CSCE 5150 Analysis of Computer Algorithms
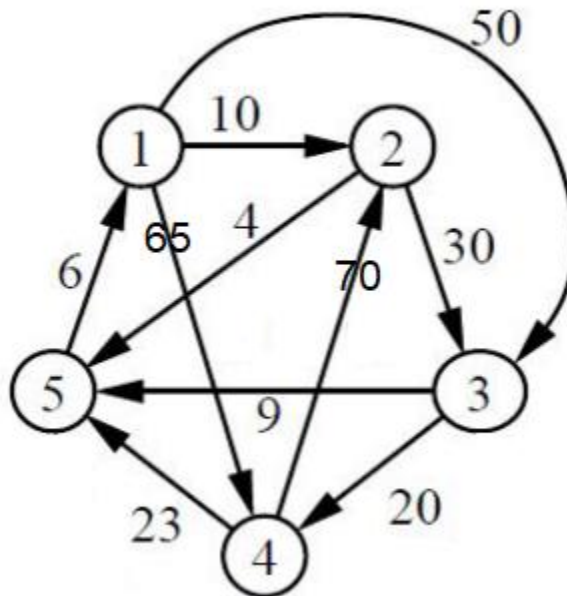
Assignment 5

Due on Canvas

(100 points)

State your answers legibly and concisely. Your solutions will be graded on correctness, elegance, clarity, and originality. Please remember that although group work is permitted, the work handed in must be in your own words.

Show the contents of arrays A and P after each iteration of the main for-loop in Floyd's algorithm executed on the following graph. Use this information to list the shortest paths from vertex 1 to each of the other vertices.

Solution:

k = 0

A	1	2	3	4	5
1					
2					
3					
4					
5					

P	1	2	3	4	5
1					
2					
3					
4					
5					

k = 1

A	1	2	3	4	5
1	░	░	░	░	░
2	░				
3	░				
4	░				
5	░				

P	1	2	3	4	5
1					
2					
3					
4					
5					

k = 2

A	1	2	3	4	5
1		░			
2	░	░	░	░	░
3		░			
4		░			
5		░			

P	1	2	3	4	5
1					
2					
3					
4					
5					

k = 3

A	1	2	3	4	5
1			░		
2			░		
3	░	░	░	░	░
4			░		
5			░		

P	1	2	3	4	5
1					
2					
3					
4					
5					

k = 4

A | 1 | 2 | 3 | 4 | 5
P | 1 | 2 | 3 | 4 | 5

k = 5

A | 1 | 2 | 3 | 4 | 5
P | 1 | 2 | 3 | 4 | 5