Internship Report

Training offered by Cognizant

28/02/2021 - 25/05/2021

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ACKNOWLEDGEMENT

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PROJECT REPORT UNDERTAKING

I Mr. <u>Shantanu Bhargava</u>   -Roll No. <u>171301</u>   Branch<u>   Computer Science   </u>is doing my internship with<u>   Cognizant   </u>from <u>   28th Feb   </u> to <u> 11th June2021</u>
<u>   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<u>   </u>

Name<u>   Shantanu Bhargava   </u>

Roll No.<u>   171301   </u>

Date :<u>25th May 2021</u>

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Candidate's Declaration

I hereby declare that the work presented in this report entitled **"Training Offered by Cognizant"** is submitted in the department of Computer Science & Engineering and Information Technology**,** Jaypee University of Information Technology Waknaghat is an authentic record of my own work carried out over a period from 28th Feb 2021 to 25th May 2021.

(Student Signature)

Shantanu Bhargava (171301)

CS84

This is to certify that the above statement made by the candidate is true to the best of my knowledge.

_____

Dr. Ruchi Verma

Date: 25th May 2021

INTRODUCTION

The journey towards the end of this training has made me face many challenges. The nine weeks training program has proved to be a great learning experience. The first week of the training was based on learning functional testing, which is a type of software testing that validates the software system against the functional requirements/ specifications. The purpose of functional tests is to test each function of the software application, by providing appropriate input, verifying the output against the Functional requirements.

The next week was solely based on Database Concepts and SQL. This week solidified our concepts on database concepts which will come into later use.

The week after that was based on the learning of VBScript which was a new language in my arsenal of coding languages. VBScript was used for the next 4 weeks after that for the automation tool name, Micro Focus UFT (Unified Functional Testing). This was a Automation Testing tool.

DESCRIPTION OF THE COMPANY

(COGNIZANT)

Cognizant is a global technology firm based in the United States that specialises in business consulting, information technology, and outsourcing. The company's headquarters are in Teaneck, New Jersey. Cognizant is a NASDAQ-100 company that trades under the symbol CTSH. It began as a Dun & Bradstreet in-house technology unit in 1994 and began serving external clients in 1996.

Cognizant had a period of fast growth during the 2000s and became a *Fortune* 500 company in 2011; as of 2020 it's at position 194.

Cognizant made its biggest acquisition in September 2014, when it paid $2.7 billion for healthcare IT services provider TriZetto Corp. In pre-market trading, shares of Cognizant grew nearly 3%.

The company signed a multimillion-dollar agreement with Escorts Group in India on June 24, 2015, to assist Escorts' companies in digital transformation and modernization in all market segments.

On June 30, 2015, it announced a partnership with NTUC FairPrice, a Singapore-based supermarket retailer, to conduct digital transformation in NTUC's business in order to enhance personalised and reliable customer experience across multiple channels.

Cognizant and a group of Indian life insurers revealed in April 2018 that they were working on a blockchain solution to improve productivity by allowing cross-company data sharing. The platform, which is based on R3's Corda, a distributed ledger technology platform, is said to minimise reliance on third-party data intermediaries and aggregators for customer profiles and regulation such as KYC due diligence, financial and medical underwriting, risk assessment, fraud detection and regulatory compliance.

DESCRIPTION OF THE TRAINING

Progress of the training went in a smooth way with the learning paths divided in weeks. These weeks had further subdivisions for learning and innovations with integrated assignments and practical sessions.

The first week included the learning of concepts of functional testing and Agile testing. There were different levels of functional testing which were thoroughly discussed with some basics of automation testing, Performance testing, API Testing and Mobile Testing.

Week 2 was meant for SQL and the concepts of database and DBMS. We worked with SQL and performed basic database operations using MySQL database.

In Week 3, we learned VBScript and its basics. We learned to use FSO (File System Objects) for file handling. Learned to work with excel object model.

Week 4 was the starting of our main training of the automation testing software. We started working on the Micro Focus UFT Software which is a automation tool used to test the different test cases with checking of the deliverables.

UFT (Unified Functional Testing) Software uses VBScript and Utilizes SQL for accessing the database.

<p align="center">**TRAINING CONTENTS**</p>

<p align="center">**MODULE 1**</p>

<p align="center">**FUNCTIONAL TESTING**</p>

Functional testing is a form of software testing that verifies that the software system meets the functional requirements. The aim of functional tests is to verify that the output matches the functional specifications by providing sufficient feedback and testing each feature of the software application.

The Agile software development approach is one of the most straightforward and efficient methods available to turn a business need's vision into software solutions Continuous preparation, learning, growth, team collaboration, evolutionary creation, and early delivery are all terms used to characterise agile software development approaches. It promotes adaptability in the face of change.

