IIIIIINFUSE

INTERNSHIP REPORT

Archita Upendra Samudra
2049

REPORT OF INTERNSHIP DONE AT INFUSE CONSULTING LTD.

Completed by
Archita Upendra Samudra
2049

For the partial fulfillment of
MCA Degree for Semester VI
Discipline of Computer Science and Technology,
Goa Business School,
Goa University

At
Infuse Consulting Ltd.
Suntek Kanaka Corporate Park, Patto Centre, Bambolim, Goa 403001

Under the guidance of
MR. SUBODH BORKAR
(Head of Product Development - useMango, Infuse Consulting Ltd.)

IIII INFUSE
c o n s u l t i n g
Excellence through Quality Assurance

1ᵗʰ June 2023

INTERNSHIP CERTIFICATE

This is to certify that Archita Upendra Samudra, Roll No. 2049, currently pursuing the 6th Semester of the MCA program in the Computer Science and Technology discipline at Goa Business School, Goa University, has been actively engaged as an intern with our organization since January 9th, 2023. During her internship, she has consistently displayed exemplary performance by successfully accomplishing assigned tasks and other related responsibilities.

Archita exhibits a strong sense of self-motivation and requires minimal supervision to effectively complete her assigned tasks. She has demonstrated remarkable aptitude for swiftly acquiring the required domain knowledge and mastering the necessary technologies. Her rapid learning pace has greatly contributed to the overall productivity and successful delivery of the team.

Yours Sincerely,

Subodh Borkar,
Head of Product Development - useMango

GOA UNIVERSITY

GOA BUSINESS SCHOOL

CERTIFICATE OF EVALUATION

This is to certify that Ms. ARCHITA UPENDRA SAMUDRA has successfully completed her internship at Infuse Consulting Ltd., Goa in partial fulfillment of the award of the degree in Master of Computer Application.

_____
Examiner 1

_____
Examiner 2

Place: Goa University
Date: 15/06/2023

_____
Dean, Goa Business School

Acknowledgement

INTERNSHIP REPORT

Archita Upendra Samudra
2049

REPORT OF INTERNSHIP DONE AT INFUSE CONSULTING LTD.

Completed by
Archita Upendra Samudra
2049

For the partial fulfillment of
MCA Degree for Semester VI
Discipline of Computer Science and Technology,
Goa Business School,
Goa University

At
Infuse Consulting Ltd.
Suntek Kanaka Corporate Park, Patto Centre, Bambolim, Goa 403001

Under the guidance of
MR. SUBODH BORKAR
(Head of Product Development - useMango, Infuse Consulting Ltd.)

IIIIII INFUSE
c o n s u l t i n g
Excellence through Quality Assurance

1ᵗʰ June 2023

INTERNSHIP CERTIFICATE

This is to certify that Archita Upendra Samudra, Roll No. 2049, currently pursuing the 6th Semester of the MCA program in the Computer Science and Technology discipline at Goa Business School, Goa University, has been actively engaged as an intern with our organization since January 9th, 2023. During her internship, she has consistently displayed exemplary performance by successfully accomplishing assigned tasks and other related responsibilities.

Archita exhibits a strong sense of self-motivation and requires minimal supervision to effectively complete her assigned tasks. She has demonstrated remarkable aptitude for swiftly acquiring the required domain knowledge and mastering the necessary technologies. Her rapid learning pace has greatly contributed to the overall productivity and successful delivery of the team.

Yours Sincerely,

Subodh Borkar,
Head of Product Development - useMango

Infuse Consulting India Private Limited
B 902, Teerth Towers, Sr. No. 28/2, Near Raj Hotel, Baner, Pune 411021
India Company Incorporated by Government of India, Ministry of Corporate Affairs under number U74999PN2018PTC179748
www.infuse.it

GOA UNIVERSITY

GOA BUSINESS SCHOOL

CERTIFICATE OF EVALUATION

This is to certify that Ms. ARCHITA UPENDRA SAMUDRA has successfully completed her internship at Infuse Consulting Ltd., Goa in partial fulfillment of the award of the degree in Master of Computer Application.

