

IntimeTec VisionSoft Pvt. Ltd

PREPARED BY

Harsh Gauttam (2018BTECHCSE021)

FACULTY GUIDE

Dr. Alok Kumar



**Department of Computer Science & Engineering
Institute of Engineering and Technology (IET)
JK Lakshmipat University, Jaipur**

July-2022

IntimeTec VisionSoft Pvt. Ltd

Practice School-2

Submitted in partial fulfilment of the requirements

for the degree of

Bachelor of Technology in Computer Science and Engineering

By:

Harsh Gauttam (2018BTECHCSE021)

Faculty Guide:

Dr. Alok Kumar



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Institute of Engineering and Technology (IET)
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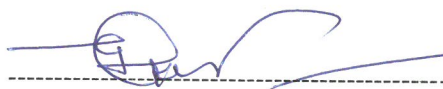
July-2022

CERTIFICATE

This is to certify that the Practice School-2 project work entitled **In Time Tec Vision Soft Pvt Ltd., Jaipur** submitted by **Harsh Gauttam (2018BTechCSE021)**, towards the partial fulfillment of the requirements for the degree of **Bachelor of Technology in Computer Science and Engineering** of JK Lakshmipat University Jaipur is the record of work carried out by them under my supervision and guidance. In my opinion, the submitted work has reached a level required for being accepted for Practice School-II examination.

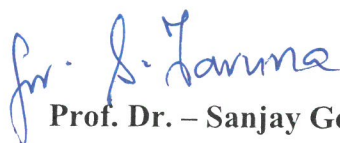


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ACKNOWLEDGEMENTS

The internship opportunity I had with **In Time Tec, Jaipur** was a great chance for learning and professional development. Therefore, I consider myself as a very lucky individual as I was provided with an opportunity to be a part of this company. I am also grateful for having a chance to meet so many wonderful people and professionals who led me through this internship period.

I perceive as this opportunity as a big milestone in my career development. I have taken efforts in completing this internship. However, it would not have been possible without the kind support and help of many individuals and organizations. I would like to express heartfelt gratitude to **Prof Dr.Sanjay Goel**, Director, Institute of Engineering & Technology for providing this opportunity to me. Also, I would like to thank my faculty guide **Dr. Alok Kumar** for his constant support and guidance.

I am highly indebted to **In Time Tec** for their guidance and constant supervision as well as for providing necessary information regarding the project & also for their support in completing the project.

I would like to express my gratitude towards the members of In Time Tec for their kind co-operation and encouragement which helped me in the completion of this project. I would like to express my gratitude and thanks to industry mentors **Mr. Mahendra Sharma and Chaithra Bekal** for giving me such attention and time.



Sincerely yours,

Harsh Gauttam
(2018BTechCSE021)

ABSTRACT

SDETs(Software Development Engineer in Test) have skills in programming and technical testing tasks, abilities, and know-how that IT organizations can use to complement more conventional testers. QA professionals manually test applications with written testing plans and traceability matrices, whereas SDETs write code to test applications via automation. On a daily basis, I have to understand project documents, create & executing test cases, report, and testing bugs. I have also put my input into the designing team, suggest the development team and other team-building activities and write test cases and execute it. In Project, SDETs are assigned to tasks of automation and writing test cases. Also, they have to find bugs and raise the bug ticket.

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CHAPTER 1: INTRODUCTION

1.1 About the organization



In Time Tec starts in 2009, when our founders came together around the fact that there was more to life, more to do, and more to give. From the very beginning, our mission has been to create abundance — we just happen to build software,

In Time Tec provides software development services through four distinct models: a blend of onshore and offshore resources, onshore-only resource teams, offshore-only resource teams, and near-shore teams (offshore teams working within a specific time zone). The team size, delivery model, and technical domain are based on our partner's needs and it's the vested partnership between In Time Tec and our clients that create a powerful context in which we can deliver.

