UNIFIED FUNCTIONAL TESTING

Project report submitted in partial fulfilment of the requirement of the degree of

BACHELOR OF TECHNOLOGY

IN

ELECTRONICS AND COMMUNICATION ENGINEERING

By

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UNDER THE GUIDANCE OF

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WAKNAGHAT**

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DECLARATION

I hereby declare that the work reported in the B.Tech Project Report entitled **"Unified Functional Testing"** submitted at **Jaypee University of Information Technology, Waknaghat, India** is an authentic record of our work carried out in the internship at Cognizant Technology Solutions under the supervision of our guide Sowndhariya Ravichandran**.** I have not submitted this work elsewhere for any other degree or diploma.

Utkarsh Srivastava

171046

This is to certify that the above statement made by the candidates is correct to the best of my knowledge.

Sowndhariya Ravichandran

Date: 19/05/2021

Head of the Department/Project Coordinator

ACKNOWLEDGEMENT

CHAPTER – 1

FUNCTIONAL TESTING

1.1Introduction

Functional testing basically tests the feature of the software. How a software should work. It is a quality assurance process. The functional testing is used to test different functions of software or application by providing the valid inputs and validating results. It's a form of black-box testing.

In this type of test, the performance of the software was tested by providing a separate input.

The process of Functional testing involves:

- Identifying the functionality of the software.

- Creating an input data based on the requirements.

- Executionand Preparationof test cases.

- At last, comparing the actual results with the expected results

    and show the errors (if any).

For example: Testing the functionality of Facebook's login page, a payment gateway, flight/Hotel booking, etc.

Fig1.1 Principal objectives of Functional testing

1.2 Models

There are different types of models in software testing.

SDLC: Software Development Lifecycle describes the types of tasks performed at different stages in a software development project and how they relate logically.

There are two types of SDLC models.

- Sequential
- Iterative/Incremental

Also known as a waterflow model as the activities are completed after one another.

Fig 1.2 SDLC

V-Model: It's a development process which can be considered as an advancement to the waterflow model. In this model instead of walking in a straight line, the steps are bent at the top behind the coding section. It forms a V-shaped structure in 2 phases, Verification Phase and Validation Phase.

Unlike Waterfall model, the V-Model integrates the test process throughout the

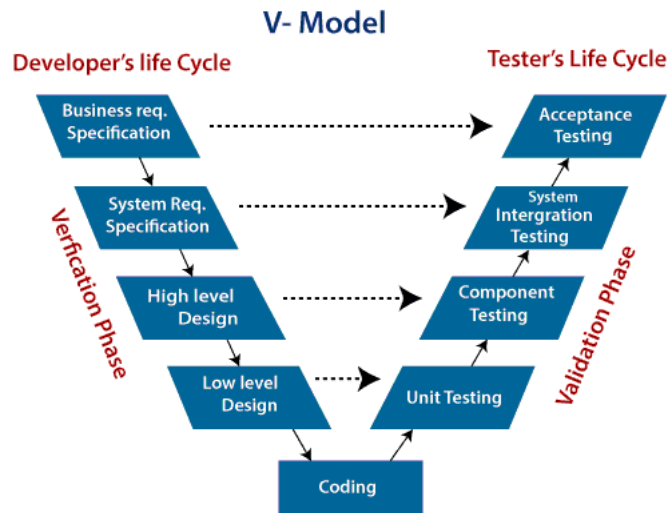development process. This implements the principal of early testing.

Fig1.3 V Model

SCRUM Model: It's a development process which relies on the incremental development. In this model each iteration tends to be of relatively short time period (e.g. hours, days or few weeks).It's anAgile management framework which contains constituent and practices. Work is done in small tasks assigned to different teams.
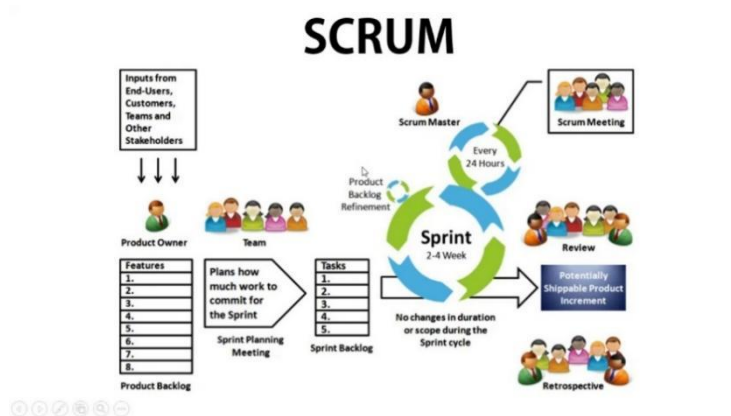

