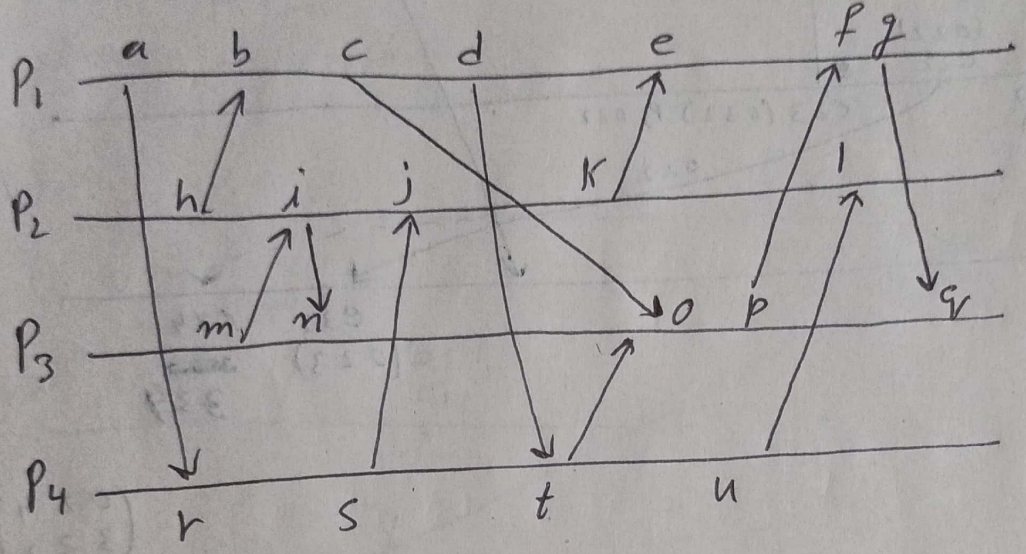
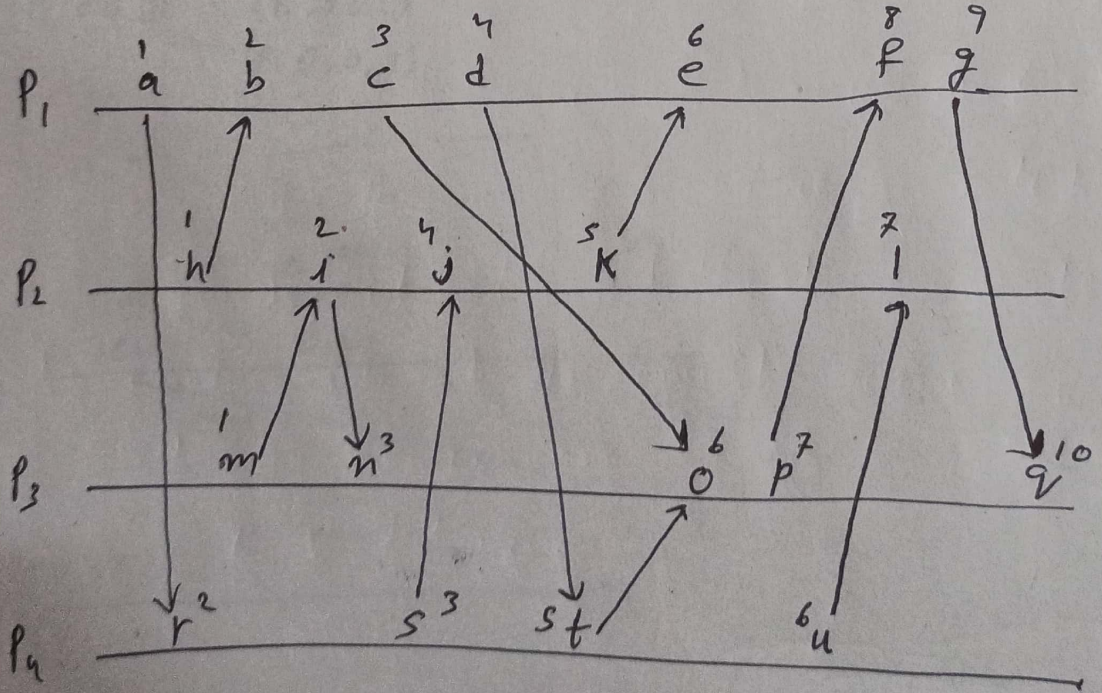
22MCA0139 RAJAT SINGH Digital Assignment 2

