A Code Profiling using Statistical Testing in StART

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An exhausted testing is one of the testing strategy that need more time taken due to test the whole test cases in the Software Under Test. Many techniques have been proposed to avoid this situation because the size of the Software Under Test is vary and need to have good testing strategy performance. One of the techniques is Adaptive Random Testing (ART). The ART is one of the enhanced random testing. Due to ART performance is better than pure random testing, it becomes motivation to implement the ART in Aspect Oriented Program (AOP). The ART and random testing are similar in which is selection the first test case with random manner. But, ART add another one characteristic which is the evenness test in domain area. Due to similar for first test case, we proposed a new strategy called StART. In StART, we use statistical testing technique to get the information before we test. This process we named it as code profiling. This code profiling helps in selection first test case in this technique. The result from this phase shows the area that we need to select for test activity.

Keywords: Code Profiling, StART, Statistical Testing, Aspect Oriented Program, selection test cases.

1. INTRODUCTION

In software testing, test each one for the whole test cases in Software Under Test (SUT) is not a good idea¹. It is a very costly process due to the SUT is very big project especially increase cost in term of time. Due to this constraint there are many testing strategies proposed to avoid this problem. One of the strategy is Adaptive Random Testing (ART). ART is one of the extension of random testing². The strategy is test one of the test case randomly and test case which is farthest to the nearest test case that tested. The ART and random testing are different in which the ART maintain the evenness of the testing activity for the input domain³. There are many notions used to improve this ART⁴ and the result shown that ART is better performance compared to random testing. Meanwhile, the similar process in ART and random testing is the first test case to be test is randomly pick which is not use any in information behind the SUT. So, in this paper proposed a strategy called code profiling to support in test case selection for the domain area. The code profiling that proposed is using statistical testing as our guideline.

Nowadays, programming paradigm towards complex and need a very good code management. The Object-oriented Program (OOP) is well-known programming paradigm. So, object oriented paradigm need support for code management says aspect oriented program. Aspect Oriented Program (AOP) is extended paradigm in handling the modularization for the object oriented program and it is a programming technique. The bad modularization of object oriented program occurs tangling and scattering code. The tangling is when a module manages several issues meanwhile code scattering when a single issue referred by many modules. These tangling and scattering implicate a very poor