

# Instruction 4 – Assignment 4

**Note:** The answers for this assignment should be posted at the Study web in the folder "1BM45\_Process mining -> assignment 4 -> Submitted"

**Deadline:** 05-03-2008 at 11 am

## Question 1:

The aim of this exercise is to mine a social network that reflects the hand-over of work for the example used in the ProM tutorial. You are first asked to mine the social network based on different log filterings. Afterwards, you will have to analyze the mined networks.

(Preparation steps)

- Download the log at <http://tabu.tm.tue.nl/wiki/media/tutorial/repairexample.zip?id=tutorials&cache=cache>
- Download the ProM tutorial at [www.processmining.org](http://www.processmining.org) -> Tutorials
- Filter the log to contain only:
  - a. The process instances that start with the task "Register (complete)" and end with the task "Archive Repair (complete)".
  - b. Save this filtered log. This filtered log will be used as input for the two sub-questions below.

(Actual sub-questions to which the answers should be included)

**Sub-question 1.1.** Perform the following steps:

1. Read page 26 of the ProM tutorial. (You need to read the first paragraph on this page to fully understand what will be asked in Sub-question 1.2).
2. Execute the procedure on this page for the filtered log that you have obtained after executing the preparation steps.
3. Include a screenshot of the mined social network for both the *Social Network Miner* plug-in and the *Analyze Social Network* plug-in in your answer.
4. Indicate which employees are doing worse and explain the reasons for your choices.

**Sub-question 1.2.** Another end user thought of a different way to filter the log. The main idea is that, instead of keeping all event logs and considering the start and complete event types for the task *Repair (Simple)* and *Repair (Complex)*, this user thought that one could filter the log to consider only the start event types of these two tasks. After all, whenever a telephone is not fixed in the first attempt, it will be followed by another fix (i.e., there will be another repair task with the event type start). Therefore, here you are asked to perform the following steps:

1. Load in ProM the filtered log that you have obtained after executing the preparation steps.

2. Filter the log so that only the task *Repair (Simple) (start)* and *Repair (Complex) (start)* are kept in the process instances. (Hint: Use the analysis plug-in Log Summary to check if the log is correctly filtered!).
3. Run the *Social Network Miner* plug-in.
4. Select the tab *Handover of work*, and click the button *start mining*.
5. Include a screenshot of the mined social network in your answer.
6. Analyze the mined network and answer the following questions:
  - a. What are the main differences between this mined social network and the one that was mined in Sub-question 1.1?
  - b. Why do you think that the results in the two social networks are different? Explain.
  - c. Assuming that the filtering performed by this end user is correct, could you think of a way to help this end user in getting the correct social network? Explain and include a screenshot of the new mined social network for the hand-over of work

### Question 2:

Execute the procedure described in Section 4.1 (cf. page 34) of the ProM tutorial and answer the following two questions:

1. How many traces in the log are not compliant with the model? Explain how you got this information.
2. Where are the problems in the model? Explain how you have detected the problems and suggest a possible redesign to make the model fit the log.

### Question 3:

In a fictive situation, you have been asked to analyze the log for the running example used in the ProM tutorial. This time, the manager would like you to check if the following policy is actually followed:

*A phone should be analyzed and tested at least once by the same employee.*

Please use the LTL Checker to assess if this policy is indeed followed. Your answer should address the following points:

1. State for how many process instances the policy was followed, and for how many it was not.
2. Include the formula(e) you have used and the procedure you have followed.

The log you should analyze is at

[http://tabu.tm.tue.nl/wiki/\\_media/tutorial/repairexample.zip?id=tutorials&cache=cache](http://tabu.tm.tue.nl/wiki/_media/tutorial/repairexample.zip?id=tutorials&cache=cache).