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CM 1711
April 22, 2012
CSSE 376
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Lab 8

[Question 1 (5 pts)] Please identify the metrics whose values are outside the optimal range. Also identify the methods that are responsible for this.

Number of Parameters (avg/max per method) is outside of optimal range. The method at fault is TwitterClient which is inside the TwitterClient.java file.

[Question 2 (5 pts)] Please provide a strategy or solution (without writing code) that will bring the value of the given metrics into an optimal range.

The number of parameters for the TwitterClient constructor can be brought into an optimal range by creating and passing in an object containing several of the parameters.

[Question 3 (5 pts)] A good heuristic for cyclomatic complexity is to keep it below 15. Does this code meet that heuristic?

Yes. The maximum that the whole project reaches is 6 in DelimitedTwitterStreamProcessor.java.

[Question 4 (5 pts)] Cyclomatic complexity can be used to identify the number of independent paths that need to be tested in a method. Please identify the number of independent paths in the method backOff in the inner class BackOff in TwitterClient.java. Identify conditions that would lead to each of these paths. (These conditions establish test cases for the method.)

3 independent paths.

- 1) if(backOffMillis == 0)-if statement
- 2) if(backOffMillis != 0)-else statement
- 3) if(backOffMillis != 0) and backOffMillis > capMillis-if statement inside of else statement.

[Question 5 (5 pts)] Explain, in your own words, the “afferent coupling” and efferent coupling” methods. Describe how they can be used in project analysis.

Afferent Coupling: The number of packages that depend upon classes within that same package. It is used to determine package’s responsibility.

Efferent Coupling: The number of packages that classes in the package depend on. It is used to indicate the package’s independence.

[Question 6 (5 pts)] Compute the effectiveness of Top Level Design inspection activities.

Defects Found: 806

Number of defects up to now: $154 + 928 = 1,082$

Number of defects removed before: 0

Effectiveness: $806 / (1082 - 0) = 74.49\%$

[Question 7 (5 pts)] Compute the effectiveness of Low Level Design inspection activities.

Defects found: 761

Number of defects up to now: $154+928+948=2,030$

Number of defects removed before: 806

Effectiveness: $761/(2030-806) = 62.17\%$

[Question 8 (5 pts)] Compute the overall defect removal effectiveness of the development process.

$(1 - \text{Defects in field}/\text{total defects}) = (1 - 126/3526) = 96.43\%$