

Assessing the Code Quality and Developer's Knowledge

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Quality or its absence is one of the main aspects for the evaluation of the source code. However, it is not only influenced by programmers' knowledge of the programming language but also by the actions that he faces during his work.

Mark et al. [1] discuss the influence of outer actions on the programmers' work. They have defined the value of diversion as the time needed by a person to return to the context of the work interrupted. With these diversions, several other aspects can be connected, such as stress, for example. The value of interruption is not only based on the type of diversion, but it can be raised or lowered by the personal factors of programmer himself.

Khan et al. [2], on the other hand, studies the mood and its impact on debugging performance of the programmer. In an experiment based on watching several mood-inducing movie clips by programmers that were tasked to make a debugging test afterwards, their productivity was compared.

Copy-paste is a frequently used trick that helps to spare time and effort during the programming. However, one of the main mistakes connected with it is, according to Li et al. [3], failure to remember the need of renaming identifiers after the copying of code by programmers. This error can be easily discovered by compiler, if there is no identifier with the same name declared. If there is one, it could ultimately create an error extremely difficult to find.

Context of the source code creation is connected to the programmer and to the conditions of the code creation. As a context of the programmer we could consider following factors:

- Outer environment - represents the environment programmer works in and all the influences he faces there. It can be, for example, the office where he is disturbed by his colleagues.

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- Inner environment of the programmer – this means his experiences in the field and his actual mood and state as well. Experience of the programmer can be described as the number of years he spent by programming.
- Time – explains, when the programmer is creating the code. It can be a part of the day, a day in the week, holidays or various unexpected situations – and a code created in these situations possibly contain more errors and bugs.

Our method to determine the bug probability in source code is based on evaluation of the programmers' activities in the work. Various combinations of these activities could lead to a rise or a drop in the probability rate.

At our disposal, there is a data set with the logs of several programmers, working on various software projects. Based on this, we are able to analyze the activity of programmer during the software development. We will select some projects from these and there, we will observe and analyze the bug reports and connect them to the programmers' context during the creation of particular part of code. Based on the influence of various conditions on the final code, we will evaluate these conditions and, in the same time, we will examine various combinations of the conditions and their impact. Final result of our work will be a numerical evaluation that will determine the probability of bug appearance.

Our project is focused on determination of quality of a code based on the context of programmer. We examine various factors that influence programmer during his work and the significance of their impact on the source code with the ultimate goal of preventing bug creation and failures in the process of programming.

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