Fig1.4 Scrum Model

1.3 What is Testing?

Software testing is basically a way to access the quality of the software and reduce the risk of software failure in the operation phase. There are two types of Software testing Dynamic testing

and Static testing. In Dynamic testing the execution of code is there. In Static testing the review of requirements, design and user manual is there.

The other component of Static testing is Verification. Here the verification of the product is there, weather we built the product in a good/right way or not.

Whereas the other component of Dynamic testing is Validation. In this the validation of product is there. We built the right product but weather the user is happy with the product or not.

1.4 Test Case Writing

The Test Case is a set of conditions, inputs, actions (where applicable), expected results and delivery terms made according to test conditions.Then we look for errors (if any).

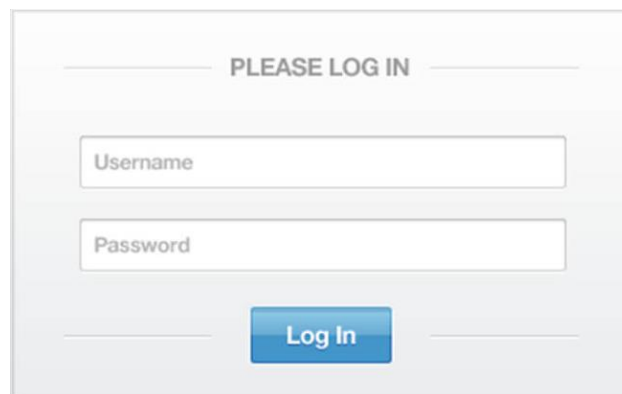Taking an example of a Login window and writing testcases for it.

Fig1.6 Login window

CHAPTER 2

Datasource

2.1 SQL

SQL stands for structured query language designed for managing the data in a relational database management system (RDBMS). It's basically a language which is used to communicate with the databases. SQL can be used for various database operations such as creation, deletion, modification, sorting and displaying the database.

There are several queries which are used to perform different tasks. Using these queries, we can easily create the data, retrieve the already created data, sort it, put conditional statements and get the desired output. SQL is used in the RDBMS systems where the data is stored in the form of records and can be accessed with the help of primary keys. It is used in various organizations where data is stored in the form of records.

Fig 2.1 A basic SQL query

2.1.1 DDL, DML and SELECT Statements

DDL: Stands for Data Definition Language. It is basically the syntax for creating and modifying the databases. Commands such as CREATE, DROP, ALTER, COMMENT, RENAME, TRUNCATE.

DML: Stands for Data Manipulation Language. It is used for data manipulation. It consists of commands such as INSERT, UPDATE, DELETE.

SELECT: It is a statement which is used to select the data from a database table. It is used to retrieve records from one or more table. It can be used with other commands such as WHERE, AND etc.

2.1.2 JOINS and SUBQUERIES

In SQL, JOIN Statement allows us to retrieve data from two or more tables at once. It joins two tables with the help of a primary key. So, if there is any same information in the two tables, then that information can be concatenated in a single table and this can help in reducing the duplicate information. There are 4 types of join operations:
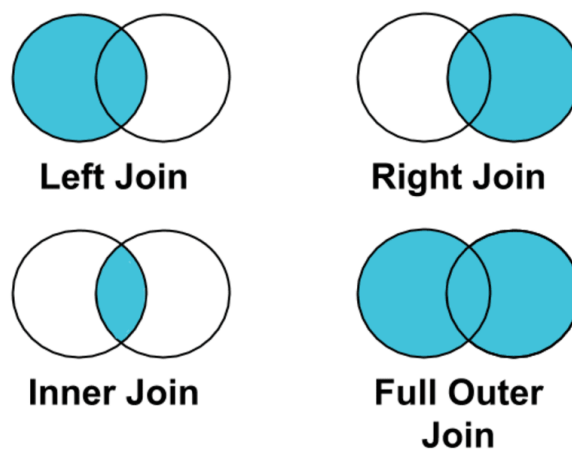

Fig 2.2 Joins

2.1.3 Scaler Aggregate

- Aggregate Functions: These are the functions which are used to perform operations from the values taken from the columns of data present in tables and return a single value.

