

# Sofia University "St. Kliment Ohridski"

## Faculty of Mathematics and Informatics, Department of Information Technologies

Thesis:

# Deploying data- driven methodology for automated functional testing of Web applications

## Overview

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One of the challenges that software engineering faces nowadays is increasing the quality of developed applications. Customer satisfaction is primary measure for the quality of the proposed solution. Quality assurance is important part of every software process. Testing verifies the degree to which the system requirements are accomplished. The purpose of functional testing is to assure that the software product implements business processes of the client and delivers the desired functionality. Automated testing gives the opportunity to repeatedly execute test scenarios easily and quickly. Current software processes are iterative and incremental. Web application development is liable to shorten duration of iterations and increase their number. Data-driven methodology for automated functional testing presented in this thesis assures effective testing in an environment of changing requirements and decreased time to test. For the deployment of data-driven methodology is used IBM product Rational Robot, testing framework Rational Robot Automation Framework Support for data- driven testing and proprietary tool that supports the process of deployment of the methodology and implements additional functionality.

This thesis is structured in ten parts. First part is Introduction. An overview of the proposed solution is made. It contains a short introduction to the problem domain. The goals, tasks and purpose of the work are stated as well.

The body of the thesis consists of five parts. The first part named "Applied Technologies" are described technologies that are used in the proposed solution. The characteristics and advantages of .Net technology are presented. .Net is used to build a tool that supports the deployment of data-driven methodology. To demonstrate how the methodology is deployed a .Net web application is used. IBM Rational Software products are also presented in that part. The product for automated testing Rational Robot is described in details. Testing framework Rational Robot Automation Framework Support implements data- driven testing for Rational Robot.

The second part has title "Survey of the problem domain and theoretical base of the proposed solution". The theoretical base of the proposed solution is presented in it. Testing process is described as part of the entire software development process. The survey of the most popular methodologies for automated testing is made. At the end the advantages of the data- driven methodology are stated and the model of the testing platform is described in details.

The next third part titled " Specification of the solution for deploying data-driven methodology" organizes and summarizes the principles that the deployment process abides.

Fourth part is named "Development of the tool for automatic creation of test tables". Specification, construction and application of the tool are described in it. The tool implements some of the deployment principles specified in the previous part.

The last fifth part is titled "Deployment of the methodology". The whole testing process based on the data-driven methodology for automated functional testing is presented in it. How the process is applied to test a module of .Net Web application is described.

Seventh part is a Conclusion. A summary of the thesis for deploying a data-driven methodology for automated testing of Web applications is made. A possible improvements and enhancements are suggested.

The last three parts contain the glossary of terms and abbreviations, bibliography and appendixes.