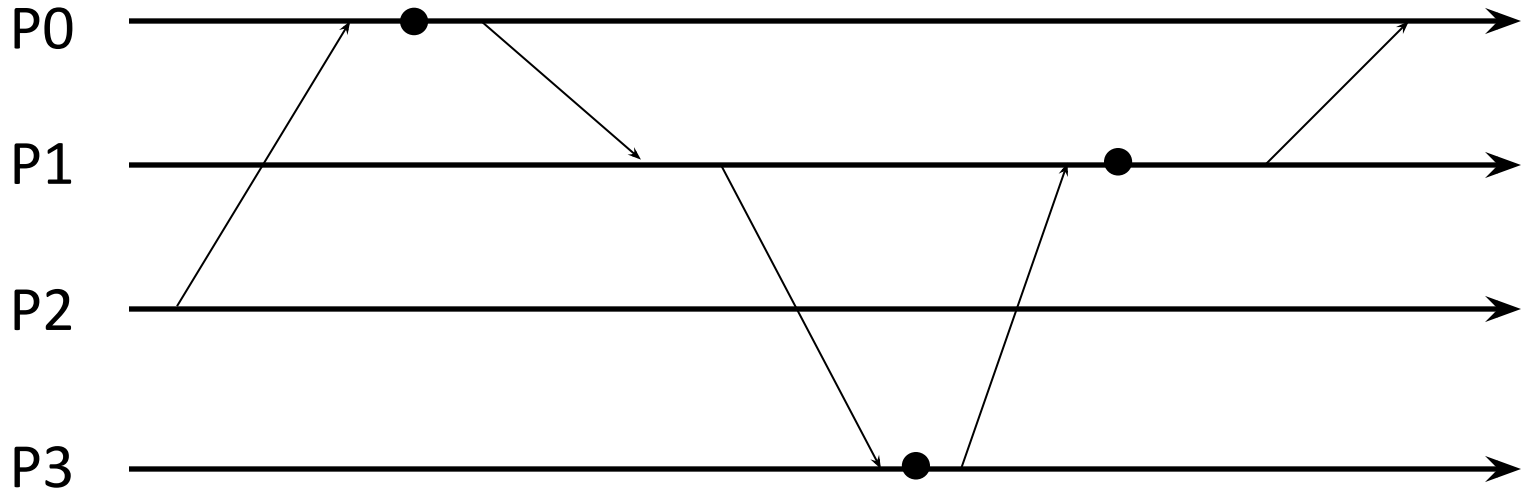
# I. Mark one pair of events that are concurrent with each other.



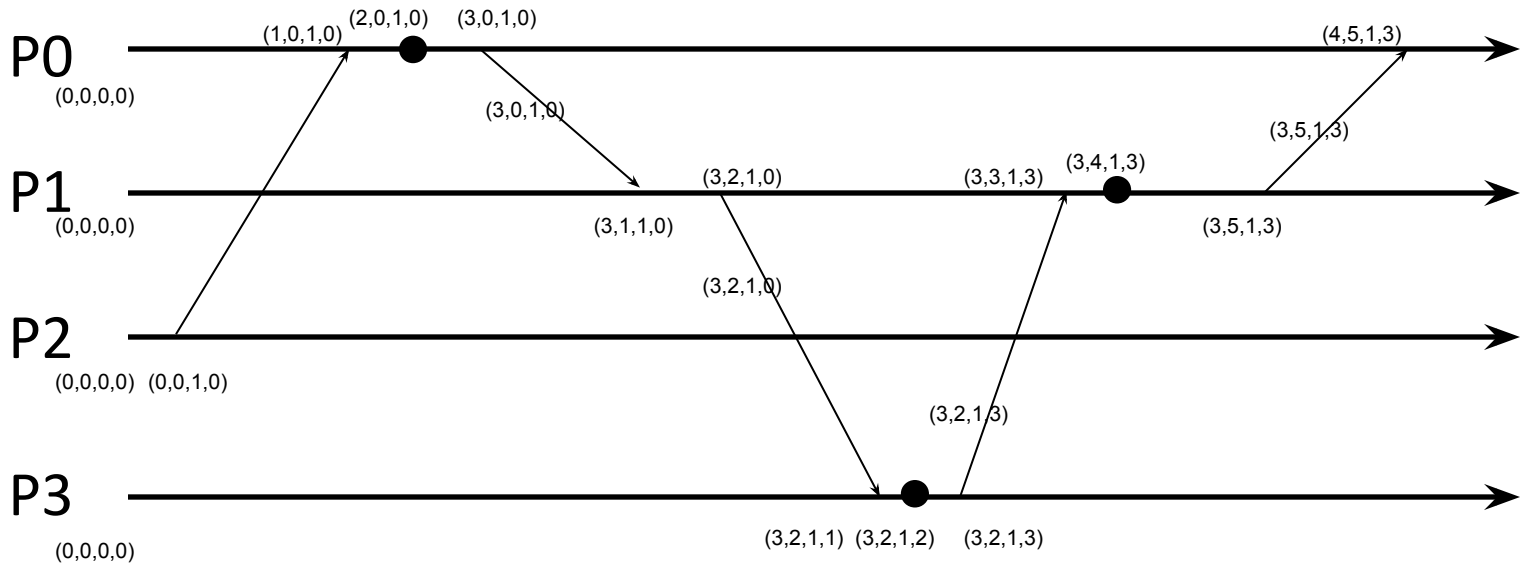
The following events are concurrent:

