<u>**END TERM MAJOR PROJECT REPORT**</u>
(27th February 2022 – 13th June 2022)

ON

<u>**IPM Product Testing With SELENIUM**</u>

Project report submitted in partial fulfillment of the requirement for the degree of Bachelor of Technology

Under the guidance of
<u>**Ms. SUPRIYA SANTHANKRISHNAN**</u>
AT

COGNIZANT TECHNOLOGY SOLUTIONS
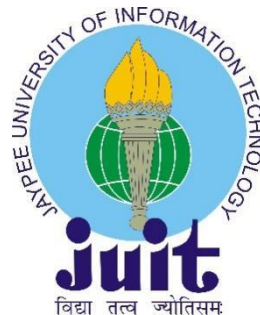**APOORAV CHAUDHARY**

181371

B. TECH (Computer Science)

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
DISTT. SOLAN, HIMACHAL PRADESH 173234
SESSION (2018-2022)

PROJECT REPORT UNDERTAKING

I APOORAV CHAUDHARY Roll No. 181371 Branch COMPUTER SCIENCE ENGINEERING is doing my internship with **COGNIZANT TECHNOLOGY SOLUTIONS** .

As per procedure I must 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 which has led to work from situation due to which 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 will produce a certificate/document of my internship completion with the company to Training and placement cell whenever the internship gets over.

APOORAV CHAUDHARY
Roll No.: 181371
B. Tech (CSE)

DECLARATION

Cognizant does not allow the project material to be used beyond the said guidelines, I APOORAV CHAUDHARY am aware and appropriately create the project report without violating any compliance.

Allocation of technology track depends on the following circumstances student capability, business demand and location where it can be offered. Students Progress is regularly monitored via various assessments namely Assess type 1 and Assess Type 2 which provides a weekly performance of a intern.

Learning curriculum as per the learning track assigned to the interns. The learning path include in-depth sessions, hands on exercise and project work. There will also be series of webinars, quizzes, code SME interactions, mentor connects, code challenges, assessments etc. to accelerate your learning. During the internship every interns progress were closely monitored by the coaches.

The projects completed in the internship duration will vary from development, to enhancements, research, scripting across technologies like Java, Selenium, TestNG, Agile, XML, SOAPUI, POASTMAN, RESTAPI, IBM BPM , Pega.

Projects in Service industry mostly require Digital skills. These projects were a combination of business aligned business case that cognizant delivers to its clients or internal projects to address Cognizant's business needs.

Internship is for a period of 3 months , during our 8th semester. The internship dates vary with the buisness unit demands.

APOORAV CHAUDHARY
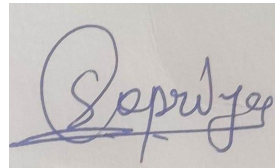**Enrolment No.: 181371**
B. Tech (CSE)

ACKNOWLEDGEMENT

It was a privileged opportunity for me to do my internship at **"COGNIZANT TECHNOLOGY SOLUTIONS"** under the supervision of Ms. Supriya SanthanKrishnan.

This article is to acknowledge all the people without whom this project would not have been completed. Majorly, I would like to thank my supervisors Dr. Rakesh Kanji and Ms. Supriya SanthanaKrishnan who gave their immense support, dedicated their time during my internship and made me understand how to go through this internship. Without their guidance and learning, this work would not have been completed.

I would like to express our sincere gratitude of the all the people who have helped and supported me throughout. I am deeply indebted to Ms. Supriya SanthanaKrishnan (Human Resources -GenC, Cognizant) and other fellow colleagues at **COGNIZANT TECHNOLOGY SOLUTIONS** for organizing an effortless internship program, efficiently and providing me valuable resources and for their cooperation and willingness to share their expertise and knowledge and to devote their precious time to discuss related topics.

Selenium is an open-source browser automation tool. It offers a single interface for writing test scripts in a variety of computer languages, including Ruby, Java, NodeJS, PHP, Perl, Python, and C#.

APOORAV CHAUDHARY   **SUPRIYA SANATHANAKRISHNAN**
Enrolment No.: 181371   **HUMAN RESOURCES -GENC**
B. Tech (CSE)   **COGNIANT**

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ABSTRACT

This report describes the internship that I did with "COGNIZANT TECHNOLOGY SOLUTIONS", Gurgaon Office, during the period of February to June 2022. The project assigned to me was "IPM PRODUCT TESTING WITH JAVA AND SELENIUM". The report itself sheds light on the various process and concepts I have learned as a full-time intern.

The primary objective of the internship was to learn software testing and automation using a web automation tool called "Selenium". Selenium driver serves as an interface that allows programmer to write scripts in languages such as Python, JavaScript, Java, etc. to automate various tasks on browsers such as Chrome, Firefox, etc.

Quality engineering and assurance (QEA) is a subtype of quality management that incorporates ensuring that quality control measures and checks are applied at every step of product or software development. It's the act of having quality assurance (QA) and quality engineering

During the project Selenium driver along with java was to use automate testing of web applications. Also, JSON/XML formats were used to communicate with APIs and JavaScript was used for form validation in various hands-on task provided to us.

This internship will deal with testing the various functionality and working of the various websites. We will use JAVA and work with spring core, selenium, and sql to achieve good results and test every functionality.

CHAPTER I

INTRODUCTION

COGNIZANT

Cognizant is a tech giant which has been providing its IT services across the globes , with its business established in almost every continent cognizant has proven to become a market leader in its domains that it has been serving for more than two decades.

Cognizant works in the information technology consulting domain by providing various services and products that helps the businesses to grow.

Cognizant has generated a total Revenue of 18.5 Billion USD in 2021. And has emerged in the 185th spot in the fortune 500 company's list in 2021.

Cognizant has various subsidiaries namely MarketRx, Soft Vision, Bolder HealthCare Solutions LLC, Cognizant Quick Left and much more .

Devbridge is one of the biggest acquisition of cognizant with a deal size of $268 million on December 9,2021.

About the Chief Executive Officer of Cognizant

Chief Executive Officer of Cognizant is Brian Humphries . His initial steps in the industry started from Compaq . He has also worked for organizations like Hewlett Packard . He began his journey in Hewlett-Packard as a Director of Financial Communications and further he also became the Vice President of Growth Markets Organization/Emerging Markets. He also offered his services on the post of President of Enterprise Solutions to Dell EMC. Further he joined Vodafone and served as its Chief Executive Officer. And further he brought his finest leadership to Cognizant and has been leading Cognizant as the Chief Executive Officer

Diversified market of Cognizant

Cognizant has been serving clients in every domain from automotive industry to the utilities industry cognizant has a very diversified client base .

Cognizant have provided its services to Disney which works in the media and entertainment market, Manchester United which is a sports club.

Cognizant has also served clients in Banking domains, Retail sectors ,Travel & Hospitality, Education Sector , healthcare sector and various other sectors. Cognizant has served a long list of clients and offered them there various IT services in order to serve there business demands.

SERVICES OFFERED BY COGNIZANT

Cognizant offers various services to its clients which has been varying from domain to domain. Due to this versatile business services its clients have always been attracted to it .

