Distributed Data Management

Sheet 7 (until 10.06.2010)

(35 points)

1. For the following graph, please compute:
   1. The diameter (2 points)
   2. The average node degree (2 points)
   3. The cluster coefficient of node $v_1$ (3 points)
   4. The degree of connectedness ($k$ of $k$-connectedness) (2 points)
   5. The bisection width (2 points)

2. Briefly answer:
   a. What is preferential attachment? (2 points)
   b. Which properties does a small-world graph have? (2 points)
   c. What are hubs? (2 points)

3. Provide an estimate for the average cluster coefficient $C_{avg}$ for a Watts-Strogatz graph with $p = 1$, depending on $k$ and $n$. (6 points)
4. For the following graphs, try to guess which generation model was used and also guess roughly (!) the parameters which might have been used (i.e \(g_n,p; g_{ws_{n,k,p}}; g_{ba_{n,m}}\)) (2 points each)