The four fundamental principles of agile software development are highlighted:

1. Individual and team interactions over processes and tools

2. Working software over comprehensive documentation

3. Customer collaboration over contract negotiation

4. Responding to change over following a plan

1.1 Software Development Life Cycle

Within a software enterprise, the SDLC is a method that is followed for a software project. It is a compre hensive plan that explains how to create, manage, replace, and change or improve particular software. The life cycle is a methodology for improving software quality and the production process as a whole.
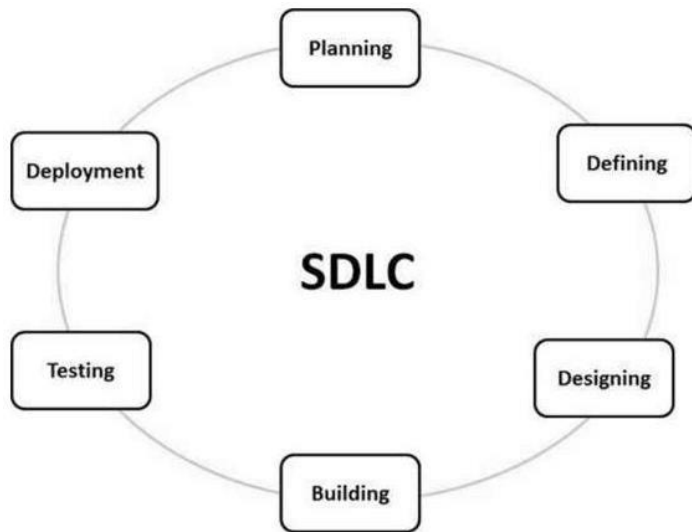
Figure 1: SDLC

The Life Cycle has the following components:

- Planning

- Defining

- Designing

- Building

- Testing

- Deployment

The Software Development has brought many challenges and shed light on various issues which were dealt with over time in different ways. These methods were noted and shared all around the world and their efficiency and the ability to adapt were documented.

There are two ways we can approach the development:

- Sequential Development

- Iterative and Incremental Development

Sequential Development:

This had a Linear Sequential Flow of activities from the idea phase all the way up to the release of the product. Any Phase in the development process should begin when the previous is completed. These were the steps highlighted in Sequential Development:

- Requirements Specification

- Design Phase

- Build

- Test and Fix

- Release

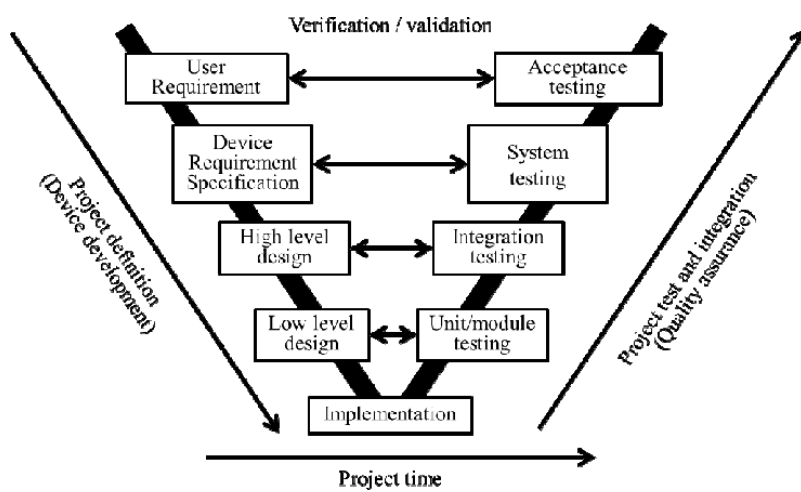**Iterative and Incremental Development:**

Iterative Development: In this kind of development we divide the software into iterations. After completion of each iteration we monitor our situation and create strategies for the next iteration. Think of it like a painting, before you paint you draw an outline, after that you start painting layer by layer.

Incremental Development: In this kind of development we divide the software development procedure into increments, which are then tackled individually. Increments are created to prioritize and for time management.

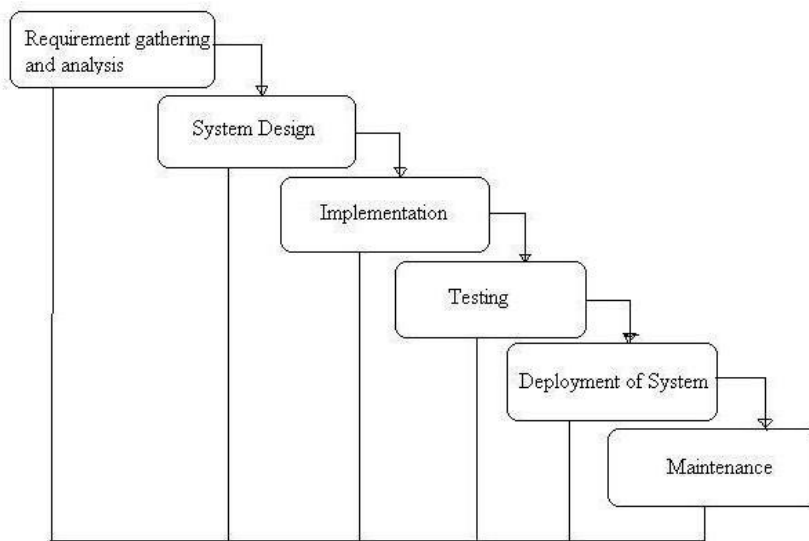Different Types of Software Engineering Models:

- Waterfall Model

- Iterative Model

- Spiral Model

- V-Model

- Big Bang Model

Like these there are hundreds of Software Engineering Models.