- (0,0,0,1) ||| (1,0,1,0)
- (0,0,2,2) ||| (2,0,1,0)
- (0,0,2,3) ||| (3,1,5,0)

II. Mark one pair of events that are concurrent with each other.

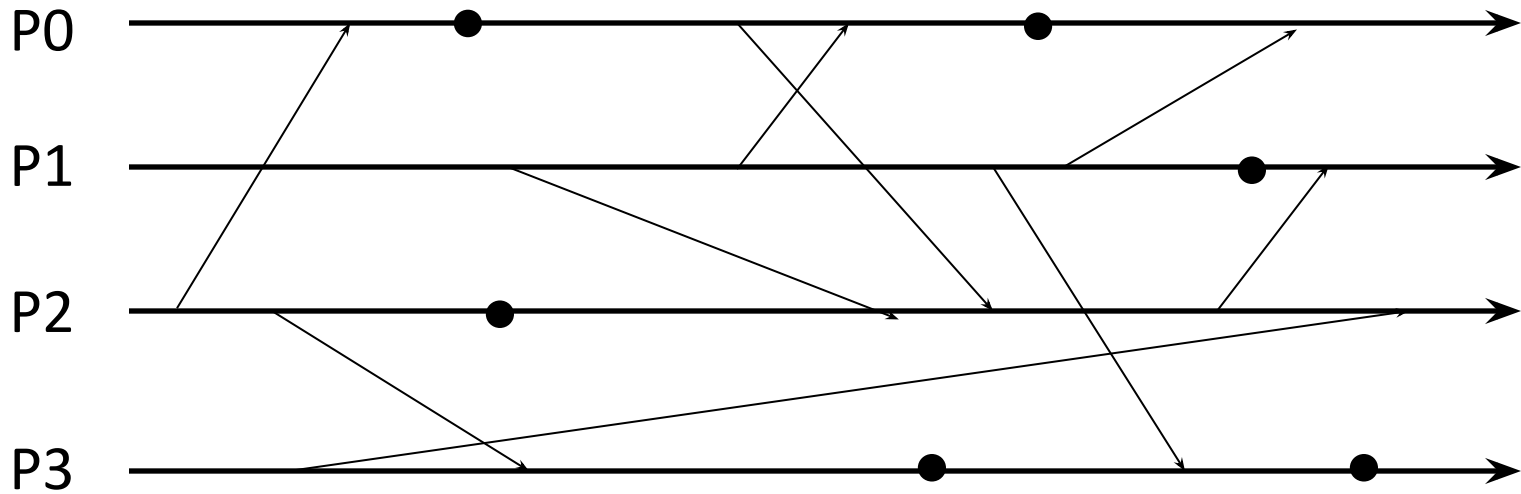


## II. Mark one pair of events that are concurrent with each other.

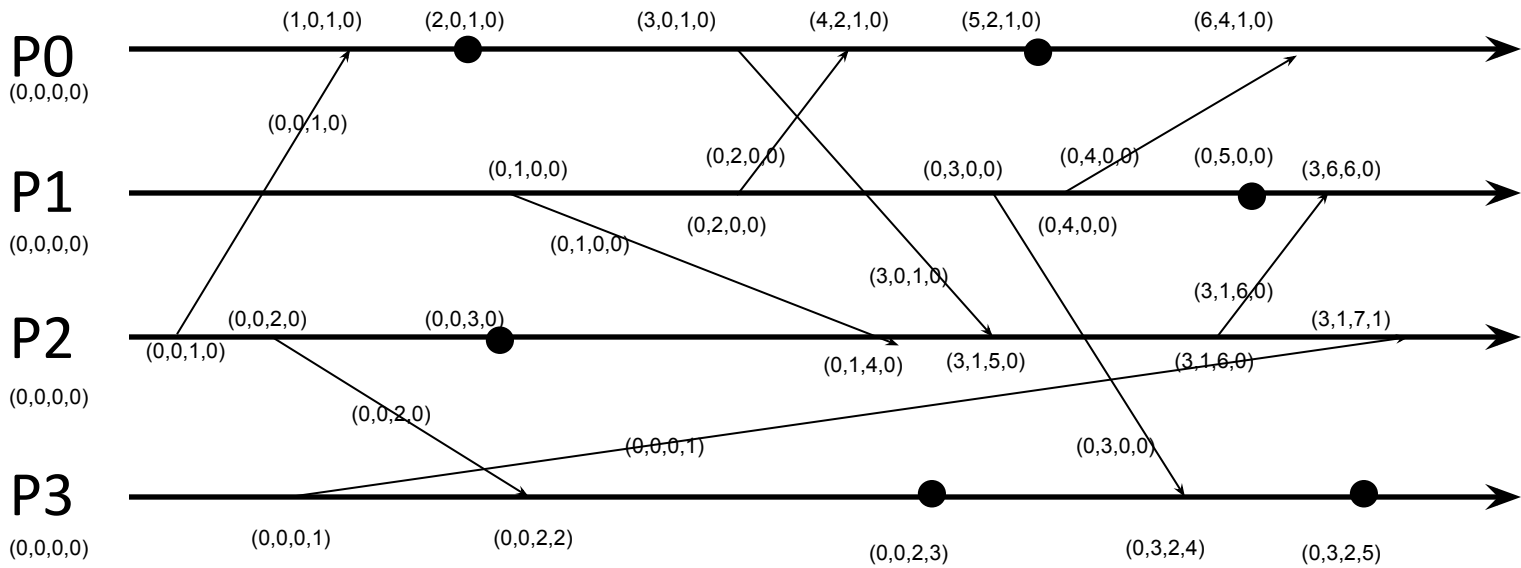


- All events are causally related to each other i.e. there are no concurrent events. For any two event VT1 and VT2;  $VT1 \leq VT2$

