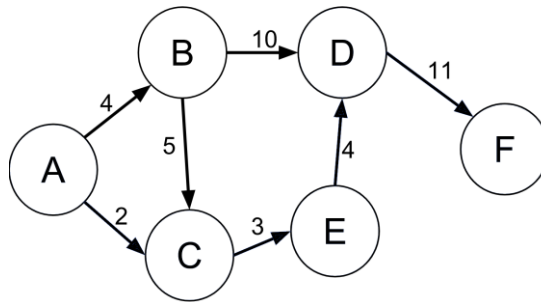


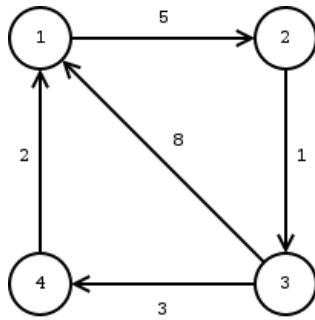
Data Structure Homework 6

1. Find the shortest path of going from A to the other vertices using Dijkstra's algorithm. Show all intermediate updates using the table below.



Iteration	Vertex selected	d[A]	d[B]	d[C]	d[D]	d[E]	d[F]
Initial							
1							
2							
3							
4							
5							

2. Find the all pair shortest paths of the graph below. Show $A^k[i][j]$, for $k=0, 1, 2, 3, 4$



	1	2	3	4
1	0	5	∞	∞
2	∞	0	1	∞
3	8	∞	0	3
4	2	∞	∞	0

$k=1$

	1	2	3	4
1				
2				
3				
4				

$k=2$

	1	2	3	4
1				
2				
3				
4				

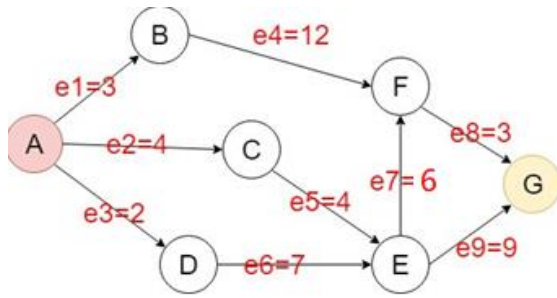
$k=3$

	1	2	3	4
1				
2				
3				
4				

$k=4$

	1	2	3	4
1				
2				
3				
4				

3. Given the AOE network $G(V, A)$ of a project given below. Each arc (link) represents a subtask.



(A) How much time does it need to complete the entire project?

(B) We want to be able to complete the entire project as early as possible. Give a table showing the earliest and latest starting time of each subtask (the edges).

Subtask	e1	e2	e3	e4	e5	e6	e7	e8	e9
Earliest start time									
Latest start time									

(C) Which subtasks are critical? What does it mean if a subtask is critical?