Flowchart 1: V Model

General Overview of "Waterfall Model"

Flowchart 2: Waterfall Model

SCRUM MODEL

Scrum is an example of iterative and incremental model. Each Iteration tend to be relatively short (eg., ho

urs, days or a few weeks) and feature increments are correspondingly small, such as few enhancement and

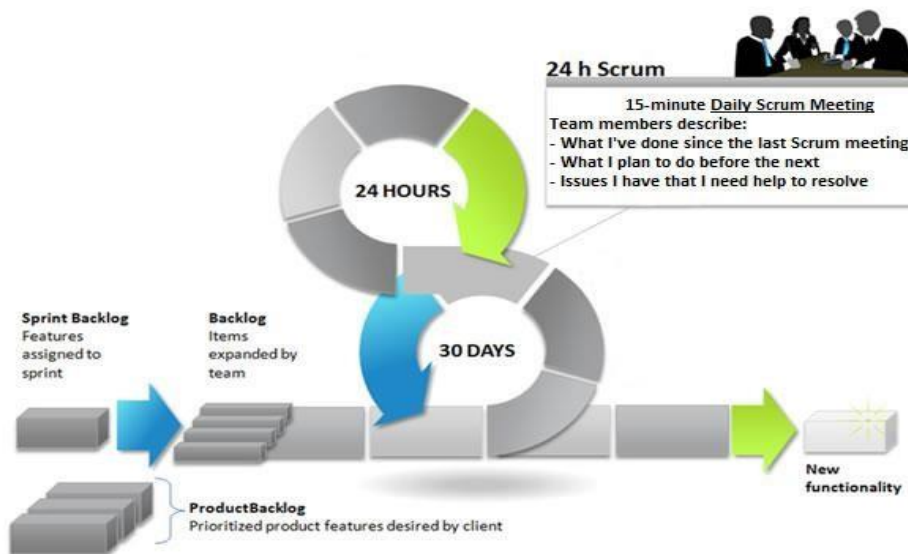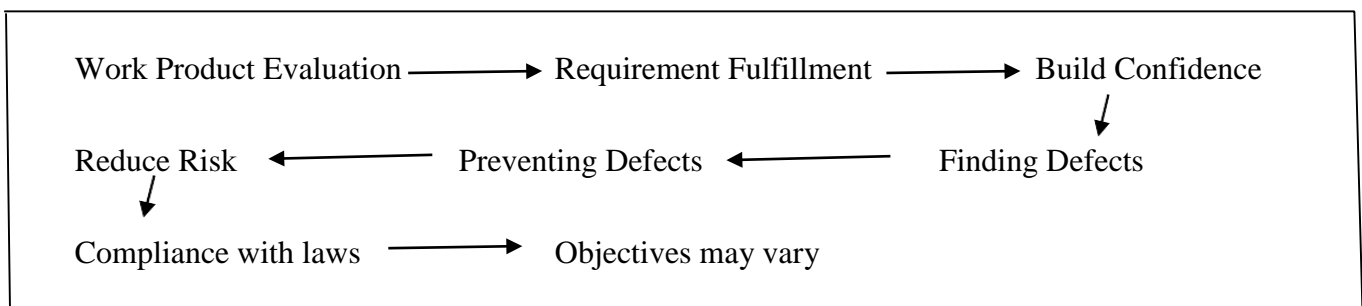/or 2or 3 new features. Scrum is considered as an Agile Methodology.

Figure 2: Scrum Process

What is testing?

We can define testing in the following words, assessing the quality of Software and reduce risk of software failure in operation. Software testing is not like test execution, it is a process which is of two types:

- Dynamic Testing

- Static Testing

Software testing performs validation and verification.

Work Product Evaluation ⟶ Requirement Fulfillment ⟶ Build Confidence

Reduce Risk ⟵ Preventing Defects ⟵ Finding Defects

Compliance with laws ⟶ Objectives may vary

Flowchart 3: Objectives of S/W Testing

Testing Process Activities:

- Test Planning

- Test monitoring and Control

- Test Analysis

- Test Design

- Test Implementation

- Test Execution

- Test Completion

Testing Levels:

Test levels are group of test activities that are organized and managed together. Each test level is an instance of the test process.

Test levels are related to other activities within the software development lifecycle.
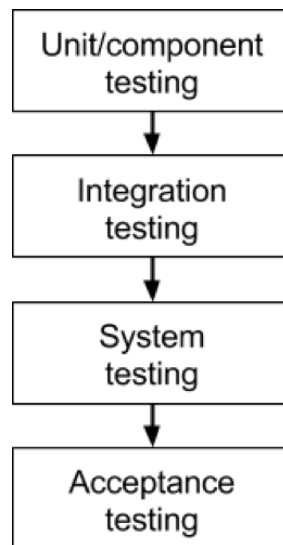
Flowchart 4: Testing Levels

1. Unit/Component testing

Unit or component testing is the most important form of testing. Unit testing aims to verify each component of a product by disengaging it and then performing tests to show that each component is functioning properly in terms of meeting requirements and providing optimal utility.

