Importance of Static and Dynamic testing when developing secure software.

Name

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Introduction

One of the importance of developing secure software is to protect your company's brand from the customer's trust. It involves a lot of process and operation. These processes and procedures have a specific system they follow. However, Static and dynamic testing is essential when developing secure software. Whenever a code is being developed, static analysis has to be conducted. Static testing is a fundamental process in modern software development. When applied at the right time and effectively, it has a positive impact on the quality of the code. It also a significant effect on security and its safety [2]. However, in dynamic testing, all tools require program execution to generate and produce effective results. In static testing, the devices usually perform by analyzing the source of the code and binary executable code. For instance, in static testing, no code is generated since analysis is done based on the potential behaviour of the code.

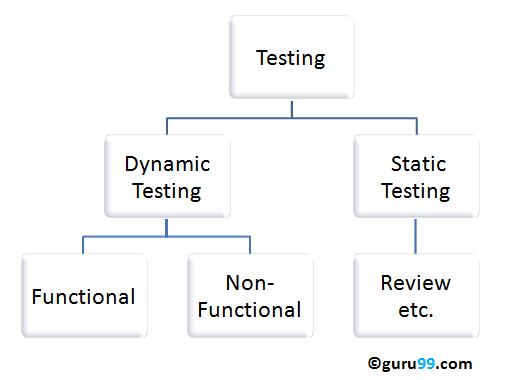


Figure1: pin diagram for dynamic and static testing [1]

**Static testing**

Static testing is essential in software development since it helps in analyzing the executed codes. The paths taken by the codes are also analyzed in static testing. This makes it easy to test them hence execution and data paths via the code. Static testing is incorporated before the codes are executed into the products. It is designed to assess application source code. This means that it is essential since it can be used in identifying potential security vulnerabilities. It is also flexible; hence it can perform in various SDLC processes. This is because it can be integrated directly into the environment. This, in turn, helps the developers of the software to monitor and track the code constantly.

Also, static testing is essential in software development since it helps one scan their code incrementally. The developers can run a complete scan once and perform consecutive scans to test the different parts of the code that may have been changed. This usually saves a lot of time and efforts. It also leads to quick mitigation and identification of the security vulnerabilities of the code. This is because it's prompt and accurate since it helps in scanning the code thoroughly.

**Dynamic**

On the other hand, dynamic testing helps the developers to understand how complex application programs run. This, in turn, makes them troubleshoot quickly, isolate the memory and debug the life of the software. Therefore, dynamic testing is essential since it allows the developers to analyze and identify potential issues during the execution process. This has a significant impact on the reliability of the application. However, dynamic testing is developed to focus on one task. This makes it easy for them to be used in the development areas. In contrast, they offer an easy-to-use graphical user interface which makes it easy for the developers to analyze and identify information gathered or presented during the dynamic analysis of the software.

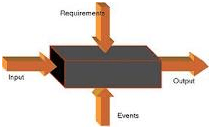


Figure 2: pin diagram of dynamic testing [1]

**Conclusion**

In my conclusion, both dynamic and static analysis are essential. There are different applications, software's build on other computers which have different programming languages and technologies. Examining a code is not enough to understand the main problem and issues that may show up during the execution process. However, having dynamic and static testing can help solve this problem.

**References**

[1]Guru 99. “Static Testing vs Dynamic Testing: What's the Difference?” available at https://www.guru99.com/static-dynamic-testing.html

[2] Nakashima, Masayoshi. "Development, potential, and limitations of real–time online (pseudo–dynamic) testing." Philosophical Transactions of the Royal Society of London. Series A: Mathematical, Physical and Engineering Sciences 359.1786 (2001): 1851-1867.