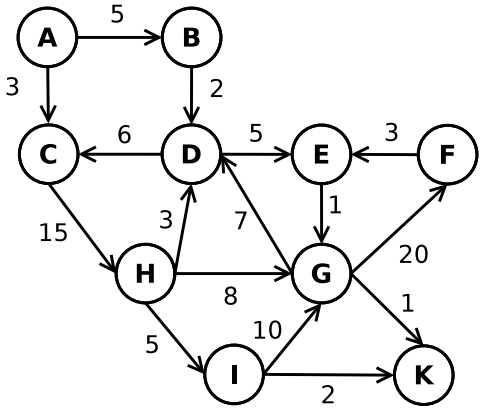
COS212 (Data Structures and Algorithms)

Tutorial Exercise 8
2020/06/01

Question 1 Graphs ..... (14 marks)

1.1 Consider the following graph:



a) [5 points] Apply Dijkstra's shortest path algorithm on this graph starting at vertex `A`. Fill in the **final** values for the *currDist* and *predecessor* variables for each of the listed vertices:

Vertex	*currDist*	*predecessor*
A		
B		
C		
D		
E		
F		
G		
H		
I		
K		

b) [3 points] Perform the directed graph depth-first cycle detection algorithm on the graph. Write down all detected cycles.

c) [5 points] Perform the `strongDFS` algorithm on the graph to find all strongly connected components, and complete the following table by filling in the **final** values for *num* and *pred* variable for each of the listed vertices. Use **alphabetical** order when there is choice between vertices.

Vertex	*num*	*pred*
A		
B		
C		
D		
E		
F		
G		
H		
I		
K		

d) [1 point] How many vertices are in the largest strongly connected component?