_____   _____
Examiner 1   Examiner 2

Place: Goa University   _____
Date: 15/06/2023   Dean, Goa Business School

Infuse Consulting Ltd.   Goa University

Acknowledgement

I had an excellent chance for learning as well as career development with my internship at Infuse Consulting Ltd., especially because I had so many outstanding leaders guiding me during this time. The internship would be incomplete if I did not express my gratitude and appreciation to everyone who made it possible.

I want to express my gratitude to Mr. Nalin Parbhu (CEO/CTO, Infuse Consulting Ltd.) for giving me an opportunity to work there.

I would like to express my sincere gratitude to Mr. Subodh Borkar (Head of Product Development - useMango, Infuse Consulting Ltd.), who served as my mentor and provided me with essential direction and assistance. I choose this moment to acknowledge his contribution gratefully.

I would like to express my deepest appreciation to Mr. Piyush Sharma (Senior Software Engineer, Infuse Consulting Ltd.), who, despite being extremely preoccupied with his obligations, made the time to listen to me, advise me, and keep me on the right track enabling me to complete my internship tasks.

I am greatly thankful to the entire faculty and staff at the MCA department of Goa University for their unwavering support and encouragement during the whole course of study.

My heartfelt regards to my family and friends for their persistent affection, solidarity, and motivation throughout this internship, which I will always remember.

In closing, I want to extend my gratitude to the Infuse family, especially my seniors Delroy Martins, Imtiyaz Khan, Vinay Prabhu, Rochelle Martins, Minaxi Patil, Joyrel Vaz, Onkar Parshekar and Preshly Fernandes who were always willing to lend a hand and offer advice. Additionally, I want to thank my internship coworkers for their backing and inspiration to explore and learn more throughout this time.

I perceive this opportunity as a big milestone in my career. I strive to put my best effort into using the knowledge and abilities I have obtained during this internship, and I will keep working as hard as I can.

- Archita Samudra

Table of Contents

Introduction

A brief summary of my full-time on-site internship with Infuse is provided in this report.

I started working with Infuse Consulting Ltd. on January 9th, 2023, as a Team Intern. This report includes all the pertinent details regarding the company, the projects I worked on, and the various duties I handled throughout my internship.

I will discuss the business, the work done here, the culture, etc. in the chapters that will come. Then, I will go into more detail about the projects I worked on, including a brief description of each project, the modules I constructed, and the tasks I finished in each module.

This report shows the knowledge I gained and the things I did as an intern to help the company. This will be a description of the knowledge I acquired through effectively accomplishing the tasks that were given to me.

Along with the timeframe of my internship, I will also go through the tools and technology employed. Finally, I will discuss my experience and how it has aided my development on both a personal and professional level.

Company profile

About Infuse Consulting

Infuse Consulting is an international company and leverages strategic consulting partners as well as its technology partners to deliver the best solution.

Recognized as the leading provider of Test Automation and Lifecycle Transformation Services for successful, ambitious organizations, Infuse Consulting is headquartered in the UK and since 2002 has helped more than 500 businesses get the most out of their Software Delivery Teams.

Infuse Consulting works hard in the fields of Test Automation and DevOps to reliably deliver several clear benefits for organizations seeking assistance with their Software Delivery.

Infuse is a Gold Partner of Micro Focus and Oracle, and has a partner network including CA, Microsoft, AWS and SAP.

Infuse prides itself on its ability to provide innovative solutions, especially in test automation. They have been automating mobile testing since 2003 and developed a functional scriptless test automation tool, useMango™.

What is useMango?

What is useMango?
- Easy to use Test Automation Tool.
- Designed so non-technical individuals can build robust automation scripts.
- Flexible framework functionality that can be adapted to match your testing ability.
- Avoids the costs of engineering your own high maintenance frameworks.
- You can use useMango to create automated tests for web and packaged applications such as Oracle and SAP.