- Scaler Functions: These are the functions which are used to modify the data based on the user input. This kind of functions also return a single value.
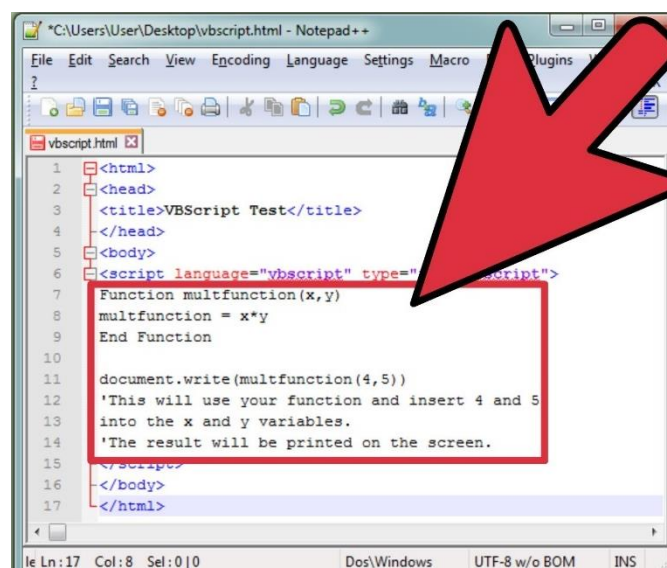

Fig 2.3 Aggregate Functions

CHAPTER 3

VB Script

VB Script is a scripting language developed by Microsoft and modelled on Visual Basic. Its a very light weight language which is easy to code. It's a great programming language for the beginners because you can learn most of the programming techniques. We don't even have to install a separate software for writing a code in VB Script. We just need to write a script in a text file and save it as .vbs. Moreover, it's not a case sensitive language like other languages.

VB Script can access the elements of the environment within which it's being running. It has a File System Object (FSO) functionality by which we can create, read, update and delete the files present in our system. For example, with a script we can create an xml file and in that file we can store the names of the countries, names of the days in the week etc.

Without VB Script it would be very difficult to perform all the functions with such ease.

We can also use a dedicated VS Code editor which can be downloaded from the internet and specially used for the scripting a VB Script only. But some other softwares are also present to do Scripting such as Notepad++ which is much easier to use.

This is an example of a VB Script used inside an HTML Program. A function called as multifunction is being used which basically takes the product of two numbers x and y.

Fig 3.1 VB Script

CHAPTER 4
UNIFIED FUNCTIONAL TESTING

4.1 INTRODUCTION

Microfocus Unified Functional Testing is basically an Automation Testing tool. As an Automation testing tool, you instruct the tool in a form some test scripts. This is going to help in automating our manual activities minimizing our efforts and time. It's a commercial tool. It's not an open-source tool like Selenium.

It enables us to automate the functional and regression testing. It also supports suit applications such as Windows, Web, Mobile, .Net, Java, Visual Basics and WPF. These can be selected as add-ins in the starting of the application.

It supports the VB Script Language.

Earlier UFT was called as QTP i.e. Quickest Professional. And it was firstly owned by the Mercury and then bought by the HP and then HP handed over the tool to the Microfocus. Firstly, it had the compatibility to test on GUI on a web based or a window-based application.