III. Identify an event at process P2 that happens before an event at P1.

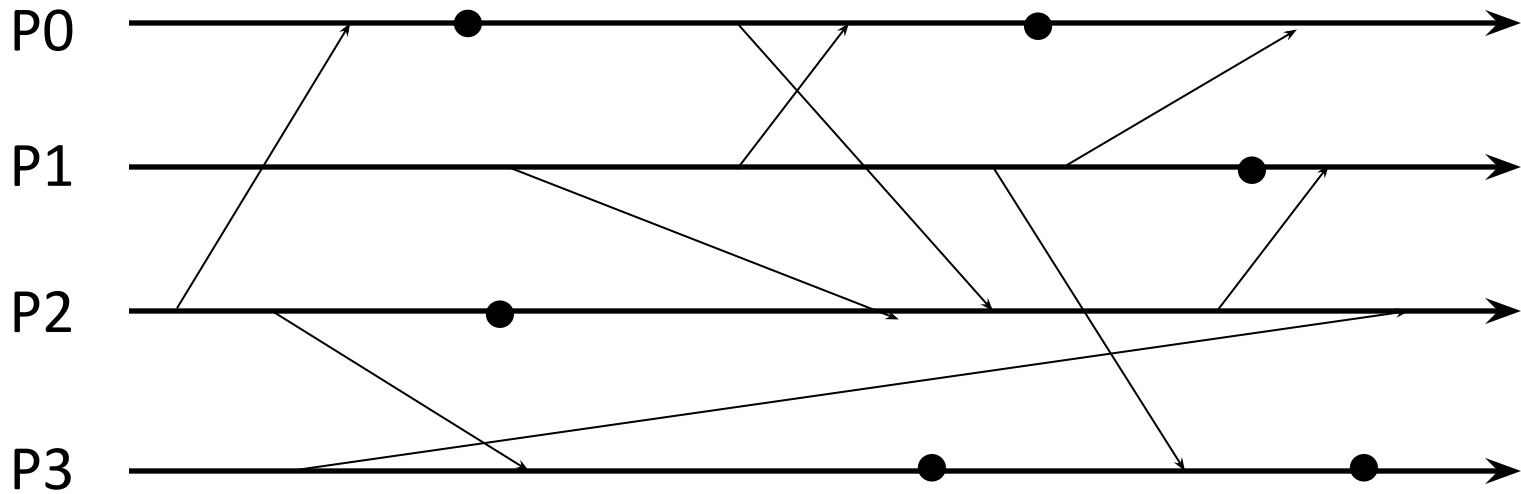


### III. Identify an event at process P2 that happens before an event at P1.

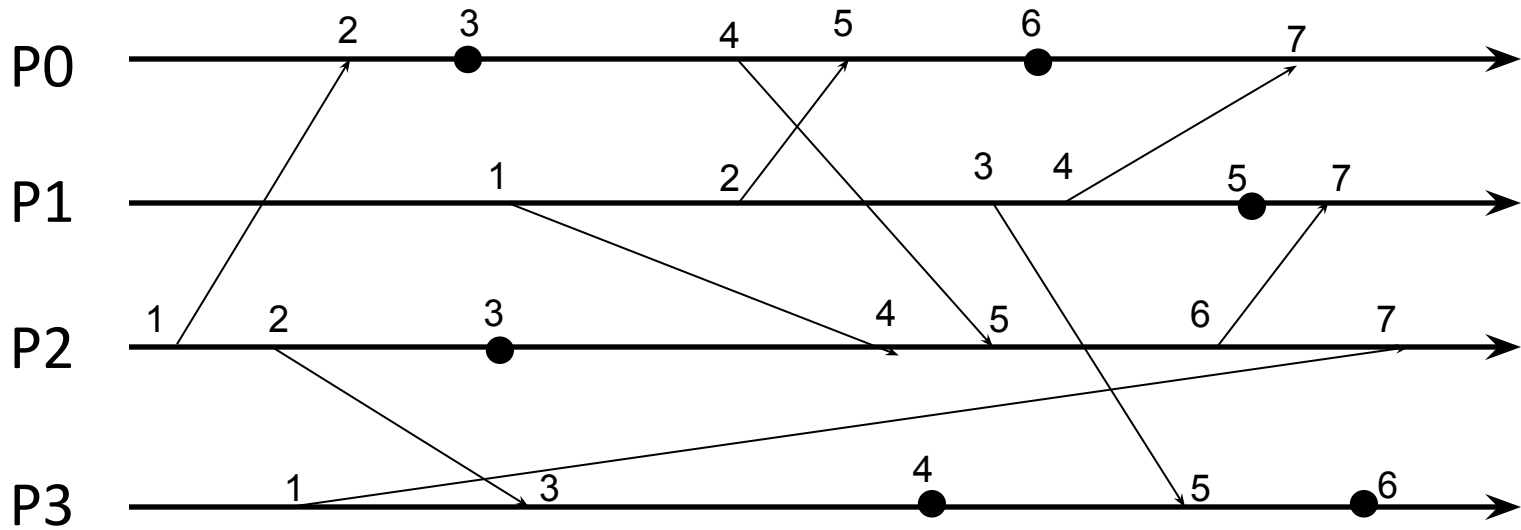


- (0,0,1,0) → (3,6,6,0)
- (3,1,6,0) → (3,6,6,0)
- (3,1,5,0) → (3,6,6,0)

