ETH Zurich
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# Assignment № 1

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Please upload a zipped file with your answers in a PDF file (task 1+2) and an R script that you used to create the answers (task 1) or submit the PDF file (task 1+2) and the related Jupyter notebook via the JupyterHub. You only need to upload the file once per group. Make sure that the names of all group members are listed in the PDF file.

If you use Jupyterhub to submit your group assignment, please email zkovacevic@ethz.ch so that we can check that everything worked from the technical site.

## Task 1: Describe and plot a social network — 11 points

(a) Load the affective network (`2400_affective_w1.csv`) and the drinking data (`2400_drinking.csv`).

(b) Recode the affective network of wave 1 into a liking network and take the wave 1 drinking behavior (`drinking_w1`).
(*Hint*: the value +1 stands for a liking tie – see the data description for details. Friendship ties are not coded as liking ties.)

(c) Calculate basic network descriptives for this liking network:

- network size (i.e., number of nodes), density, average degree, dyadic census, distribution of drinking behavior in the classroom, average drinking behavior in the class, amount of relations between people with the same drinking behavior.
- plus one other measure of your choice.
- Briefly interpret the measures (where sensible).

(d) Plot the liking network.

- The plot has to be informative.
- Color the nodes according to the drinking behavior of the person.

- The node size should be proportional to a centrality measure (of your choice).

(e) Now also include the trust network (`2400_trust_w1.csv`) and plot them both in one network plot (i.e., on top of each other).

(f) How large is the overlap between the two networks? Please comment on the overlap between the two networks (i.e., how many ties between two people are present in both networks).

(g) In a short paragraph (max. 250 words), describe what you see in the network plot and comment shortly similarities or differences between the two networks based on the network plot.

All answers to these questions need to be printed in the PDF file. We will not run your R-Scripts/Jupyter notebook to correct the assignment – we only use it to recreate your thought process in case the answers are wrong.

**Task 2: Data collection strategies** **9 points**

(a) Compare the advantages and disadvantages for network data collected by surveys, (digital) records, or qualitative interviews. Describe at least one advantage and disadvantage for each type of network collection method. (max. 400 words)

(b) Describe a specific challenge that all types of network data have. For three research designs (discussed in the lecture) of your choice, explain why and to which extent they struggle with this challenge and how you would address it if you were conducting an empirical study with the specific design (total of 3 explanations and 1 description of the challenge). (max. 400 words)

(c) Choose a combination of one of the types of network research designs discussed in the lecture and one of the network collection methods and come up with a research question that you (i) can and (ii) cannot address with this specific combination. Indicate why.
(*Hint:* A research question indicates what you want to find out in a particular piece of scientific work. A question that is presented to participants (e.g., 'who are your friends?') is not a research question.)
(max. 400 words)