Frequent Shopper Program - Part III

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Smith Consulting is entering the final phases of the software development process for the Kudler Fine Foods’ new Frequent Shopper Program application. These final phases in developing the application will involve quality assurance, testing, and implementation processes to ensure a successful release of the application.

**Quality Assurance Process**

Smith Consulting must apply quality assurance processes during implementation to ensure that the functional and performance requirements for the Frequent Shopper Program application are fulfilled. An important part of quality assurance is determining what quality is and how to measure it. The International Organization for Standardization (ISO) developed a widely used and influential model for software quality that provides a set of attributes and metrics for measuring quality (ISO 9126). The main attributes the ISO lists for software quality are functionality, reliability, usability, efficiency, maintainability, and portability (Priya & Ghayathri, 2013). Each of these attributes has a subset of attributes that further define and measure quality that can be applied to the implementation of the new Frequent Shopper Program application to ensure functional and performance requirements are met.

In addition to using these attributes to help guide and measure quality for the new application, there are good practices the Smith Consulting team can follow that will help with quality assurance. One of these practices is pair programming. This involves two developers that work together. One of them writes the code while the other watches to detect any errors and to ensure quality programming for the Frequent Shopper Program application. Another good practice for the Smith Consulting team to follow is defensive programming. Defensive programming is a method of programming where the developers anticipate any potential errors in the application and handle or minimize these errors (Braude & Bernstein, 2011). Effective commenting is another important practice to follow. Comments in code should provide concise explanations for how and why code is doing something (Braude & Bernstein, 2011).

There are many other good practices the Smith Consulting team can follow to build quality into the new Frequent Shopper Program application for Kudler Fine Foods and deliver a better end product.

**Testing Process**

Software testing is one way to determine the quality of software (Kharb, 2011). Software testing is also performed to ensure that the software meets its requirements and is operational at all levels. The three main testing processes Smith Consulting needs to follow for the new Frequent Shopper Program application are static testing, functional testing, and structural testing.

**Static Testing**

Static testing is done before functional and structural testing, as it is the least costly and can have the greatest benefit of the three testing procedures (Braude & Bernstein, 2011). The static testing process will include the Smith Consulting team examining the application code and associated documentation. This examination involves a two-step process that is performed manually without any execution of the application. The first step in the static testing process includes cleaning up the document’s spelling, grammar, punctuation, and formatting (Braude & Bernstein, 2011). This makes the second step of identifying defects easier.

The author of the document under review should be the first one to perform a static test. Then an independent viewer can perform a static test. Finally, a meeting to perform a walkthrough static test should be held to identify any additional problems or defects in the documentation.

**Functional Testing**

Functional testing procedures will test the behavior of the Frequent Shopper Program application to ensure it is in line with its requirements. First, Smith Consulting needs to write high-level test cases for the application for functional testing. These test cases can be taken from the use cases developed during the analysis phase of software development. For each path that can be taken to fulfill a use case, a test case should be written (Braude & Bernstein, 2011). As a result, the test cases can assess each potential path for all functionalities needed for the Frequent Shopper Program application.

Once the high level test cases have been written, the team at Smith Consulting needs to write lower level test cases specifically for white box and black box testing. White box testing is performed to verify the logic of the application’s code. This testing will examine the application’s statements, code paths, conditions, loops, and data flow (Braude & Bernstein, 2011). Black box testing is performed to verify the behavior of the application without accessing the application’s code. The behavior being tested should verify the behavior specified by the Frequent Shopper Program application’s requirements.

After these other testing procedures have been performed, Smith Consulting needs to perform regression testing to ensure any changes or corrections to the software did not affect other parts of the application or caused additional defects.

**Structural Testing**

The final testing required by Smith Consulting for the new application is structural testing. Structural testing continues the testing of the software’s behavior, but looks at the non-functional requirements of the application, including requirements such as usability, flexibility, performance, interoperability, and security (Samra, 2013). Some structural testing techniques Smith Consulting can apply are interface testing, security testing, installation testing, administration testing, and recovery testing (Braude & Bernstein, 2011).

**Implementation Process**

After quality assurance and testing processes have been completed, Smith Consulting will follow the actual implementation process of the new Frequent Shopper Program application. The implementation process will include the installation of the application, site and user acceptance testing, training users, and completing documentation.

The first part of the implementation process is to install the new application in its production environment (Maryland.gov Department of Information Technology, n.d.). For the Frequent Shopper Program, this will be the corresponding systems at the Kudler Fine Foods locations. Care needs to be taken to integrate the new application with the existing systems at Kudler.

Following the installation of the new application, the Frequent Shopper Program will require further testing in the production environment. This testing must be performed to ensure the application is functioning according to its requirements at its new location. Part of this testing will be performed by the development team. The other part of the testing will be performed by end users for user acceptance testing. This will involve employees of Kudler Fine Foods performing business functions on the new application to verify it functions correctly.

Sometime during the implementation phase, Smith Consulting must perform training and complete documentation for the system. It is essential for Kudler employees to be trained on the new Frequent Shopper Program application for correct and secure use of the software. All documentation should also be completed for the application and distributed to the appropriate parties.

After these implementation processes are complete, Smith Consulting will prepare to turn over the new application for maintenance.

References

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