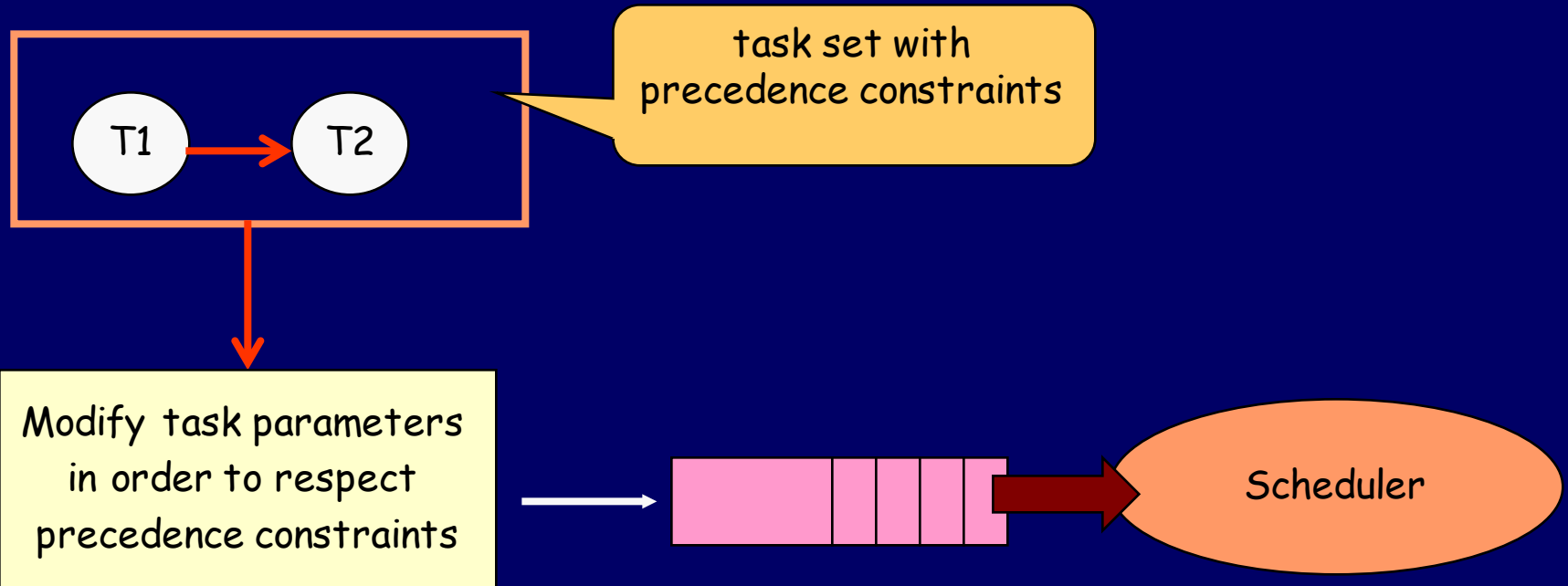
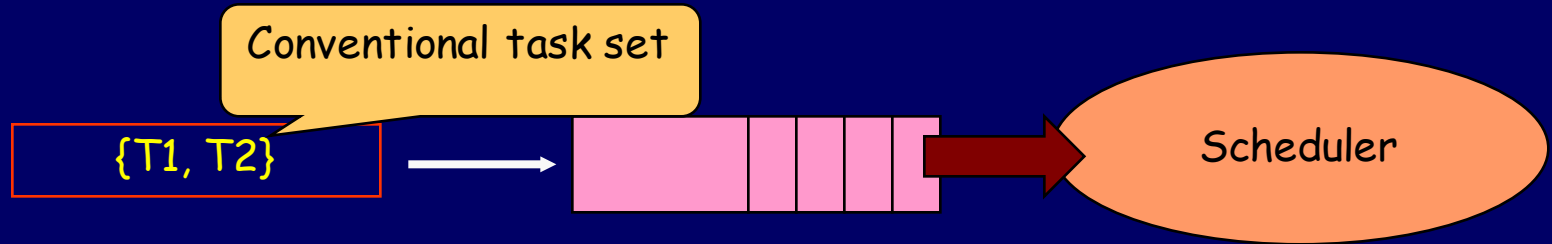