It takes a special kind of person to stand with us on our platform of abundance. Our mission and our way of being drives everything we do. We want people to live their fullest potential while serving our clients and communities. It delivers a wide range of technical security services, from reviewing existing processes and documentation, and assessing the security of current environments, to the design of new secure IT systems to meet modern security requirements. It helps organizations meet their cyber compliance obligations by assisting in the development of risk compliance reviews governance activities, policies, and action plans

.Intimetec Visionsoft Private Limited is a Private incorporated on 13 February 2009. It is classified as a non-govt company and is registered at the Registrar of Companies, Jaipur. Its authorized share capital is Rs. 50,000,000 and its paid-up capital is Rs. 37,730,720. It is involved in Software publishing, consultancy, and supply [Software publishing includes production, supply, and documentation of ready-made (non-customized) software, operating systems software, business & other applications software, and computer games software for all platforms. Consultancy includes providing the best solution in the form of custom software after analyzing the user's needs and problems. Custom software also includes made-to-order software based on orders from specific users. Also, included are writing of software of any kind following directives of the users; software maintenance and web-page.

Website	http:// www.intimetec.com
Industry	Software Development
Company size	500-1000 employees
Headquarters	Meridian, ID
Type	Private
Founded	2009
Specialties	Web Development, Mobile Development, Cloud Development, Salesforce Development, Embedded Development, Quality Assurance, Automated Testing, Technical Writing, DevOps, and Continuous Integration/Continuous Development

CHAPTER 2: WORKFLOW

2.1 TRAINING

Trainees will be expected to do self-learning and peer learning by going through the available content feedback and a weekly review(assessment) with mentors mechanism will be in place to help trainees during the training progress. Each trainee will have to work on a Final project covering everything that has been learned during the program.

Here, is the basic idea of weekly training courses. Each Week Trainees have to submit weekly and final assignments.



Figure 2.1: Moodle Course SDET

2.1.1 Week One

In week first, I have gone through C# basics and the OOPS concept.

Week-1(C# Topics)

- What is .NET Framework?
- Download and Install Visual Studio Code
- Data Types
- Enum
- Structure
- Variables operator
- Conditional Statements
- Arrays
- Class and Object
- Basic OOPs concepts(Inheritance, Polymorphism, Abstraction and Encapsulation)

 (Week 1) Basic .Net program

Figure 2.1.1 Week one Training

2.1.2 Second Week

Week-2(C# Topics)

- Collections (ArrayList, Stack, Queue and Hashtable)
- File Operations
- Stream
- Serialization/Deserialization
- Exception Handling



(Week 2) Write a program using advance .NET concepts



.NET advance concepts learning links

Figure 2.1.2 Second Week Training

2.1.3 Third Week

Week-3(Software testing basics)

•

Basics of Software testing

- What is software testing, why it is needed?
- Seven Fundamental Principles of Testing
- Software Testing life cycle Test Levels: unit testing, integration testing, system testing, UAT

Different types of testing

- Black Box, White Box and Grey Box testing
- Different type of testing: Functional/Nonfunctional Testing, usability Testing, alpha testing, beta testing, smoke testing, sanity testing.
- Static / Dynamic Testing
- Equivalence Partitioning & Boundary Value Analysis
- Severity and Priority

Bug reporting, test cases and first step to automation

- Bug reporting, Requirement traceability matrix Quality Control
- Need of Automation
- Different tools and technologies for test automation
- How to write Test case and sample templates for test cases

Figure 2.1.3 Third Week Training

2.1.4 Fourth Week

Understanding Rest APIs

- HTTP Protocol basics
- Media Type Formatters
- Authentication and Authorization
- API chaining
- Mocking
- API documentation

1. Introduction to REST API, SOAP
2. Understanding GET, POST, PUT, DELETE requests
3. Introduction to Nunit and Xunit

Introduction to the postman

4. Create postman collection for API's by all possible scenarios(Header, Body, query parameters)
5. Create API test using c#(No framework)
6. Request/Response models

