

**Assignment 3**  
**White-box testing**

**Assignment Objectives:**



- Generating test cases based on white box testing.
- Use JUnit for implementing the test cases.
- Coverage analysis.
- Testlink - test management tool.

**Theoretical aspects**



- Create test cases using White-box testing.
- Control Flow Graph
- Coverage criteria: statements, conditions/decisions, paths, loops
- References: [Myers]—chapter 4; [Naik]—chapter 4; [Young]—chapter 12; [Patton] —chapter 6,7

[Myers] Glenford J. Myers, *The Art of Software Testing*, John Wiley & Sons, Inc., 2004

[Naik] K. Naik, P. Tripathy, *Software testing and quality assurance. Theory and Practice*, A John Wiley & Sons, Inc., 2008

[Young] M. Pezzand, M. Young, *Software Testing and Analysis: Process, Principles and Techniques*, John Wiley & Sons, 2008

[Patton] R. Patton, *Software Testing*, Sams Publishing, 2005

**Assignment**

**[White-Box Testing]**

Design and implement test cases based on source code, i.e. white-box testing. The test cases will be **created for b) project requirement** from the "Problem statement" in the first laboratory).

**[TestLink]**

- a) Define the designed test cases (the ones that could be implemented and executed) in Testlink.
- b) Define the requirements using Requirement Specification section. (if not created for Lab 02)
- c) Associate the test cases and the requirements to your Test plans.

○ **In-class assignment (25 XP)**

- CFG + CC metric
- Implementing 2 test cases for **condition coverage** in Junit.
- Creating in TestLink the implemented test cases.
- Creating Maven project and git (github, public) project (same as Lab02).
- Creating a job in Jenking for executing the test cases.

○ **Homework assignment (100 XP)**

- Test cases (**for project requirement b)**) will be created for coverage criteria (All statements, Decisions/Conditions, Paths, Loop(s))
- Testlink test cases.
- Jenkins job for all test cases.

**Turn in:**



**[White-box testing]**

- 1) The documentation (test design) will contain the report **Lab03\_WBT\_Form.xls**.
  - a. CFG + CC + Paths
  - b. Test cases design for: all statements, decisions/conditions, paths, loops coverage criteria.
  - c. Statistic of the executed test cases. (last worksheet in the xls file).
  - d. In the statistic table from the excel file, the coverage percentage of the tested method will be written.
- 2) Source code: Implementation of the test cases.
  - a. The source code - tested and debugged (and retested).

**[TestLink]**

- 1) The Testlink - TestPlan/Test Cases must be presented/delivered in class.
- 2) The Testlink generated documentation.

**[Jenkins]**

The created Job in Jenkins for the created test cases.

**Assignment and Delivery date:**

1. Assignment date: laboratory 3
2. Delivery date for **in class assignment**: laboratory 3 (max 25 XP)
3. Delivery date (first) **for homework assignment**: laboratory 4 (max 100 XP)
4. Delivery date (last) **for homework assignment**: laboratory 5 (max 50 XP)

