Distributed System I Wintersemester2020/21 Assignment 4

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18/21

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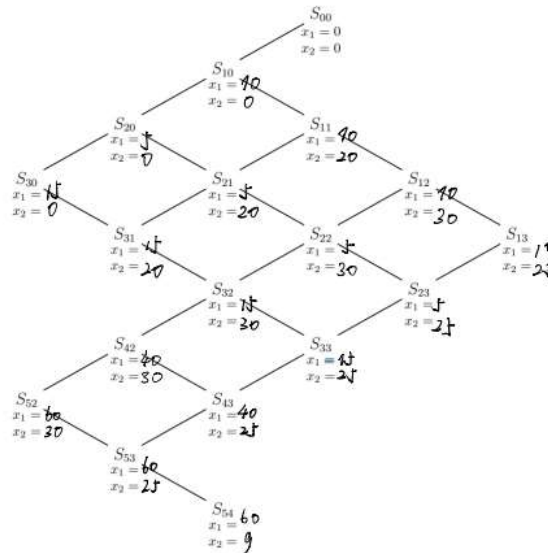
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1 Global State

1/2 **a)**

C_1 is a consistent cut. Because there is no message from future.
C_2 is not a consistent cut. Because e_2^4 need message from future (e_1^5)

2/2 **b)**

c)

2/2 i. S_{10} and S_{42} is true. So its Possibly.
2/2 ii. S_{42},S_{43},S_{52},S_{52} is true. Every Linearization must pass. So it's definitely.

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2 Transaction Processing

3/3 **a)**

4 pairs.
1. $r_1[y], w_2[y]$
2. $r_1[u], w_3[u]$
3. $r_2[x], w_3[x]$
4. $w_2[y], r_3[y]$

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4/4 **b)**

Both Serialization graphs have cycle. So both are not serialisable history.

4/6 ## 3 Two-Phase Locking

2

From the last question. H3 is not serialisable history. So only H1 and H2 can
be generated by 2-phase-Locking.
Because: $r_3[w] < w_2[w], r_2[y] < w_3[y]$