1) Diagram in question



a) Lamport Timestamps figure and list



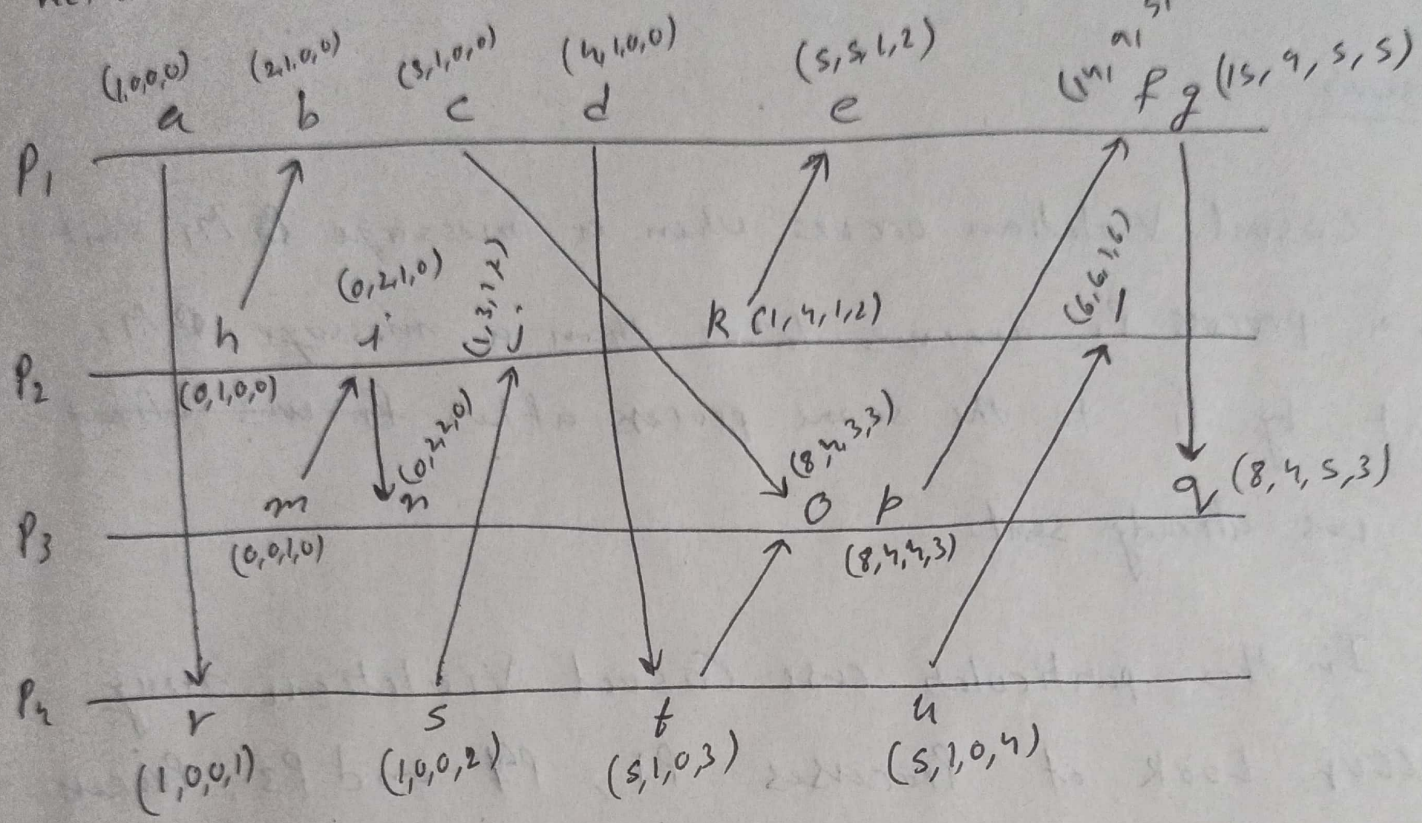
a=1 b=2 c=3 d=4 e=6 f=8 g=9

h=1 i=2 j=4 K=5 l=7

m=1 n=3 o=6 p=7 q=10

r=2 s=3 t=5 u=6

b) Vectock Clock Timestamps figure and



a(1,0,0,0) b(2,1,0,0) c(3,1,0,0) d(4,1,0,0)

e(5,5,1,2) f(14,9,5,5) g(15,9,5,5)

h(0,1,0,0) i(0,2,1,6) j(1,3,1,2) k(1,4,1,2)

l(6,6,1,6) m(0,0,1,0) n(0,2,2,0) o(8,4,3,3)

p(8,4,4,3) q(8,4,5,3)

r(1,0,0,1) s(1,0,0,2) t(5,1,0,3) u(5,1,0,4)

c) Is there potensial for a casual violation?

Answer

Casual Violation occurs when a message M_1 sent by a process P_i arrives later than a message M_2 sent by P_i to the same process after M_1 was already sent.

In this particular case Casual Violation may occur. Look at Processes P1, P4 and P3. Process P1 sends a message to P3 ($C \rightarrow O$), after that P1 sends a message to P4 and P4 sends a message to P3 at the same location ($d \rightarrow t \rightarrow O$).

Here both the messages where initiated by the same process at two different moments in time but reach P3 at the exact same event or moment in Time. This makes a potensial for a Casual Violation.