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Title of Paper

What's behind Test-driven Development?

Presenter

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Instructional Level

x Introductory **O** Intermediate **O** Advanced

Target Group

Developer, Tester, Manager

Keywords

- ❒ Test-Driven Development
- ❒ Example-Driven Development
- ❒ Systematical Test Case Development
- ❒ Uses of Test Methods

Abstract

In recent years a lot of process models take software testing into focus - or more precisely, at the beginning of development. Extreme Programming, Test-First and similar approaches start development of software with the specification and execution of test cases. These models are classified under the generic term Test-Driven Development.

A very compact description can be found in the German wikipedia, which is characteristic in the discussion with developers [1]:

> *Programming is done in small iterations of a few minutes. Each iteration is made up by three main steps:*
> 1. *Write a basic test for the next small function to implement. This test shouldn't work.*
> 2. *Come up the test with minimized code to quickly return to the "green bar" (all tests succeed).*
> 3. *Clean up the code including the removal of duplication, introduction of necessary abstractions and implementation of code conventions. Aim of this is to simplify the code.*
>
> *These steps are repeated until the developer doesn't come up with any more meaningful tests, which would fail and thus the unit is completed for the moment.*

On closer inspection testing methods are not used. Creation of test cases - as described in the text above – is based on the ingenuity of developers and indeed supported by use cases or user stories in which customer requirements are specified. Typical functional sequences of the application are documented in these test cases. Example-Driven Development (EDD) would be a more suitable name for such an approach. Although this concept is already used (e.g. [2], [3]), the term Test-Driven Development has been enforced.

For a systematically test-driven approach, test methods, in particular test design methods, should be

applied to derive test cases. Developers are supported, that they don't forget any test cases or overlook constellations. In addition to positive test cases (for proof of the required functionality), the negative test cases (what happens on faults e.g. bad inputs) are to be specified and to be run. All too often, these negative test cases are hard to find neither in the use cases, the user stories nor in the minds of the developers. Very few customers worry how the application should respond in case of an error and explicitly specify this behaviour in the requirements.

The consistent use of test methods will lead to even greater success of the Test-Driven Development approach and will meet the name much better. A step in this direction is the training of developers to the "Certified Tester - Foundation Level".

References

[1] http://de.wikipedia.org/wiki/Testgetriebene_Entwicklung, 08.01.08
[2] http://www.exampler.com/book/, 08.01.08
[3] Workshop by Steve Freeman & Mike Hill: "Example Driven Development and FIT" http://skillsmatter.com/fit-example-driven development-course, 08.01.08

Biography

Dr. Karin Vosseberg works as Senior Consultant by pdv.com Beratungs-GmbH in the team of Business Development. Her focus is on software development and quality assurance processes. For many years she has worked as research assistant at the University of Bremen in the working group of Software Engineering, Operating Systems and Distributed Systems and in the project "Informatica Feminale – Summer University for Women in Computer Science". She has given many talks on national and international conferences, e.g. Women, Work and Computerization 2000; SQM 2002 and 2003; EuroSTAR 2001 and 2005; Software Management 2004. In addition Dr. Vosseberg keeps in university contact by regularly teaching assignments.

Prof. Dr. Andreas Spillner has 30 years of experience in the field of software development and testing, in practice and research. At the University of Applied Sciences in Bremen his fields of research are Software Engineering, Software Validation, Test Methods especially for large and object oriented software systems, and Process Models of software development. Prof. Dr. Spillner is foundation member of the German Testing Board and member of the ASQF Advisory Board. He was founder and for many years chairman of the German Special Interest Group in Software Testing SIGiST ("Test, Analyse und Verifikation von Software") of the German Computer Society ("Gesellschaft für Informatik", GI). 2007 he was appointed as GI Fellow. He is author and co-author of several books and has a variety of publications in journals. Prof. Dr. Spillner has given a lot of lectures at international and national conferences and seminars.

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