Following are some of domains in which cognizant offers its services and has been:

1. Application Modernization Services: Cognizant has been offering its in the application modernization domain and has been helping its clients to modernize their businesses by upgrading their business applications and has been ranked No.1 by HFS

2. Artificial Intelligence: With the rising needs of AI Cognizant has also jumped in this field and has proven itself in this domain with its best AI services in the Market

3. Intelligent Process automation: Cognizant has also been providing its services in the IPA domain with its variety of services and products that it has been offering is recognised to be the best by various analytic firms.

4. Quality Engineering & Assurance: Cognizant has been offering its QA services to its clients and has proven to provide best services in the QA domain. And was recognized by Forrester as a Continuous   Automation   and   Testing   Leader   leader   Enterprise   in   QA   services.

COGNIZANT PRESENCE IN THE INDIA SUBCONTINENT

Cognizant with its wold class services came to set its path inside India and has acted as popular IT company in the development of IT services in India.
With its first Indian branch was established in Chennai , Tamil Nadu in the year 1994. And since then it has enhanced and diversified its operations with branches all across the country.

Cognizant is committed to the development of the Indian Society and has played a major role to rove its commitments towards the people of India . It helped people of India during the COVID pandemic.Cognizant has donated almost a sum of rupees 10 crore in order to improve the healthcar efforts being made by the government.

During the vaccination drives Cognizant almost covered the cost of 6 lakh people in India in order to get them vaccinated and has proved it will continue supporting the Indian society and people of this country whenever needed.

cognizant

Corporate stories

Search Newsroom

Cognizant Launches COVID-19 Vaccination Drive for 650,000 Strong Ecosystem of Associates, Families, and Support Teams Across India

About cognizant's exclusive online learning platform

Cognizant fulfills its training to its employees by the use of an exclusive in house product named Cognizant academy.

Cognizant Academy helps to succeed with Cognizant's aim of being "fit for growth" by enabling colleagues who can help the company achieve that goal.

Cognizant Academy, the enterprise's in-residence gaining knowledge of and development arm, is dedicated to getting ready colleagues for the future via presenting role-based and business-aligned learning solutions.
Generation Cognizant (Gen C) Program encourages you to be greater self sustaining learners for the duration of guided self-learning hours, finishing the mastering objectives in your personal tempo and fashion, and get prepared for the fingers-on practice time

The Gen C learning programme gives young human beings with a entire gaining knowledge of path that lets in them to interact with Subject Matter Experts (SME), gain a better knowledge of the commercial enterprise surroundings, and groom themselves.

Learner Autonomy is emphasised by way of Cognizant, which inspires college students to take responsibility of their very own gaining knowledge of using the available gear and sources. The emphasis is on "studying" instead of "teaching." Prepare to start on your own educational journey.

The undertaking of Cognizant Academy is to foster a vibrant learning lifestyle and climate. Academy displays the spirit of collaboration among the employer and individual colleagues in an effort to obtain a shared goal.

The path of learning to instill technical skills in interns

The whole gaining knowledge of adventure is formalized using person getting to know standards, in which problem fixing and applying the skills received are given extra importance than conceptual studying.

Learner Autonomy is endorsed through Flipped Classroom, where the studying platform gives international magnificence gaining knowledge of sources, and college students might now not be limited by way of tutelage of an teacher.

Get mentored by means of SME, whose motivation and guidance will assist you accelerate in the learning adventure.

This software encourages you to be extra self reliant freshmen during guided self-mastering hours, completing the studying objectives on your personal pace and style, and get geared up for the hands-on exercise time.

Brief Glimpse of Cognizant Internship program

The internship program consisted to training tracks that comprised of a two Stage Training course .

Following were the stages:

STAGE 1 –QEA BASICS

- Functional Testing
- Java Programming
- SQL and BPM Basics

STAGE 2 –SELENIUM WITH PEGA LEARNING PATH.

- Pega Training
- Configurations,WebDriver basics with Pega
- Selenium Automation Techniques with Pega
- Selnium Webedriver With PAGE OBJECT MODEL and Apache POI with Pega
- Automation Testing - Selenium with TestNG
- Digital Technologies

Cognizant also provides various learning materials with the help of udemy that offers various free courses as per the requirement of the employee in order to be trained in various domains.

During the duration of the course each intern is timely assessed with the progress of the course . With completion of every week each intern is assessed with either a code challenge or by a Integerated Capability test.

These assessments are designed in a way to evaluate the problem solving skills of an in intern in a real time environment and tests whether a intern satisfies the evaluation parameters.

Learning components and its organization

THe normal duration of this application is 12 weeks. From the day 1 of the program, each day may have a few gaining knowledge of components to be finished by using the GEN C.

The designated scholar handbook will have the day-clever time table. All the studying additives have to be completed as special in the day-clever agenda. These components will be auto scheduled for your specific getting to know paths as in line with the given time table.

INNOVATIVE LEARNING MODELS IN 2020

The Gen C (Generation Cognizant) Program stretches across the entire timeline of a campus hire's learning journey from the time he/she accepts the offer letter from the company -to the first year of his/her tenure in the organization. There is a robust learning strategy put in place across each of the stages.

- Modern Flipped Classroom
- Branding @ Campus Events
- Leader Engagement
- Heartfulness Workshops & Webinars Active Volunteering

LEARNING RESOURCES TO ACCESS FROM HOME FOR INTERACTIVE TRAINING

1.For Interactive Tainer-Student Learning

2. For Self paced Courses

3. For Pega Learning

4. Classroom Experience

TECHNICAL COURSES AND BEHAVIORAL TRAINING

Course Name	The Complete 2022 Software Testing Bootcamp
Course Type	Software & Business Courses
Course provider	Udemy
Instructors	Tarek Roshdy, QA Engineer
Requirements	1. No prior knowledge about the field is required 2. Basic computer & mobile using skills (you need to be able to use them as an end user) 3. Good knowledge of English Language
Course Content	1. Basic Concepts of Software Testing 2. Test case & Bug Report Writing 3. Black-Box Test Techniques 4. Requirements Review & Test Scenarios Writing using Trello 5. Implementing the test process on a Test Management Tool (Testlink) 6. Basics of Agile methodologies & Agile Testing 7. How to use Application Lifecycle Management Tool (JIRA) 8. White-Box Test Techniques 9. Basics of API Testing

Course Name	Postman API Testing
Course Type	Software and buisness
Course provider	Udemy
Instructors	Raghav Pal
Requirements	None
Course Content	1. Introduction 2. Collections 3. Variable 4. Environments 5. Test Scripts Creation 6. Data Driven Testing 7. Authorization 8. Command Line and Jenkins 9. Workspaced| Monitors |documentation 10. Remote Execution 11. Soap Api Testing 12. Api Chaining

	13. Mock API

Course Name	WebServices/Rest API Testing with SoapUI +Real time Projects
Course Type	Software and buisness
Instructors	Sashi R
Requirements	Proficiency in tesing web services using SOAP UI tool is a must.
Course Content	1. Web Services Basics 2. SoapUI basics 3. Assertions 4. Working with properties 5. OAuth2-authentication 6. Automation with Groovy 7. Web Service Mocking 8. Data Drivern Testing 9. Database Concepts

Course Name	Learn API Technical Writing:JSON and Xml for Writers.
Course Type	Udemy
Instructors	Peter Gruenbaum
Requirements	1. No prerequisites for this course - A computer with Internet
Course Content	1. Introduction 2. Json 3. XML

Course Name	Java Database Connection: JDBC and MySQL
Course Type	Software and Buisness
Instructors	Chad Durby
Requirements	None
Course Content	1. Introduction 2. Getting Started with JDBC 3. Performing Basic JDBC Operations 4. Calling Stored Procedures 5. Transactions and MetaData 6. Handling BLOBs and CLOBs 7. Database Configuration

CHAPTER II

LITERATURE SURVEY

LITERATURE SURVEY

Document [4] [5] contains a detailed description of how the selenium tool works [7]. Gojare et al. Provided the Selenium Framework Utility section, steps to generate screenshots, different types of test kits, how to customize test reports, and finally a result to customize reports [8].

