COMP33812: Software Evolution Coursework 3

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Software Validation and Verification

Introduction

Nowadays every company that is creating software has to meet deadlines which only means that there is a time constraint on every project a company starts. In the process, there has to be attention paid to details so that there would not be elements which may cause harm to the persons using the software or to the company's image. In order to create and deliver a software product with certain functionalities, requirements and features, there is the software validation and verification process that aims to provide filters in such a way that the output would be a product made after the exact standards imposed since the beginning (5).

Validation and Verification Process

First of all, the software validation process is all about checking what a developer did compare to the requirements he or she had to follow in order to achieve a certain point. In order to have a successful validation, the requirements have to be clearly defined up front so that nobody will get confused on any part of his/her work (4). There are also two types of validation: when the focus is on technical details or when the focus is on the business requirements. The difference between those two points of focus is simply the fact that on the technical part, the details are clearly specified (what type of payment system to use) and on the other side, when focusing on business requirements, the most important part is that the application or the software product to behave in a certain manner when put in the production. The main question that related to the software validation is: "Are we building the right product?".

Second of all, after learning about the software validation, now we can focus on the software verification stage. The question concerning this subject is: "Are we building the product, right?" (8). If the developer has passed through the validation stage so now everyone knows that he intends to implement a functionality, for example, that was assigned to him/her, now we have to also check if the code is written is doing the right thing or if it is behaving as expected (6).

Role of Standards

In order to be able to validate and verify pieces of software, there have to be some standards followed by the person or team that is conducting the verification and filtering process. There is not a single person in the world that knows all the details of a verification process, so there are certain standards that quality assurance employees have to stick on, which can also be compared to a

Bible for them. The IEEE has released a book that has the standards explained in detail (1).

In the testing process, there are three types of problems that may arise: Fault, Failure or Malfunction (2). When talking about a faulty piece of software, we refer to a missing function or feature from the code that was not implemented as expected. Failure can happen during the execution of a code by simply not working as intended or as supposed to. The last problem that may arise is called malfunction since the code may not do what it is supposed to. The difference in this problem is that the code exists, so there is no fault, the code is working without having errors, so no failure as well, but the code is doing something that is not supposed to do. Those three are examples of how bugs or human errors can disrupt a software easily, which is why the standards are very important to be followed in the process of analysing and verifying a piece of software.

Effect on Software Quality

All the terms and examples described above are used in order to achieve software quality. These terms refer to the idea of having a software that is bug-free, well documented, that is meeting all the requirements, which is working exactly as expected and also is ready to be released as well. In general software, quality is about having a product ready to be deployed (4). The software validation and verification process are the core filtering processes that would help any piece of code to be working well; integrated in the system the code will provide the functionality needed which leads us to the conclusion that those two processes are having a positive effect on the software quality since they work together to deliver the correctly working product (7).

Conclusion

In conclusion, the process of creating software is not easy and also requires a lot of patience and skilled people. Professional developers are responsible for the quality assurance that would be a very important step in achieving software quality. When I was working in the internship there were developments that had to be done by me and the rest of the team. After the code was done, it was delivered to the quality assurance persons that would find bugs and holes nobody ever taught about, which made me understand how important is to have a piece of software well build and how details can play a major role into achieving this goal.

Biography

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