Simple scheduling problem

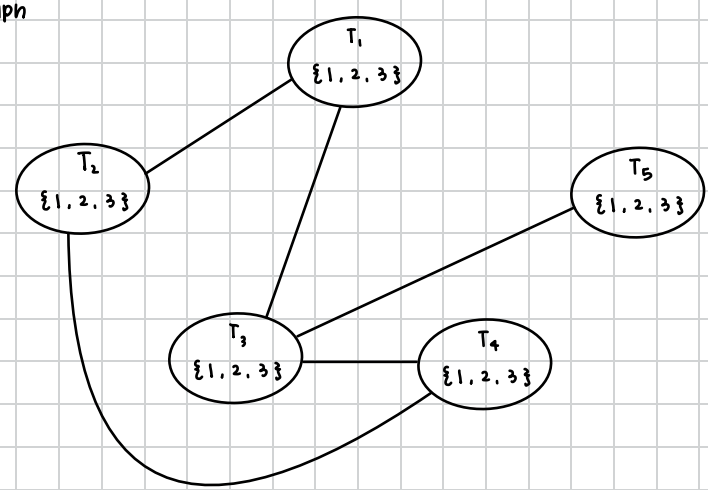
1. Variables: the tasks T_1, T_2, T_3, T_4, T_5

   Domain: $D_{T_1} = D_{T_2} = D_{T_3} = D_{T_4} = D_{T_5} = \{1, 2, 3\}$

   Constraints:

   - ↳ $T_1 T_3$ (supports) : $\{(2,1), (3,2), (3,1)\}$ T_1 after T_3
   - ↳ $T_2 T_4$ (supports) : $\{(1,2), (1,3), (2,1), (2,3), (3,1), (3,2)\}$ T_2 and T_4 not at same time
   - ↳ $T_3 T_4$ (supports) : $\{(1,2), (1,3), (2,3)\}$ T_3 before T_4
   - ↳ $T_3 T_5$ (supports) : $\{(2,1), (3,2), (3,1)\}$ T_3 after T_5
   - ↳ T_4 (supports) : $\{1, 3\}$ T_4 not at 2
   - ↳ $T_1 T_2$ (supports) : $\{(1,2), (1,3), (2,1), (2,3), (3,1), (3,2)\}$ T_1 and T_2 not at same time

2. Constraint graph



3. Arc Consistency

Constraint Queue:

initial queue

T_1T_3	T_1T_3: 1 for T_1 and 3 for T_3 not supported → $D_{T_1} = \{\cancel{1}, 2, 3\}$, $D_{T_3} = \{1, 2, \cancel{3}\}$
T_4	T_4: 2 for T_4 not supported → $D_{T_4} = \{1, \cancel{2}, 3\}$
T_2T_4	T_2T_4: all values supported
T_3T_4	T_3T_4: 1 for T_4 not supported → $D_{T_4} = \{\cancel{1}, 3\}$
T_3T_5	T_3T_5: 1 for T_3 and 3 for T_5 not supported → $D_{T_3} = \{\cancel{1}, 2\}$, $D_{T_5} = \{1, 2, \cancel{3}\}$
T_1T_2	T_1T_2: all values supported
T_1T_3	T_1T_3: 2 for T_1 not supported → $D_{T_1} = \{\cancel{2}, 3\}$
T_3T_4	T_3T_4: all values supported
T_2T_4	T_2T_4: 3 for T_2 not supported → $D_{T_2} = \{1, 2, \cancel{3}\}$
T_1T_2	T_1T_2: all values supported
T_3T_5	T_3T_5: 2 for T_5 not supported → $D_{T_5} = \{1, \cancel{2}\}$

Final Domains After Arc Consistency

$D_{T_1} = \{3\}$

$D_{T_2} = \{1, 2\}$

$D_{T_3} = \{2\}$

$D_{T_4} = \{3\}$

$D_{T_5} = \{1\}$