RestSharp

- Introduction to RestSharp
 - Creating a framework in RestSharp(Basic framework)
-

Figure 2.1.4 Fourth Week training

2.1.5 Fifth Week

Week-5 (UI Testing(Selenium with Nunit))

- Selenium History(Selenium IDE, RC, WebDriver, Grid).
- Selenium WebElement Locators
- -References
 - NuGet packages
- All Selenium commands(e.g: sendkeys, click, clear etc.)
- Different type of wait in selenium
- Select Option from DropDown using Selenium Webdriver
- Accessing Table using Selenium Webdriver
- Keyboard & Mouse Event using Action Class
- Using Contains, Sibling, Ancestor to Find Element in Selenium



(Week 5) Automate below testcase



Learning Material



Selenium Youtube reference

Figure 2.1.5 Fifth Week Training

2.1.6 Sixth Week

Week-6

- Learn about Page Object Model implementation
- Project type
- Files in the project hierarchy
- Upload a File using Selenium Webdriver
- Alert & Popup handling in Selenium
- Failure screenshot
- command-line execution
- Test Reports



(Week-6) Automate below testcase



Reference link

Figure 2.1.6 Sixth Week Training

2.1.7 Final Week Assignment

Final week assignment was of two weeks in which the Final project covered everything that has been learned during the program.

2.2 HACKATHON

During the first week the company announced a internal hackathon with the aim to select the candidates for the direct deployment to project.

The hackathon was in 2 phases: -

- Phase 1- coding Round

In this round we must solve two coding problems on HackerRank around 35 candidates were selected out of 150 trainees in this round

- Phase 2- Development Round

The Second phase the was the development round in which we must choose our tech stack according to which problem statement was provided.

2.3 PROJECT DEPLOYMENT

After submitting my final project, I have assigned to truckstop project in and get an opportunity to work for live project and work in SDET domain.

2.3.1 Project Flow

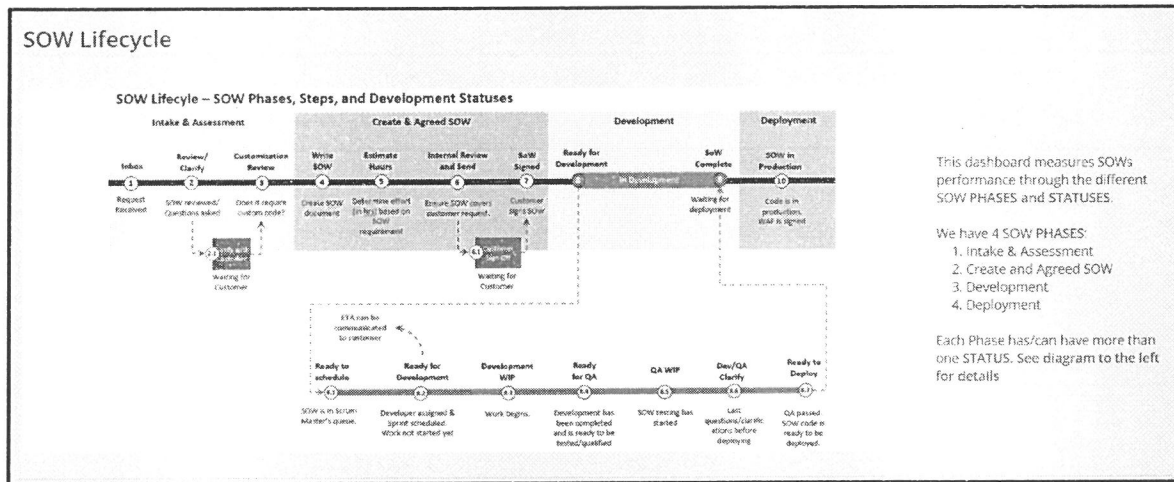


Figure 2.3.1: Hierarchy of workflow in truckstop

2.4 RESPONSIBILITIES AS A SDET

2.4.1 Project Documents: Knowledge of entire system start to end Know requirements and guidelines for the products.

2.4.2 Execute test cases: Setting up, maintaining, and performing test automation frameworks on multiple application platforms, such as Mobile, Desktop, Web, building test scenarios and acceptance tests. Create & manage bug reports and communicate with the team.