This type of testing is done at the most critical points of the improvement process, and it's usually done by the designers themselves before handing the product over to the testing team.

The advantage of catching any errors in the product early in the day is that it reduces programming development opportunities as well as time and money spent going back to correct key problems in the programme after it is almost done.

2. Integration testing

Integration testing entails testing different components of the system in tandem to see if they fit well together. By putting the units through their paces in groups, any flaws in the way they work together can be identified.

Analyzers may use either a base up or a hierarchical reconciliation technique to evaluate how different sections of the system operate at their interface. Research builds on the outcomes of unit testing by testing a higher level mix of units (called modules) in increasingly more perplexing circumstances in base up Integration Testing.

It is recommended that analysts begin with this approach before moving on to the hierarchical methodology, which measures higher-level modules first and studies lower-level modules later.

3. System testing

Framework attempting is a higher level of research. As the name implies, each component of the product is tested in its entirety to ensure that the overall item meets the specified requirements. System testing is an important step because the product is almost ready to ship, and it can be tested in a climate that is somewhat similar to what the customer would find when it is used.

Framework testing enables analysts to ensure that the product meets market requirements and that it performs as intended in its operating environment. A specific research community performs this type of testing on a daily basis.

4. Acceptance testing

Finally, Acceptance Testing is the stage of the product testing process where an item is approved or rejected. The aim of this type of testing is to determine if the system meets the requirements of the end-

client and whether it is ready for implementation. To test the product, the research team will use a variety of techniques, such as pre-

composed scenarios and tests, and will use the results of these instruments to explore ways in which the fr amework can be improved.

The scope of acknowledgement testing ranges from catching simple spelling errors and correcting them to finding bugs that might trigger a major flaw in the application. The testing team will learn how the item will function once it is installed on the client's system by conducting acceptance tests. There are also other legal and legally binding reasons why acknowledgement testing is necessary.

Testing Types:

There are hundreds of types of testing. Here are a few to discuss:

- **Functional Testing:** A form of black box testing that bases its test cases on the software compone nt under test's specifications. Research departments are in charge of this.

- **Non-functional Testing:** Non- functional specifications testing is a testing methodology that focuses on testing a software progra mme. Performance engineers or manual testing teams may carry out these tests.

- **Black box Testing:** A form of software testing that verifies an application's functionality without knowing the application's code or internal structure. Requirements and functionality are the founda tions of the tests. QA teams are in charge of this.

- **White box Testing:** Coverage of code statements, branches, paths, and conditions are among the c hecks used in this testing method, which is focused on understanding of an application's internal lo gic. It is carried out by programmers.

- **Dynamic Testing:** Testing that include executing the software.

- **Static Testing:** Testing that doesn't include executing the program.

- **Retesting:** Testing after debugging to ensure defects are fixed.

- **Regression Testing:** Testing unchanged areas to ensure they are not affected by changes.

- **Smoke Testing:** Testing main functionalities to ensure that the build is stable enough to continue testing.
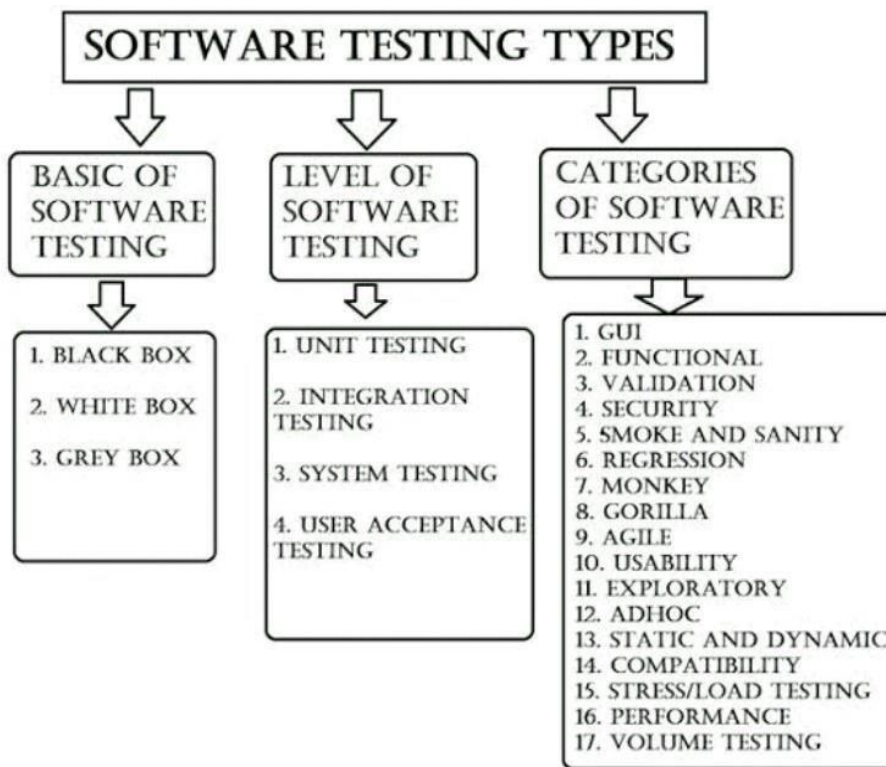
Flowchart 5: Software testing types

THE FOUR VALUES OF THE AGILE MANIFESTO

The Agile Manifesto consists of four key values:

- **Individuals and interactions over processes and tools.**

- **Working software over comprehensive documentation.**

- **Customer collaboration over contract negotiation.**

- **Responding to change over following a plan.**

THE 12 AGILE PRINCIPLES

Along with the four values of the Agile Manifesto, there are 12 principles you need to be aware of. These principles go into a little more detail and expand upon the four values.

