# 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.

# o 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.

#### O 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).

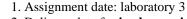
#### [TestLink]

- 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:**



- 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)

