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**CS-320: Journal: Static and Dynamic Testing**

Software testing is an essential process in the development of software, as it ensures that the final product meets the requirements and is free from errors. There are two main types of software testing: static testing and dynamic testing. Static testing involves analyzing the software code and its associated documentation without executing the code. Dynamic testing, on the other hand, involves executing the software code and analyzing the output.

One key difference between static and dynamic testing is the timing of the testing. Static testing is performed before the software is executed, while dynamic testing is performed during or after the software is executed. Static testing involves reviewing the software code, design, and documentation to detect defects, errors, or inconsistencies in the software, which may result in bugs or malfunctions. Static testing techniques include code review, walkthroughs, and inspections (Hambling, B., et al., 2019).

Dynamic testing, on the other hand, involves executing the software code to verify that it performs as expected. This type of testing aims to detect defects and errors that are not visible during static testing. Dynamic testing techniques include unit testing, integration testing, system testing, and acceptance testing (Hambling, B., et al., 2019).

Another difference between static and dynamic testing is the scope of testing. Static testing is mainly focused on the software code, design, and documentation, while dynamic testing is focused on the software functionality, performance, and reliability. Static testing is more suitable for detecting defects in the early stages of the software development lifecycle, while dynamic testing is more suitable for detecting defects in the later stages (Hambling, B., et al., 2019).

Despite these differences, developers need to use both static and dynamic testing when testing software. Static testing helps to identify defects early in the development process, which reduces the cost and time required for fixing defects. It also helps to improve the quality of the software code and design, which reduces the likelihood of defects in the final product.

Dynamic testing, on the other hand, helps to ensure that the software meets the requirements and performs as expected. It helps to identify defects that are not visible during static testing, such as defects related to software performance and reliability. Dynamic testing also helps to ensure that the software is user-friendly and easy to use, which is essential for achieving customer satisfaction (Hambling, B., et al., 2019).

Both static and dynamic testing are important in software testing. While static testing helps to detect defects early in the development process, dynamic testing helps to ensure that the software meets the requirements and performs as expected. Developers need to use both types of testing to ensure that the software is of high quality, meets the requirements, and is free from defects.

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