**2-2 Journal: Dynamic and Static Testing**

Christine R. Emerson

Department of Computer Science, Southern New Hampshire University

CS-255: System Analysis and Design

Dr. Toledo Lopez

March 6, 2023

**Static Testing**

Static testing identifies software application defects without code execution (Hambling et al., 2019, p.75). Instead, code is statically checked early in the development process to identify problems in the source code. Automated analysis and manual reviews are two ways to perform Static Testing. Manual reviews are where other people examine the source code and point out the logic or design flaws, inconsistencies, deviations from standards, etc. The process of automated analysis involves analyzing a source code for possible errors. The capability of identifying problems early on reduces the possibility of massive rework. In addition, it returns a high return on investment because it identifies missing requirements, detects defects, and returns on investment due to its cost-efficiency. I found this significant benefit of Static Testing in the reading: "if work products are statically tested before any code is written, this will remove defects from the work product and ensure these defects are not built into the code" (Hambling et al., 2019, p. 76).

**Dynamic Testing**

In dynamic testing, the software's dynamic behavior is analyzed. In this type of testing, a test case is executed, and input is given to see if the output matches the expectations through test cases. To run the test cases, you must compile and run the software code manually or by using an automation process to develop suitable software; this testing method validates software applications as end users in different environments.

Despite being costly, Dynamic tests aim to ensure that the software works as intended after installation, ensuring the application is stable and free of severe flaws. Despite its complexity, the dynamic test is primarily aimed at ensuring consistency.

**Differences Between Static and Dynamic Testing**

Testing from a static and dynamic perspective aims to detect defects as soon as possible. Despite this, this week's reading showed many differences.For example, "the main difference is that static testing is carried out against work products without actually executing any code, whereas dynamic testing is carried out by executing actual code or the final software or hardware product" (Hambling et al., 2019, p. 76)**.**Furthermore, static testing is performed early in software development, whereas dynamic testing occurs later.The static testing process is conducted before the deployment of the code, and the dynamic testing process is conducted following the deployment of the code**.** Defects are prevented by static testing, and they are discovered and fixed by dynamic testing. Unlike Dynamic Testing, Static Testing doesn't require running several test cases, so it typically takes less time. Consequently, Dynamic Testing costs more than Static Testing. Moreover, Static Testing enhances the consistency and quality of the work product, whereas Dynamic Testing is concerned with externally visible features. Finally, Static Testing is often an effective way to identify defects significantly quicker and more efficiently than Dynamic Testing.

**Importance of Using Both Static and Dynamic Testing**

During the software development life cycle, testing plays a crucial role. Different testing methods can be used to carry out the testing process effectively. Static Testing and Dynamic Testing are two of the main types of testing. Dynamic analysis requires the execution of executable software and static testing to ensure quality. Due to the fact both work towards the same goal of detecting defects quickly, they complement each other perfectly. Static testing seeks to prevent defects, whereas dynamic testing seeks to discover active faults. Both approaches uncover only a portion of existing defects; therefore, combining the approaches is imperative. Adding Static Testing can enable finding errors Dynamic Testing cannot find. Since Dynamic Testing is highly expensive, Static Testing can help locate errors reducing the overall cost.

**References**

Hambling, B., Morgan, P., Samaroo, A., & Williams, P. (2019). Software Testing: An ISTQB-

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