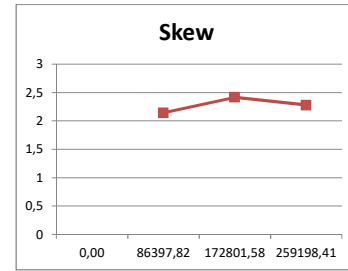


Q11

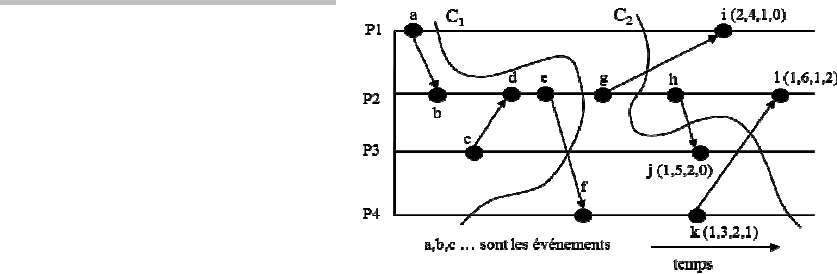
jour	0	1	2	3	
hs "h:m:s"	13:10:05	13:10:03	13:10:07	13:10:04	
hs "s"	47405	47403	47407	47404	
cp(t) "s"	0	86398	172802	259199	$\text{=jour} * 86400 + \text{hs}(i) - \text{hs}(0)$ (i.e 61506)
offset "ms"	0	185	417	590	
UCT "s"	0,00	86397,82	172801,58	259198,41	$\text{UCT} = \text{cp}(t) - \text{offset}$
Skew (10^6)		2,141258	2,413172338	2,276248531	$\text{skew} = (\text{cp}(t) / \text{uct}) - 1$
precision (moyenne des skews)/ 2.510^{-6}				91,07571631	



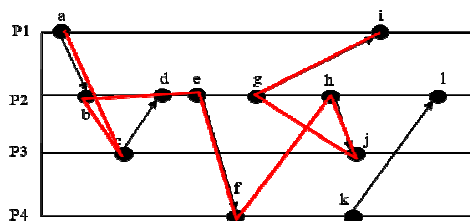
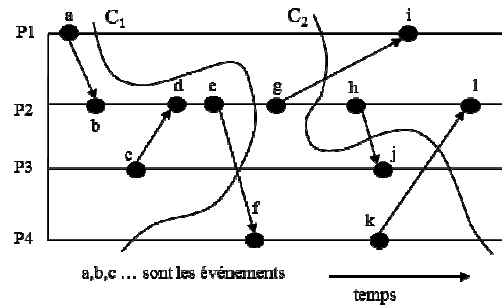
Q21

Interrupt time server n (ms)	8,120	8,120	
Interrupt time server n+1 (ms)	2,160	2,160	
mean communication time (ms)	2,98	2,98	
UCT-Cp(t) i.e. Cn - Cn+1	-338	offset	-335,02 ms
CPU Frequency	1 Ghz	synchronisation frequency	0,937203609 Ghz
max synchronization time	5		

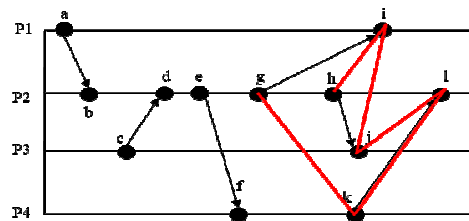
Q22



H	a-l			
h1	ai			
h2	bdeghl			
h3	cj			
h4	fk			
C1	abdec	f1	aec	consistent
C2	abdegcjfk	f2	agik	non consistent

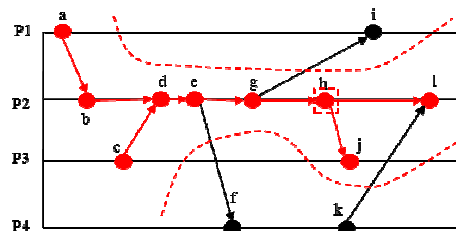


acbdeflujgi is not a run with $h \rightarrow g$, then not a linearization

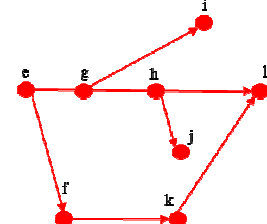


gkljih is a not run $l \rightarrow h$ and not consistent with the HB relation with $j \rightarrow h$, then not a linearization

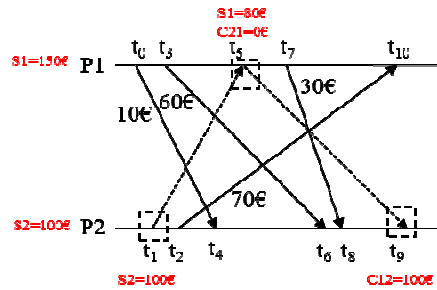
h concurrent with $h || i, h || f, h || k$



with total ordering and $P1 < P2 < P3 < P4$, we have
e, g, i, h, j, f, k, l



Q23



time	event	P1			P2		
		€	state	C ₂₁	€	state	C ₁₂
	initial state	150			100		
t ₁	P2 initiates the snapshot				100	100	
t ₅	P1 receives the marker	80	80	0			
t ₉	P2 receives the marker	50			130		100

The recorded global states is not occurring in the execution.
 $50€ \neq 80€ (80-0)$
 $100€ \neq 200€ (100+100)$

Q31

(a)

state _i	t ₀	t ₁
T _i	WANTED	WANTED
R _{D_i}	0 1 0 0	0 1 1 0

we apply rule (3)

(b)

state _i	t ₀	t ₁
Msg _i	9	10

we apply the rules (5) then (6), as Msg_i = N-1

Initialization with p_i
(0) state = RELEASED

Requesting the critical section with p_i
(1) state = WANTED, update T_i
(2) broadcast <T_i, p_i>

Receiving rule <T_j, p_j> with p_i
if (state == HELD)
or
(state == WANTED) and (T_i < T_j)
(3) R_{D_i}[j] = 1
otherwise
(4) update T_i, send a reply

Receiving a reply message with p_i
(5) Msg_i = Msg_i + 1
if Msg_i == N-1
(6) state = HELD

Releasing the critical section with p_i
(7) state = RELEASED
(8) **for** ∀j, **if** R_{D_i}[j] = 1
send a reply message to p_j, set R_{D_i}[j] = 0
Msg_i = 0

Q32

