Automated Testing Framework of Bank Financial Services Based on QTP

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Abstract- *Testing is indispensible in software development process. Due to increasing complexity of softwarebeing built the necessity of testing and time consumed by testing is increasing. The current automate testing in the aspects of industrial benefits gradually causes the attention of the domestic financial bank. The innovation of software technology, the increase of software scale and the shortened developing period make the traditional manual testing meeting enormous challenges, while the development of automated testing technology has promoted the progress of the software testing industry. Because of the particularity of financial and banking services, the bank is under an obligation to ensure the quality and reliability of software. Number of services that banks offer customers, has been increased significantly in recent years. There is a variety of services available through the different channels like internet bank, mobile bank, telephone bank, ATM and so forth. The need to personalize these services for customers is felt more than before since people are busier than ever and have a limited time to do their daily tasks. So this is a new method testing a kind of software automation testing framework based on QTP, mainly targeting on the core of the bank, credit, online banking to test the function.*

Keywords- software testing Web Testing, Automation Testing,QTP automated testing tool, Banking services

I. INTRODUCTION

Automation testing uses automation testing tools. The job of automation testing tool is to test the intended task and to cut down the human effort. Automation testing is faster than manual testing and it is more reliable since it performs each test case with precision. Automation testing improves software quality and its reliability. Sophisticated test cases are written to detect hidden defects in the software which is not possible in manual testing.The continuous development of banking and financial services put forward higher requirements to the bank of financial management, especially the quality and efficiency of software, which is vital to the market competitiveness of banks. It is the process of exercising and evaluating a system or system components by manual automatic means to verify that it satisfies specified requirements or to identify differences between expected and actual results. Manual testing carried out by the testers. Testers test the software manually for the defects. It requires a tester to play the role of an end user, and use most of all features of the application to ensure its correct behavior. They follow a written test plan that leads them through a set of important test cases. The problems with manual testing are, it is very time consuming process, not reusable, has no scripting facility, great effort required, and some errors remain uncovered Software testing is a vital phase in software development cycle. Automated testing framework is a collection of all the processes in the automated testing process.

A good testing framework is conducive to the test, as well as the cost of the reduction, post maintenance convenience. Therefore there is put forward a kind of automation testing framework based on QTP (Quick Test Professional).Test Automation Framework (TAF) is a tool agnostic framework and can be used across multiple applications ,mobile devices with minimal re-work. is also in partnership with HP and has delivered QA Automation solutions to over 30+ satisfied banking customers. This framework is reusable & modular, reducing effort .

II. RELATED WORK

Xianjie Xie1, Zhijun Yang, Jiankun Yu in 2016 has proposed Design and Implementation of Bank Financial Business Automation Testing Framework Based on QTP [1].

Khaled M. Mustafa, Rafa E. Al-Qutaish, Mohammad I. Muhairat in 2009 the classify and distribute a set of testing tools over the types of testing (testing methods) for three types of software products (web application, application software, and network protocol) [2].

Kaur M, Kumari Rin 2011 has proposed a set of tools that support the testing process in a variety of ways. Some tools simulate the final execution environment as a way of expediting test execution, others automate the development of test plans, and still others collect performance data during execution [3].

Himan Abdollahpouri in 2013 has introduced An Approach for Personalization of Banking Services in Multi-channel Environment Using Memory-based Collaborative Filtering [4].

Ms. Rigzin Angmo, Mrs. Monika Sharma in 2014 has introduced Selenium Automation Framework increases automation efficiency by reducing initial coding effort. It is a script less framework used for automation testing of web applications that is developed in many programming languages like java, .NET, Php etc. The framework provides a platform to execute data driven framework by spreadsheet template. It can be used in the current automation project [4]. Michael T. Grater in 2005 has published and study analyzes selected literature to provide an analysis of benefits of automated software testing tools to increase software quality assurance.The increasing complexity of software development demands that developers use automated software testing tools. Benefits are presented for software engineers and business analysts and classified in relation to five quality factors.[6]

Aebersold Kirsten in 2019 has proposed Test Complete is also a commercial integrated platform for desktop, mobile and Web application testing. It enables testers to build a robust testing framework that utilizes the broad spectrum of available software testing methodologies [7].

