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# Homework #4

- Vertex 0: (0,9)  
 Vertex 1: (1,6)  
 Vertex 2: (2,5)  
 Vertex 3: (3,4)  
 Vertex 4: (7,8)

- TC with Warshall's Algorithm

k = 0

	0	1	2	3	4
0	1	1	0	0	1
1	0	1	1	1	0
2	0	0	1	1	0
3	0	1	0	1	0
4	0	0	0	1	1

k = 1

	0	1	2	3	4
0	1	1	1	1	1
1	0	1	1	1	0
2	0	0	1	1	0
3	0	1	1	1	0
4	0	0	0	1	1

k = 2

	0	1	2	3	4
0	1	1	1	1	1
1	0	1	1	1	0
2	0	0	1	1	0
3	0	1	1	1	0
4	0	0	0	1	1

k = 3

	0	1	2	3	4
0	1	1	1	1	1
1	0	1	1	1	0
2	0	1	1	1	0
3	0	1	1	1	0
4	0	1	1	1	1

k = 4

**Final transitive closure:**

	0	1	2	3	4
0	1	1	1	1	1
1	0	1	1	1	0
2	0	1	1	1	0
3	0	1	1	1	0
4	0	1	1	1	1

3. Maximum number of topological sorts occurs when we have no restrictions (no edges).  
A topological sort consists of a list of vertices.  
Therefore we have  $n = 5$  spots, with 5 choices for the first spot, 4 for the second, etc.  
So we have  $5 * 4 * 3 * 2 * 1$  choices = **120 sort orders**.