



# INTERNSHIP REPORT

Preshly Fernandes

1911

# **REPORT OF INTERNSHIP DONE AT INFUSE CONSULTING**

SUBMITTED BY

**PRESHLY FERNANDES**

**1911**

UNDER THE GUIDANCE OF

**MR. SUBODH BORKAR**

(Head of Product Development, useMango, Infuse Consulting)

6<sup>th</sup> June 2022

**INTERNSHIP CERTIFICATE**

This is to certify that Preshly Fernandes, Roll. No. 1911, studying in 6<sup>th</sup> Semester Goa University MCA department, is working as an intern with us from 10<sup>th</sup> January 2022 and has successfully completed the various tasks related to feature development, bug fixing, etc. assigned to him during the internship period.

Preshly is a self learner and needs minimal supervision to complete his tasks, He has learned the product domain knowledge and required technologies at a fast pace and has contributed well towards the team delivery.

Yours Sincerely,

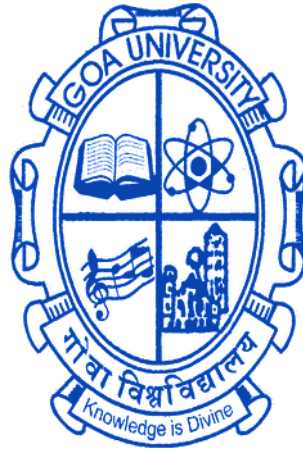


Subodh Borkar,  
Head of Product Development - useMango

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# GOA UNIVERSITY



## GOA BUSINESS SCHOOL

### CERTIFICATE OF EVALUATION

This is to certify that Mr. Preshly Fernandes has been evaluated for the project work titled “**Report of Internship done at Infuse Consulting**” in partial fulfilment for the award of the degree in Master of Computer Application.

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Examiner 1

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Examiner 2

Place: Goa University

Date: 11<sup>th</sup> June 2022

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Dean, Goa Business School

## Acknowledgement

The internship opportunity I had with Infuse was a great chance for learning and professional development, especially to have so many wonderful people leading me throughout this period. The internship wouldn't be complete without expressing my gratitude and appreciation to all the people who made it possible.

I would like to thank Mr. Nalin Parbhu (CEO/CTO, Infuse Consulting) for giving me the opportunity to intern at Infuse.

My sincerest gratitude to Mr. Subodh Borkar (Head of Product Development useMango, Infuse Consulting) for being my mentor and giving me necessary advice and guidance. I choose this moment to acknowledge his contribution gratefully.

My great appreciation to Mr. Piyush Sharma (Product Engineer, Infuse Consulting) who in-spite of being extraordinarily busy with his duties, took time out to hear, guide and keep me on the correct path and allowing me to carry out my tasks during the internship.

I thank all the faculty and staff at the MCA, Goa University for their constant encouragement and support during the entire course work.

I would like to thank my family and friends for all the love, support and encouragement they provided me during this internship which will never be forgotten.

Finally, I would like to express my gratitude towards the Infuse family, especially my seniors Delroy Martins, Imtiyaz Khan, Vinay Prabhu, Joyrel Vaz who were always ready to help me and guide me. Also, I would like to thank my internship colleagues Rochelle Martins, Minaxi Patil, Onkar Parshekar for helping me to learn new things and always supporting me during this period.

I perceive this opportunity as a big milestone in my career development. I will strive to use gained skills and knowledge in the best possible way, and I will continue to work on their improvement.

- Preshly Fernandes

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# Introduction

This report is a short description of my full-time on-site internship at Infuse.

I joined as an Intern at Infuse Consulting on 10<sup>th</sup> January 2022 and have been here since then. This report contains necessary information about the organization, the projects I worked on and the other tasks I completed in this internship period.

In the chapters that will follow, I will talk about the company, the work here, the culture, etc. Then, I shall elaborate on the projects I worked on, a brief information about the projects, the modules I built and the tasks I completed in those modules.

This report highlights my learning experience and my contributions to the organization as an intern. This will describe the knowledge that I gained by successfully completing the tasks that were assigned to me.

I'll also discuss the tools and technologies that were used, as well as the timeframe for my internship. Finally, I'll talk about my experience and how it has helped me grow both personally and professionally.

