Teamwork instructions

1. Prepare a BPMN model of a process (for the minimum requirements, see below), by exporting it as a *.bpmn* file. We name it as **BPMN-A**.
   - Submit BPMN-A via Teams (intermediate submission).
2. Translate the BPMN model into a trace-equivalent Workflow net. Use WoPeD to model it and export it in *.pnml* format (read the recommendation below). We name it as **PN-A**.
   - Submit PN-A via Teams (intermediate submission).
3. Use BIMP to run a simulation of the process model (for the minimum requirements, see below) and export it as an *.mxml* file. We name it as **MXML-A**.
   - Submit MXML-A via Teams (intermediate submission).
     - You will receive back an altered version of the event log. We name it as **XES-B**.
4. Use ProM to discover the process model behind MXML-A with the "Inductive Visual Miner" plugin by S. Leemans. We name the exported view, i.e., the outcome of this analysis, **VIM-A**.
5. Use ProM to load MXML-A and export it in XES format. We name the resulting event log as **XES-A**.
6. Use ProM to discover the process model behind XES-B with the "Inductive Visual Miner" plugin by S. Leemans. We will refer to this model as **VIM-B**.
7. Use ProM to export VIM-B as a Petri net. We will refer to this model as **PN-B**.
8. Filter *out* events having lifecycle transition *not* corresponding to "complete" (i.e., remove the "start" or "schedule" events and the like to keep only the "complete" ones) with the "Filter Events" ProM plugin by S. Leemans (so, keep only the "complete" events). We will refer to the resulting log as **F-XES-A**.
9. Use the "Replay a Log on Petri Net for Conformance Analysis" ProM plugin by A. Adriansyah to check conformance of the models with the event logs, as follows:
   a) check conformance of PN-A with F-XES-A;
   b) check conformance of PN-B with F-XES-A;
   c) check conformance of PN-A with XES-B;
   d) check conformance of PN-B with XES-B.
10. Present your work during the last class or the exam session (see requirements below).
11. Submit the report of this analysis at least one week before the exam (see requirements below).

Business process model minimum requirements

- Events, gateways, and activities should sum up to 15 (or more, but not more than 30), in which:
  - at least an AND split-join fragment occurs
  - at least two XOR split-join fragments occur, one of which entails a cycle
- The model should pass the syntax quality verification
- The model should comply with the 7 Process Modelling Guidelines
- Though not necessary, the use of advanced BPMN features is appreciated.

Simulation requirements

- Use BIMP to generate an event log. The event log should consist of:
  - 50 cases, i.e., process instances, having
  - total trace matching with the implemented model

Report requirements

The report should consist of the following:

- A front-page containing:
  - course title and course number;
  - semester;
  - name, surname, and matriculation number of all team members;
  - date of submission.
- Detailed screenshots of:
  - BPMN-A;
  - PN-A;
  - VIM-A (also, clarify in the text the thresholds you used for activities and paths);
  - VIM-B (also, clarify in the text the thresholds you used for activities and paths);
  - PN-B;
  - Replay result screens from the "Replay a Log on Petri Net for Conformance Analysis" as of all analyses of point (9): (9)a), (9)b), (9)c), (9)d).
- A table with trace fitness statistics, for all analyses of point (9): (9)a), (9)b), (9)c), (9)d).
- Your interpretation of the conformance checking results, including the following:
  - Interpret fitness considering PN-A as the normative model and PN-B as the descriptive model.
  - Explain why alignments are not only made of synchronous moves, whenever fitness is not 100%.

The report should not be too verbose: stick to the essential and write only what is necessary. For instance, if a modelling guideline was not fully respected, it is a good idea to justify why, so as to motivate the deliberate design choice. Also, describe the BPMN model to illustrate the idea behind the diagram. Make sure to describe how simulation and discovery were tuned, and why. The approximate size should amount to 15 pages, figures included.

Final submission (via Team)

By *a week before* the written test (e.g., January the 11th if the written test takes place on January the 18th):
- Please upload in the file folder named after your team
  - A PDF document meeting all the report requirements listed above
  - Exports from the BPMN modelling tool:
    - BPMN-A, as a *.bpmn* file
  - Exports from WoPeD:

- - - PN-A, as a *.pnml* file
  - ○ Exports from ProM:
    - ■ PN-B, as a *.pnml* file
    - ■ F-XES-A, as an *.xes* file
  - ○ Pictures (or screenshots) in *.png*, *.jpg* or similar graphical formats, of:
    - ■ BPMN-A
    - ■ VIM-A
    - ■ VIM-B
    - ■ PN-A
    - ■ PN-B
    - ■ Replay result screens from the "Replay a Log on Petri Net for Conformance Analysis" as of all analyses of point (9): (9)a), (9)b), (9)c), (9)d)