[5] [6] The Selenium server consists of a server component that is used to accept requests from the Remote Web Controller class of Selenium clients. Driver API for running tests for web browsers on a server. The final component is Selenium Grid, which Selenium Server implements in command line options for grid functions.

It contains a central hub and nodes for numerous scenarios and preferred browser functions. .Grid is a tool that allows parallel tests to be run on different computers and different browsers at the same time, which affects the minimized execution time.

EXAMINATION OF RESULT

After the test run, the result can be checked in the recording field. It shows that the test case passed and there is no error. When the test case is executed, error messages and information are displayed showing the development in the log.

Panel repeating even though the Record tab was not selected. These messages are often useful for debugging test cases. The Delete button deletes the recording and the Information button allows you to select different levels of information to be recorded. The Reference tab is the default selection when entering or changing Selenium commands and parameters in Table mode. 18 of 44 Documentation for the current command is displayed in table mode. When entering or modifying commands in either table or source mode, it is very important to confirm that the parameters specified in the Target and Value fields must match the parameters specified in the Parameter List in the Reference window.

PURPOSE OF RESEARCH

How does the Selenium Framework reduce the time required for quality assurance?

The goal of this study is to determine the time efficiency of the Selenium Framework when used in a test suite. In the case of a firm, there is a test suite.

Finally, based on the statistical findings, the analysis concludes that employing the Selenium framework for automating testing is beneficial.

Also, this particular study aims to provide a full tutorial for automating web application testing utilizing the Selenium framework and language programming (Java). This thesis proposes a solution to the difficulty mentioned above (the need for test automation). However, there is no guarantee that this is the only cause of the problem. The author then undertakes research to determine the true reason of the problem while remaining open to fresh theories or suggestions . With all of these considerations in mind, the work employs an abductive research strategy.The author of the above thesis chooses Design Science as the research method for the following reasons:

To begin with, it is a study strategy that incorporates a solution-oriented approach and enhances the desire for change toward a better future . Second, design is a research method that involves creating an artefact to answer a problem, analysing the outcome, and presenting the results to an audience . The researcher then provides a development recommendation. A detailed examination of the artefact is then carried out in order to get a conclusion on the findings.

In Design Science, there are five main approaches for assessing data. An observational approach is employed to collect data for this study, and a descriptive method with scenarios is used to examine their performance.

During the observation phase of the development process, the author maintains track of field notes, memoranda, behavioural logs, and triggers. Before building the artefact, the data is studied in a descriptive scenario and compared to prior behaviour to determine its efficacy. as well as limitation

The work's creator watches and records the amount of time it takes to run the test suite. Because a test case might contain several assertions, there are 44 automation test cases out of 50 use cases. This implies that some test cases start off in the same place.

After a lot of study on several examples, the author has figured out how to separate one condition for comparing the two possibilities.

The following are the requirements:

Given that one developer must conduct the whole functional testing four times in two months of development .

CHAPTER III

SYSTEM DEVELOPMENT

SYSTEM DEVELOPMENT

SOFTWARE DEVELOPMENT LIFECYCLE

A Software Development Lifecycle Model tells us about the types of activities executed at every stage in a software development project, and how the ventures relate to one another aptly and chronologically.

1. SDLC is the elision of Software Development Life Cycle.
2. It is furthermore called as Software Development Process.
3. SDLC is a complex set apart assignments executed at each parade in the product up gradation measure.
4. ISO/IEC 12207 is a global typical for programming wheel of life measures. It is said to be
5. the streamer that sets every one of the assignments needed for fabricating and looking after programming.

TYPES OF SDLC

1. Sequential
2. Iterative and Incremental

SEQUENTIAL SOFTWARE DEVELOPMENT

The software development process is represented by a sequential development model as a continuous, increasing flow of operations. This means that whenever a step in the development is completed, interaction should begin. Although there is no stage cover in theory, it is sometimes beneficial to get early advice from the adjoining stage.

ADVANTAGES	DISADVANTAGES
1. Cost Effective	1. Rigid
2. Less time taking	2. Absence of central authority
3. Suitable for different geographical positions	3. Lack of intuitiveness
4. It's linear	4. No centrality of the client
5. Maximized customer satisfaction	
6. No pre knowledge required	

WATERFALL MODEL

The maturing undertakings are finished one by one in the Waterfall model. Test projects are only launched in this model after all other maturing operations have been completed. Its diagrammatic representation resembles a series of cascades.

V-MODEL

Unlike the Waterfall approach, the V-model integrates test activities throughout the development process, following the notion of testing ahead of time.

Agile

SCRUM

Scrum is basically a framework developed for project management which increases the efficiency and productiveness of business Units.

Scrum is a framework for developing and delivering products in a diverse and complex environment.

Scrum consists of various sprints. Each Sprint has a duration of 1-4 weeks.
Scrum further consists three roles that are :
1. Scrum Master
2. Product Owner
3. Development Team
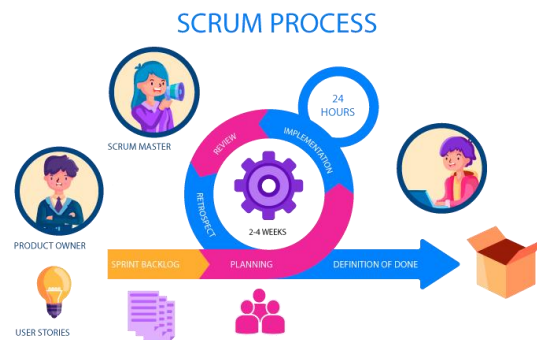
Scrum Ceremonies

There are four scrum ceremonies in a sprint. Following are the scrum ceremonies:

1. Sprint Planning

2. Daily Scrum

3. Sprint Review

4. Sprint Retrospective

5. BackLog Refinement
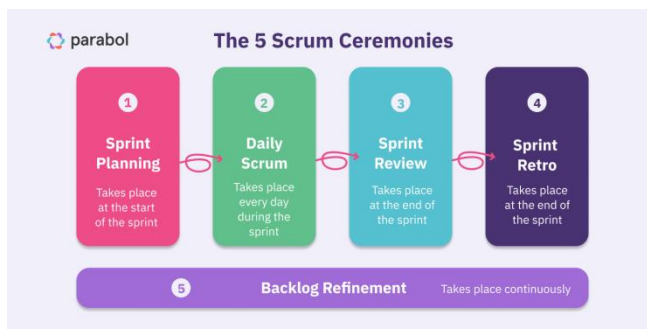
Pega
Pega is basically a Business process management tool Used by various businesses in order to support their working . And therefore and low code demanding tools used by various organizations to fulfill there business demands. Due to various tools and services that pega has been offering its clients has made pega quite popular among the tech giants in the IT service industry.