Agile Principle 1

"Our highest priority is to satisfy the customer through early and continuous delivery of valuable software."

Agile Principle 2

"Welcome changing requirements, even late in development. Agile processes harness change for the customer's competitive advantage."

Agile Principle 3

"Deliver working software frequently, from a couple of weeks to a couple of months, with a preference to the shorter timescale."

Agile Principle 4

"Business people and developers must work together daily throughout the project."

Agile Principle 5

"Build projects around motivated individuals. Give them the environment and support they need, and trust them to get the job done."

Agile Principle 6

"The most efficient and effective method of conveying information to and within a development team is face-to-face conversation."

Agile Principle 7

"Working software is the primary measure of progress."

Agile Principle 8

"Agile processes promote sustainable development. The sponsors, developers, and users should be able to maintain a constant pace indefinitely."

Agile Principle 9

"Continuous attention to technical excellence and good design enhances agility."

Agile Principle 10

"Simplicity — the art of maximizing the amount of work not done — is essential."

Agile Principle 11

"The best architectures, requirements, and designs emerge from self-organizing teams."

Agile Principle 12

3C Concept

"Card, Conversation, Confirmation"; this formula (from <u>Ron Jeffries</u>) captures the components of a User Story:

- a "Card" (or often a Post-It note), a physical token giving tangible and durable form to what would otherwise only be an abstraction:

- a "conversation" taking place at different time and places during a project between the various people concerned by a given feature of a software product: customers, users, developers, testers; this conversation is largely verbal but most often supplemented by documentation;

- the "confirmation", finally, the more formal the better, that the objectives the conversation revolved around have been reached.

MODULE 2

SQL

SQL (Structured Query Language) is a common language used to interact with databases. A database is a n ordered set of information or data. This database is accessed by database management systems. My SQ L is a Relational Database Management System that allows us to access and communicate with the databa se through a user interface. The following are examples of RDBMS:

- MySQL

- PostgreSQL

- SQL Server

- Oracle

What is an RDBMS?

A relational database is a table-

based set of data. Tables have columns for data categories and rows for specific instances of those categor ies. Tables in a relational database can be connected together, and we use a relational database manageme nt system (RDBMS) to access and communicate with it.

ITEM_ID	ITEM_NAME	ITEM_UNIT	COMPANY_ID
1	Chex Mix	Pcs	16
6	Cheez-It	Pcs	15
2	BN Biscuit	Pcs	15
3	Mighty Munch	Pcs	17
4	Pot Rice	Pcs	15
5	Jaffa Cakes	Pcs	18
7	Salt n Shake	Pcs	-

COMPANY_ID	COMPANY_NAME	COMPANY_CITY
18	Order All	Boston
15	Jack Hill Ltd	London
16	Akas Foods	Delhi
17	Foodies.	London
19	sip-n-Bite.	New York

** Same column came once

COMPANY_ID	ITEM_ID	ITEM_NAME	ITEM_UNIT	COMPANY_NAME	COMPANY_CITY
16	1	Chex Mix	Pcs	Akas Foods	Delhi
15	6	Cheez-It	Pcs	Jack Hill Ltd	London
15	2	BN Biscuit	Pcs	Jack Hill Ltd	London
17	3	Mighty Munch	Pcs	Foodies.	London
15	4	Pot Rice	Pcs	Jack Hill Ltd	London
18	5	Jaffa Cakes	Pcs	Order All	Boston

Figure3: Joined Tables in RDBMS

Data Definition Language (DDL):

Data Definition Language (DDL) is a short term for a programming language that deals with database schemas and definitions of how data should be stored in a database.

- CREATE -

  Creates a database and its elements, such as tables (table, index, views, store procedure, function, and triggers)

- ALTER - alters the original database's composition

- DROP - removing data from the database

- TRUNCATE - Delete all records from a table, as well as all spaces reserved for the records.

- COMMENT - Adding comments to the data dictionary is a good idea.

- RENAME - rename an object

Data Types:

- INT: Whole Numbers

- FLOAT (M, D): Decimal Numbers(Approximate)

- DECIMAL (M, D): Decimal Numbers(Precise)

Non Numeric Data Types:

- CHAR(N): Fixed Length Characters

- VARCHAR(N): Varying Length Characters

- ENUM('M','F'): Value From a Defined List

- BOOLEAN: True or False values

Date and Time Types:

- DATE: date(YYYY-MM-DD)

- DATETIME: date and the time(YYYY-MM-DD HH-MM-SS)

- TIME: Time (HHH-MM-SS)

- YEAR: Year (YYYY)

Data Manipulation Language (DML):

DML stands for Data Manipulation Language and is used to store, modify, retrieve, remove, and update data in databases. It contains most common SQL statements such as SELECT, INSERT, UPDATE, DELETE, and others.