## 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?

- 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 over time.
- 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

### Overview

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.

### Tools and Technologies

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

## My Contributions

The early stage of the internship was about learning about the useMango product, various technologies used in the company and getting accustomed to the domain of the product. The first few weeks were a training period, where we had to learn about various topics. Task was assigned to explore the useMango app, to explore its features, write tests, execute the tests, view the results and a review session wherein all that was learnt was shared among other interns and feedback was given by the mentor.

The next task that was assigned to me was to write a lambda function in C# which will find the latest driver version of the given browser. The same function was then deployed on AWS Lambda and then tested on the lambda test console. Also, the code for the same was then pushed to GitHub, this was done to give exposure of using git and its tools.

I also learnt about various tools and technologies during the initial period. The interns were given various topics for self-learning. The topics that were assigned to me are SOLID principles, Log framework and Serilog, Docker, Windows Presentation Foundation (WPF) and Model-View-View-Model (MVVM). For the topics we had to prepare a presentation and share whatever that was learnt with other interns during the group-discussion session. Also, training sessions were conducted by the seniors on the topics React and AWS cloud formation templates. We were also part of one of the sprints during this training period, which included a walkthrough about the working of the sprints and other details were provided. It was a hard time for all as the sprint was the last one for Mr. James Johnson (Product Manager, Infuse Consulting).

Then finally the time came to work on the product features and solve some bugs. The interns were included in the sprint. From here on I worked on various features and bugs of the useMango product. The main features that I worked on are in the useMango app, server, client, framework, install, common and report service repositories.

The first task was to solve bugs. I was teamed up with another intern for pair-programming and we worked on a bug for showing a message pop up when deleting a used parameter in a test in useMango. The next task was to change the message that was displayed when making a composite component in the test.

During the next sprint, we were allowed to follow pair-programming. We were assigned a story to be developed for the app. The story was to enable the user to resend verification email via the app, if the email is not verified. The story had two parts, UI/UX design and backend service. My partner worked on the UI task, and I worked on the backend task, wherein a request was sent to the Cognito Identity Service on AWS which would send the resend verification email to the user. The story had a trickier part, where the Cognito would require the access token to send the verification email, but with the help of the seniors we were able to solve the issue. I also worked on a bug during this sprint, as nothing was loading when the search text was cleared from the search box in the component selector window.

There were also demos during the sprints by seniors on various use of useMango in testing different frameworks such as SAP Tests, Visual Test for HTML Canvas and SITS, and Oracle EBS Tests and Web Tests Related Service Requests.

In the new sprint, we had to work individually. For the story from the previous sprint, I had to make changes as per the PR comments, to follow the standardized way in writing the code. Then I was assigned to resolve a bug, the Chrome driver was not updating when the useMango was launched and the user was not able to run the tests in the app. After a lot of debugging and help from teammates and seniors, I was able to update the script for updating the drivers in Python. During this period, I learnt a lot about EC2 instances on AWS, PowerShell commands and working of registry on Windows systems.

In the next sprint, I had to solve the bug like chrome driver not updating. But in this case, it was for the Edge driver. Also, I wrote a general script that would work for both the Chrome and Edge drivers. Much of the effort went in refactoring the code, which had to work for the use case. There were also changes in the useMango framework repository for the Edge driver name was changed to the recent one. The SOLID principles which I had learnt and overloading principles in OOPs were helpful for this bug.

The next sprint came with a lot of work to be done. It was bug fixes. The first was to change the component titles in the app as they were not standard in all the places. The second was the main thing. The resend verification email that I had worked on was not working for the user in the UK, especially those who were testing this feature. The reason behind this was Cognito required credentials for communication, which were present on the developer's system, but on those of the testing team. So, there was work around for this. I made changes in the useMango app, server and client to get this feature working. During this process I learnt about

writing API and unit tests for the same on the server, testing the API using Postman and working with messages in C# to communicate between two classes.

The next sprint was about bug fixes and testing. I solved one bug, to show animation when adding a first step to the test. Then in the testing part I was teamed up with my colleague, to test the useMango application website based on the test plan.