Scheduling tasks with precedence relations



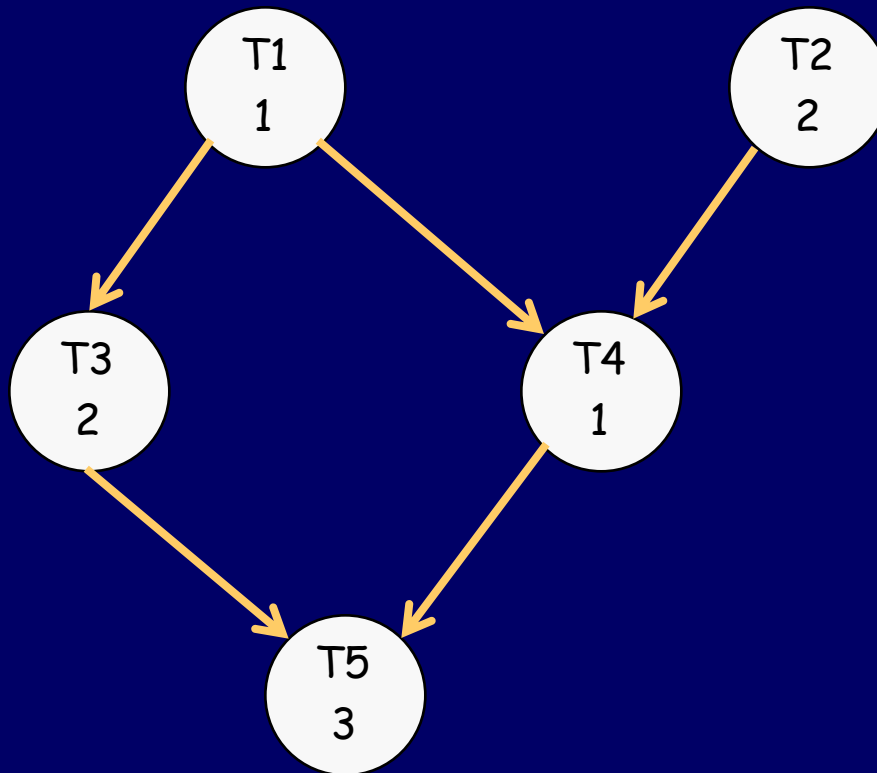
Modifying the task parameters for RMS

- While using the RMS scheduler the task parameters (ready time) need to be modified in order to respect the precedence constraints



- $R_{j^*} \geq \text{Max} (R_j, R_{i^*})$ where R_{i^*} is the modified ready time of the task T_i
- Priority $\text{Prio}_i \geq \text{Prio}_j$ (strictly greater)