INCREMENTAL AND ITERATIVE DEVELOPMENT

The incremental model is a sort of programming development in which necessities are broken down into many impartial modules for the duration of the product improvement cycle. Every module in this replica goes via the necessities, purpose, execution, and trial degrees. Each subsequent arrival of the phase increases the dimensions of the previous discharge. The interplay maintains till the total skeleton has been reached.

You may also begin with a fraction of the product determinations and paintings your manner as much as the essential adaption of the product the usage of the Iterative Model. If there is a need to replace the product after the number one form, a brand new rendition of the product is created with a one of a kind emphasis. The Iterative Model's arrival will result in a awesome and fixed length called a cycle.

This duplicate encourages humans to move lower back to in advance phases, while the variations are made subtly. The undertaking's final output became implemented to the varnish of the Software Development Life Cycle degree.

WHY THE NEED TO TEST SOFTWARES

Software trying out may be described as a process that accommodates a number of extraordinary responsibilities or sports. Execution is merely this kind of responsibilities.

Software testing facilitates within the following methods:

1.Checks the operating capability of the utility
2.Tests everything beforehand a good way to avoid risks after deployment.

TEST PROCESS

There is no one with an all inclusive programming take a look at degree, but there are simple preparations of check sporting activities without which testing might be greater averse to perform its installation destinations.

TEST LEVELS

Test levels are gatherings of test exercises that are coordinated and overseen together. Each test level is an occasion of the test interaction. Test levels are identified with different exercises inside the product improvement lifecycle.

Testing Principles:

(i) All tests should adhere to the customer's specifications.

(ii) We need to hire a third party to test our programme.

(iii)Exhaustive trying out is impossible. Because we require the maximum trying out feasible based totally on   the utility's risk evaluation.

(iv) Before doing any tests, make sure they're ready out.

(v) It follows the Pareto rule, which claims that 80% of software program mistakes are caused by 20% of programme additives.

(vi) Begin with little parts and paintings your way up.

Types of Testing:

1. Unit Testing   It concentrates on the tiniest aspect of software development. We test a single unit or a collection of interconnected components. The programmer frequently does this by using sample input and watching the accompanying outputs.

2. Integration Testing   The goal is to take unit-tested components and use them to create a design-driven programme structure. Integration testing involves combining a number of components to generate a result.

(a) Testing in a Black Box: It's a validation tool.

We disregard the internal working mechanisms and concentrate on the result.

(b)White Box Testing:

- It's a verification tool.

This section is concerned with internal mechanics, or how the output is generated.

3. Functional Testing   Functional testing is a sort of testing that aims to determine whether each application feature functions in accordance with the programme requirements. The result of each function is compared to the relevant requirement to see if it meets the end user's expectations.

TEST CASE WRITING

1. Test Case Title	2. Pre-Conditions
3. Test Steps	4. Expected Results
5. Test Suite	6. Test Environment
7. Actual Results	8. Status
9. Defect Report	

HTML

HTML turned into created with the aim of specifying the structure of guides along with headers, paragraphs, and lists, among different matters. Make it less complicated for researchers to percentage medical facts

The motive of text is defined in HTML. The internet browser should then decide what to do with the text.

HTML is now usually used to format internet pages utilizing the HTML language's severa tags. HTML is a must-have ability for college college students and specialists who want to work as software builders, particularly within the web development vicinity.

Mark-up for HyperText Language - five is an HTML protocol that permits us to develop wonderful and sensible internet pages by using tying HTML to the sophisticated use universe of 2004. HTML is merely a presentation of the principles of The Book That Is Integrated with the Web to be able to add sound and video, as well as one-of-a-kind utilities, geographic areas, and neighbourhood stores for patron-aspect information. HTML-five gives a huge range of makes use of within the mixed media header [6], thanks to its improvements. Website specialists and engineers will acquire a bonus. HTML-5 is a move-degree language. HTML-five improves website web page go-degree presentation on PCs, pills, smartphones, and smart TVs. HTML-5 is still a hectic layout, and programme architects are in short supply. HML5 components are also delivered to websites.

HTML stands for hypertext markup language, and it's miles the standard markup language for creating web pages and web packages. HTML5 is the fifth version of HTML, and it's far a core era markup language of the Internet this is used for structuring and presenting content material for the worldwide web. The HTML5 general became finalised and launched in 2014, and it's far precisely what HTML ought to were.

Elements inspection or identifying factors is one in every of HTML's maximum crucial programs.

Every element on a web page, which include a button, hyperlink, text, or drop field, is an element. We need to first find out the elements earlier than automating or acting any movements on them. When we use HTML to find objects, Selenium can also act on them and do the right sports.

XPATH

Xpath is a query language that is used to discover a node or a group of nodes in an XML or HTML record.

The maximum vital component of designing automation scripts has constantly been localising a web portion. Finding a accurate, effective, and specific monitoring device has constantly been a stumbling block in the implementation of computerized exams. It has brought about QA engineers to don't forget locators other than ID, Name, Class, Link, or TagName. XPath has lengthy been a fave among QAs, in particular for figuring out dynamic components. Selenium's XPath affords a variety of xpath functions and axes (relationships) with which to write down effective XPaths for internet objects and construct a completely unique location for net components.

XPath can be created in the following ways

1. Attributes	2. Texts
3. Dynamic elements	4. Combining text and attributes
5. Using parent-child relationship	6. Using ancestor-descendant relationship
7. Using preceding and following relationship	

ABSOLUTE XPATH VS RELATIVE XPATH

RELATIVE XPATH

When particular textual content, attributes, or other additives are not accessible, this calls for looking the whole record with using certain attributes, textual content, or relationships to make searching possible. As indicated inside the ultimate section, there are numerous methods to search for items using Relative XPath.

ABSOLUTE XPATH

This approach necessitates offering a beginning point at the root, in addition to supplying all of the toddler and descendants tags exactly and without missing any, which is probably dangerous in the future. This is due to the truth that an internet web page is dynamic, and we won't be capable of find the pieces considering that they may not stay inside the same area.

Because we must supply accurate information about the element whilst the usage of Absolute XPath, and failing to achieve this would possibly result in large destiny errors, this XPath isn't always advised to be used on a real-time application or internet page with elements that alternate places often.

Relative XPaths are favoured to be used greater regularly for figuring out or examining objects on a dynamic web page, that is what exists in a actual-time environment, for that reason.

XPATH FUNCTIONS

Because we should deliver accurate statistics about the detail while the usage of Absolute XPath, and failing to accomplish that would possibly result in widespread future mistakes, this XPath is not advised for use on a actual-time utility or net web page with elements that change locations regularly. Relative XPaths are favoured to be used greater regularly for figuring out or examining objects on a dynamic internet web page, that's what exists in a actual-time environment, for that reason.S.
Contains() Starts-with() Text() AND operator OR operator

CSS SELECTORS

CSS are a method of expressing how objects on a web page are displayed. The CSS selector is essentially a aggregate of an detail selector and a selector fee that can be used to become aware of sure gadgets on a web page. The CSS selector, like XPath, can be used to discover internet components that do not have an ID, class, or name. They're representations of HTML tag strings, attributes, IDs, and instructions.

