Introduction to Network Analysis – Homework 1 – Ana Polančec, 63190439

1. Connected components

Proven inequalities wiith mathematical induction and reasoning:

Criterion for m:

Is the criterion practically useful for real networks?

1. Node linking probability
2. Random node selection
3. Weak & strong connectivity
4. Is Java software scale-free?
5. Five networks problem

To decide which network is which, we first determine the initial differences that might help: all the networks appart form Erdos Reny random graph are real networks, which will show sparsity and other parametrs, that differ from the erdos reny graph. Furthermore, two of the networks are directed. Based on the nature of the networks we can sklepamo that the citation network is directed, as is the university Web graph.

Final verdict: (network1-5.adj)

* Flickr social aliation network:
* IMDb actors collaboration network:
* Small part of a university Web graph:
* Sample of computer science citation network:
* Realization of the Erdoš-Renyi random graph:

1. Who to vaccinate?

* Better immunization is achived in the second scheme.
* With vaccinating a random aquaintance of a selected person we have a higher probability of vaccinating a »hub«. This also follows the principle »Your friends always have more friends than you«.