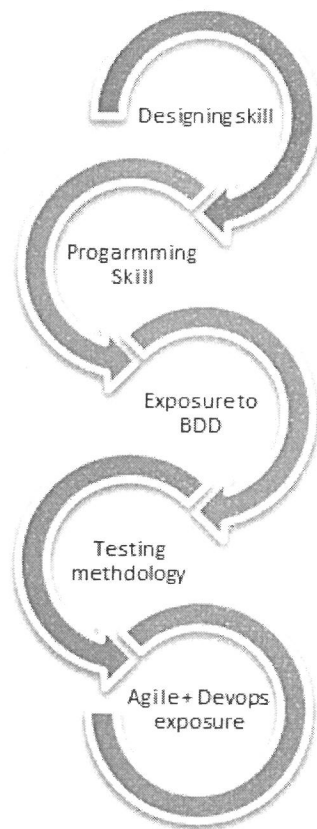


Figure: 2.4 Knowledge requirement of SDET

2.4.3 Interaction with different Services: An SDET job is very demanding especially during the release of code. A software tester must efficiently manage workload, have high productivity, time management skills. A typical project using behavior-driven development would begin with a conversation between the developers, managers and customer to form an overall picture of how a product is intended to work.

2.4.4 BDD Driven Development: BDD is a way for software teams to work that closes the gap between business people and technical people by: Encouraging collaboration across roles to build shared understanding of the problem to be solved Working in rapid, small iterations to increase feedback and the flow of value Producing system documentation that is automatically checked against the system's behaviour.

2.5 TOOLS AND TECHNOLOGIES

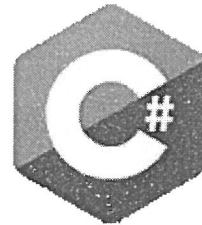
To fulfill the SDET duties, we are assisted with some tools and technologies which makes the work that we do possible and efficient. This section talks about the different tools and technologies that we use in the development of a whole feature cycle. The tools providing aid in similar fields are grouped together

2.5.1 Language and Technologies

This section talks about the language that is used for programming the features of the service and also the different distinct frameworks and libraries that are used for the production, management, and documentation of these features.

C#.Net

C# is a general-purpose, modern and object-oriented programming language pronounced as “C sharp”. It was developed by Microsoft led by Anders Hejlsberg and his team within the .Net initiative and was approved by the European Computer Manufacturers Association (ECMA) and International Standards Organization (ISO).



In this Project C# is used for writing test cases using selenium as tool. And to automate the test scripts in various browsers like Google Chrome, Firefox, Safari, Internet Explorer, and Opera on different operating systems such as Windows, Mac, Linux.

Java

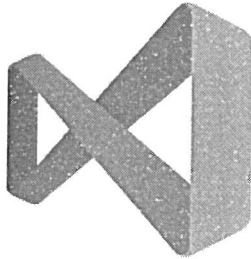
Java is Object Oriented. However, it is not considered as pure object-oriented Programming. JAVA was developed by James Gosling at Sun Microsystems, Inc in the year 1995, later acquired by Oracle Corporation.

In this Project JAVA is used for writing test cases using selenium as tool. And to automate the test scripts in various browsers like Google Chrome, Firefox, Safari, Internet Explorer, and Opera on different operating systems such as Windows, Mac, Linux.

2.5.2 Code Development

Visual Studio

An integrated development environment (IDE) is a feature-rich application that can be used for many aspects of software development. The Visual Studio IDE makes it easy to edit, debug, build, and publish your app.

