Homework 4 Dependence Analysis

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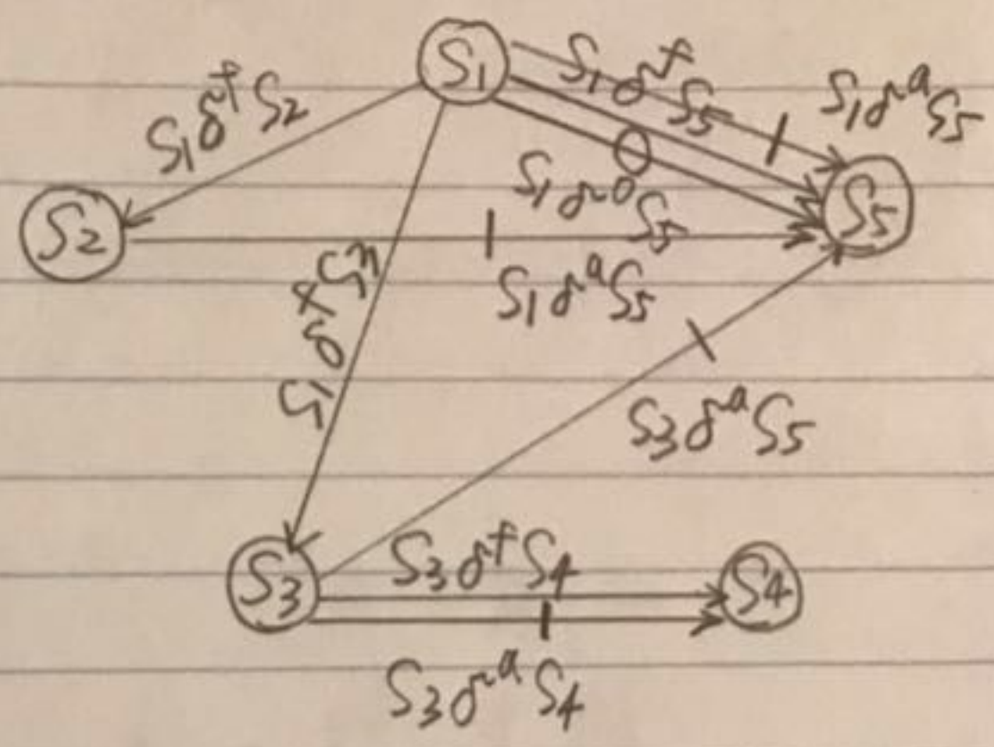
1.

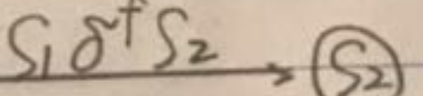
Stmt	read	write
S_1	a	a
S_2	a.b	b
S_3	a.d	c
S_4	c	d
S_5	a	a



$Out(S_1) \cap In(S_2) = \{a\} \rightarrow S_1 \delta^f S_2$
$Out(S_1) \cap In(S_3) = \{a\} \rightarrow S_1 \delta^f S_3$
$Out(S_1) \cap In(S_5) = \{a\} \rightarrow S_1 \delta^f S_5$
$Out(S_3) \cap In(S_4) = \{c\} \rightarrow S_3 \delta^f S_4$
$Out(S_1) \cap Out(S_5) = \{a\} \rightarrow S_1 \delta^o S_5$

$In(S_1) \cap Out(S_5) = \{a\} \rightarrow S_1 \delta^a S_5$
$In(S_2) \cap Out(S_5) = \{a\} \rightarrow S_2 \delta^a S_5$
$In(S_3) \cap Out(S_5) = \{a\} \rightarrow S_3 \delta^a S_5$
$In(S_3) \cap Out(S_4) = \{d\} \rightarrow S_3 \delta^a S_4$

2. S_1: A[i][j] = A[i+1][j-1]
S_2: B[i][j] = A[i][j]



Body

A[i,j] = A[i+1][j-1]
B[i,j] = A[i][j]

distance vector	direction vector
(-1, 1)	(-, +)
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For S_1:
They cannot be re-ordered. Because the first sign is "-".

reordered
For S_2:
No dependencies, fully reorderable