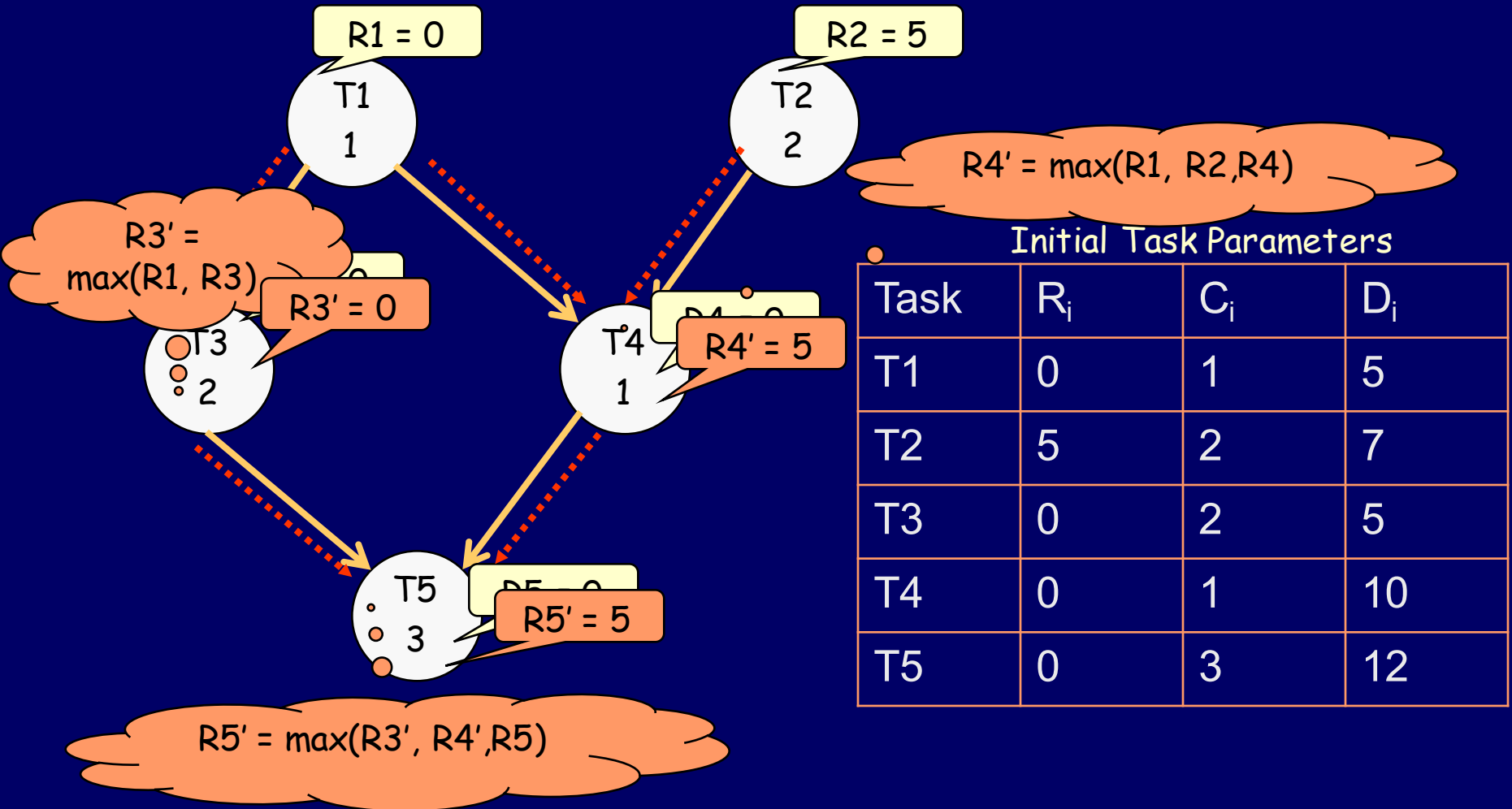
Modifying ready times for RMS: example



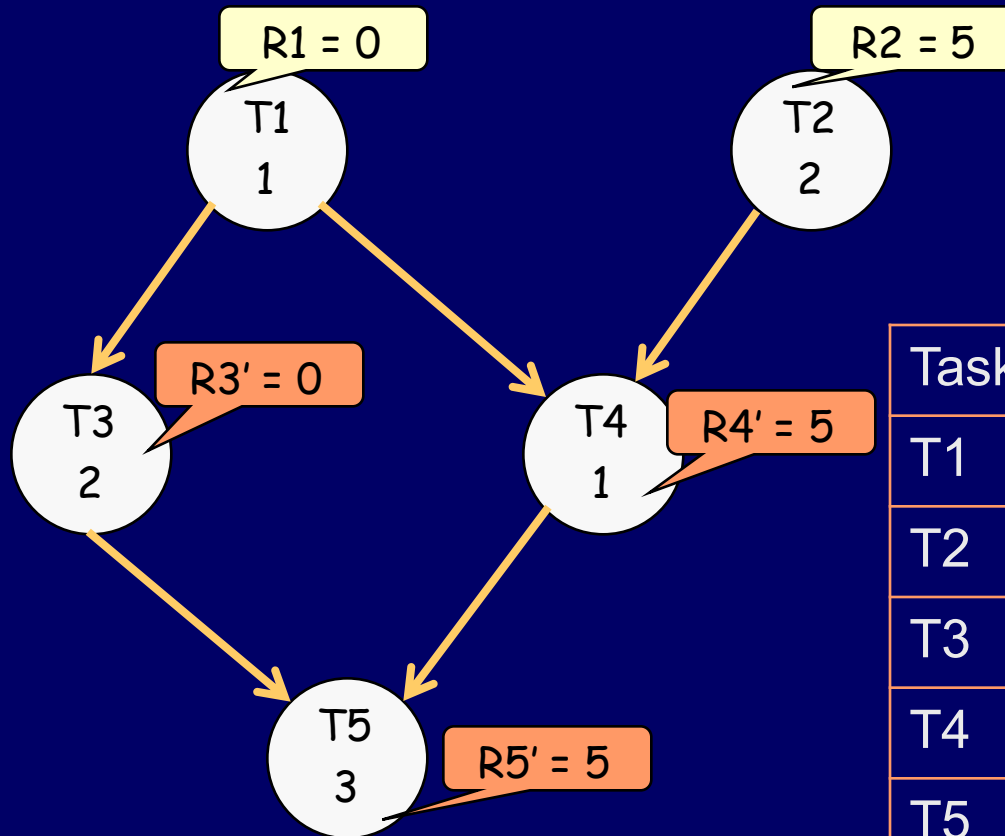
Initial Task Parameters

Task	R_i	C_i	D_i
T1	0	1	5
T2	5	2	7
T3	0	2	5
T4	0	1	10
T5	0	3	12

Modifying the Ready times for RMS



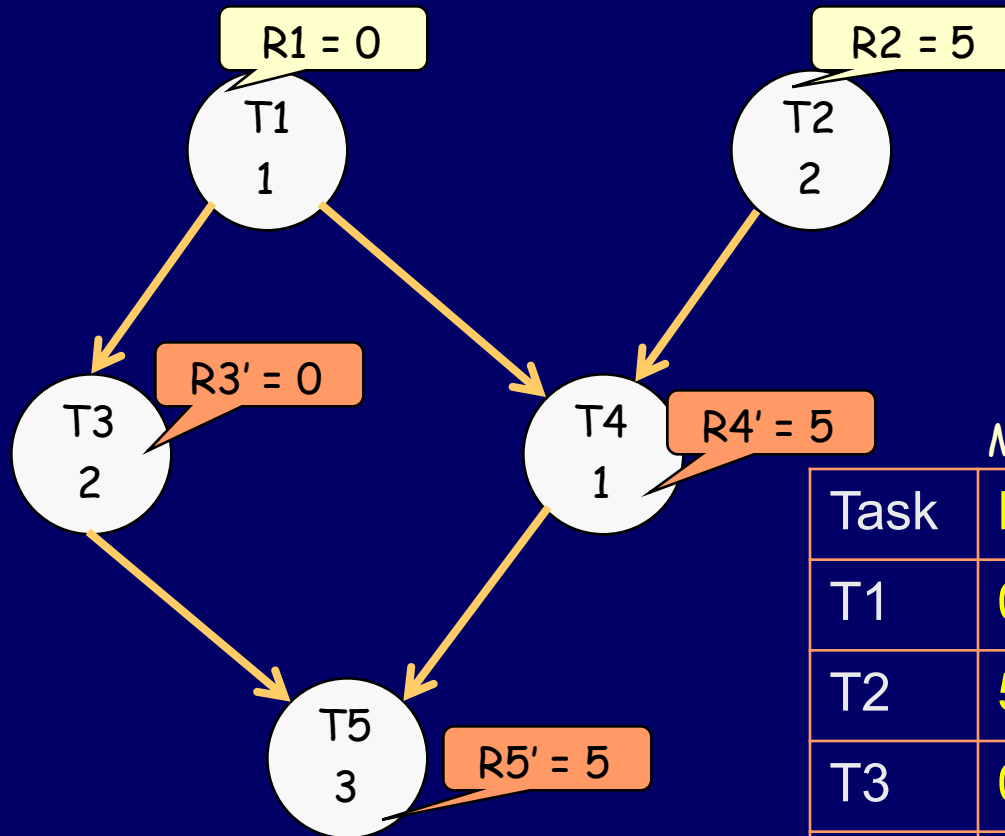
Modified Ready times for RMS



Modified Task Parameters

Task	R_i	C_i	D_i
T1	0	1	5
T2	5	2	7
T3	0	2	5
T4	5	1	10
T5	5	3	12

Assigning task priorities for RMS



Assume all tasks of a connected component have the same period. Therefore, as per RMS all tasks will have a tie. We assign priorities to break the ties.

Modified Task Parameters

Task	R_i	C_i	D_i	Priority
T1	0	1	5	3
T2	5	2	7	4
T3	0	2	5	2
T4	5	1	10	1
T5	5	3	12	0

