Assignment 2: Conformance Checking with DCR Graphs

Reactive and Event Based Systems

Task Description

For this assignment you should implement a simple conformance checker for DCR Graphs and use it to check the patterns defined in assignment 1 against the Dreyers log[1].
The conformance checker should be able to take any DCR Graph and log as input, i.e. it will not suffice to hard code the patterns of part 1. For the logs we advise that you use the CSV format of the Dreyers log. For DCR Graphs we leave the input format to you, options included the format of the sample tool, the XML format of the DCR portal, or your own input format. In the latter case it should be straightforward for us to define our own models in your format.
As output the program should show for each pattern how many traces in the log satisfy it, and how many do not.

You may use any programming language you like. Some options include:

1) For those who like a challenge we encourage you to implement your own engine in Jolie. This will be useful for the second part of the course.
2) If you wish to use Java or a similar language like C# you can use the code samples from the slides as the basis for your engine.
3) If you're having a harder time with the assignment then there is also a sample engine provided in javascript[2]. You may use this code fully and implement the conformance checker on top of it, but keep in mind that implementing the engine yourself is a good way to better understand the semantics.

Note that the code you hand-in should compile and run. If for some reason we cannot compile and run your code on our own machines (e.g. because you used a non-standard programming language), you may be asked to demonstrate that it works on your own machine.

Optional: Have your program output for each trace that does not satisfy a pattern the reason that this is the case.

Hand-in

For this assignment you should deliver:

a) A ZIP file containing:
    1. Your source code.
    2. Clear instructions on how to run your code on the patterns of Assignment 1 and the Dreyers log. Alternatively, a script or batch file that runs your program on the patterns of Part 1 and the Dreyers log would suffice.
b) A 2-3 page PDF report containing:
    1. A front page stating your group name ("assignments x") and the names of the group members that contributed to the submission. (Not counted towards the 2-3 pages.)
    2. A short description of how you implemented the conformance checker (including an overview of your main design decisions).
    3. A screenshot of your program running, including the output of results.
    4. A table showing for each pattern how many traces satisfied it, and how many did not.

[1] https://www.dropbox.com/s/1l0ur2pr2bpqyix/log.csv?dl=0
[2] https://github.com/tslaats/REBS2021