Altexsoft introduced in 2019 Selenium is a framework for testing web applications that is compatible with various browsers and platforms like Windows, Mac, and Linux. Selenium helps the testers to write tests in various programming languages like Java, PHP, C#, Python, Groovy, Ruby, and Perl. It offers record and playback features for doing tests without the need to learn test scripting language [8].

Katalon proposed is an automated testing platform that offers a comprehensive set of features to implement full automated testing solutions for Web, API, and Desktop and Mobile applications[9].

III. EXISTING SYSTEM

The design of the automated testing framework involves three systems including the core business of the bank, credit and online banking. The objective is to define the interface, interaction, data validity and storage of the system under the premise of each function of three different systems in normal. Test cases and data will cover all kinds of normal and abnormal conditions, including different card states verification, verification of discrete contract, cost information verification, to assure the successful application of the framework. Then it puts forward a kind of automation testing framework based on QTP, which mainly includes five parts: test driver layer, data layer, abstraction layer, test case layer and object layer, operate layer.

IV. PROPOSED WORK

Banking customers are increasingly looking for digital channels to access products & services. It has become the primary engagement point with the bank and it has enabled banks to offer more services through digital channels. Banks now have to deal with complex testing scenarios for IT teams.

Along with the continuous development of software automation testing technology and the unceasingexpansion of user needs, automated testing has become ever more noticeable. QTP automated testing technology has become the mainstream of software automation testing tools, because of its powerful object library, supporting a variety of different programming platforms and plug-ins and so on. The financial services of banking multiple facilitiesare available and test automatically all over data.

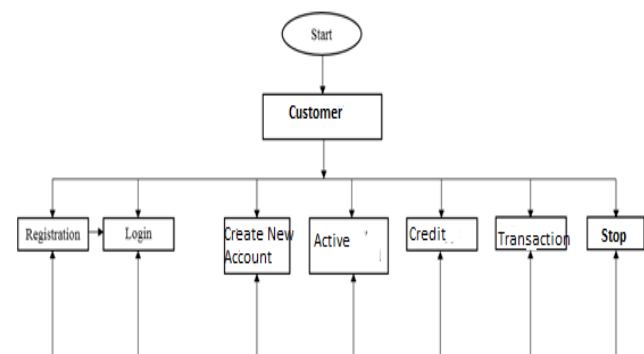
Fig 1.Process of customer account

In user registration fill the information about user details. User Register as a customer or a manager. Information is like User name, Contact No, Address, Password, etc. Then customer login fill the information the user is created.
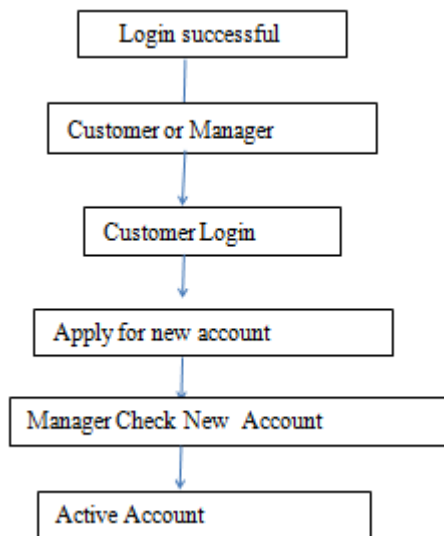
Fig.2 Process for active account

Fig.3 Process of Automation Testing Framework based on QTP

Then next step is user login. User enter the data then login successful. User account is created. Then user as a customer, Customer apply for a new account of bank using the financial services and credit is deposited to the account. Then User login as a manager, Manager check a new account of customer and also check money has deposited or not. Money has deposited then manager is give account number of customer and account is activated. The manager is rights to give the permission of transaction.QTP test points to perform this project. Automated testing framework is a collection of all the processes in the automated testing process. A good testing framework is conducive to the test, as well as the cost of the reduction, post maintenance convenience. Therefore we put forward a kind of automation testing framework based on QTP, mainly including two parts, i.e., test case and framework test design.

