Feedback — Optional programming assignment 2

You submitted this homework on **Sat 17 Nov 2012 12:40 AM PST**. You got a score of **10.00** out of **10.00**.

For this optional assignment you'll need a GML file that is a non-random subset of English-language wikipedia pages from 2007 and their hyperlinks. 6MB file here. It is also recommended that you work in R with igraph, as I have provided a mostly filled-in template you can work with.

Question 1

What is the power-law exponent of the degree distribution of the fragment of English-language wikipedia pages from 2007? Your answer must be accurate to within 0.2

You entered:

2.7

Your Answer		Score	Explanation
2.7	✓	2.00	
Total		2.00 / 2.00	

Question Explanation

See http://tuvalu.santafe.edu/~aaronc/powerlaws/ for an explanation of how to fit power-laws and to download R code.

Question 2

Looking at the degree distribution of the above Wikipedia page network, what can you say?

Your Answer		Score	Explanation
◉ the distribution has xmin > 1	✓	2.00	
Total		2.00 / 2.00	

Question Explanation

Look at the xmin returned by the plfit function. Also check the plot for deviation from the pure power-law distribution.

Question 3

Calculate the indegrees and outdegrees of the nodes in the Wikipedia graph.

Which of the following is true.

Your Answer		Score	Explanation
◉ the node with the highest outdegree is a Wikipedia hub page pointing to many articles on the same topic	✓	2.00	
Total		2.00 / 2.00	

Question Explanation

The empirical results should be intuitive: broad concepts should have high indegree, hub pages should have high outdegree, but you need to compute them in order to see which hub/concept pages these are.

Question 4

Find the highest betweenness node in the Wikipedia graph. This node likely has high betweenness because

Your Answer		Score	Explanation
◉ It has high indegree	✓	2.00	
Total		2.00 / 2.00	

Question 5

Generate a graph that is a 4x4 lattice (see R template for how to do this). Calculate the Bonacich alpha centrality using two different values of alpha, alpha = 0.25, and alpha = -0.5. Which of the following statements is true?

Your Answer		Score	Explanation
◉ When alpha is positive, nodes with 4 edges have higher centrality than nodes with fewer edges.	✓	2.00	
Total		2.00 / 2.00	