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**Bachelor's Thesis (or Project for a PR)**

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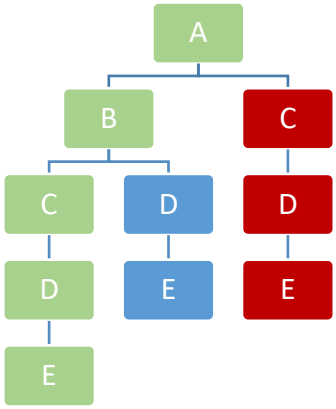
## Tree View for Event-based Monitoring for th REMINDS Monitoring Framework

REMINDS (http://mevss.jku.at/reminds) [1] is a tool-supported framework for monitoring systems of systems at runtime. It comprises a flexible runtime monitoring infrastructure providing support for different roles and a requirements monitoring model covering the requirements to be monitored, the constraints checking adherence of a system's behavior to its requirements, the events and data produced by systems at runtime, and the probes instrumenting systems to intercept events and data at runtime.

The events collected from certain system parts often form different (recurring) patterns. The aim of this thesis/project is to visualize these patterns as tree(s) in a view independent from REMINDS (that can later be integrated) to be developed preferably using Java and Eclipse (e.g.; GEF/Zest). One example how (a very simple) tree could be illustrated is shown below, with A-E being the monitored events, which have potentially occurred several times in different orders, as reflected by the tree structure. Monitored events will be provided in a form to be negotiated (e.g., as a CSV file).




Additionally this view should be able to allow editing the patterns, such as:

- Highlight certain paths through the tree (e.g., define valid/invalid paths)
- Show event-fields (such as attached data) per node (in a separate dialog and/or as part of the view)
- Dynamically add new paths/branches
- Dynamically delete existing paths
- Export the final tree in an adequate form (e.g., XML or CSV)
- It must be possible to integrate the visualization into the REMINDS monitoring client as an Eclipse Plug-in. Extension Points have already been prepared.
- Detailed requirements will have to be negotiated with the developers of REMINDS.
- It is expected that the developed view is easily extensible and follows the MVC pattern, i.e., separates the actual tree visualization from an underlying tree model from the controller responsible for interacting with the tree, e.g., to make modifications.

[1] M. Vierhauser, R. Rabiser, P. Grünbacher, K. Seyerlehner, S. Wallner, and H. Zeisel, "ReMinds: A Flexible Runtime Monitoring Framework for Systems of Systems," Journal of Systems and Software, 2016 (http://dx.doi.org/10.1016/j.jss.2015.07.008).

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