System is automatically test this function the balance is available or not in customer account. System is testing in customer account balance is available or not. Credit is important for withdraw money in users account.
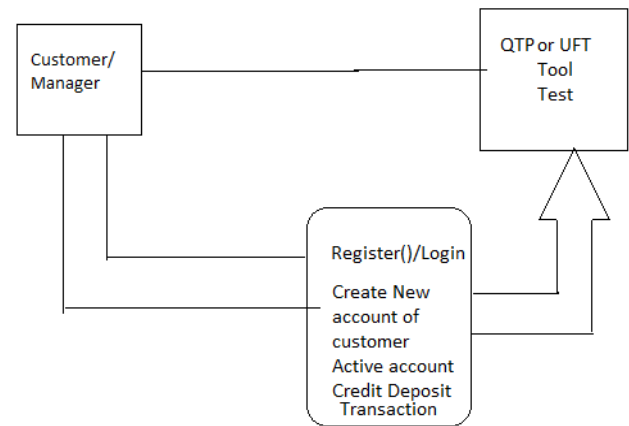
Above figure shows process of automation testing framework based on QTP first QTP driver module goes to test case and test having two processes its test currency and test bank account information.

V. RESULT ANALYSIS

QTP (UFT) Quick Test Professional (Unified Functional Testing)

UFT, formerly Quick Test Professional (QTP), is a test automation tool for functional and regression testing, it's probably the most popular commercial tool functional test automation. UFT offers a comprehensive set of features that can cover most of functional automated testing needs on desktop, mobile and Web platforms. Visual Basic Scripting Edition scripting language is used by this tool to register test processes, operate various objects and control in testing the applications.
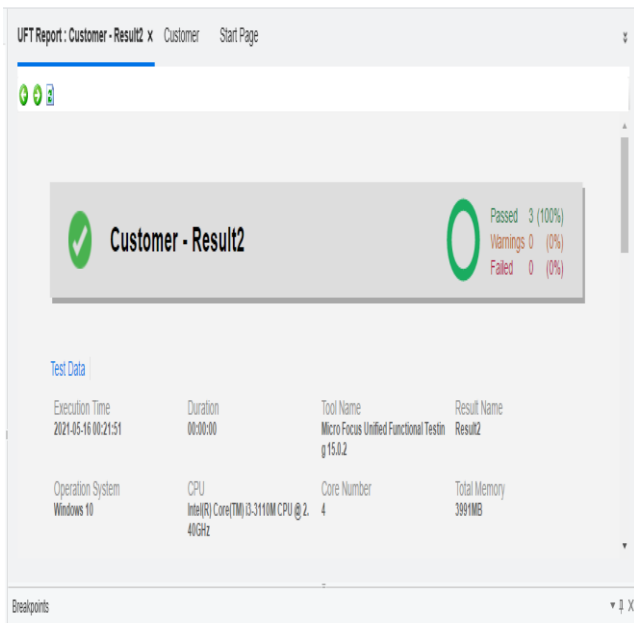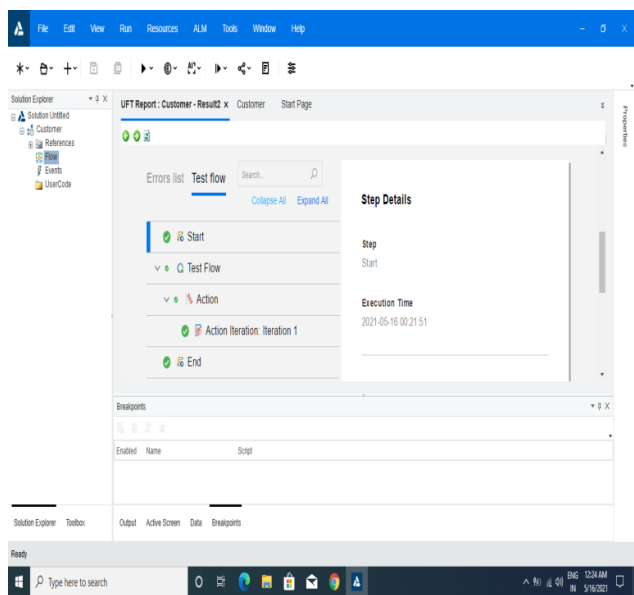
Fig.4 QTP(UFT) Check Customer Result

Fig.5 Execution in UFT

From July to September in 2015, financial software ofcertain b From July to September in 2015, financial software of certain bank, Web module and so on were developed with QTP test script by the test team, in which a total of 315 test cases were completed, with 185 object libraries. For comparison, we took 100 test cases from them for testing, conducted five tests, regarded the average test time of 5 times as the test time. The results of such tests are as shown in Table.