Finding an internet web page element may be hard, particularly in modern-day settings while all different internet pages are dynamically designed and the net parts advanced / displayed based on that need to be dynamic. It's difficult to use the static attribute on a dynamic element. These elements, like the general public of the time, do not have constant attribute values. As a result, locators inclusive of ID, name, link, partial hyperlink, and so forth can not be used directly. Creating a UI-based totally automation test script, especially a Selenium automation script, requires locating the right internet component.

CSS selectors are beneficial in this example due to the fact CSS is able to identifying most people of internet elements on a page. It can also hit upon objects with variable characteristic values, making it the top alternative for any automation dressmaker. It's one of the fastest techniques to discover items on a web web page considering the fact that it is toward the code. Let's have a look at how to assemble a CSS selector for a web section the use of syntax.

So it is essentially a way of figuring out objects so that fashion may be applied to them, actions can be completed on them, and facts can be collected from them for trying out reasons.

JSON & XML

JSON and XML are commonly used in API documentation.

API

A programming interface (API) specifies how two or more pieces of software communicate with one another. It stresses the ability of several devices to communicate with one another.

It's also crucial to have good API documentation.

JSON and XML are structured data formats that don't always fit into a table (eg a tree) HTML is the foundation of XML. JSON is another common format.

COLLECTIONS

Structured data is made up of groupings of data due to the inclusion of data kinds. An array or dictionaries, for example. We can have the following types of structured data:

1. Dictionaries of lists
2. Lists of Dictionaries
3. Dictionaries of Dictionaries
4. Any levels or combinations

We can have data trees that are quite complicated. Structured data is usually always present in API replies. However, structured data can only be included in API calls on rare occasions.

JSON

1.JavaScript is a computer language that was developed by Sun Microsystems.

2.JSON was designed to store structured data for usage in JavaScript. 3.JSON has recently been utilised in a wide range of applications.

4.It is currently widely used to deliver data to Web APIs.

JSON has grown in popularity as the digital world has evolved and efficiency has been a vital quality of organisations in order to make things function with less resource use and a more productive mindset.

Strings, integers, booleans, and nulls are among the most common data types in JSON. Arrays, objects, and layering of these structures are also included. Arrays may be contained within objects, objects can be contained within arrays, arrays can be contained within arrays, and so on. A JSON file is frequently a single large object containing several objects and arrays.

XML

Extensible Markup Language is the full shape of XML. It's a textual content-based totally markup language based totally at the Standard Generalized Markup Language (SGML) (SGML). Instead of prescribing a way to show information like HTML tags, XML tags pick out the records and are used to shop and organise it. It's used to reveal the facts. In the foreseeable future, XML will no longer replace HTML, but it's going to open up new opportunities by way of assuming many powerful HTML features. XML has some of considerable features that make it helpful in a number systems and solutions. XML is extensible, this means that you can design your very own self-describing tags or languages to fulfill your needs.

XML stores information as an alternative of supplying it; it lets in you to store facts unbiased of ways it is offered. The World Wide Web Consortium (W3C) created XML, which is now available as an open fashionable.

They have the choice of the use of JSON or XML for API calls. It is decided through the employer's or product's desires and objectives.

When a request is made, it normally specifies which layout must be used if you want to pleasant meet the request. If an API employs both JSON and XML, XML from time to time lacks capabilities that permit for smooth mapping among the 2 paperwork. An example of API documentation is proven below.

JAVASCRIPT

JavaScript is one of the most widely used programming languages on the planet. Browsers utilise it to create interactive web pages. However, JavaScript may now be used to create web applications.

1. Web/Mobile Apps
2. Real time networking apps(Chats/Video calls)
3. Command line tools IV. Games

Apps for the Web and Mobile III. Command line tools II. Real-time networking apps (Chats/Video calls) The fourth category is games.

JavaScript also can be used out of doors of browsers. This means that on line and mobile applications can also utilise JavaScript as a backend. By including JavaScript to either the or the aspect of the HTML, we may additionally merge the 2.

Because the script is sent from the pinnacle and we include the script within the head, it will be occupied parsing it in place of centered at the content material, it is a superb practise to position JavaScript in the tag as opposed to the. HTML is ready content material, however JavaScript is about behaviour, which alludes to content material separation.

1.JavaScript is a scripting or programming language that lets in us to implement complicated capability on webpages. A website will offer well timed content updates, interactive maps, and 2D animations every time it is greater than simply offering static records. JavaScript is almost usually utilized in 3D photographs, scrolling video jukeboxes, and different similar programs. It is the 1/3 level of popular web era, with HTML and CSS being the first .1.HTML is the markup language that we use to structure and provide meaning to our on-line content material, together with with the aid of developing paragraphs, headers, and data tables, as well as embedding images and motion pictures in the page.

2.CSS is a style-rule-primarily based language that we use to apply patterns to HTML content material, including defining historical past colors and fonts and distributing statistics over many columns.

Three JavaScript is a programming language for developing dynamic, updating fabric, controlling multimedia content, animating graphics, and more.

JAVA

Java is a broadly used programming language this is constructed on instructions, organised round items, and designed to have as few execution conditions as feasible. It is anticipated to allow software developers to write once and run everywhere (WORA), implying that organised Java code may also execute on any systems that help Java with out the need for recompilation. Since the beginning of 2019, Java has been one of the maximum famous programming languages utilized by GitHub, notably for purchaser employee internet apps.

REAL WORLD APPLICATIONS

There are severa places wherein Java is utilized in training, starting from a web trading web page to android applications, from logical packages to cash-related packages which encompass digital buying and selling frameworks, from video games like Minecraft to work place applications along with Eclipse, Netbeans, and IntelliJ, and so forth.

JAVA VIRTUAL MACHINE

The Java Virtual Machine (JVM) is a motor that gives runtime states for Java code or applications to be driven. It converts byte code from Java to machine language. JVM is a Java Run Environment surprise (JRE). The compiler will generate device code for particular structures in diverse programming languages. In any state of affairs, the Java compiler generates virtual machine code.

DATA TYPES

PRIMITIVE DATA TYPES	NON-PRIMITIVE DATA TYPES
Primary data forms include integer, character, short, large, float and double.	They comprise classes, interfaces, and arrays.

OBJECT-ORIENTED PROGRAMMING SYSTEM

The Object-Oriented Programming System (OOPS) is a programming paradigm that focuses on "objects" that hold data and methods. The flexibility and common sense of actions are the most important aspects of item masterminded creating PC applications. It brings together data and its application (techniques) in an one location (object), making it easier to understand how a programme works.

CONCEPTS OF OBJECT-ORIENTED PROGRAMMING SYSTEM

Class: It's a gathering of similar elements. For example, you have a class named "Expensive Automobiles." The cost or speed of these vehicles are examples of its attributes (data). Driving, relaxing back down, and other systems can be used with these vehicles.

Objects:There can be different adaptations of a class in a software, and an object can be labelled as a development of a class. For instance, a seat, a bike, a marker, a pen, a table, a car, and so on.

Inheritance:Properties and procedures that have a place with existing classes can be shared, acquired, or "acquired" by classes. This allows you to reuse existing code and save down on your coding time. A derived class, also known as a young person class, is one that derives from another. A base class, often known as a parent class, is a class that shares its attributes and techniques.

Polymorphism: refers to a strategy's ability to be used in a variety of ways, i.e., it can take different structures at different times (poly + morphs). Compile time polymorphism and run time polymorphism are the two types of polymorphism.