- SELECT - obtain information from a database

- INSERT - fill up a table with data

- UPDATE - current data in a table is updated

- DELETE - Delete the entire contents of a database table.

- MERGE - UPSERT is an emergency response procedure (insert or update)

- CALL - a PL/SQL or Java subprogram is called

- EXPLAIN PLAN - the data access path's interpretation

- LOCK TABLE - Controlling concurrency

Data Control Language (DCL):

DCL stands for Data Control Language, which includes commands such as GRANT and is primarily concerned with database system privileges, permissions, and other controls.

- GRANT - enable users to have database access privileges

- REVOKE - By using the GRANT command, you can revoke a user's access privileges.

Transaction Control Language (TCL):

TCL stands for Transaction Control Language, which is a database transaction language.

- COMMIT - commits a Transaction

- ROLLBACK - rollback a transaction in case of any error occurs

- SAVEPOINT - to rollback the transaction making points within groups

- SET TRANSACTION - specify characteristics of the transaction

Primary/Foreign Key
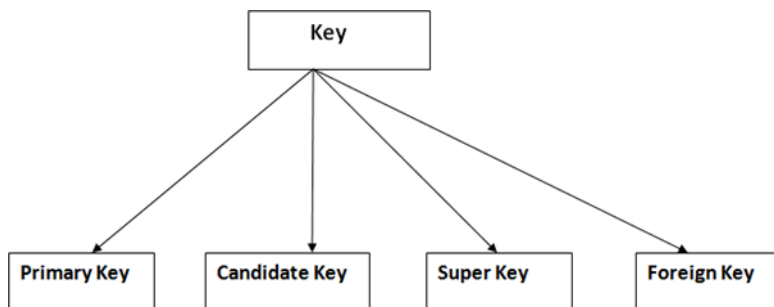
Flowchart 6: Different Types of Keys

PRIMARY KEY: Column or set of columns, which uniquely identifies a record within a table are referred to as Primary Keys. A Primary Key must be unique and cannot be null.

A table can only have one primary key.

FOREIGN KEY: Its used to link 2 tables together. Foreign Key is a column whose values match the values of another table primary key column. The Table with Primary Key is called the Reference, or Parent table and the table with the foreign key is called the child table. A table can have multiple foreign keys.

- **Super Key -** A super key is a group of single or multiple keys which identifies rows in a table.

- **Primary Key -**

  is a column or group of columns in a table that uniquely identify every row in that table.

- **Candidate Key -**

  is a set of attributes that uniquely identify tuples in a table. Candidate Key is a super key with no repeated attributes.

- **Alternate Key -**

  is a column or group of columns in a table that uniquely identify every row in that table.

- **Foreign Key -**

  is a column that creates a relationship between two tables. The purpose of Foreign keys is to maintain data integrity and allow navigation between two different instances of an entity.

- **Compound Key -** has two or more attributes that allow you to uniquely recognize a specific record. It is possible that each column may not be unique by itself within the database.

- **Composite Key -** An artificial key which aims to uniquely identify each record is called a surrogate key. These kind of key are unique because they are created when you don't have any natural primary key.

- **Surrogate Key -** An artificial key which aims to uniquely identify each record is called a surrogate key. These kind of key are unique because they are created when you don't have any natural primary key.

JOINS

A SQL Join statement joins data or rows from two or more tables together based on a common area. The following are examples of different forms of joins:

- INNER JOIN: Will only retrieve data if both tables have matching values.
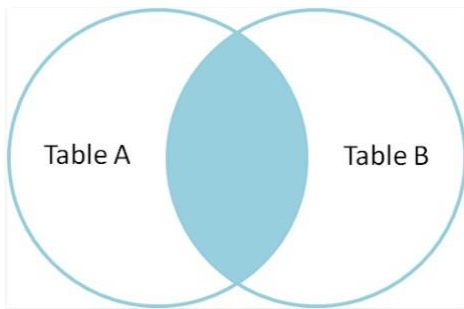

Figure 4: Inner Join

- LEFT JOIN: Will get data from the left table (Table 1) and matching rows from the right table that fit (Table 2).
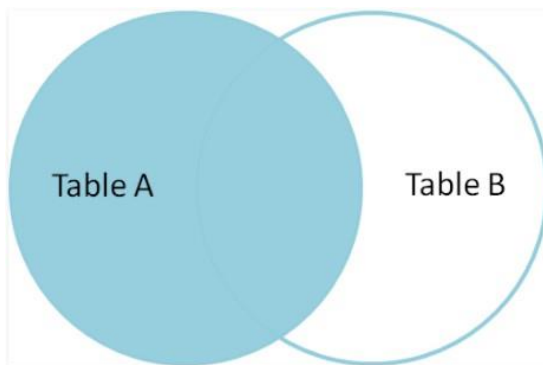