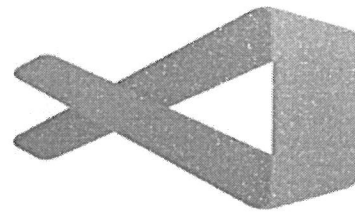


Over and above the standard editor and debugger that most IDEs provide, Visual Studio includes compilers, code completion tools, graphical designers, and many more features to enhance the software development process.

Visual Studio Code

Visual Studio Code, also commonly referred to as VS Code, is a source-code editor made by Microsoft for Windows, Linux and macOS.

Features include support for debugging, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Git.



Eclipse

Eclipse is an integrated development environment used in computer programming. It contains a base workspace and an extensible plug-in system for customizing the environment. It is the second-most-popular IDE for Java development.



2.5.3 Version Control

This section talks about the version control and the platform used for it. Here are the tools which helps in developing and modification of code on bigger scale while keeping the integrity of code intact and keeping the code secure.

Git

Git is a free and open source distributed version control system designed to handle everything from small to very large projects with speed and efficiency.

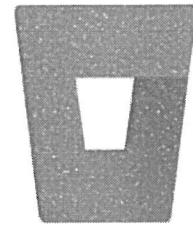
Git is easy to learn and has a tiny footprint with lightning fast performance. It outclasses SCM tools like Subversion, CVS, Perforce, and ClearCase with features like cheap local branching, convenient staging areas, and multiple workflows.



Git is used for tracking changes in any set of files, usually used for coordinating work among programmers collaboratively developing source code during software development. Its goals include speed, data integrity, and support for distributed, non-linear work

Bitbucket

Bitbucket is a Git-based source code repository hosting service owned by Atlassian. Bitbucket offers both commercial plans and free accounts with an unlimited number of private repositories. Bitbucket Cloud is hosted on Atlassian's servers and accessed via a URL. Bitbucket Cloud has an exclusive built-in continuous integration tool, Pipelines, that enables you to build, test and deploy from directly within Bitbucket. You can learn more about Pipelines features and capabilities here. However, there are some restricted functions in Atlassian Cloud apps.



In this project bitbucket is used for review code and Workflow control to enforce a project or team workflow. Pull requests with in-line commenting for collaboration on code review.