Then later on from version 11.5 it was declared as Unified Functional Testing. Now its compatible to test mobile applications, web application, windows application, GUI, API testing, API Load test and Business flow test.
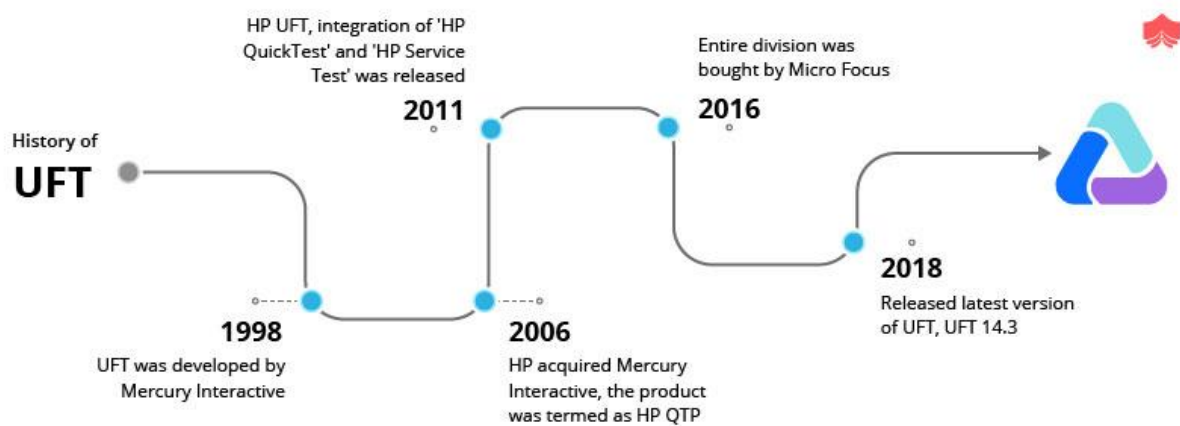

Fig 4.1 History of UFT

4.3 Object Repository

Precisely in UFT we call the interface as Object Repository. Object Repository stands for the database. It's the database of all the Objects, their Properties and their respective values. This acts like a memory of UFT and we have to work with these properties of this application. Object Repository is present in the Action page of the UFT and we can also spy the objects from the different applications or the webpages. Then we can also save these objects and call them through going to the Resources option and selecting the Associate Repositories. After associating the repositories to the script, we can now Run the script without any errors. After

clicking on the run button the script should run successfully. Here's the icon of Object Repository.
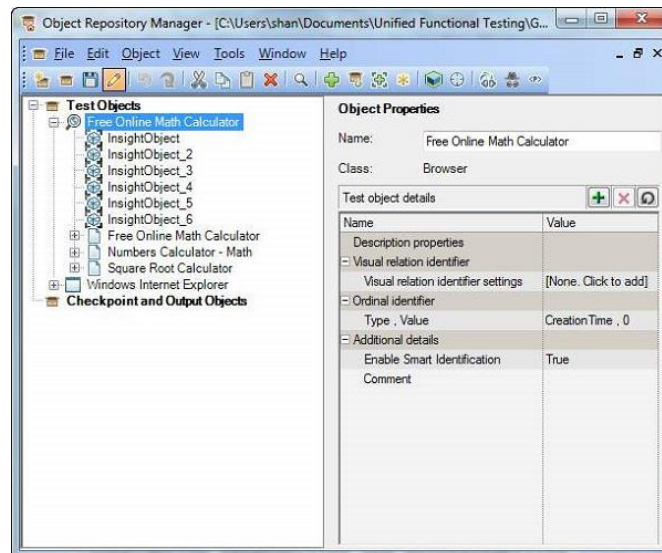

Fig 4.3 Object Repository Manager

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Project Report Undertaking

I Mr. <u>UTKARSH SRIVASTAVA</u> Roll No. <u>171046</u> Branch ECE is doing my internship with <u>COGNIZANT TECHNOLOGY SOLUTIONS</u> from <u>28 Feb 2021</u> to <u>11 June 2021</u>.

As per procedure I have to submit my project report to the university related to my work that I have done during this internship.

I have compiled my project report. But due to COVID-19 situation my project mentor in the company is not able to sign my project report.

So I hereby declare that the project report is fully designed/developed by me and no part of the work is borrowed or purchased from any agency. And I'll produce a certificate/document

of my internship completion with the company to TnP Cell whenever COVID-19 situation gets normal.

Signature:

Name: Utkarsh Srivastava

Roll No.: 171046

Date: 20 May 2021