**IV. Mark all Lamport timestamps on this figure for all events.**  
**All processes start with zero timestamps.**

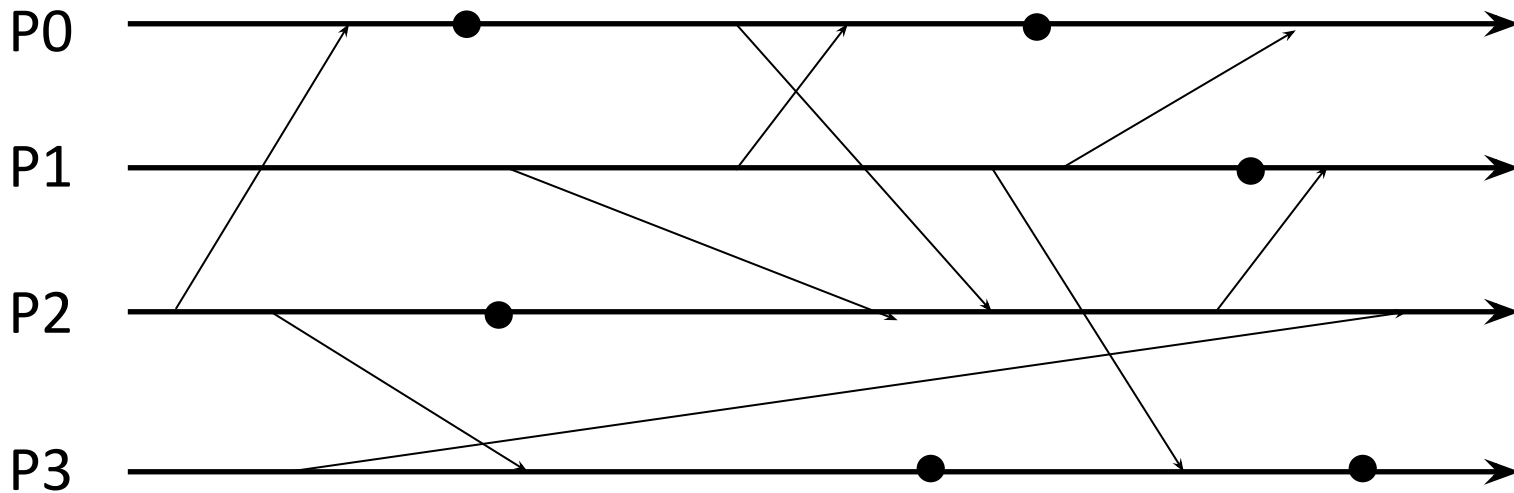


IV. Mark all Lamport timestamps on this figure for all events.  