What are the key benefits of using useMango?
- Component based test building removes the need for technical developers.
- Reduce months of manual testing into minutes.
- Fast ROI, allowing you to focus on business-critical issues.
- Increase confidence in your continuous delivery output with automated end to end testing.
- Enable Continuous Delivery by adding automated end-to-end testing of your build pipelines

About useMango

With useMango tests are quicker and more efficient, saving businesses time and money. With useMango you can build a test by selecting from 200+ pre-built components, just add data and it is ready to run. If you have problems with forms, or complicated pages useMango provides an easy solution, you can activate the useMango scanner to scan your application, with a single click, this will identify all the testable objects on any UI and create a new component. If you need to create a custom component, useMango provides you the means to do so. A software tester can complement the useMango generated scripts with custom code, using in-built frameworks made with Ruby, VBScript, Python etc.

Other Key Features
- Works on modern web & desktop applications.
- Codeless test tool & framework.
- Extended to support Package Applications SAP (GUI and Web Variants) Oracle E-Business, Oracle Fusion.
- Ensure application quality with fast and frequent testing.
- Test processes from end-to-end across multiple platforms and technologies.
- Business users and manual testers can automate tests without coding.
- Easily keep hundreds of tests up to date as your application changes overtime.
- Expand the scope of your testing with data-driven tests.
- Meet exceptional automation requirements with simple scripted components.
- A scalable cloud-based test service which meets your growing needs.
- Get automated test outcomes directly in your continuous integration pipelines.
- Integrates with your modern continuous integration tooling.

Product – useMango

<u>Overview</u>

UseMango is a windows application which has several different architectural structures, from the server to website and common libraries that contain shared code. UseMango is maintained and developed by the Infuse team and has customers worldwide.

<u>Tools and Technologies</u>

- C#
- .NET framework
- WPF
- Ruby
- Python
- JavaScript
- React JS
- AWS
- Postman
- Git
- MongoDB

My Contributions

During my internship, I made significant contributions to the company by actively participating in various tasks and projects. The early stage of the internship was about learning about the useMango product, various technologies used in the company and getting accustomed to the product domain.

The internship started off with extensive training sessions, wherein I acquired essential skills and knowledge relevant to the company's operations. I diligently absorbed the training material and actively engaged with trainers and mentors to enhance my understanding. This enabled me to quickly grasp concepts and adapt to the company's work environment.

I was initially shown the useMango app as part of training, instructed to explore the application and its features, write tests, execute the tests, and check the results, and then a review session was held where everything was shared among the other interns, and comments were provided by the mentor. Following that, I had the opportunity to gain practical experience building clean, optimized, in accordance with coding standards, and testable code in Ruby and Python. A short overview of HTML, CSS, and JS was given. Using Selenium, I also gained knowledge of automation. I had good learning about version control using Git. Jenkins-based CI/CD pipelines and Docker-based containerization were also covered as well. Lessons on web services utilizing the Python framework were also provided, including ones on Postman API testing. Finally, I gained a basic understanding of AWS services. There were exercises to support each training component. I learned a lot from these activities, and thanks to the mentors' feedback on them, I was able to improvise as needed. A one-week exercise that involved creating a full-stack web project using the tools and technologies we had learned during the training marked the conclusion of the training.

After two months of training, all interns were supposed to answer ISTQB Foundation Level Exam for ISTQB CTFL Certification. The ISTQB Foundation Level Certification (CTFL) exam is required for everyone who tests software full-time or part-time, including software testers, QA analysts, product owners, developers, and automation engineers. While preparing for the exam, I got to learn in-depth about different phases of SDLC and various types of testing. My mentors assisted me in my preparations which helped me achieve my certification and also enhanced my knowledge regarding the same.

