Master Thesis – Database Abstraction Layer for Eiffel Event Persistence Solution

Background
Eiffel is an open source protocol used to represent and maintain historic and live information about continuous integration, delivery and deployment processes (for instance, in large, decentralized software engineering projects). This information is represented as small, atomic JSON events, referencing other events and forming a traversable graph. The protocol itself and software implementations for emitting, collecting, storing, analyzing and visualizing of Eiffel have been developed internally within Ericsson for several years, and are increasingly becoming available as open source solutions, with multiple software development tools being extended to generate and consume Eiffel event data.

Thesis Description
The current solution for Eiffel event persistence developed by Ericsson is based on MongoDB. However, a thorough evaluation of alternative database technologies, including graph databases, is lacking. It is reasonable to expect that other database technologies may enable increased performance, particularly for certain types of operations. The purpose of this thesis project is to develop an abstraction layer that makes it possible to plug in a database with minimal effort in our solution for Eiffel event persistence. We aim to have a common interface towards any database that supports the current used CRUD and query database operations. Adding support should be just a matter of easy implementing the designed interface for the new database. Possible first candidate database solutions to include are Neo4j, ArangoDB, OrientDB, ElasticSearch and MongoDB. Implementation of the interfaces will be required to pass our current unit and functional tests.

Qualifications
Students who want to work on this project should have read a course on Database Technology, and it is an advantage to have read TDDD43 Advanced Data Models and Databases.

Extent
1-2 students, 30hp each

Location
Ericsson AB Mjärdevi, Linköping

Preferred Starting Date
Spring 2019

Keywords
Eiffel, Java, Databases, MongoDB, NoSQL, Open Source, Graph Databases, Experiment, JDBC

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