 All processes start with zero timestamps.

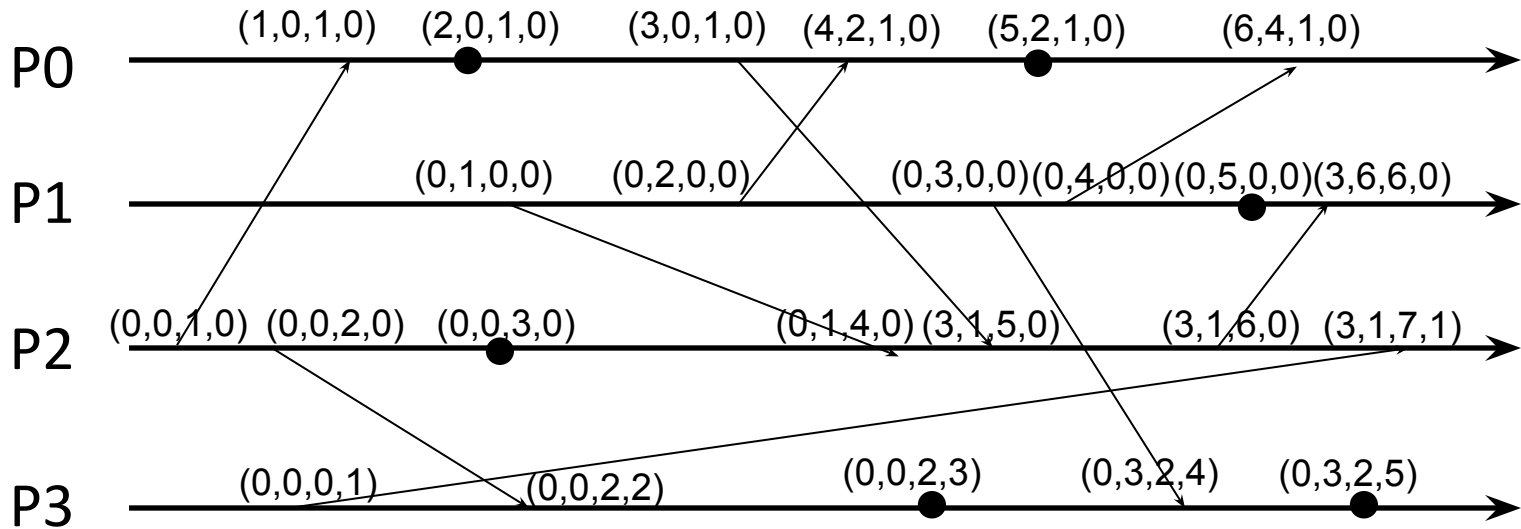




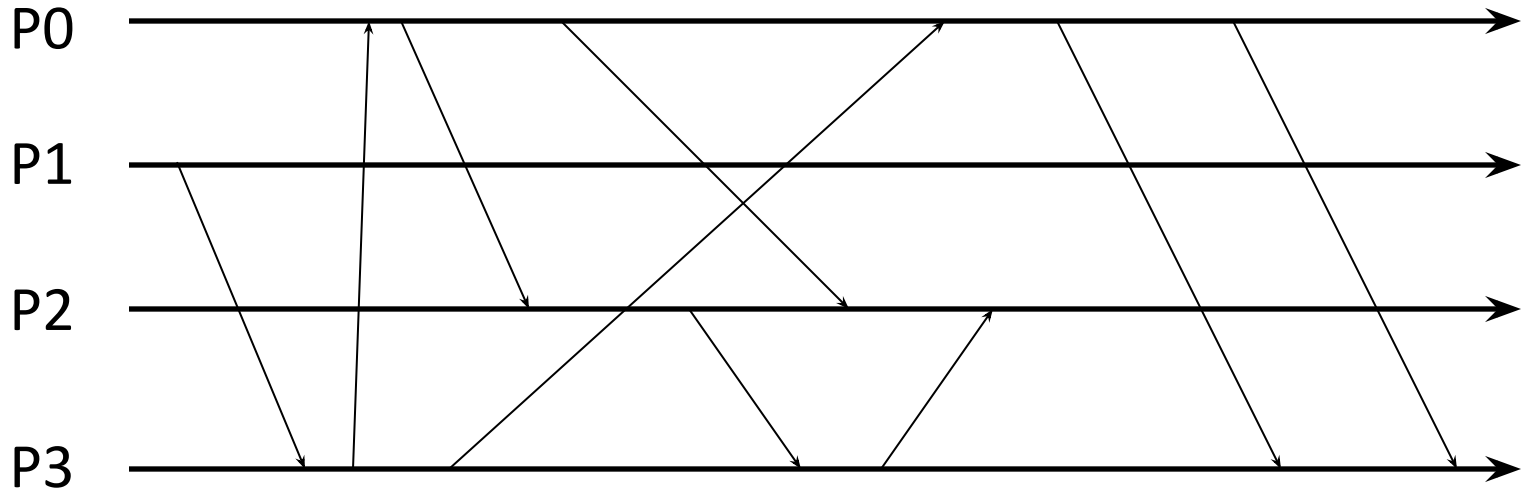
**V. Mark all vector timestamps on this figure for all events.**  
**All processes start with zero timestamps.**



