CS211 ALGORITHMS & DATA STRUCTURES II

LAB 9

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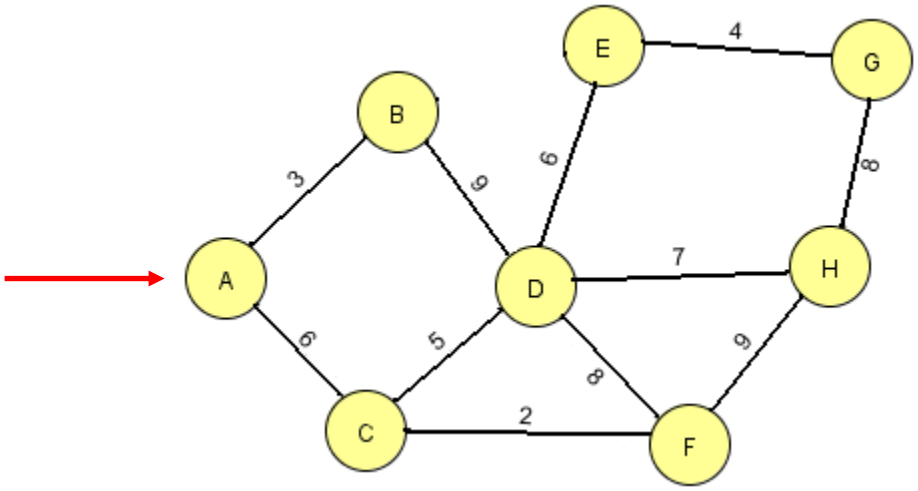
WEIGHTED GRAPHS

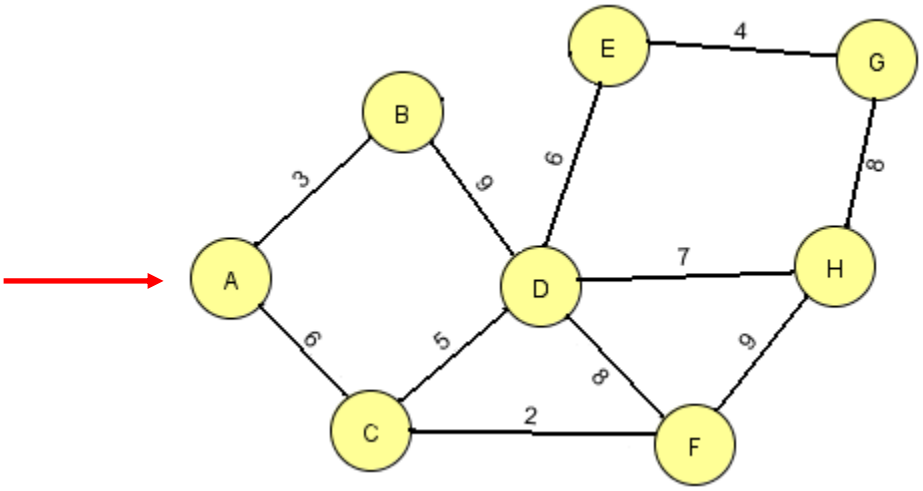
PART I: Pen and paper exercise

Find the minimum spanning tree for the following graph starting at node A.



Vertices Visited	Edge Priority Queue	Edge Selected
A		

Find the shortest distance between Node A and Node G in the following graph using Dijkstra's algorithm.



Vertices Visited	A	B	C	D	E	F	G	H
A	0	3 (A)	6 (A)	-	-	-	-	-
	0							
	0							
	0							
	0							
	0							
	0							
	0							
	0							

PART II: Programming exercise

Say you start rolling a dice. On average you will need 6 rolls to get a 6.
But what if, during the process of rolling for a 6, you get a Snapchat? Given that you received a Snapchat at some point during the rolling process, how many rolls will you need on average to get a 6?

Now let's make it a bit more interesting. What if you sneeze and get a Snapchat while you're rolling for a 6. Now how many rolls will you need on average to get a 6?

One way to answer these questions is to actually roll a dice and wait for these events to happen. Another quicker way is to write a Monte Carlo algorithm.

Advanced Programming exercise

Say you happen to get two Snapchats while you're rolling. How many rolls do you need on average to get a 6? Why is this different to the sneeze and the Snapchat example? Or is it? Explain.