During my internship, I had the opportunity to be part of the research team. The team aimed to identify solutions that will allow to integrate self-healing feature in useMango app. Self-healing in automated testing is a solution to resolve key issues that arises due to changes to the properties (locators) of the web elements, such as Name, ID, XPath, and CSS. When these attributes change or break, test scripts fail, leading to the collapse of the complete test case. With self-healing (replacing incorrect locators with the appropriate ones) ability, useMango app will be able to solve this issue regardless of the changes made to the website UI. I contributed in the findings that showcased how our competitors have incorporated self-healing into their products and their underlying working.

After three months of internship I was a member of the customer support team. At first, I was expected to do self-learning about C# and WPF (Windows Presentation Foundation – UI framework used for building desktop applications).

After a week, I received a task related to feature development. The feature involved creating a marketing tool called ROI (Return on Investment) Calculator for useMango. This tool determines the total cost saving and work days saved when a client chooses to use useMango app. Based on client requirements, this tool will show the results together with the necessary visualizations. The research was the first step in developing the module. I did some study on how this feature is provided by our rivals. I gathered the needs in accordance with the findings and received approval from the product owner for them. Then I began developing the formulas required to determine the ROI. In addition, I used React.js and other visualization libraries to create the front end for this module based on all the demands and recommendations made by the product owner and other seniors. I deployed the module in a development environment once it was built. Here, I gained firsthand knowledge of Wordpress. I was also in charge of accurately recording every aspect of the module's development.

I also had the wonderful opportunity to collaborate with the development team. I was a part of the team here that was responsible for improving the useMango app's scalability. I worked to pinpoint the scalability issues useMango is now experiencing. I also offered some suggestions for ways to make useMango more user-friendly and scalable. In addition to all of this, I really enjoyed working with my seniors and learning about their ways of operating.

In addition to this, I tested the error fixes produced by my senior and fellow coworkers. Here, I had to create test plans and execute tests. For future reference, the test results were documented.
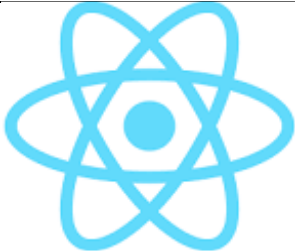
I was now being diverted to a client project. First, the client's business processes and my obligations for the assigned project were explained to me. The test leads then gave me the appropriate training for Data Migration and ETL testing. I was given reading material to use as a resource during the training. I also learned how to write SQL scripts that are required for testing. Later, I received a brief explanation of how testing operates in client's working environment. My goal is to put out my best effort in a way that benefits the client and the organization.
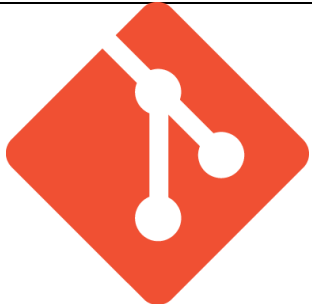
Last but not least, I took part in a three-day training course on Infuse Functional Testing Management. I gained an understanding of the guidelines and procedures the organization uses for functional testing through this session. Additionally, I was able to learn about the project management, consultancy skills and testing standards that must be adhered to.

Overall, my contributions during the internship encompassed training, module development, testing, and support to the sprint team. Through my dedication, problem-solving skills, attention to detail, and willingness to assist others, I made a tangible impact on the company's projects and demonstrated my potential as a valuable asset to the team.

Tools and Technologies Used

	C# C# is a general-purpose, modern and object-oriented programming language. It was developed by Microsoft led by Anders Hejlsberg and his team within the .Net initiative.
	.NET framework The .NET Framework is a software framework developed by Microsoft that runs primarily on Microsoft Windows. It includes a large class library called Framework Class Library and provides language interoperability across several programming languages.
	WPF Windows Presentation Foundation is a UI framework that creates desktop client applications. WPF uses the Extensible Application Markup Language (XAML) to provide a declarative model for application programming.
	Ruby Ruby is an interpreted, high-level, general-purpose programming language. It was designed and developed in the mid-1990s by Yukihiro "Matz" Matsumoto in Japan.
	Python Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its built-in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting language.