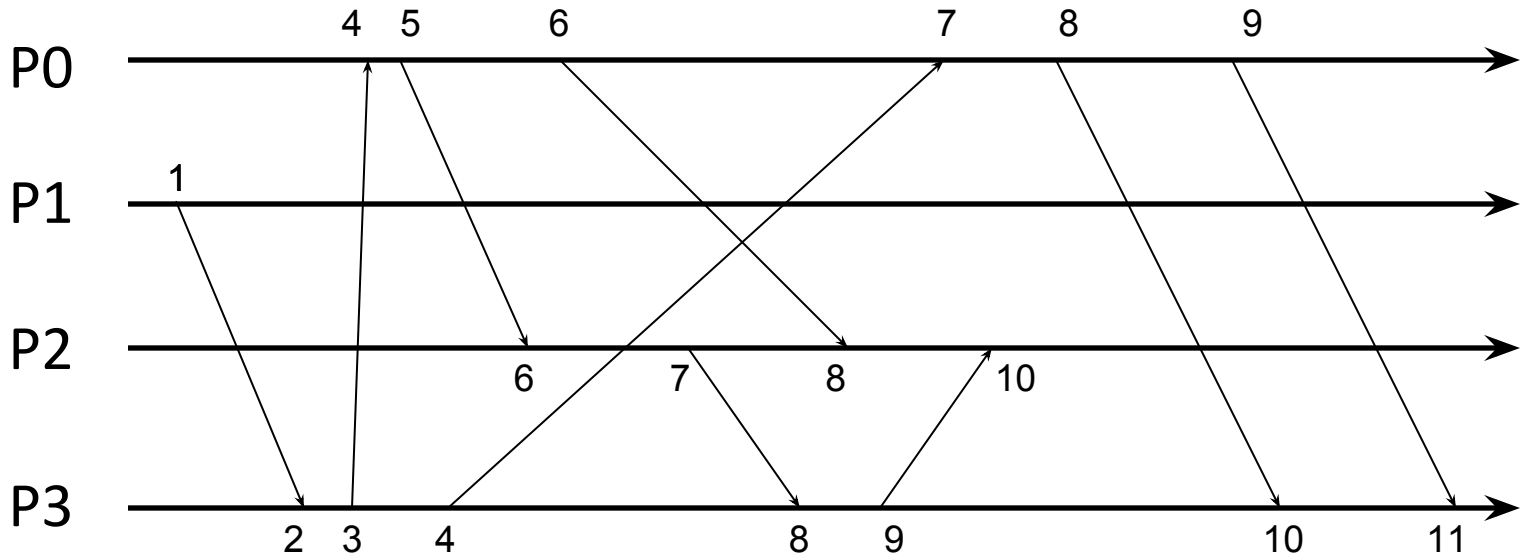
V. Mark all vector timestamps on this figure for all events.  
 All processes start with zero timestamps.



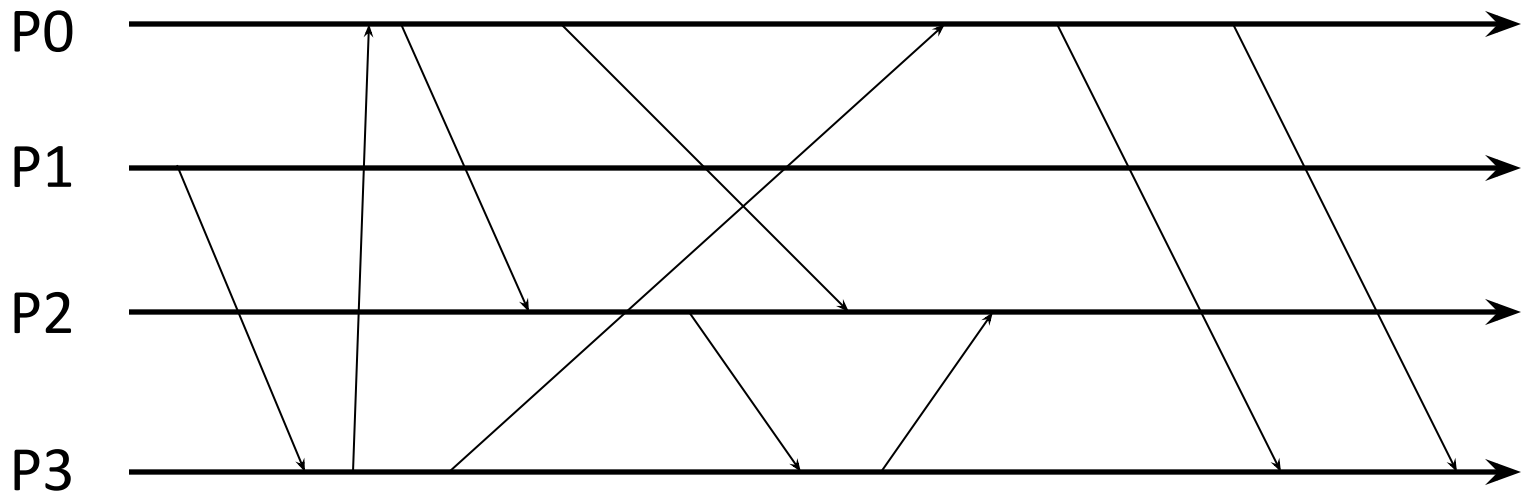
**VI. Mark all Lamport timestamps on this figure for all events.  
All processes start with zero timestamps.**