The next sprint went on in developing APIs for the component categorization on the server. There was a lot of learning for this story. I learnt a lot about APIs, unit tests, API tests, MongoDB and getting database dump from EC2 and Postman. In this sprint one of the main features of useMango, Python release, was moved to production. There was a lot of testing taking place so that the user does not face any issues while working with useMango. I was able to reproduce one bug while testing, the execution pop-up freezing issue while running the test on the app. I also worked on one bug on report service, where a wrong test output result was displayed on the test results page.

## 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.



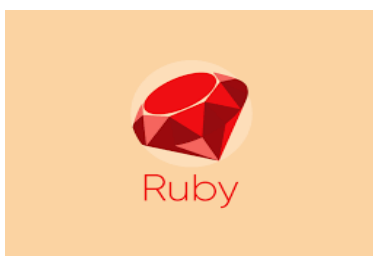
### .NET Framework

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.



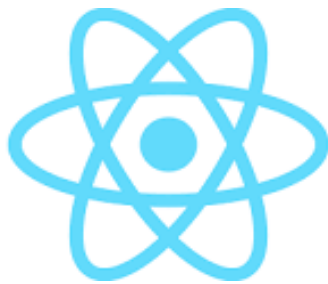
## Python

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.



## 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.



## 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.

## Project timeline/Project diary

January 2022

- Week 1
  - Formal Orientation and onboarding process.
  - Introduction to useMango.
  - Exploring features of useMango.
  - Automated a test using the product.
  - Environment and tools set up for development.
- Week 2
  - Introduction to AWS
  - Task to write lambda function to get latest browser version in C#.
  - Deploy the function to AWS lambda and test.
  - Push the code to GitHub
  - Part of sprint review meeting
  - New topic to learn
    - SOLID principles
- Week 3
  - Continued to learn SOLID principles and its presentation
  - React tutorial by senior
  - Practise React

February 2022

- Week 4
  - Group discussion and presentations
    - 1) ASP .Net Core
    - 2) SOLID principles
    - 3) Entity Framework
    - 4) Dependency Injection
  - New topic to learn
    - Log Framework in .NET, Serilog
  - Cloud Templates tutorial by senior

- Week 5
  - Prepare presentation on Serilog
  - New topic to learn  
Docker
  - Build test API  
Connect lambda function to MongoDB Atlas and deploy to AWS lambda
- Week 6
  - Preparing presentation on Docker
  - New topics to learn  
WPF  
MVVM
- Week 7
  - Inclusion in the sprint
  - Bug fixes in useMango app

March 2022

- Week 8
  - Bug fixes in app
  - Demo On SAP Tests & DMU Environment by senior
- Week 9
  - New story  
Resend verification email
  - Introduction to Visual Test for HTML Canvas and SITS by senior
  - Demo on Oracle EBS Tests & Web Tests Related Service Requests by senior
- Week 10
  - Continued working on resend verification email story
  - Bug fixes in app

- Week 11
  - Work on PR comments with the Resend verification email story
  - Bug fixes in app
  - Bugs on drivers not updating
- Week 12
  - Bug fixes in app

## April 2022

- Week 13
  - Bug fixes in app
- Week 14
  - Bug fixes in app
  - App, Server, Client changes for resend verification email.
- Week 15
  - Bug fixes in app
- Week 16
  - Bug fixes in app
  - Unit test for server API

## May 2022

- Week 17
  - Bug fixes
  - Test useMango app website based on test plan
- Week 18
  - New story
    - Component Category APIs

- Week 19
  - Continued working on Component Category API story
  - Unit test and API test for the same APIs
- Week 20
  - Continued working on changes for component category API story

June 2022

- Week 21
  - Continued working on changes for component category API story
  - Python release testing and bug fixes
  - Bug fixes on report service

## My Reflections / Experiences of Internship

My Internship at Infuse Consulting has been a wonderful experience. Facing new challenges every day is a norm here at Infuse. An undying hunger to learn more is something that is cultivated in the employees here. Being in industry and working on a product helped me a lot to learn and gain experience.

At Infuse, I never felt alone as I was provided freedom to interact, consult, seek help and guidance, etc. from any colleagues. I got to learn a lot about software, clean code architecture, writing better code and a lot of other things during the internship. Trying out new stuff and getting it implemented in the product without even knowing about it, is what makes it possible to try out and learn new things every day.

Overall, I'm very happy to be part of Infuse and learning a lot of new things. My best of wishes to everyone here.

## References

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