**Case study using Spring and Hibernate**

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**Abstract-** Hibernate and Spring are open-source Java frameworks which helps developing Java/JEE applications from simple, stand-alone applications which are running on a single JVM, to complex enterprise applications which are running on full-blown application servers. Most of the frameworks supports a single tier or area of the application. This gives frameworks for the whole application. Springs which are used to build an application. It provides guidance and structure as well as libraries and supporting code. Spring is light weight which reduces complexity and helps to reduce in its size and code impact. This promotes application (enterprise application) which is easier and less complex to develop and easier to test and more flexible and easier to maintain. Hibernate is a object oriented way of connecting to database. In simple terms, your database tables will get mapped as Java objects easily.

**INTRODUCTION**

Hibernate and Spring are open-source Java frameworks. Hibernate and Spring allow developers to produce scalable, reliable, and effective code. Both frameworks support declarative configuration and work with a Plain Old Java Objectprogramming model minimizing the necessity of application code on the frameworks, and making development more creative and portable.

The Hibernate framework aims to solve the problems of managing data in Java: those problems which are not fully solved by the Java persistence API,  JDBC, persistence providers, DBMS (Database Management Systems**)**, and their mediator language, SQL (Structured Query Language).

What is Spring?

* Spring Framework is an open source application framework.
* This gives framework for the whole application.
* It can be used to provide support to build an application.

It gives good guidance and structure as well as supporting code and libraries.

What is hibernate?

* It is an open source object-relational mapping (ORM)(provides means to persist bean data into relational database) for Java.
* Hibernate is responsible for making data persistent by storing it in a database.

Spring is a multitier framework that is not available to a particular area of application architecture. Spring unifies preexisting solutions under its consistent API and makes them very much easier to use. Spring can be integrated with Hibernate to provide an abstraction layer over the persistence technology, and produce more portable, manageable, and effective code. Spring provides other services spread over the application architecture, such as inversion of control and aspect-oriented programming decoupling the application's components, and modularizing common behaviors

**LITERATURE SURVEY**

# **The DOPLER meta-tool for decision-oriented variability modeling: a multiple case study.**

The variability of a product line is typically defined in models. However, many existing variability modeling approaches are rigid and don’t allow sufficient domain-specific adaptations. We have thus been developing a flexible and extensible approach for defining product line variability models. Its main purposes are to guide stakeholders through product derivation and to automatically generate product configurations. Our approach is supported by the DOPLER (Decision-Oriented Product Line Engineering for effective Reuse) meta-tool that allows modelers to specify the types of reusable assets, their attributes, and dependencies for their specific system and context. The aim of this paper is to investigate the suitability of our approach for different domains. More specifically, we explored two research questions regarding the implementation of variability and the utility of DOPLER for variability modeling in different domains. We conducted a multiple case study consisting of four cases in the domains of industrial automation systems and business software. In each of these case studies we analyzed variability implementation techniques. Experts from our industry partners then developed domain-specific meta-models, tool extensions, and variability models for their product lines using DOPLER. The four cases demonstrate the flexibility of the DOPLER approach and the extensibility and adaptability of the supporting meta tool.

**UPPAAL — a tool suite for automatic verification of real-time systems.**

Uppaal is a tool suite for automatic verification of safety and bounded liveness properties of real-time systems modeled as networks of timed automata. It includes: a graphical interface that supports graphical and textual representations of networks of timed automata, and automatic transformation from graphical representations to textual format, a compiler that transforms a certain class of linear hybrid systems to networks of timed automata, and a model-checker which is implemented based on constraint-solving techniques. Uppaal also supports diagnostic model-checking providing diagnostic information in case verification of a particular real-time systems fails.

# **SiLK: A Tool Suite for Unsampled Network Flow Analysis at Scale.**

A large organization can generate over ten billion network flow records per day, a high-velocity data source. Finding useful, security-related anomalies in this volume of data is challenging. Most large network flow tools sample the data to make the problem manageable, but sampling unacceptably reduces the fidelity of analytic conclusions. In this paper we discuss SiLK, a tool suite created to analyze this high-volume data source without sampling. SiLK implementation and architectural design are optimized to manage this Big Data problem. SiLK provides not just network flow capture and analysis, but also includes tools to analyze large sets and dictionaries that frequently relate to network flow data, incorporating higher-variety data sources. These tools integrate disparate data sources with SiLK analysis.

# **WebSuite—A Tool Suite for Harnessing Web Data**

We present a system for searching, collecting, and integrating Web-resident data. The system consists of five tools, where each tool provides a specific functionality aimed at solving one aspect of the complex task of using and managing Web data. Each tool can be used in a stand-alone mode, in combination with the other tools, or even in conjunction with other systems. Together, the tools offer a wide range of capabilities that overcome many of the limitations in existing systems for harnessing Web data. The paper describes each tool, possible ways of combining the tools, and the architecture of the combined system.

**The Rat Genome Database curation tool suite: a set of optimized software tools enabling efficient acquisition, organization, and presentation of biological data**

The Rat Genome Database (RGD) is the premier repository of rat genomic and genetic data and currently houses over 40 000 rat gene records as well as human and mouse orthologs, 1771 rat and 1911 human quantitative trait loci (QTLs) and 2209 rat strains. Biological information curated for these data objects includes disease associations, phenotypes, pathways, molecular functions, biological processes and cellular components. A suite of tools has been developed to aid curators in acquiring and validating data objects, assigning nomenclature, attaching biological information to objects and making connections among data types. The software used to assign nomenclature, to create and edit objects and to make annotations to the data objects has been specifically designed to make the curation process as fast and efficient as possible. The user interfaces have been adapted to the work routines of the curators, creating a suite of tools that is intuitive and powerful.

**Application**

Spring framework help in the enterprise application development.

Spring’s are used to develop any java applications.

Spring, hibernate along with google cloud spanner help to develop Web application that can be used to read from the repositories and store them in the Google cloud spanner database.

**Conclusion**

* Spring is an open source application framework.
* Spring helps to reduce complexity observed in java enterprise application development.
* It is lightweight framework which helps us to get benefits from java EE.
* It gives framework that promotes enterprise application which are easier and less complex to develop, easier to test, more flexible and easier to maintain.
* Hibernate is an open-source ORM(which provides transformations between object and relational models)frameworks.

And this is used in implementation of the std.

**REFERENCES**

# [1.] “An Introduction to Hibernate and Spring” article by **Ahmad Seddighi.**

[2.] [www.packtpub.com](http://www.packtpub.com).

[3.] The DOPLER meta-tool for decision-oriented variability modeling: a multiple case study.

Paul Grünbacher,Rabiser

[4.] The Rat Genome Database curation tool suite: a set of optimized software tools enabling efficient acquisition, organization, and presentation of biological data

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[5.] UPPAAL — a tool suite for automatic verification of real-time systems

Johan Bengtsson,Kim Larsen, Fredrik Larsson, Paul Pettersson, Wang Yi.

# [6.] SiLK: A Tool Suite for Unsampled Network Flow Analysis at Scale

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[7.] [www.hibernate.org](http://www.hibernate.org)

[8.]<http://www.tutorialspoint.com/hibernate/hibernate_architecture.htm>