Formal Methods for System Verification

PROJECT INSTRUCTIONS

The project consists of applying stochastic modelling techniques to a model that is obtained as a variation of the one presented in the article assigned to your group.
You have the freedom to select and implement modifications to the original model based on your preferences.
Please organize a slide presentation following the outlined steps below.

1. write a short introduction containing an informal, but careful, explanation of the problem which you wish to model;
2. consider the system which you are modeling and identify the components of interest and the activities which they undertake either individually or in co-operation;
3. describe these components behaviourally, explaining how they interact with each other;
4. express each component as a high-level description in the PEPA stochastic process algebra;
5. express the entire system in the PEPA process algebra as the co-operation of the above components;
6. draw the derivation graph of your model (or part of it);
7. define the infinitesimal generator matrix $\mathbf{Q}$ of the Markov process underlying your system;
8. express at least three quantities of interest in the model (e.g. steady state probabilities, throughput, utilisation, expected response time, number of jobs) throught a formula that can be evaluated.
9. encode the system with the PEPA Eclipse Plug-in and compute some measure.