Modifying task parameters for DMS

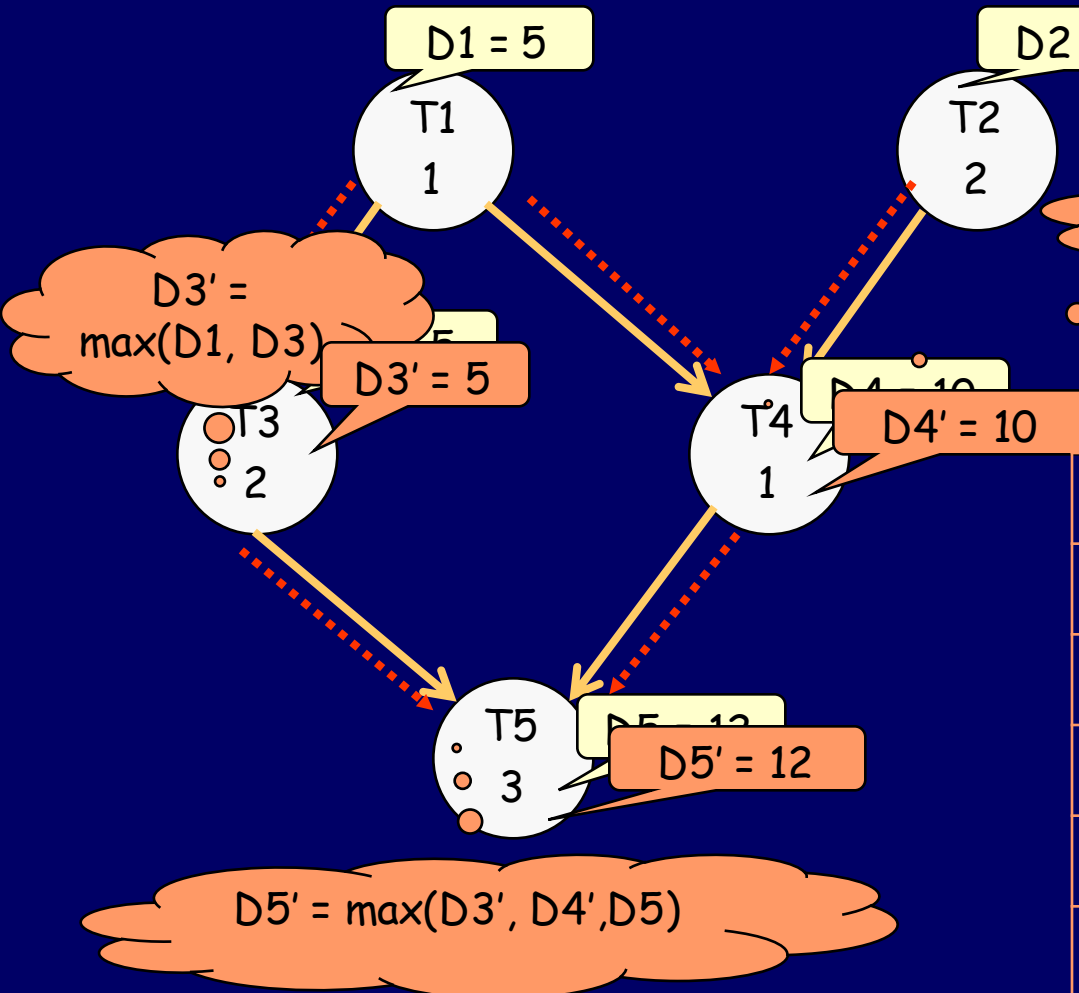
- While using the DMS scheduler the task parameters (ready time, relative deadline) need to be modified in order to respect the precedence constraints



- $R_{j^*} \geq \text{Max} (R_j, R_{i^*})$
- $D_{j^*} \geq \text{Max} (D_j, D_{i^*})$
- $\text{Prio}_i \geq \text{Prio}_j$ (Strictly greater)

