

Importance of quality in a software project

Software projects require special attention from the moment they start until they finish, from the moment the requirements are gathered until the project is delivered, but, throughout the development, there must be testing, maintenance and a series of methodologies to fulfill the project in the proposed time. While it is true, all of the above is important, but during the execution of the project, a concept that is fundamental throughout the entire software development process must be kept in mind: quality. Quality in software development refers to the degree to which a system meets each of the functional and non-functional requirements established based on the needs of the system users.

In software engineering, there are quality tests, where these are intended to analyze those failures and/or errors present in the software, which favors the times that must be met with respect to the launch of the software, since by tracking the operation of the software and identifying faults, you can proceed to fix them immediately avoiding that at the end of development errors are found that could be avoided or corrected in time. This helps and guarantees the quality since it makes the final users feel

confidence and security at the moment of using the software, since it assures the fulfillment of each one of the user's needs by complying with each one of the proposed requirements.

In relation to quality in software development, it is vital to understand what are those quality attributes that must be taken into account to ensure the quality of the software, among these are the observable quality attributes and those unobservable, the observable ones, defined by the customer who is requesting the development, among these are presented: performance tests, which are fundamental, because under this criterion it is possible to determine the stability, speed, scalability and response capacity that a software has under a certain load of tasks, in addition there is the security which is a fundamental component at the moment of developing a project, the security in the life cycle of the software is fundamental to guarantee the confidence with which the user uses and interacts with the developed software, This is why it must be verified from the initial phase of the project to work under a model in which continuous security checks are established throughout the project, here must be guaranteed tests in relation to authentication, authorization, confidentiality, integrity, accountability and availability tests, all this in order to ensure from the beginning that it will prevent access by unauthorized users, both to the program and to the stored data.

Continuing with the observable quality attributes, availability must be considered, since it ensures the extent to which the system is available for use when required, functionality must also be taken into account, where it must be guaranteed that the system performs each of the requirements for which it was designed, as well as reliability, understood as the extent to which the system must have the ability to be maintained over time. The external security is the measure of the absence of errors that generate information losses, while the internal security is the one where the system has the ability to resist attempts of use by external people, guaranteeing the non-authorization of access to the system. (Padilla, 2022).

Continuing with the unobservable quality attributes, we have several attributes such as: Modifiability, which is the ability to make future changes to the system quickly and inexpensively, as well as integrability, which ensures that each of the components of the developed system are correctly integrated, portability, which refers to the ability of the system to be executed in different systems, in other words, that the application is compatible with different operating systems, Finally, there is reusability, a concept understood as the capacity of the system so that its components can be used in future projects, and finally, there is scalability, which refers to the capacity of adaptation and response, in relation to the performance of the software project as the number of users increases.

In software development it is of great importance to ensure the quality of the projects, which goes hand in hand with the attributes mentioned above, but there is also a relevant aspect throughout the software development cycle and lies in the importance of testing continuously, that is where testability comes into context, because it is at this stage of the software development process where the necessary tests must be performed to verify each of the needs of the project, but before, it is necessary to know that the testing are those activities destined to evaluate the quality of the software where failures are detected, as well as validation and verification tests are designed, which go hand in hand with the previous thing, since it is verified that the development team has carried out correctly the system, all the previous thing carried out by a tester who is a professional trained to carry out this type of activities.

With respect to this phase of the development, a testing process is designed, where it is first necessary to model the software environment, it is in this phase where the environment in which the tests will be executed is identified and it is the task of the tester to simulate the interaction that the software will have with its environment, in order to identify those actors that will interact with the system and the possible interactions that they may have with it, in second instance there is the selection of test scenarios, for this different flows are represented based on those functional and non-functional requirements initially established, After this, the scenarios are executed and

evaluated, for this stage the results obtained are evaluated with the expected ones, this is monitored and favors the attention to those that were not successful and must be corrected and to finish this process the progress of the tests must be measured, which leads to monitor, report and control the process, since each of the activities performed must be measured and those tests that need corrective actions to be successful must be followed up.

Based on each of the concepts discussed above, it is possible to conclude that the whole process behind the quality control, process through which it seeks to improve the quality of the software product is relevant, since in this also takes place the quality assurance because in this the quality control process is verified and it is in this process where you see the result of work of a development team that will be recognized for what it will deliver to the customer. From this, it is noticeable that it is fundamental that, at the moment of realizing a software project, quality must be assured from the beginning and it must be given the importance that it deserves, because in case a project does not fulfill the requirements established initially or presents some failure that could have been avoided before its delivery, the purpose of the project loses validity and the development team loses credibility and therefore the user's confidence.

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