	HTML5 HTML5 is a markup language used for structuring and presenting content on the World Wide Web.
	CSS3 Cascading Style Sheets (CSS) is a style sheet language used for describing the look and formatting of a document written in a markup language.
	JavaScript JavaScript is a lightweight, interpreted, object-oriented language with first-class functions, and is best known as the scripting language for Web pages, but it's used in many non-browser environments as well.
	React JS React is a free and open-source front-end JavaScript library for building user interfaces based on UI components. It is maintained by Meta (formerly Facebook). Although React is a library, it is widely used in web development. React makes it painless to create interactive UIs.
	Jenkins Jenkins is a self-contained, open source automation server which can be used to automate all sorts of tasks related to building, testing, and delivering or deploying software.
	TeamCity TeamCity is a general-purpose CI/CD software platform that allows for flexible workflows, collaboration and development practices.

	Docker Docker is a software platform that allows you to build, test, and deploy applications quickly. Docker packages software into standardized units called containers that have everything the software needs to run including libraries, system tools, code, and runtime.
	AWS Amazon Web Services is a subsidiary of Amazon providing on-demand cloud computing platforms and APIs to individuals, companies, and governments, on a metered pay-as-you-go basis.
	Postman Postman is an API platform for building and using APIs. Postman simplifies each step of the API lifecycle and streamlines collaboration so you can create better APIs—faster
	Git Git is a distributed version-control system for tracking changes in source code during software development. It is designed for coordinating work among programmers, but it can be used to track changes in any set of files.
	MongoDB MongoDB is a non-relational document database that provides support for JSON-like storage. The MongoDB database has a flexible data model that enables you to store unstructured data.
	Selenium Selenium is an umbrella project for a range of tools and libraries that enable and support the automation of web browsers. It provides extensions to emulate user interaction with browsers, a distribution server for scaling browser allocation, and the infrastructure for implementations of the W3C WebDriver specification that lets you write interchangeable code for all major web browsers.

	Flask Flask is a web framework, it's a Python module that lets you develop web applications easily. It's has a small and easy-to-extend core: it's a micro-framework that doesn't include an ORM (Object Relational Manager) or such features. It does have many cool features like url routing, template engine. It is a WSGI web app framework.
	Wordpress Wordpress is a content management system (CMS) that allows you to host and build websites. Wordpress contains plugin architecture and a template system, so you can customize any website to fit your business
	Visual Studio Code Visual Studio Code is a lightweight but powerful source code editor which runs on your desktop and is available for Windows, macOS and Linux. It comes with built-in support for JavaScript, TypeScript and Node.js and has a rich ecosystem of extensions for other languages and runtimes (such as C++, C#, Java, Python, PHP, Go, .NET).
	Visual Studio Community A fully-featured, extensible, free IDE for creating modern applications for Android, iOS, Windows, as well as web applications and cloud services
	SQL Server SQL Server is a relational database management system (RDBMS) developed and marketed by Microsoft. As a database server, the primary function of the SQL Server is to store and retrieve data used by other applications.

Internship Timeline

January 2023
- Week 1
    - Formal Orientation and onboarding process
    - Introduction to useMango
    - Demo of Oracle EBS, SAP & Mobile
    - Creating tests with useMango - utilizing all features of useMango in depth including composites, scripted components and test flow controls

- Week 2
    - Programming with Ruby
    - HTML, JS & DOM
    - Element Identification
    - Introduction to Automation
    - Selenium
    - Git & source code management
    - Test Plan creation

- Week 3
    - Containerization
    - Tutorial on Docker
    - Workshop: Build a basic containerized testing framework for a practice website
    - CI & CD pipelines (with Jenkins)

February 2023
- Week 4
    - CI/CD Workshop
    - Programming in Python
    - Introduction to WebService architecture
    - Python WebService Framework
    - Workshop: WebService Unit Testing + API Testing

- Week 5
    - Workshop: Involves using the skills learned so far to build a Full Stack Web Application.

