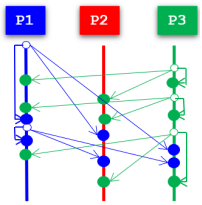
理论作业

1. Given the following operations of three processes (P1, P2, P3). They belong to （ ）



   (a) Total Ordering
   (b) Sequential Ordering
   (c) Causal Ordering
   (d) Data-centric ordering

2. Explain in your own words what the main reason is for actually considering **weak consistency** models.

3. Why is computer clock synchronization necessary? Describe the design requirements for a system to synchronize the clocks in a distributed system.

4. Given a certain merge sort algorithm, we assume that the sequential part accounts for 60% running time and the remaining parallel part 40% time. Moreover a 6-core computer can speed up the parallel part by 4×, 10-core computer by 5×, and yet 20-core computer by 8×, could you approximate the sweet point of the merge sort algorithm?

5. A client attempts to synchronize with a time server. It records the round-trip times and timestamps returned by the server in the table below.
   Which of these times should it use to set its clock? To what time should it set it? Estimate the accuracy of the setting with respect to the server's clock. If it is known that the time between sending and receiving a message in the system concerned is at least 8 ms, do your answers change?

Round-trip (ms)	*Time (hr:min:sec)*
22	*10:54:23.674*
25	*10:54:25.450*
20	*10:54:28.342*