Modifying the Deadlines for DMS

The procedure to modify the ready times is same as that of RMS



Modified Task Parameters

Task	R_i	C_i	D_i
T1	0	1	5
T2	5	2	7
T3	0	2	5
T4	5	1	10
T5	5	3	12

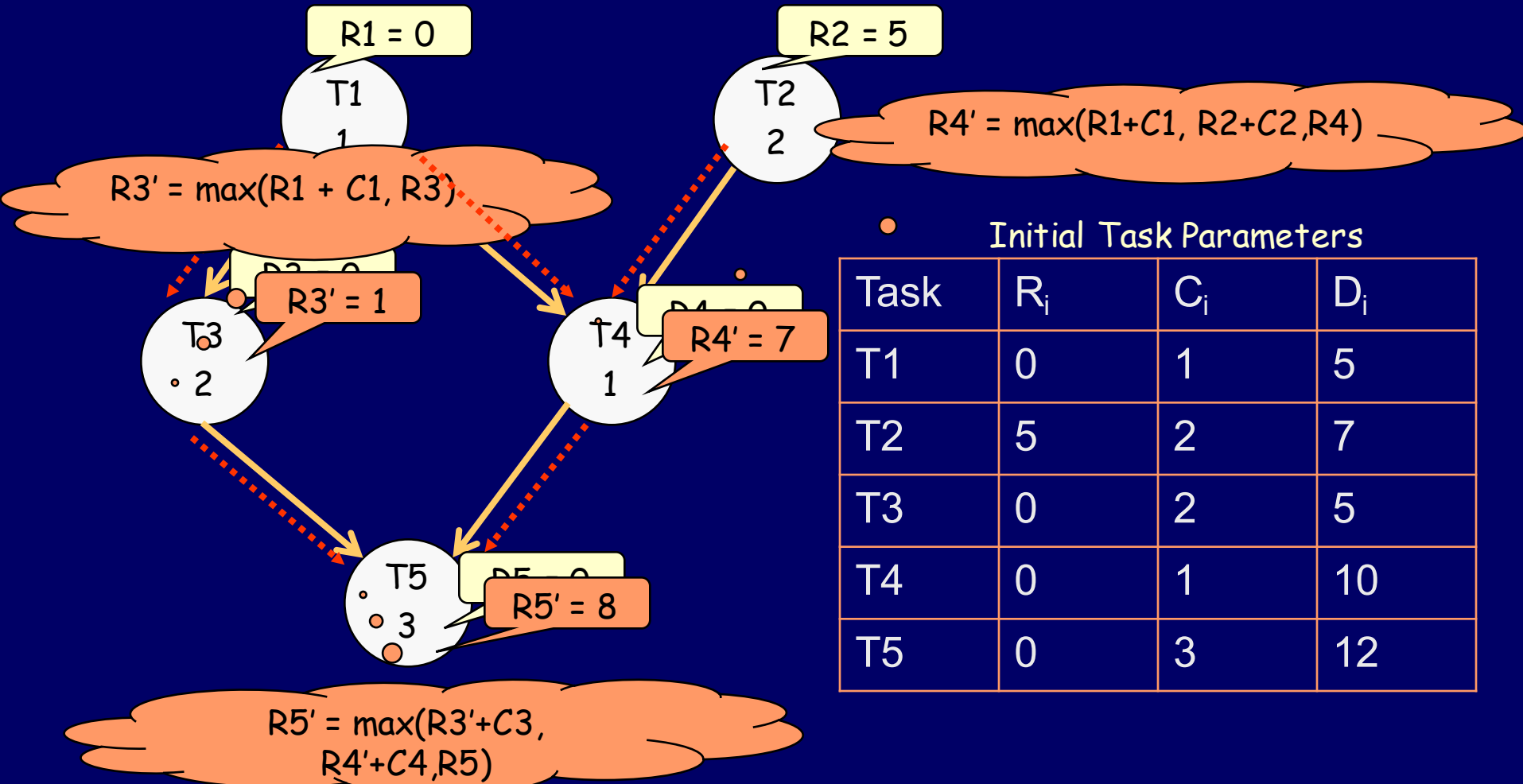
Modifying task parameters for EDF

- While using the EDF scheduler the task parameters need to be modified in order to respect the precedence constraints

