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Bachelor's Thesis

Extending AntTracks with Tagging Functionality for Time Window Highlighting

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AntTracks comprises a modified Java VM based on the Hotspot VM, i.e., AntTracks VM, and an offline post-processing analysis tool.

The VM's aim is to allow tracking of an application's entire life cycle by writing information about certain events to a trace file. This events include object allocations, object movements by the garbage collector, pointers between the objects and so on.

Such an event trace can then be analyzed in the offline post-processing tool. Based on the information parsed from the trace file the tool is able to reconstruct the heap for any garbage collection point.

Currently, AntTracks is able to record a trace for the whole run time of an application. Yet, often only a certain time window within this trace is of specific interest to the user, e.g., parts of the monitored application that are assumed to contain memory anomalies.

The goal of this thesis is to extend AntTracks to allow users to add *Tag events* to a trace. A tag event contains a string, e.g., "Suspicious function is going to be called" and should later allow users to identify specific moments during application execution when analyzing the trace offline.

To add tags to running applications, the student has to develop a small application that lists all Java applications currently running on an AntTracks VM. For all these VMs, the tool should offer the function to add a tag with a user-specified text.

To connect to a running VM, the Attach API, (native) Java agents, as well as changes in the AntTracks VM (e.g., custom JVMTI functions) may be used.

The final version of the written thesis must be submitted not later than 20.08.2018.

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