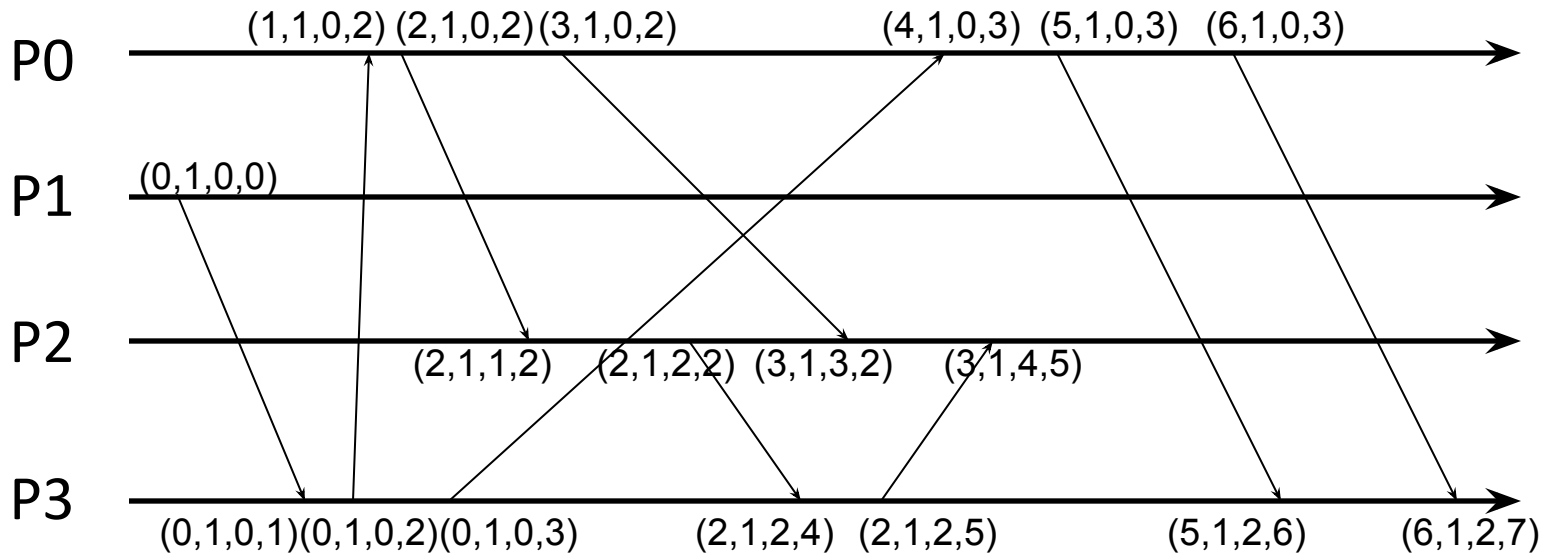
**VI. Mark all Lamport timestamps on this figure for all events.  
All processes start with zero timestamps.**



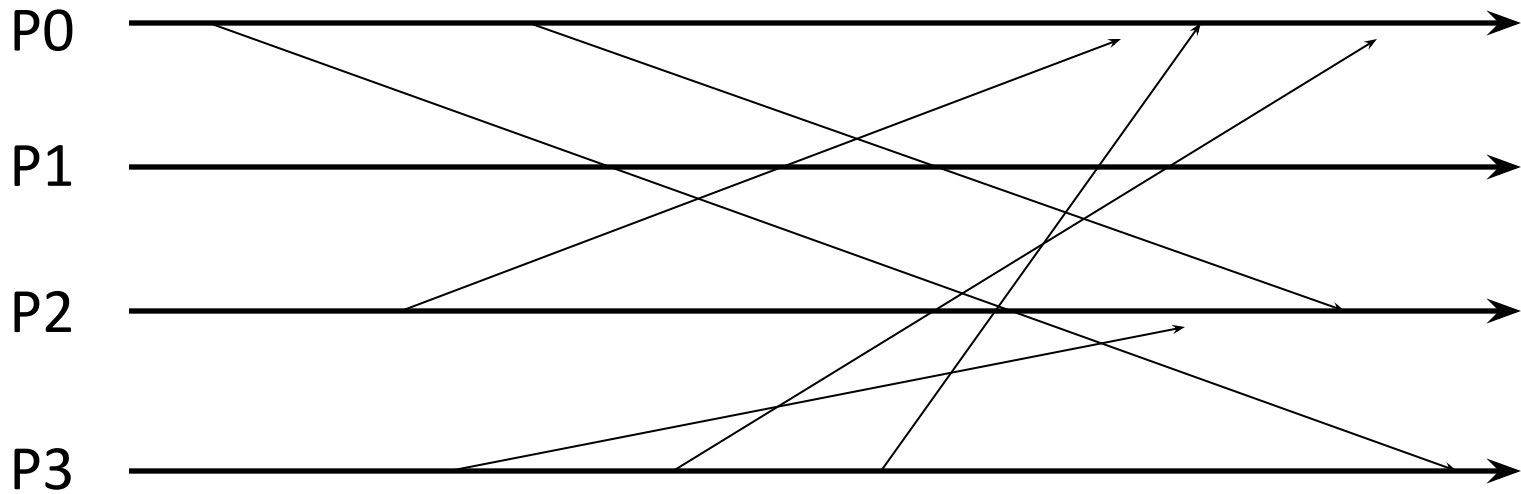
**VII. Mark all vector timestamps on this figure for all events.**  
**All processes start with zero timestamps.**