Figure 5: Left Join

- RIGHT JOIN: All data from the right table (Table 2) will be retrieved, as well as corresponding matching rows from the left table (Table 1).
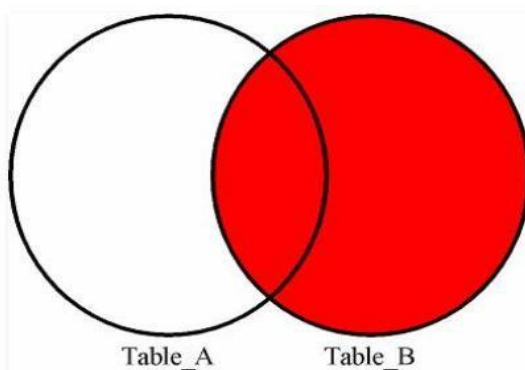

Figure 6: Right Join

- FULL JOIN: By combining the results of both the LEFT JOIN and the RIGHT JOIN, the result-set is formed.
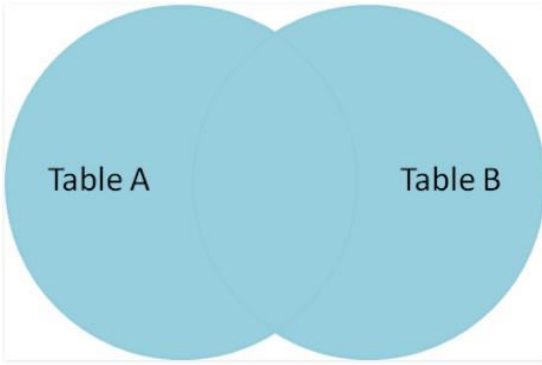
Figure 7: Full Join

MODULE 3

VB SCRIPT

Microsoft's VBScript ("Microsoft Visual Basic Scripting Edition") is an Active Scripting language based on Visual Basic. It enables Microsoft Windows system administrators to create sophisticated machine management resources that include error handling, subroutines, and other advanced programming constructs. Quick Test Professional (QTP), a test automation tool, uses VBScript as its primary scripting language. Visual Basic Scripting, or VBScript, is a subset of Visual Basic for Applications (VBA). VBA is a Microsoft product that can be used not only in Microsoft products like MS Project and MS Office, but also in third-party applications like AUTO CAD.

Version History:

- VBScript is used as a scripting language in one of the popular Automation testing tools – Quick Test Professional abbreviated as **QTP**

- Windows Scripting Host, which is used mostly by Windows System administrators for automating the Windows Desktop.

- Active Server Pages **(ASP)**, a server side scripting environment for creating dynamic webpages which uses VBScript or Java Script.

- VBScript is used for Client side scripting in Microsoft Internet Explorer.

- Microsoft Outlook Forms usually runs on VBScript; however, the application level programming relies on VBA (Outlook 2000 onwards).

Scope of the Variables

Variables can be declared using the statements below, which specify the variable's scope. When a variable is used within a process or a class, its scope is critical.

- Dim

- Public

- Private

Dim: Variables declared at the Procedure level with the "Dim" keyword are only available within the same procedure. Variables declared at the script level with the "Dim" keyword are applicable to all procedures within the same script.

Public: Variables declared with the "Public" keyword are accessible to all procedures in all scripts associated with them. The Dim keyword is replaced by "Public" when declaring a variable of type "public."

Private: Variables marked as "Private" have only the scope of the script in which they are declared. The Dim keyword is replaced by "Private" when declaring a variable of type "Private."

ARRAYS

What is an Array?

A variable is a container for storing a value, as we all know. Developers are often able to keep several values in a single variable at the same time. An array variable is created when a set of values is stored in a single variable.

Array Declaration

Arrays are declared in the same way as variables are, with the exception that array variables are declared using parenthesis. The size of the array is indicated in brackets in the following example.

```
'Method 1 : Using Dim
Dim arr1() 'Without Size

'Method 2 : Mentioning the Size
Dim arr2(5) 'Declared with size of 5

'Method 3 : using 'Array' Parameter
Dim arr3
arr3 = Array("apple","Orange","Grapes")
```

Figure 8

Multi Dimension Arrays

Arrays can have up to 60 dimensions and are not limited to a single dimension. The most popular arrays are two-dimensional arrays.

```
Dim arr(2,3)    ' Which has 3 rows and 4 columns
arr(0,0) = "Apple"
arr(0,1) = "Orange"
arr(0,2) = "Grapes"
arr(0,3) = "pineapple"

arr(1,0) = "cucumber"
arr(1,1) = "beans"
arr(1,2) = "carrot"
arr(1,3) = "tomato"

arr(2,0) = "potato"
arr(2,1) = "sandwitch"
arr(2,2) = "coffee"
arr(2,3) = "nuts"

document.write("Value in Array index 0,1 : " &  arr(0,1) & "<br />")
document.write("Value in Array index 2,2 : " &  arr(2,2) & "<br />")
```

Figure 9

Redim Statement

Declare dynamic-array variables and assign or reallocate storage space with the ReDim Statement.

- **Preserve** − An Optional parameter used to preserve the data in an existing array when you change the size of the last dimension.

- **varname** − A mandatory parameter that denotes the variable's name, which should adhere to standard variable naming conventions.

