

Marketing analytics

The S-curve has gotten steeper in more modern times True False

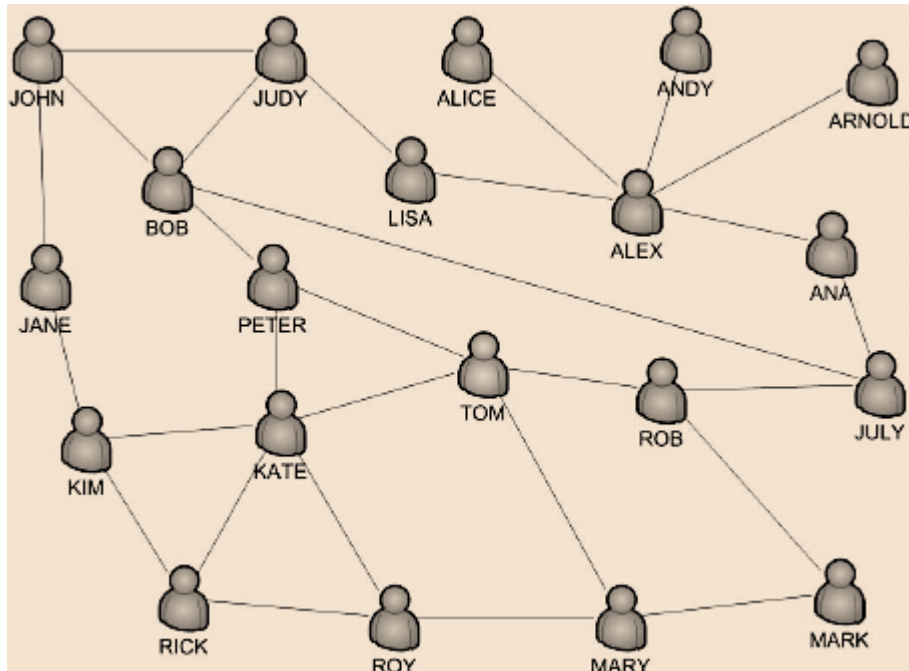
With respect to the Bass/innovation model, if p is higher, than q has to be lower
True False

Given $p=0.2$, $q=0.5$ and $m=1$ million, complete the table below.

t	P(t)	S(t)	Y(t-1)	Y(t)	Y(t)/m
0			0		
1					
2					
3					
4					
5					

At what value of t does market penetration ($Y(t)/m$) reach 90%?

Network science



What is the probability of observing the following:

- a) degree of 3
- b) clustering coefficient of 1
- c) degree of 7
- d) clique of size 3 (*hint: think carefully about the numerator and denominator when calculating the empirical probability for this*)

What is the maximal clique in this network? What is its size?

Based on the network, rank all the nodes in order of their influence. Describe your reasoning.

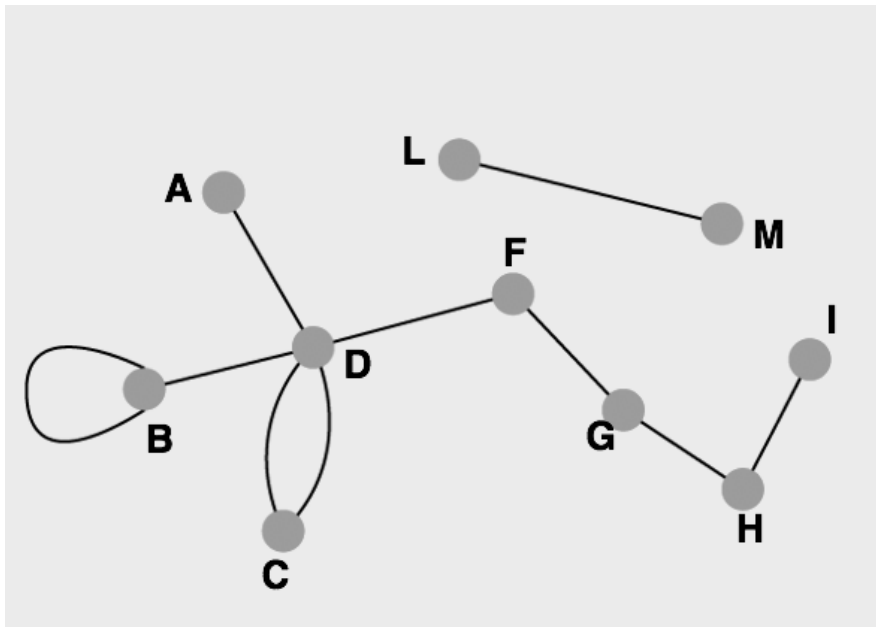
Can you think of a quantitative way to do what you just did (rank nodes by influence) for a much larger network?

Draw out the adjacency matrix for this network. What is the space complexity?

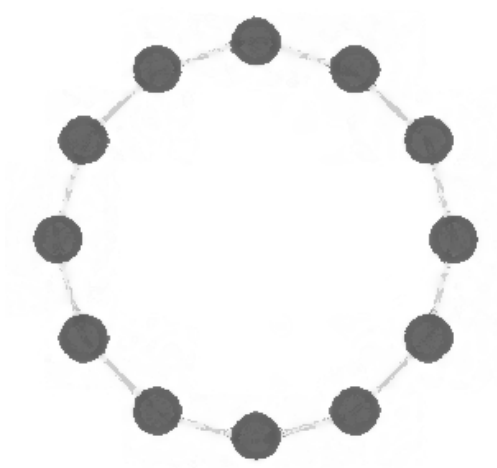
Draw an approximate degree distribution for this network.

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Try all questions above for the two networks below:



Hint: for this second network, it is a good idea to 'name' the nodes first



Advanced questions: what is the difference between an assortative and disassortative network? Can you tell by looking at the degree distribution? Why or why not? If not, how would you tell?