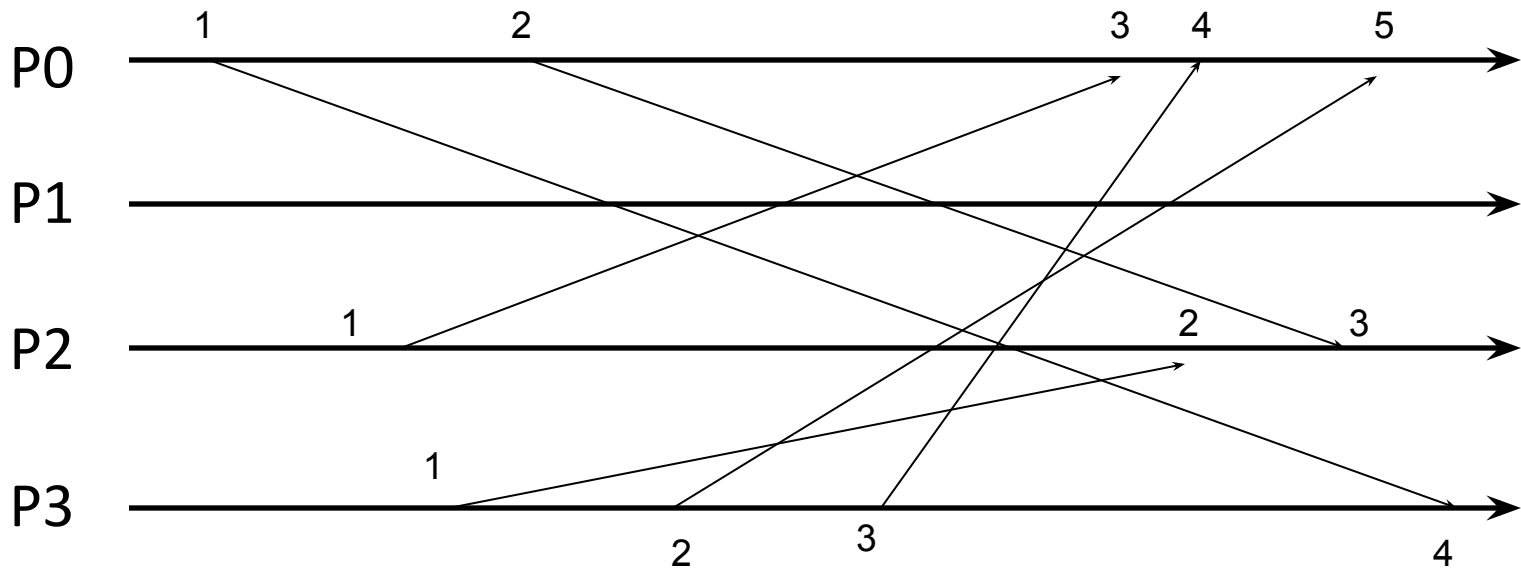
**VII. Mark all vector timestamps on this figure for all events.**  
**All processes start with zero timestamps.**



**VIII. Mark all Lamport timestamps on this figure for all events.  
All processes start with zero timestamps.**

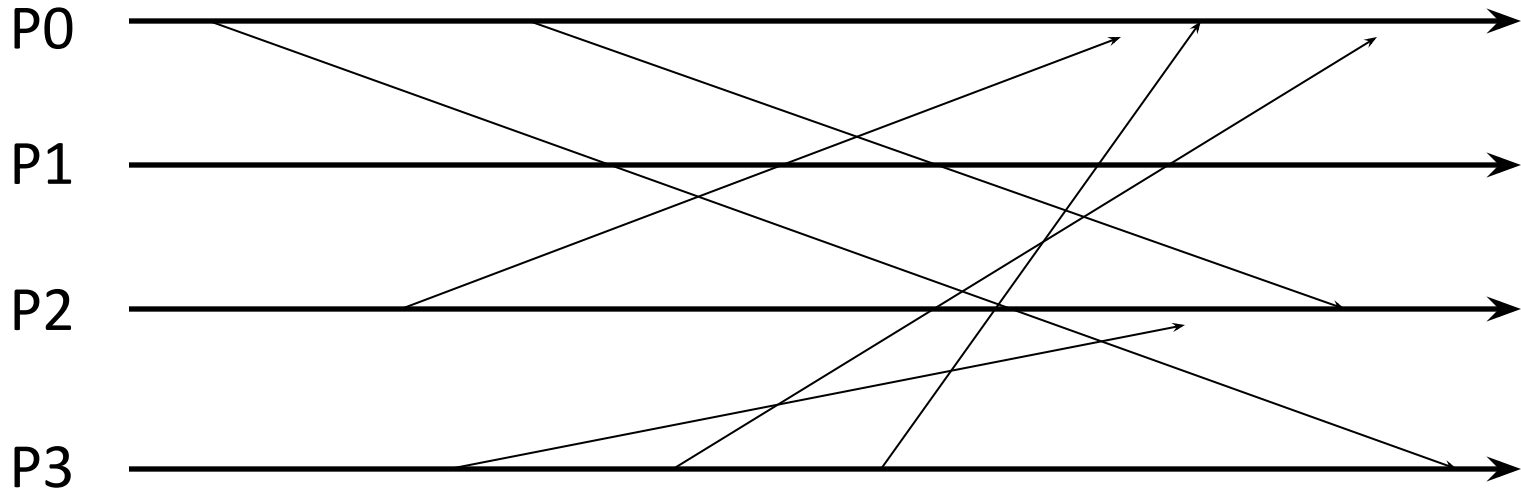


VIII. Mark all Lamport timestamps on this figure for all events.  
All processes start with zero timestamps.





**IX. Mark all vector timestamps on this figure for all events.**  
**All processes start with zero timestamps.**



IX. Mark all vector timestamps on this figure for all events.  
 All processes start with zero timestamps.