- **subscripts** − A required parameter that indicates the array's size.

```
Dim a()
i = 0
redim a(5)
a(0) = "XYZ"
a(1) = 41.25
a(2) = 22

REDIM PRESERVE a(7)
For i = 3 to 7
a(i) = i
Next

'to Fetch the output
For i = 0 to ubound(a)
    Msgbox a(i)
Next
```

Figure 10

<u>Error Handling:</u>

Syntax errors

Syntax errors, also known as parsing errors, arise while VBScript is being interpreted. The following paragraph, for example, has a syntax error because it lacks a closing parenthesis.

```
dim x,y
x = "Tutorialspoint"
y = Ucase(x
```

Figure: 11

Runtime errors

Runtime errors, also known as exceptions, occur during the execution of a programme after it has been interpreted. The following paragraph, for example, causes a runtime error because the syntax is right, but it is attempting to call fnmultiply, which is a non-existing feature at runtime.

```
Dim x,y
x = 10
y = 20
z = fnadd(x,y)
a = fnmultiply(x,y)

Function fnadd(x,y)
    fnadd = x+y
End Function
```

Figure 12

Logical errors

The most difficult form of error to track down is logic errors. These errors aren't caused by a syntax or runtime problem. Instead, they happen when you make a logical error in your script's reasoning and don't get the desired result. Since the type of reasoning you want to put in your software depends on your

business requirements, you won't be able to catch those errors. As an example, dividing a number by zer o or a script that is written which enters into infinite loop.

Err Object

Assume that if there is a runtime error, the execution will halt and the error message will be shown. If we want to catch an error as a developer, we use Error Object. As an example, the error number is given by Err.Number, and the error description is given by Err.Description in the example below.

```
Err.Raise 6      ' Raise an overflow error.
MsgBox "Error # " & CStr(Err.Number) & " " & Err.Description
Err.Clear        ' Clear the error.
```

Figure 13

OBJECT ORIENTED

What is an Object

VBScript runtime objects help us to accomplish various tasks. This section will help you understand how to instantiate an object and work with it.

Syntax

In order to work with objects seamlessly, we need to declare the object and instantiate it using **Set** Keyword.

Dim objectname   'Declare the object name

Set objectname = CreateObject(object_type)

```
Dim objectname      'Declare the object name
Set objectname = CreateObject(object_type)
```

Figure 14

MODULE 4

MICRO FOCUS UFT SOFTWARE

Quick Test Professional (QTP) is a Micro Focus product . If script creation is complete, this tool assists testers in performing automated functional testing without the need for supervision.

The applications in Micro Focus UFT are automated using Visual Basic Scripting (VBScript). The Scripting Engine does not need to be built separately since it is included in the Windows operating system.

Testing Tools

A product that supports one or more test operations, such as planning, specifications, building a build, test execution, defect logging, and test analysis, is referred to as a tool in the sense of software testing.

Classification of Tools

Several parameters can be used to classify tools. It consists of −

- The purpose of the tool

- The activities that are supported within the tool

- The type/level of testing it supports.

- The kind of licensing (open source, freeware, commercial)

- The technology used

Sr.No.	Tool Type	Used for	Used by
1	Test Management Tool	Test Managing, scheduling, defect logging, tracking and analysis.	Testers
2	Configuration management tool	For Implementation, execution, tracking changes	All Team members
3	Static Analysis Tools	Static Testing	Developers
4	Test data Preperation Tools	Analysis and Design, Test data generation	Testers
5	Test Execution Tools	Implementation, Execution	Testers
6	Test Comparators	Comparing expected and actual results	All Team members
7	Coverage measurement tools	Provides structural coverage	Developers
8	Performance Testing tools	Monitoring the performance, response time	Testers
9	Project planning and Tracking Tools	For Planning	Project Managers
10	Incident Management Tools	For managing the tests	Testers

Table 1: Types of Tools

QTP is a Functional testing tool, which is best suited for regression testing of the applications. QTP is a licensed/commercial tool owned by Micro Focus, which is one of the most popular tools available in the market. It compares the actual and the expected result and reports the results in the execution summary.

Advantages

- As compared to other object-
  oriented programming languages, developing automated tests with VBScript does not require a hi
  ghly skilled coder and is relatively simple.

- Easy to use, navigate, validate results, and generate reports.

- Test Management Tool is easily integrated, allowing for fast scheduling and tracking.

- Can also be used for Mobile Application Testing.

- Since it is an Micro Focus product, full support is provided by HP and by its forums for addressin
  g technical issues.

Disadvantages

- Unlike Selenium, QTP works in Windows operating system only.

- Not all versions of Browsers are supported and the testers need to wait for the patch to be released
  for each one of the major versions.

- Having said, that it is a commercial tool, the licensing cost is very high.

- Even though scripting time is less, the execution time is relatively higher as it puts load on the CP
  U & RAM.

CONCLUSION

All of the things learned during the path of our internship was aligned to benefit the next ta rget which helped us with a tunnel vision to get through our projects and assignments.

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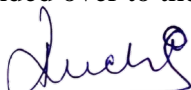**Complete Thesis/Report Pages Detail:**
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