When a technique is overburdened, or when the contention used with the approach is altered, compile time (static) polymorphism occurs. This is done to achieve a variety of results. A instance in point would suggest many titles for becoming President of a country, each of which would provide different results – but they would all be referred to as President.

When the approaches themselves are altered, run time (dynamic) polymorphism occurs. When you don't need a President but do need a Prime Minister, you'll need to replace your present plan.

Abstraction: The term "information deliberation" refers to the process of just displaying relevant attributes and procedures for dealing with an object while hiding the rest. Information deliberation allows you to reduce the multiple character (obviously) of a programme, and classes in OOP languages provide a lot of flexibility.

Encapsulation: Embodiment refers to the organisation of items and their methods in a single location. It also maintains the information's integrity – preventing it from being tampered with needlessly – by restricting access to the data, ideally by hiding it from outside components.

EXCEPTION HANDLING

Exception Handling in Java is a fantastic tool for dealing with runtime errors so that the application's normal progress may be maintained.

Following are the various kinds of Exceptions present in Java:

1. Built-in Exceptions
2. User Defined Exceptions

JAVA EXCEPTION KEYWORDS

Try	The "try" watchword is utilized to determine a square where we should put an exemption code. The attempted square should be trailed by either get or at last. That is to say, we can't utilize the square alone.
catch	The "catch" square is utilized to deal with the exemption. It must be gone before by the attempt square which implies we can't utilize the catch square alone. It tends to be trailed by a long last square later.
finally	The "finally" square is utilized to execute the significant code of the program. It is executed whether a special case is dealt with or not.
throw	The "throw" catchphrase is utilized to toss a special case.
throws	The "throws" catchphrase is utilized to announce exemptions. It doesn't toss a special case. It determines that there may happen to be a special case in the technique. It is constantly utilized with strategy signature.

STRINGS

A string is a collection of characters. String objects in Java are permanent, which means they can't be modified once created.

1. char charAt(int list) - Restores the character at the predefined list.
2. int compareTo(Object o) - Examines this String to another Object.
3. int compareTo(String anotherString) -Examines two strings lexicographically.
4. int compareToIgnoreCase(String str) - Examines two strings lexicographically, disregarding case contrasts.
5. String concat(String str) - Connects the predefined string as far as possible of this string.
6. boolean equals(Object anObject) -Looks at this string to the predetermined item.
7. int indexOf(int ch) -Returns the list inside this string of the principal event of the predetermined character.
8. int indexOf(String str) -Restores the file inside this string of the primary event of the predefined substring.
9. int lastIndexOf(int ch, int fromIndex) -Restores the file inside this string of the last event of the predetermined character, looking in reverse beginning at the predefined record.
10. int lastIndexOf(String str) -Restores the file inside this string of the furthest right event of the predetermined substring.

STRING BUFFER

Java StringBuffer class is an alterable (modifiable) string. The StringBuffer class in java is similar to the String class with the exception that it is impermanent. For example, it very well may be changed.

CONSTRUCTOR	DESCRIPTION
StringBuffer()	makes an unfilled string support with the underlying limit of 16.
StringBuffer(String str)	creates a string support with the predetermined string.

StringBuffer(int capacity)	creates an unfilled string support with the predefined limit as length.

ARRAYS IN JAVA

An array is a holder object that holds a set variety of estimations of a solitary kind. The period of a cluster is installation when the showcase is made. After creation, its period is fixed.

In Java all reveals are powerfully allocated.

Exhibits can incorporate local's statistics sorts just as objects of a category contingent upon the which means of cluster. If there have to get up an incidence of natives information types, the actual features are put away in bordering memory regions. If there should be an prevalence of gadgets of a class, the real items are placed away inside the load section.

COLLECTIONS IN JAVA

Collection framework in Java provides an architecture to handle and manipulate objects. It has implementations for various data structures, which have very different use cases some are faster for storage or retrieval others store data in a certain way and so on. Java collection is a bundle of single objects. It provides many interfaces like Set, List, Queue, HashSet, etc.

ARRAYLIST

ArrayList class in java is a resizable array which very similar to vectors in C++. It is implemented in java.util package. ArrayList provides many different functions for manipulating ArrayList from adding elements, removing elements, sorting elements.

JAVA DATABASE CONNECTIVITY WITH MYSQL

To interface Java applications with the MySQL database, we must observe 5 after advances.
In this version we're utilising MySql as the database. So we ought to know the following facts for the MySql database:
1.Driver magnificence: The motive force magnificence for the MySql database is com.Mysql.Jdbc.Driver.
2.Connection URL: The affiliation URL for the mysql database is jdbc: mysql://localhost:3306/sonoo in which jdbc is the API is running, we may additionally likewise utilize IP deal with. We may additionally utilize any database, in such case, we need to supplant the sonoo with our database call.
3.Username: The default username for the mysql database is root.
4.Password: It is the name of the game word given via the purchaser at the hour of introducing the MySQL database. In this version, we're going to make use of root as the name of the game key.

INTRODUCTION TO MYSQL

The acronym SQL stands for Structured Query Language. It is a trendy language this is used to communicate with databases. SQL is a effective programming language for working with databases. It operates with the aid of grabbing and dismantling information bases with information fields of their tables.

MySQL is the board shell and a network database. It gives a user interface for us to hook up with the database.

The programme is used for a wide variety of purposes, consisting of facts warehousing, on line buying and selling, and logging. Despite this, the maximum commonplace application of MySQL is to create an internet information base.
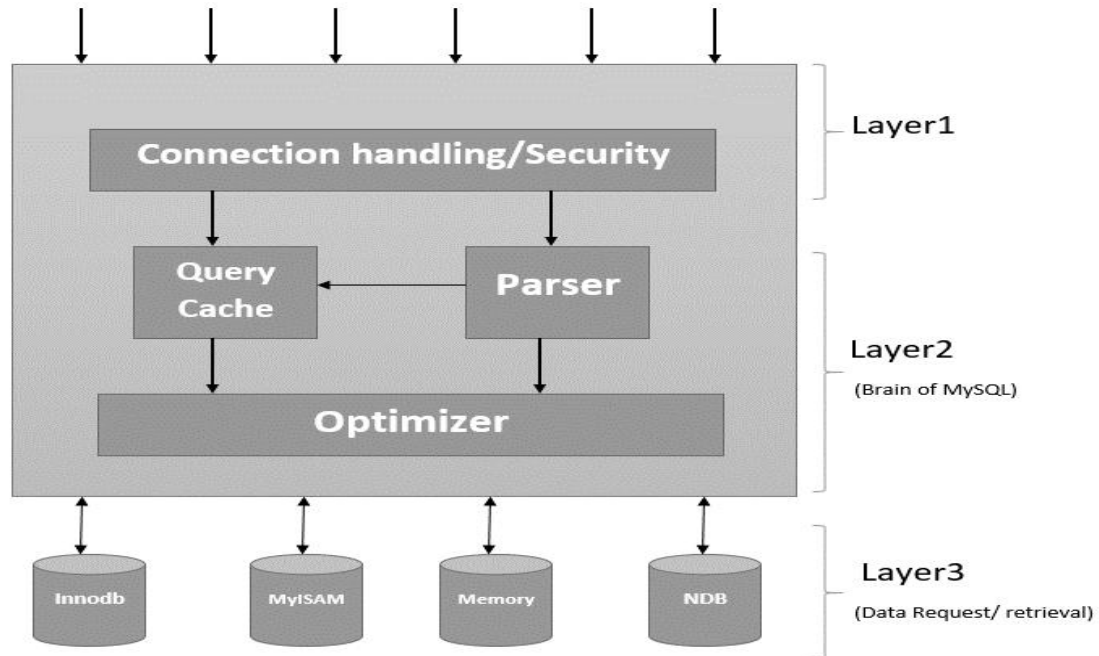

Figure 2: MySQL CLIENT

RELATIONAL DATABASE MANAGEMENT SYSTEM

A relational data set is one in which statistics are organised into lines and segments in a well-structured group. As a consequence, identifying and ingraining obvious features on a detailed basis is simple. It's feasible to fast sprint doubts over tables that aren't linked because to the social architecture.