- Week 6
    - Workshop review + fixes
    - Introduction to AWS Services

- Week 7
    - Workshop: Project manual deployment to AWS
    - Infrastructure as Code
    - Workshop: Project automated deployment on AWS

March 2023
- Week 8
    - Demo of the project to the Head of Training

- Week 9
    - Training for ISTQB
    - ISTQB FTL Certification Exam

- Week 10
    - Research on Self-Healing
    - Learning C#, WPF

- Week 11
    - Assignment of task related to Feature development – ROI Calculator for useMango
    - Research on ROI tools offered by various other testing based organizations

April 2023
- Week 12
    - Discussion with Product Owner and Product Head about the research done
    - Requirement Analysis
    - Understanding the working of ROI tool as referred by the Product Owner

- Week 13
    - Determining the formulations and assumptions to be made for the ROI Calculator to be developed
    - Building UI

- Week 14
    - Developed the first version of ROI Calculator
    - Deploy on AWS S3 bucket and generate static website link through AWS cloudfront

- Week 15
    - Changing the UI as per useMango theme
    - Research on ways of how to incorporate module built into Wordpress
    - Demo of the calculator to Product Head
    - Changing the formulations and assumptions as per the suggestions given

May 2023
- Week 16
  - Document the formulations and assumptions made
  - Incorporating ROI Calculator to Wordpress dev environment
  - Improvising formulas and fixing minor bugs in code
  - Give demo of the latest version of ROI Calculator to Product Owner
  - Document the latest changes

- Week 17
  - Research and analysis on Scalability of useMango
  - Testing bug fixes

- Week 18
  - Introduction to client project
  - Training on Data Migration and ETL testing
  - Brushing up SQL basics

- Week 19
  - Going through the resource materials given
  - Learning to write SQL Scripts

June 2023
- Week 20
  - Training on Project Management and Consulting

- Week 21
  - Writing QA DB Scripts based on Mapping Document

My Reflections / Experiences of Internship

My internship at Infuse Consulting Ltd. was a transformative experience that significantly contributed to my professional growth. It provided a platform to apply my academic knowledge and gain practical insights into the industry. Working alongside experienced professionals, I honed my technical abilities, communication skills, and problem-solving capabilities. The internship also exposed me to the industry's practices, trends, and challenges, fostering a deeper understanding of project management, teamwork, and effective communication.

The work culture at the company was exceptional, characterized by a strong emphasis on teamwork and shared goals. Colleagues were always willing to lend a helping hand and collaborate on projects. Whether it was seeking advice or sharing ideas, I found my colleagues to be approachable and supportive. This created a sense of camaraderie within the team and made it easier to overcome challenges and achieve collective success.

Furthermore, the company nurtured a culture of continuous learning and professional growth. Senior professionals were not only knowledgeable in their respective fields but also eager to share their expertise with interns like myself. They provided guidance, mentorship, and valuable insights, helping me navigate through complex tasks and offering opportunities for skill development.

Overall, my internship experience was instrumental in shaping my professional journey. It enhanced my skills, and equipped me with the confidence and knowledge necessary to excel in my future endeavors. I am grateful for the experience and excited to leverage the lessons learned and skills acquired to make meaningful contributions in this organization.

References

- https://docs.aws.amazon.com/
- https://www.python.org/doc/
- https://docs.microsoft.com/en-us/dotnet/csharp/
- https://docs.microsoft.com/en-us/dotnet/desktop/wpf/
- https://www.ruby-lang.org/en/documentation/
- https://docs.docker.com/
- http://docs.usemango.co.uk/
- https://docs.github.com/en
- https://legacy.reactjs.org/docs/getting-started.html
- https://git-scm.com/doc
- https://icedq.com/etl-testing