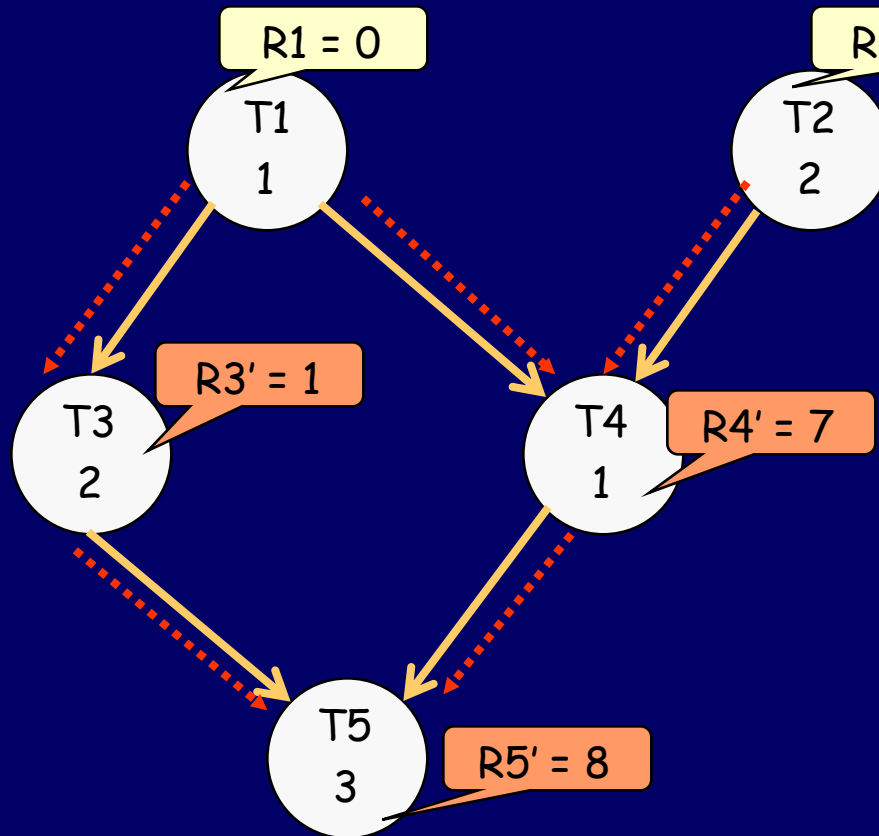


- $R_{j^*} \geq \text{Max} (R_j, (R_{i^*} + C_i))$
- $D_{i^*} \geq \text{Min} (D_i, (D_{j^*} - C_j))$