INSTALLATION OF MYSQL

Step1: The initial step is to go to the site www.dev.sql.com and introduce MySQL for the necessary working framework.

Step2: Ensuing to acquaint the MySQL with your system, fire setting up the workbench stage where you can create the inquiries.

Step3: At the point when you open the workbench, a secret phrase brief will spring up and you must enter the root secret word that you made during the establishment procedure.

Step4: Then comes the time when you can make your first database inside the workbench.

DATA DEFINITION LANGUAGE

A grammar for creating and switching data set components such as tables, lists, and clients is known as information definition language. DDL manifestations are similar to a computer programming language for separating data structures, notably data set blueprints. CREATE, ALTER, DROP, and TRUNCATE are some of the most often used statements.

DATA TYPES

Numeric Data type: INT: Whole numbers FLOAT(M,D): Decimal numbers(approx.) DECIMAL(M,D): Decimal numbers(precise)	**Non-Numeric Data type:** CHAR(N): Fixed length character VARCHAR(N): Varying length character ENUM('M','F'): Value from a characterized list BOOLEAN: True or False qualities
Date and Time type: DATE: Date(YYYY-MM-DD) DATETIME: Date and time (YYYY-MM-DD HH-MM-SS) TIME: Time(HH-MM-SS) YEAR: Year(YYYY)	

PRIMARY AND FOREIGN KEYS

PRIMARY KEY	FOREIGN KEY
An important key is a table field that uniquely identifies each column/record in a data set table. Unusual calibre should be present in essential keys. NULL characteristics are not permitted in an important key section. A table contains only one key, which might have a single or several fields.	This directive is used to prevent operations that would destroy table connections.

MODIFYING TABLES

Tables Can Be Added and Removed "Include COLUMN COL NAME> DATATYPE>" is the language structure to include another segment in the already created table.

"DROP COLUMN COL NAME>" is the syntax for removing a section from a table.

Furthermore, an abbreviation request is used to remove all data from the tables.

DATA MANIPULATION LANGUAGE

A Data Manipulation Language is typically sublanguage of a larger data set language like SQL, with the DML including a portion of the language's controllers. Read-only data selection is sometimes assumed to be necessary for a distinct DQL, however it is frequently associated with and thought to be a part of a DML. INSERT, SELECT, UPDATE, and DELETE are the most popular DML commands.

JOINS

Joins allow you to retrieve data from many tables in a single select statement. There must be a relevant segment between two tables in order to link them. Inward joins, left joins, and right joins are examples of different types of joins.

INNER JOIN	LEFT JOIN	RIGHT JOIN
Inward join will recover information just when there is coordinating qualities in both the tables.	Left join will recover all the information from the left table and the coordinating lines from the correct side of the table.	The correct join will recover the information from the correct table and coordinating columns of the left table.

SUBQUERIES

Subquestions are questions that are answered within other questions. In a SELECT, INSERT, UPDATE, or DELETE query, the subqueries can be used. The answer might be found in either the WHERE or FROM clauses. To be more exact, there are two types of subqueries: non-corresponded subquery and connected subquery.

NON-CORRELATED SUBQUERY

The inward question can flow free of the outward inquiry in this type of subquery. The internal questions run first, generating an output set that is subsequently used by the external inquiry.

CORRELATED SUBQUERY

In this sort of subquery, the internal question runs for each line in the external inquiry. Here the internal question cannot run freely of the external inquiry.

NORMALIZATION

Standardization is the procedure of effectively sorting out the information into the database. It is fundamentally done to expel the excess information and to just store the related information in a table. The advantages of standardization are:

1. Reduce the extra room
2. Reduce addition, update, and cancellation inconsistencies
3. Improve inquiry execution
4. Reduce the extra room
5. Reduce addition, update, and cancellation inconsistencies
6. Improve inquiry execution

Following are the degrees of standardization:

1st typical structure (1NF)	2nd typical structure (2NF)
3rd typical structure (3NF)	Boyce and Codd typical structure (BCNF)

FIRST NORMAL FORM (1NF)

A table is in the 1NF if it meets the following criteria in the basic typical structure:

1.There are no repeated information lines.

2.Each area only has a single worth.

3.There is an important key on the table.

SECOND NORMAL FORM (2NF)

The requirements in the next ordinary shape are that a desk is inside the seconf ordinary shape if:

1.They suit in with first Normal Form.

2.Every phase this is anything, however an important key of the table is problem to the entire of the crucial key

THIRD NORMAL FORM (3NF)

According to the rules of the third typical structure, a table is in the third normal form if it meets the following criteria:

1. It fits into the second normal form.

2.Any segment that isn't part of the essential key is susceptible to the complete essential key.

AUTOMATION TEST USING AUTOMATION FRAMEWORK

The notion of performing test cases through human involvement is referred to as manual testing . Developers, on the other hand, can use a machine or software to perform a series of test cases 36 of 44 and compare the findings to the intended outcome . In other words, test automation is a set of test scripts that may be run without the need for human intervention . Automation testing is divided into three tiers.

WHEN TO USE AUTOMATED TESTING

Prior to each sprint or development, it is suggested that the testing technique be examined and planned. For regression testing, test automation is a good choice . Regression testing16 ensures that the newly released version or modifications have no negative impact on earlier versions. Automated tests for repeated tests that are unlikely to change over the development cycle or sprint should be adjusted.

SELENIUM WEBDRIVER

INTRODUCTION TO SELENIUM

Selenium is a collection of tools and libraries that allow web browsers to be automated by developers. It offers a variety of browser extensions that simulate user interaction. It includes drivers that developers may use to automate the browser. It also offers infrastructure for implementations of the W3C WebDriver Specification, allowing developers to build code for all major web browsers. It's a UI automation tool that's free and open-source. It was built by a Thought Works engineer in 2004. Later in 2006, Selenium WebDriver was released.

COMPONENTS OF SELENIUM

SELENIUM IDE
- Selenium IDE is Record and Play base Tool.
- Selenium IDE is basically a Browser Plugin, which is compatible with Mozilla Only.
- It is easy to learn, use and install.
- User is not allowed to put conditions in IDE.

SELENIUM RC
- Selenium RC stands for Remote Control
- RC is the first automated web testing tool that allowed users to use a programming language they prefer
- User can use Java, C#, PHP, Perl, Ruby, and Python with Selenium RC.

SELENIUM WEBDRIVER
- Selenium WebDriver is better than Selenium IDE and RC
- Selenium WebDriver is more stable than RC
- WebDriver, unlike Selenium RC, does not rely on JavaScript for Automation. It controls the browser by directly communicating with it.
- Selenium WD supports multiple Programming language. Java, C#, Python, PHP, Perl, Ruby.