2.5.4 Automation Tool

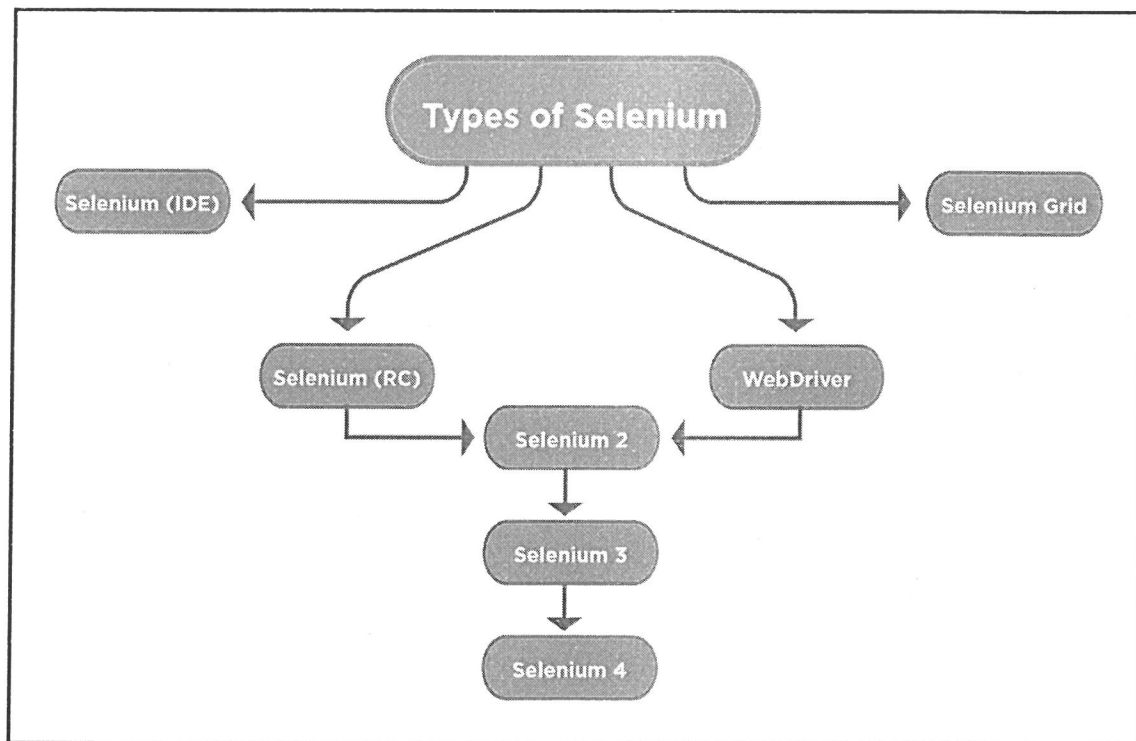
Selenium

Selenium is a free (open-source) automated testing framework used to validate web applications across different browsers and platforms.



You can use multiple programming languages like Java, C#, Python, etc to create Selenium Test Scripts. Testing done using the Selenium testing tool is usually referred to as Selenium Testing.

Selenium Software is not just a single tool but a suite of software, each piece catering to different Selenium QA testing needs of an organization.



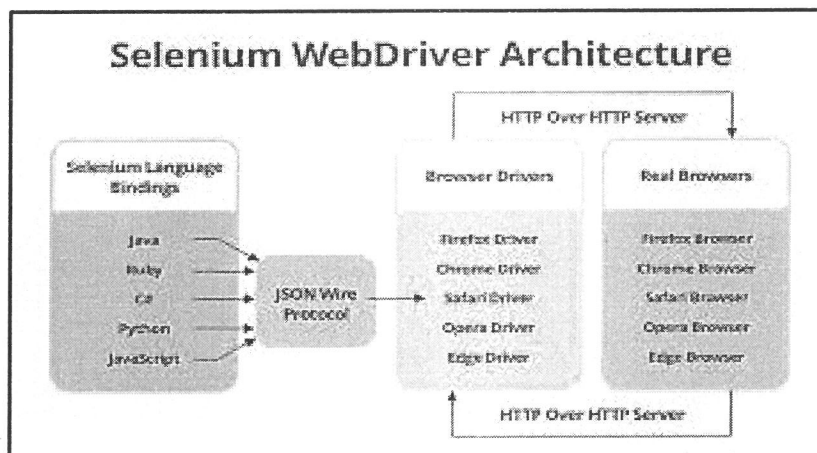
2.5.4 Types of selenium

Selenium IDE is an extension available for both Firefox and Chrome, which has the record and replay functionality available. **Selenium IDE** also now has the capability of exporting the code in various predefined languages. It also gives the ability to use one test case inside another.

Selenium GRID allows users to run tests on different machines, with different browsers and OS simultaneously, which gives the ability to run tests in parallel, as such saving a lot of time and resources of testing on several machines.

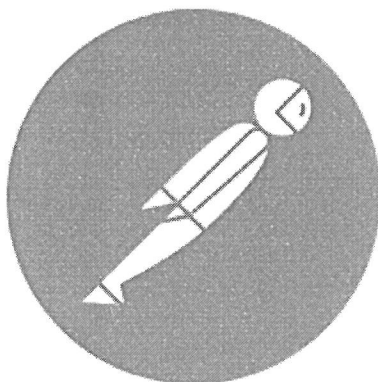
Selenium RC is a server that acts as a middle man between the user and the browser that needs to interact. RC uses Javascript to work with browsers while allowing the users to write code in the language of their choice. It was the main version of Selenium for some time. Selenium RC had issues with the *One Origin Policy* and deprecated in favor of WebDriver.

