

Name _____

EntryNo _____

Group _____

Problem 1:

Consider a distributed system with n processes. Each process P_i has a computation sequence C_i which defines P_i . Let $C = \bigcup_{i \in [1, n]} C_i$. Let C_i be the following sequence:

$$C_i = [s_i^{i+1}, \dots, s_i^n, s_i^1, \dots, s_i^{i-2}, r_i^{i-1}, \dots, r_i^1, r_i^n, \dots, r_i^{i+2}]$$

Prove the following statement: if $CV : C \rightarrow \mathbb{N}^m$ is a vector clock for the above program, then $m \geq n$.

Problem 2:

Assume that you have implemented the vector clock algorithm but what you really need is Lamport's clock. Write a function *convert* that takes as input a vector timestamp and outputs a logical clock timestamp.