Modifying the Ready times for EDF



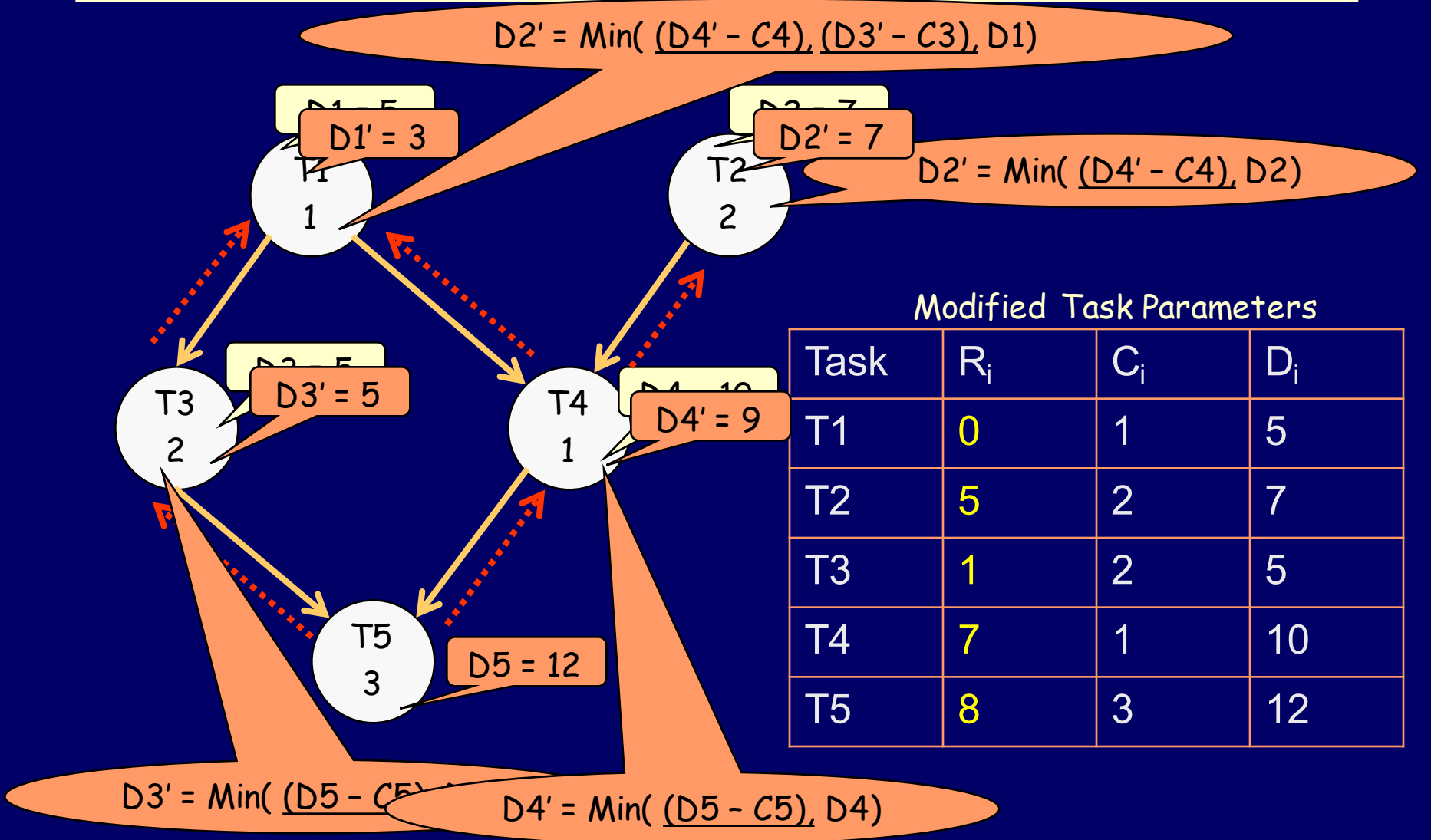
Modifying the Ready times for EDF



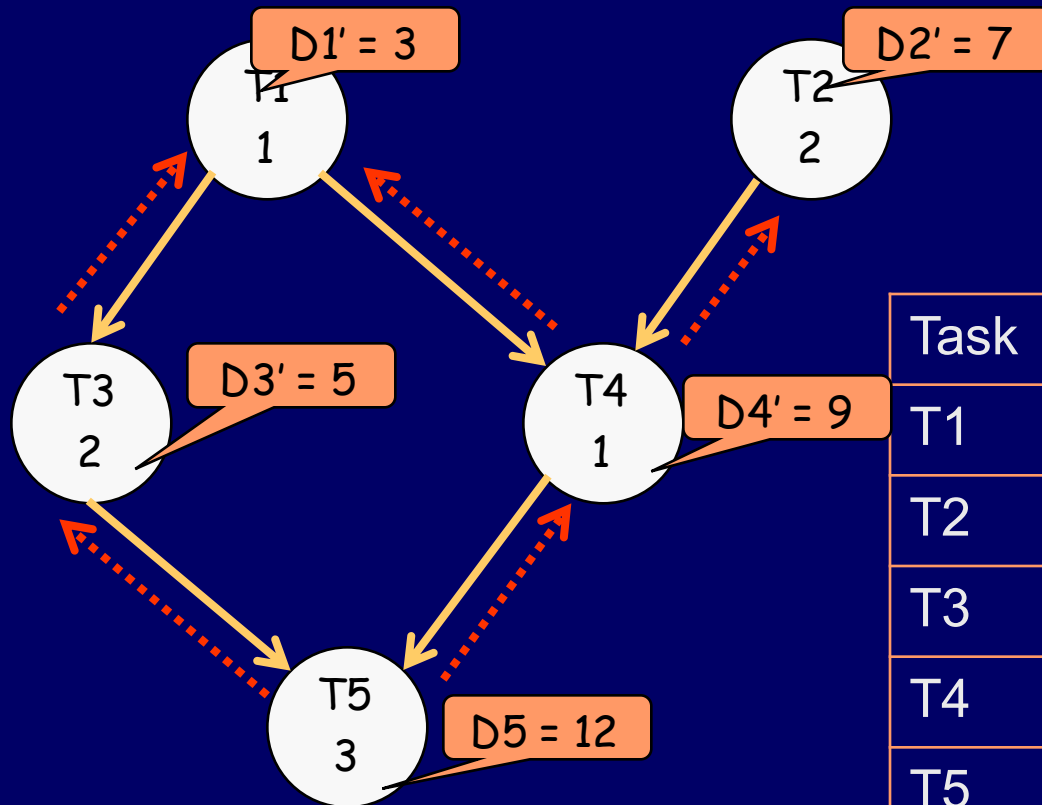
Modified Task Parameters

Task	R_i	C_i	D_i
T1	0	1	5
T2	5	2	7
T3	1	2	5
T4	7	1	10
T5	8	3	12

Modifying the Deadlines for EDF



Modifying the Deadlines for EDF



Modified Task Parameters

Task	R_i	C_i	D_i
T1	0	1	3
T2	5	2	7
T3	1	2	5
T4	7	1	9
T5	8	3	12