Table1. Comparative results of the implementation of QTP Automated testing framework
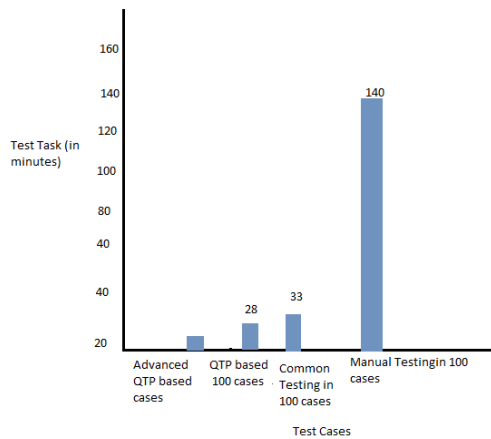
Test Mode	Test Case Number	Test Task	Pass Rate
Based on the implementation of QTP automated testing framework	100	28	92%
Common Implementation of automated testing framework	100	33	81%
Manual Testing	100	140-160	86%

It took 28 minutes to test 100 use cases by QTP-basedautomation framework, which passed the 95 test cases, with 5defects being found. It took 33 minutes to test conventional automation framework, which passed the 81 test cases. For manual testing, according to common experience, each test case probably took 1-2 minutes, it took 140 to 160 minutes to finish testing all the test cases. Through the 86 test cases, it can be seen that QTP-based automation test framework compared to routine testing framework and the manual test has a faster test speed, with highest pass rate of test cases among them, which greatly improves the work efficiency.
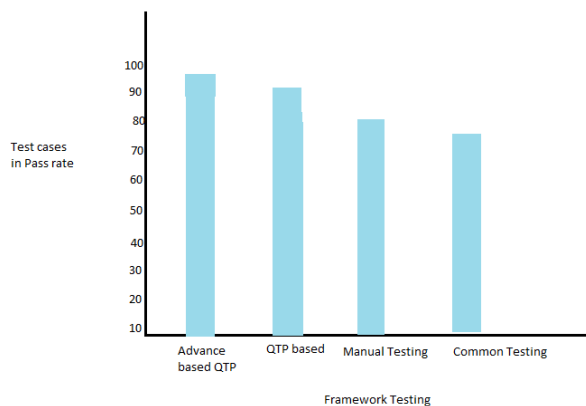
Table 2. Automation Tools Comparison

Features	Katalon Studio	Selenium	Test Complete	QTP(UFT)
Test development platform	Cross-platform	Cross-platform	Windows	Windows
Application under test	Web, Mobile apps, API/Web services	Web apps	Windows desktop, Web, Mobile apps, API/Web services	Windows desktop, Web, Mobile apps, API/Web services
Learning curves	Medium	High	Medium	Medium
Programming Skills	Not required. Recommended for advanced test scripts	Advanced skills needed to integrate various tools	Not required. Recommended for advanced test scripts	Not required. Recommended for advanced test scripts
Ease of installation tools	Easy to set up and Run	Require installing and integrating various tools	Easy to set up and run	Easy to set up and run
Develops ALM integrations	Many	No	Many	Many
Object storage and maintenance	Quick	Slow	Quick	Quick

Advanced QTP Based and Other Testing

Graph.1 Comparison between QTP based and other testing

Graph.2 Comparison between advanced QTP based and other testing

Applications

1. Using UFT, testers can automate user actions on a web or client based computer application and test and identify bugs that may appear when those actions are being performed.
2. Check software of bank financial services is correct or not.
3. Check the automated testing framework in applications.

Advantages

1. Improves accuracy and quick finding of bugs compared to manual testing.
2. Saves time and effort by making testing more efficient.
3. Increases test coverage because multiple testing tools can be used at once allowing for parallel testing of different test scenarios.
4. Automation test script is repeatable.

VI. CONCLUSION

A suitable framework for automated testing can ensure the Smooth progress of the test work, avoid the risk of Automated Testing and make the testing process quite clear and obvious. By choosing proper framework one can save time as well as money and can improve software quality. So this automation testing framework for bank financial services based on QTP is good.

VII. ACKNOWLEDGMENT

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