SOEN384- Management, Measurement and Quality Control

Fall 2015 -Assignment 1 (10%)

**Team** Assignment (4-5 students in a team)

**Due on October 10th by midnight**

Submission instructions: submit electronically (EAS) as "Theory Assignment 1", one submission per team. List the names and the IDs of the team members on the first page of your submission.

**Goal of Assignment 1:** **Practice software measurement data collection, analysis and decision-making with the McCabe IQ and Logiscope tools**

In assignment 1, you’ll use LOGSICOPE and McCabe IQ to analyze the quality of the code delivered in consecutive milestones (see the content of *A1-code.zip* file).

1. **Quality trends analysis with McCabe IQ tool**

**1.1** You will extract the measurement data and analyze the quality trends of methods (modules) of the whole project (see A1 source code) across the five different milestones in terms of:

1. Average Cyclomatic Complexity **[v(G)]**
2. **Average** Essential Complexity **[ev(G)]**

**1.2**, For each metric listed in 1.1: Show the quality trends in terms of line charts and interpret the results: Is the quality of the code increasing or decreasing? Comment on the major quality changes that occur in different milestones.

1. **LOGISCOPE**

**Part 1. Theory (goal: to understand the measurements)**

**For the Maintainability factor:**

**1.1** Write its definition and the LOGISCOPE formula for its quantification

Note: LOGISCOPE decomposes the **Maintainability** factor into the following four criteria:

* **Analyzability**
* **Changeability**
* **Stability**
* **Testability**

**1.2 For each criteria listed above:**

1. Write its LOGISCOPE formula in class factor level
2. For each operand in the formula: explain what characteristic of the code it measures.

**Part 2. Practice**

**1.Collect measurement data. Use the given source code packed in *A1-code.zip***

For each available milestone, collect the measurement data on Maintainability as indicated below

* 1. Class Factor Level
  2. Class Criteria Level

Include the measurement results in your assignment (print screen option can be used)

**2. Analyze** the collected measurement data

* 1. Compare the maintainability of the code in the milestones. Rank the quality of the code in different milestones based on the poor and fair category reported in the class factor or criteria level. Identify the worst quality code (milestone).
  2. In the worst quality code (milestone), identify and list a class which is characterized as fair or poor in terms of maintainability, and explain the reason why this class is characterized as fair or poor.
  3. In the worst quality code (class), identify a method which you consider as complex, explain the reason why this method is complex, and use Kiviat Graph from logiscope to visualize the results of the analysis of this method.

**3. Decision making.**Write recommendations for improvement of the quality of the code:

3.1 for each milestone (at class factor/criteria level) (

M1: CompilerRegistry

M2:CompilerErrorModel,CompilerProxy,CompilerRegistry, CompilerRegistryTest, CompilerRegistryTestWithout

M3: “ “ “ “ “ “ “

M4: “ “ “ “ “ “ “

M5: CompilerErrorModel

)

3.2 for the one class identified in Step 2.2 (M5; CompilerErrorModel.java)

3.3 for the method identified in Step 2.3 (\_calculatePositions() or getErrorAtOffset(OpenDefinitiopnsDocument, int))

1. **Postmortem: Evaluation of the LOGISCOPE tool and its comparison with McCabe IQ tool.**

Summarize your experiences with both tools in no more than half page and state their advantages and disadvantages.

1. By October 8th please print out the Peer Assessment Form, complete and give to your TA.

Individual Assignment 1 marks will be calculated as follows:

*A1 mark of Student X = Team’s A1 mark \* average of the peer assessment for X*