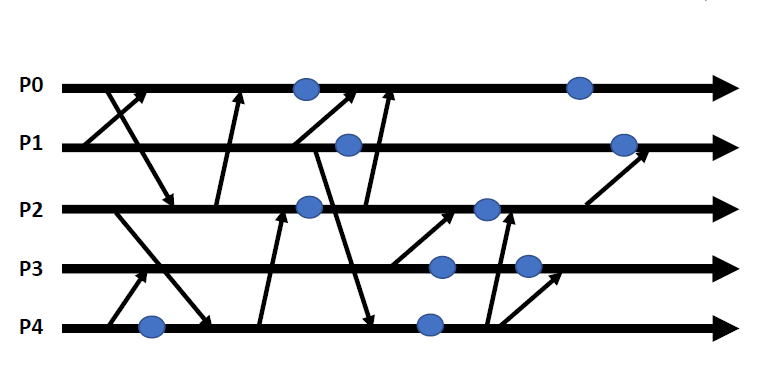
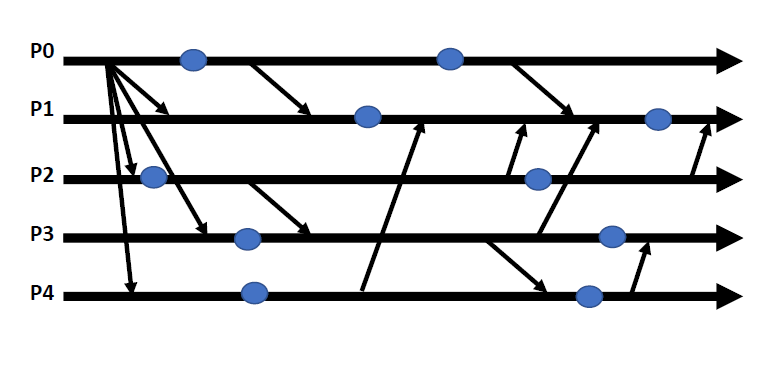
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ECE 4930-004

**HW2**

1. Draw the location of checkpoints to create one strongly consistent cut, one consistent cut, and one inconsistent cut. Clearly label each cut.



1. What is the *domino effect*, and why is it an important concern when checkpointing? Clearly state what causes it and discuss a solution to mitigate it.
2. Given the initial vector timestamps for the three processes below, what is the final vector timestamp for each process? Countable events include: message sends, message receives, and local events (circles). Show your work for partial credit.
3. Sending marker message is expensive as it is essentially an all-to-all operation that does not scale. However, using marker messages allows the processes to coordinate to obtain a consistent checkpoint. Create and describe a checkpointing scheme that reduces the overall number of marker message. Note: your scheme must still use marker messages to initiate the checkpointing operation. Does your scheme produce inconsistent, consistent, or strongly consistent checkpoints?