Selenium WebDriver is the most commonly used component of Selenium. WebDriver allows users to write custom code in their language of choice and interact with the browser of their choice, through browser-specific drivers. WebDriver works on the OS level and uses a Protocol called JSONWire Protocol to communicate with browsers.



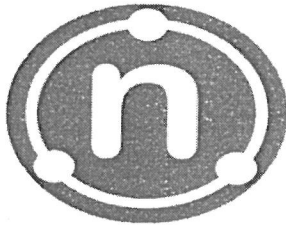
2.6 TESTING

Postman



Postman is an API client that makes it easy for developers to create, share, test and document APIs. This is done by allowing users to create and save simple and complex HTTP/s requests, as well as read their responses. The result - more efficient and less tedious work. Postman is very convenient when it comes to executing APIs. Once you've entered and saved them, you can simply use them over and over again, without having to remember the exact endpoint, headers, API keys, etc.

Nunit



NUnit is a unit-testing framework for all .Net languages. NUnit is Open Source software NUnit same as Junit in java.

CHAPTER 3: BEHAVIOUR DRIVEN DEVELOPMENT

3.1 BDD Design Strategy

Behavior Driven testing is an extension of TDD. Like in TDD in BDD also we write tests first and then add application code. Before diving into Gherkin, it is necessary to understand the importance and need of a common language across different domains of project. By different domains, By different domains I mean Clients, Developers, Testers, Business analysts and the Managerial team.

```
Scenario: Add two numbers
  Given a first number 3
  And a second number 4
  When the two numbers are added
  Then the result should be 7
```

```

namespace MathLibTests
{
    [Binding]
    public sealed class Steps
    {
        [Given(@"a first number (.*)")]
        public void GivenAFirstNumber(int p0)
        {
            ScenarioContext.Current.Pending();
        }

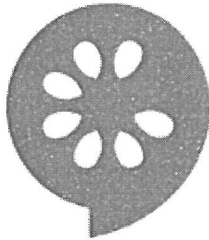
        [Given(@"a second number (.*)")]
        public void GivenASecondNumber(int p0)
        {
            ScenarioContext.Current.Pending();
        }

        [When(@"the two numbers are added")]
        public void WhenTheTwoNumbersAreAdded()
        {
            ScenarioContext.Current.Pending();
        }

        [Then(@"the result should be (.*)")]
        public void ThenTheResultShouldBe(int p0)
        {
            ScenarioContext.Current.Pending();
        }
    }
}

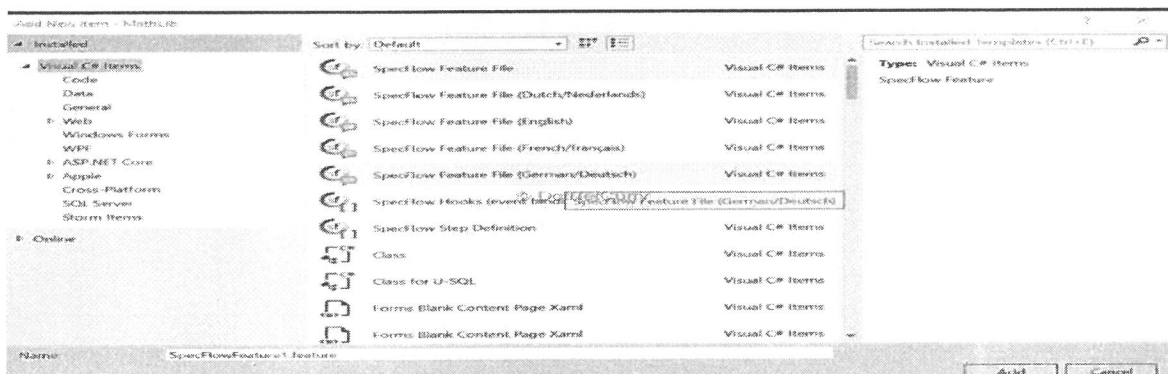
```

Cucumber



Cucumber is a testing framework which supports Behavior Driven Development (*BDD*). It lets us define application behavior in plain meaningful English text using a simple grammar defined by a language called Gherkin. Cucumber itself is written in Ruby, but it can be used to "test" code written in *Ruby* or other languages including but not limited to *Java*, *C#* and *Python*.

