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# Application of Concept of Regression Testing in Agile Testing

**Robby Rahim**
Lecturer at Sekolah Tinggi Ilmu Manajemen Sukma, Medan, Indonesia
robbirahim@ieee.org

**Abstract**: - This paper will explain the concept of regression testing in agile testing. This will explain the definition of regression testing and also why it is used in agile testing. It will explain the strategies used in agile testing and also the challenges faced while implementing regression testing in agile testing. The concept of regression testing is used to check whether the system is working properly even after making changes to the system. Also, we will discuss types of regression testing.

**Keywords**: Regression Testing, Agile testing, Strategies, Challenges.

Introduction: - Once the testing of any application is done than if any changes are made in the application than again the testing of the application is done which is known as regression testing. There are various strategies to perform regression testing of any application. There are following types of regression testing strategies: - [1]


Figure1 Strategies of Regression Testing.

a. Prioritize Testing for regression testing: - This approach involves prioritizing the test cases based upon the importance of the functions of the application. In this strategy, the tester should prioritize retesting of those functions which occurs again and again. Basically, this means those functions of an application which are repetitive should be retested again and again so as to avoid any kind of bugs. Therefore, the testers should test all those functions on priority and rest test cases can be retested after a while.
b. Reuse of test cases for regression testing: - As regression testing means retesting of the functional and non-functional features of the application, the testers can reuse the test cases as well for testing certain common features of the application. When the testers use already existing test cases for retesting certain functions of the application than it will save a lot of time and cost of retesting the whole application.
c. Retest Everything: - This type of strategy is rarely used as in this it is required to test everything all over again whenever any changes are made in the application. This will require a lot of time to test everything again so the testers will rarely use this type of strategy as it will be time consuming and most of the time will be consumed in this testing only. But there are scenarios where everything needs to be retested. In such cases the testers will use automation testing.

How to perform Regression Testing: - Following are the steps which are mandatory to perform regression testing: -

a. Information gathering: - First of all the tester will gather all the information regarding the modules or functions of the application which should be retested. The tester in this stage will identify if there are pre-existing test cases which can be used while performing the regression testing of the application.
b. Gathering information about time taken to execute the test cases: - The testers should have knowledge as how much time will be taken to execute test cases for regression testing. The testers should perform

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time estimation required to perform the regression testing of the function of the application.

c. Identification of the scope for automation of test cases: - In this stage in order to perform regression testing the testers must identify whether the testing can be automated and should write test scripts which can be used in future. This will again save a lot of time and efforts whenever there is scope of regression testing.

d. Identify the priority of the test cases: - The Testers should be capable of differentiating between the most important feature and least important feature of the application so that priority can be decided of the test cases. So, it is mandatory that the testers should prioritize the features which should be retested again. The features should be prioritized from priority 0-3.

e. Use tools for regression testing: - In order to save time, the testers can even use one of the many available tools for testing. Following is the list of tools that can ease the task of regression testing: -

- QTP
- Selenium
- Waitr

Types of Regression Testing: - [2]

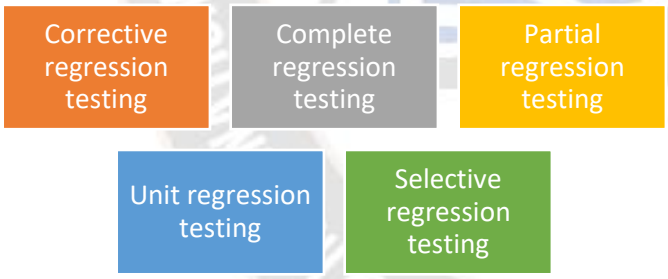


Figure 2 Types of regression testing.

a. Corrective Regression Testing: - In this type of testing the regression testing is done if a new code is added to already existing code of the application. If there are any errors than only that module of the application is fixed. That is known as corrective regression testing.

b. Complete Regression Testing: - In this if only a small code is added to already existing code than also the complete functions of the entire application is tested again. This process will take a lot of time and efforts to retest entire application.

c. Partial Regression Testing: -In this type also whenever a new code is added in the application only that function of the application is tested. This is to check whether the system is working properly even after adding a small code.

d. Unit Regression Testing: - In this type of regression testing, the retesting of the individual unit is tested whenever any changes are made. But during this the interaction between all other units are blocked and only that unit is retested in which the changes are made.

e. Selective regression testing: - In this type of regression testing the tester will test the impact of new code which is added on already existing code of the application.

Regression testing in Agile Testing: - Agile testing is done in incremental steps of development of the application. As soon as a feature is completed it is tested and then the developers will go to the next feature coding. Then again, the two features will be tested. This process will keep repeating until the final product is delivered. So, the agile testing is incremental testing process. On the other hand, in regression testing the functional and non- functional features of the application is tested repetitively. In some of the applications both types of testing are used parallelly.

Performing regression testing in agile testing is little tricky but gives tremendous results. It is time consuming and requires efficient technical knowledge but is very effective. The testers should simultaneously create test cases during the incremental development of the features of the application. Implementing both agile testing and regression testing gives accurate results. The test scripts are made based on the available resources, priority of the test cases etc.

Challenges while performing Regression testing: - There are few challenges while performing regression testing: - [3]

a. In regression testing every time any code is added to the application, the retesting of the application takes a lot of time to perform. This is one of the main challenges while performing regression testing. So, while performing this type of testing it is important that the test environment should be such that the execution time must be reduced.

b. Higher cost: - To ensure to make proper functioning application, the system should be retested again and again whenever a new feature

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is added or whenever new changes are made. This process of retesting includes higher cost which can not be afforded by few organizations. So, implementation of regression testing includes higher costs.

c. Efficient Testers: - The testers involved in regression testing must be capable of understanding the scope of the regression testing so that they can use the test scripts and can prioritize the test cases. Employing such testers is hideous task.

Conclusion: Hence this paper has explained the concept of regression testing in details. Like any other type of testing, regression testing also undergoes various stages of testing cycle. The paper has also explained many types of regression testing available. The tester should select correct type of regression testing to achieve maximum accuracy in test results which will in turn have efficient applications.

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