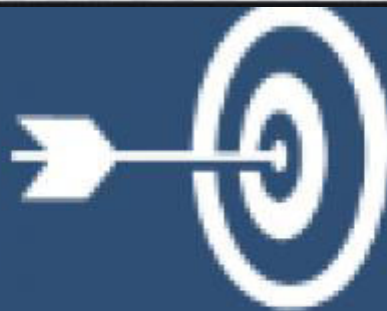# Smart Data Optimizer

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Abstract

Software Testing has been a continuously evolving field right from the day software development began. Testing has assumed greater importance over the years, particularly in the fields where quality cannot be compromised, such as Telecom Industry, Banking & Finance Industry, etc. Over the years, research has gone into development of various techniques, which can make testing faster, cheaper and better. The purpose of this White paper is to outline one such technique SMART DATA OPTIMISER, which can be used to test quality test cases in a faster and more efficient manner. Though this technique has been around for some time, the adaptability of this has not been well appreciated by the testing community. This white paper tries to analyze and demonstrates the applicability of the SMART DATA OPTIMISER technique, in a way which can appeal to the testing community in a more adaptable manner and assist in developing quality software.

Industry Overview

According to trends in the industry, Software Testing Industry is estimated to double its revenue by the year 2025, compared to 2015. Various techniques have been developed, over the years, to establish techniques to assist in Test Case Data optimizer and Test Case Execution. Test case execution techniques evolved faster and gave rise to Automated software testing tools. However, Test Case Data optimizer techniques have largely been a manual activity, which has been tedious and time consuming. On an average, it is estimated that this activity consumes at least 40% of the testing lifecycle and has good potential and scope for automation specially with introduction of IOT/Digital platform evolving.

Concept Details

Software test case data preparation has always been considered a tedious, monotonous and time-consuming activity, often subject to errors, due to various reasons – the key reason being misinterpretation of Requirements. To address this issue, test case data preparation has to be transformed into a more structured and easier to use approach, which can be achieved by having a pictorial representation

Case Study

1)

A leading financial services group in South Africa were facing a challenge in achieving maximum coverage and arriving at an optimal set out of 18000 data combinations, for testing. On applying smart data optimizer solution, this could be reduced to 3000 combinations with assured coverage. That was almost 80% slash down directly resulting in testing effort savings.

2)

A large North American telecom equipment manufacturer. Testing of a large IP-PBX system which included live Communication Version features to be incorporated. The Initial test suite had more than 800 test cases. By implementing Smart Data Optimizer, the number of test cases were reduced from 800 to 170; around 78% reduction. There was a reduction in approx 75% of the testing effort. Even after testing the reduced number of test cases there was no compromise on the test coverage

Solution

Using statistical Orthogonal Array technique, this solution provides a systematic

and efficient way of generating combinations of several variable parametric data.

With minimum number of parameter combinations to be tested, it ensures maximum coverage with every parameter value tested against every other dependent parameter value. The tool also provides a mechanism to eliminate invalid combinations, which is invaluable input in scenarios where number of permutations and combination are huge.

To derive at an optimal set of test data with maximum coverage and ensuring all necessary impacted test data are part of test suite, the Optimize Data feature of the RTD tool is used. This feature helps you in deriving effective and efficient test data set for regression testing.
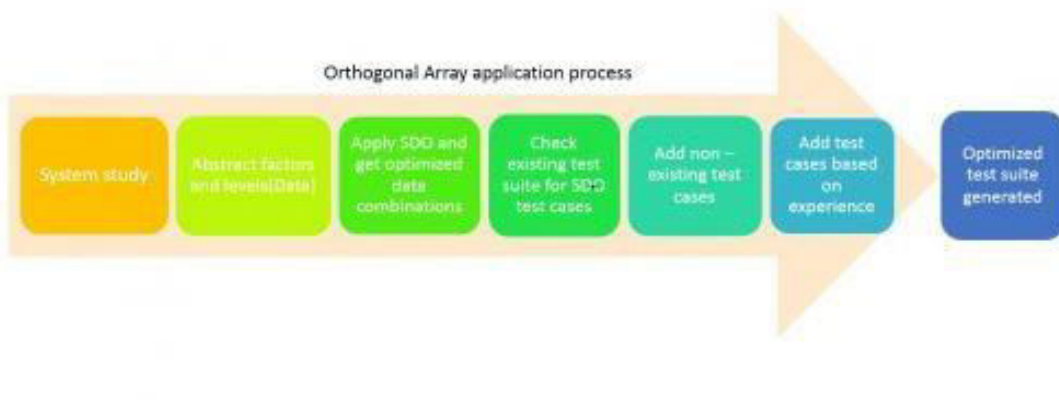
Benefits

- Effort savings of up to 30% or more can be achieved due to optimal combinations of data

- Increase the number of test cases in scenarios where initial coverage was inadequate. Hence focus is more on optimization of test coverage with minimum effort

- Helps reduce Defect Leakage due to missed scenarios

Implementation

Ideal implementation in an account consists of the below mentioned activities:

1. Session on modeling and the concept of SMART DATA OPTIMISER.

2. Hands-on workshop or a Proof of concept with the practitioners in the relevant account.

3. Shadow support in case of issues/concerns.

Conclusion

SMART DATA OPTIMISER technique brings with it huge amount of benefits with respect to reduction in review effort & time, easy maintainability and more efficient change management. The business benefits are directly realized by having tests suite execution more coverage *cheaper, faster and better*. SMART DATA OPTIMISER solution serves as a catalyst for software quality testing and be a visible differentiator for business wins.