

Please upload your solutions to Ilias. Deadline: 2<sup>nd</sup> February 23.55 pm

## Exercise 7

IMPORTANT: There will be two more exercises (including this one), so you can get maximum 40 points more than you currently have. To be able to participate in the exam, you need 80 points in total. In case you have trouble to reach that, please contact me.

- 1) In the Ilias directory you can find two text files. Assume a collaborator gave them to you and wants to understand and visualise his or her data. He/she has no idea about how to visualise or analyse this protein interaction network, but has run two different experiments to generate this data.
  - a. What questions would you ask your collaborator to be able to achieve a good visualisation?
  - b. The collaborator wants to get an overall idea of the properties of the network. What can you calculate or measure to provide an idea to the collaborator? Please calculate or measure the properties for the two given networks and provide any kind of documentation/visualisation you could potentially discuss with your collaborator. Please discuss the results, as he/she has no idea about networks. **Hint:** At least three properties.
  - c. Visualise the two networks assuming the following: The collaborator wants to get a good overview about overall connectivity and shape, central hubs in the network, if any parts are more isolated or if there are any smaller local structures that are interesting. Please **report** what you have done and why. How would you justify and explain your choices and what you see in the different visualisations to your collaborator? Are there any other things that might be interesting to look into? Is there anything else you can find in the visualisations your collaborator was not looking for? **Hint:** One visualisation per network is not enough. You might want to combine a few to achieve a good overview.
  - d. Since two different experimental procedures were used to generate this data, the collaborator is also interested in comparing the two networks/visualisation to get an idea about the performance of the experiment. Think of ways to compare the two networks or files and do so for one idea. Explain and summarise your findings.

20 points