Specflow



This is called as Cucumber for.NET. Specflow is similar to Cucumber in so many aspects. In fact, this was developed by getting inspiration from the Cucumber.Specflow uses Gherkin formatted English text to describe user stories.Specflow is an Open source and even though it is inspired from the Cucumber, it has some advantages over Cucumber. With Visual Studio coming into the picture, a user gets hands on the VS Debugger which is useful in terms of adding breakpoints on Given/When/Then lines in the statements.

CHAPTER 4: CONSTRUCTION

Software testing is the process of verifying the correctness of software by considering all attributes and evaluating the implementation of software components in order to detect bugs, errors, or flaws. Readability, scalability, portability, reusability, and usability are all software attributes.

Software testing provides a stand-alone view and objectivity of the software while also ensuring its accuracy. It entails putting all parts through the appropriate procedures to ensure that they meet the set requirements. The method also provides information about the product's nature to the customer. The manual testing technique is followed to test the automobile portal.

The process of testing software without using any automation tool is termed as manual testing. There are three types of manual testing namely white box testing, black box testing and grey box testing. The manual testing is done using functional unit testing approach which is a sub type of black box testing. Functional testing emphasizes upon validation of the functionalities of the software by checking whether it is working as per the requirements specified. Each feature is tested by giving the input, determining the output and verifying the actual output with the expected output.

4.2 TEST SCENARIO

In software engineering, a test case is a specification of the inputs, execution conditions, testing procedure, and expected results that define a single test to be executed to achieve a particular software testing objective, such as to exercise a particular program path or to verify compliance with a specific requirement



figure 4.2: Test Case Passes

CHAPTER 5: CONCLUSION

At In Time Tec Vision Soft Pvt. Ltd., the Practice School- II opportunity provided a lot of knowledge in networking technologies. I can affirm that the professional experience and knowledge I acquired here would really assist my overall career. I have accomplished my internship learning lots of new tools and technologies.

Working in a professional setting, such as In Time Tec Vision Soft Pvt. Ltd., has also taught me valuable skills such as teamwork and basic professional work ethics. The mentors here are extremely helpful and supportive.

Moving on to the project work. My contributions to the project work at the company were highly appreciated by my mentors and my seniors. Working on a live project improved my knowledge and skillsets. During this internship period.

Lastly, I am very pleased to receive a full-time employment offer from IntimeTec for the role of Software Engineer.

REFERENCES

1. <https://moodle.intimetec.com/course/view.php?id=24#section-0>
2. <https://www.toolsqa.com/>
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4. <https://www.geeksforgeeks.org/csharp-programming-language/>
5. <https://docs.microsoft.com/en-us/dotnet/api/system.stackoverflowexception?view=net-6.0>



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Date: 26th May'22

TO WHOMSOEVER IT MAY CONCERN

Employee Name: Harsh Gauttam

Employee ID: ITTV/EMP/2739

Address: Plot no. 1 / 2, Kanakpura Industrial Area, Kanakpura. Sirsi Road, Jaipur-302034.

This is to certify that **Mr. Harsh Gauttam** is pursuing internship followed by employment with **In Time Tec Visionsoft Pvt. Ltd** from **21st Feb'22** at our **Jaipur** office located at **Plot no.1/2, Kanakpura Industrial Area, Kanakpura. Sirsi Road, Jaipur-302034.**

During his Internship period, he is entitled to a stipend of Rs. 15,000/- per month, other details are valid as per the offer letter.

Regards,

Neha Dubey

Sr. HR Associate

In Time Tec Visionsoft (p) Ltd.

Confidential

This is a Computer Generated Document. No Signature Required.

