**5-2 Journal: Software Testing Techniques**

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**What Was Utilized**

For each milestone assignment contributing to the project one assignment, many software testing techniques were involved, such as test planning, black-and-white box testing, and assertions. Test planning is a method to log all test-related objectives to complete the assigned tasks. Test planning was used in every milestone to understand how to execute the objects while using different strategies to ensure each function works. As most of the test planning was heavily used within the first milestone for the contact and contact service files, the testing felt more like black box testing since the internal structure was unknown. The black box testing method is focused on the function and nonfunctional aspects of the application without any information of the components. However, after receiving feedback from the first milestone, I noticed the following milestones continued with similar functionality and slowly transitioned into white box testing. White box testing is when the tester has complete knowledge of the internal framework that concentrates on the code written. With white boxing testing, I was able to have more in-depth visibility to fully identify issues of my applications to ensure the coverage met the standards. Assertion was also used throughout all milestones to define when the test succeeds or fails. One example was to use “assertNull” to test when testing objects to ensure each field cannot be null. Another important assertion implemented was using “assertThrows” to verify when any cases of the test fail. Using various techniques to employ each milestone helped me test the functions properly to ensure all requirements were covered instead of missing or not validated.

**What Was Not Utilized**

Even though many different techniques were used to complete the milestones, others were taught in class that were not rational to use are boundary value analysis, tagging, and repeated tests. Boundary value analysis testing is used to analyze errors that involve clusters around boundaries. The most practical time to use this technique would be in applications that include minimum, maximum, or when focusing on an appropriate range. Since the milestones applications do not include multiple fields on a specific value, it would have been unnecessary. Tags are a great way to manage and run tests and are used by categorizing tests into groups. Tagging is best used for applications that require a lot of testing or integration tests. Unfortunately, since the applications were broken into separate categorized files, tagging would not have been helpful since all functions in the application would need to be executed. If the applications were combined into one file, tagging could have split into contact, task, and appointment. Lastly, repeated tests are a technique to repeat the same test a specified number of times. If one of the tests fails during the repeated test execution, the entire test will fail. Repeated tests are best used to ensure a particular function will pass in random or unpredictable codes because the bugs would be caused by something out of one’s control. Since the application is a controlled testing unit, repeated testing would not have been helpful for the milestones. Boundary value analysis, tagging, and repeated tests are fantastic techniques for other applications. However, using them during each milestone would not have been reasonable.