SELENIUM GRID
- Selenium Grid is tool to use for Parallel Execution.
- Selenium Grid is compatible with RC and WD both
- It works like an Execution Engine for Selenium Tests.
- Enables simultaneous running of tests in multiple browsers and environments
- Utilizes the hub-and-nodes concept. The hub acts as a central source of Selenium commands to each node connected to it.

SELENIUM INSTALLATION SYSTEM REQUIREMENTS

To install the Selenium test suite with Java, you'll need to have a Java environment up and running, as well as the following system requirements:

1.On the native computer, install the Java Runtime Environment (JRE): JRE is included with the Java Software Development Kit (JDK). Users can pick the operating system they are running while downloading and installing JDK from Oracle's official website for Java (Oracle 2018).

2.Go to the Eclipse official website and download the Eclipse IDE (Integrated Development Environment).

3.To run test scripts on a specific browser, download Selenium WebDriver depending on the browser and place it in the directory linked.

TESTNG

TestNg provides various annotations in testing domain thereby diversifying test methods and helping to complete testing tasks in a efficient fashion. TestNG is a open source testing framework which was made by Cedrick Beust . TestNg helps in business system automation thereby making it easy for testers to test various applications in a ambiguous thereby giving the selenium code more readability and functionality to the tester. It also provides a proper testing report thereby helping user create test cases and aligning them to the pass or fail and hence providing a readable result.

TestNg provides following annotations:

- @BeforeSuite

- @BeforeTest

- @BeforeClass

- @BeforeMethod

- @Test

- @AfterMethod

- @AfterClass

- @AfterTest

- @AfterSuite

Hierarchy of TestNG annotations
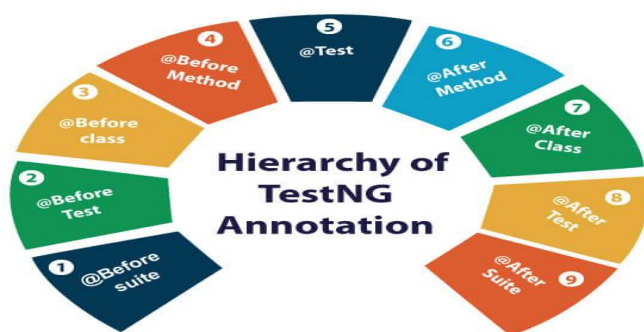
@BeforeSuite $\rightarrow$ @BeforeTest $\rightarrow$ @BeforeClass $\rightarrow$ @BeforeMethod $\rightarrow$ @Test

@AfterSuite $\leftarrow$ @AFterTEst $\leftarrow$ @AFterClass $\leftarrow$ @AfterMethod

JAVASCRIPT EXECUTOR

Javascript executor is an interface in Selenium Webdriver that helps automation testers to work through various javascript applications.

Javascriptexecutor in Selenium helps the webdriver to work with various HTML tags.

MAVEN

Maven is a product by apache software foundation . Maven is a package builder that provides extensive feasibility of usage for the user as it provides an easy addition of packages into the project by the use of page object model or the pom.xml file through which the user can add dependency which further helps to add the external libraries consisting of various JAR files required by the project.

Maven eases the build process ,provides uniform build system and provides easy migration of features to new system.

CHAPTER IV

Learning Track

WEEK-1

Functional Testing

In the initial stage we covered the basics of qea which consisted of Functional testing . Functional Testing

Checking functions by emulating business scenarios, based on functional requirements. Black-box testing is a common way to verify functions.

Basics of automation Testing

We were taught how to automate the testing process and how to make automation testing simpler yet efficient in order to complete the desirous tests.

Integrated Capability Test (ICT)

We were continuously tested by these ICT's. Our progress was continuously monitored by these ICT's . And we were assessed by the end of every week to check our progress.

Week 2&3

Programming with Java

Basics of how to program with java was taught to us . We were taught all the Syntax and various utilities of java . We were also taught the application of java in real world test scenarios.

Week 4

Data Source (SQL)

We were taught about DBMS and its various commands in which we learned various queries and how to use them .

BPM BASICS

We were taught about Business Process Management and Various tools for BPM.

Week 5

BASICS of PEGA

In the fifth week we were taught about pega and how the pega system works and how is it used as a business Process Management tool.

Week 6

WebDriver Basics with PEGA Training

In the sixth week we were introduced to Selenium and how the selenium works and how it can be used to automate testing

Week-7

Automation Techniques and Dynamic XPath with Pega Training

In the seventh week we were taught about Xpath and how to use these Xpath inorder to locate the Web elements using these Xpath.

Mini-project

In the seventh week we were assigned with the mini-projects . Project was to be done individually by the interns. And all the required deliverables were required to be meet by the intern.

Week-8

WebDriver with POM and Apache POI with PEGA Training

In the eigth week we were introduced to apache POI in which we learned how we can access excel files using apache POI. And we also learned about the POM(Page Object Model).

Week 9 & 10

Selenium with TestNG and Pega Training

In the ninth and tenth week we were introduced to concepts of testNG and how to use its annotations in order to integrate and simplify the testing process.

Hackathon Project

In the ninth and tenth week we were assigned the a hackathon project in which teams of 5-6 members were created and we were assigned with the problem statement and the deliverables of the project that ewe had to produce by testing those outcomes.

Week 11 & 12

Integerated Capability Test(ICT)

In the eleventh week we were assessed for whole of the training it was summarized test in which all of our concepts on automation testing that we learned in this was taken into test and we were assessed further.

Main Project

In the eleventh and twelfth week we were assigned with the main project in which teams of 5-6 members were created and we were assigned with the problem statement and the deliverables of the project that we had to produce by testing those outcomes. We worked on proper BPM tools and automated the test process in it.

CHAPTER V

CONCLUSION

CONCLUSION

Over the past few years, developers all over the world have been constantly working and developing the applications to provide better software as well, quality software for users. With the use of different methodologies as well as philosophies that help in development. Over the years Agile methodology has come forward to for better development and customer satisfaction.

Selenium is considered the first choice for automation for web-based applications for testing them. Ever since the inception of Selenium it has been the primary choice for automation and testing because of the popular languages it supports and use of selenium is easy and should be considered if testing of web application is to be done as the tests can be replicated on various machines and the test coverages provides extensive coverage that allow the developers to make robust and quality software within budget and providing customer satisfaction and well-built products.

Through this Internship, Software testing and automation of testing using selenium was performed and learning process was immense and the learning and aid provided was sufficient for learning development for automation and testing. Selenium was not the only technology that was used during this internship. Many different technologies like JavaScript, SQL, HTML and CSS were also heavily used in this internship. Overall, the learning process was immensely yielding, and the learning gathered from the were extremely beneficial.

FUTURE WORK

As Software's is being developed and most of them are web-based applications, this makes the testing more important for the software to provides a reliable way to develop software and that makes a quality product and due to huge number of applications with varying levels of complexity makes automation as a perfect candidate for providing vital test coverage with speed as well as efficiency that makes a quality product. Software testing, just like software development is an important part of the whole process of getting a product or an application to get to market, henceforth automation of testing is the way to be taken to reduce time to market time and increase the quality of software as well as decreasing the cost of development.

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