



Online Travels Agency Testing Report

By

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Supervised By

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Assistant Professor

This project report has been submitted in fulfilment of the requirements for the

degree of Bachelor of Science in Software Engineering

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Prime Tech Solutions LTD.

Online Travels Agency Testing Report

January 1, 2024 – July 31, 2024

By

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ID: 161-35-1532

An internship report submitted in partial fulfillment of the requirement for the degree of Bachelor of Science in Software Engineering

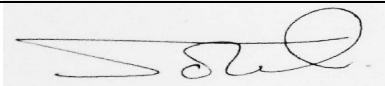


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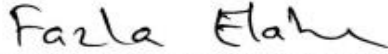
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APPROVAL

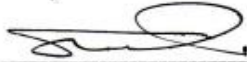
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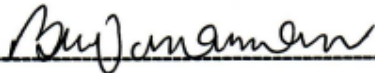
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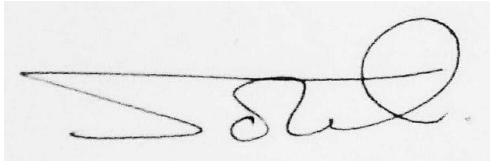


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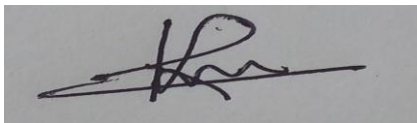
SUPERVISOR'S DECLARATION

I hereby declare that this paper has been done by me under the supervision of Mr. Md. Khaled shohel, Assistant Professor, Department of Software Engineering, Daffodil International University. I also declare that neither this paper nor any part of this paper has been submitted elsewhere for the award of any degree or diploma.



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STUDENT'S DECLARATION

I hereby declare that the work in this project is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Daffodil International University or any other institution.



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Department of Software Engineering,

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Online Travel Agency Testing Report

Zakaria Khan

Project submitted in fulfillment of the requirements
for the award of the degree of
Bachelor of Science/Master of Science

Department of Software Engineering

DAFFODIL INTERNATIONAL UNIVERSITY

Letter of Transmittal

I am pleased to present my internship report. The report allowed me to experience modern technology and techniques that ensure a forward step in developing my career.

In this report, I tried to summarize what I have done and experienced during my internship as an Intern SQA Engineer in Tour Project, a Prime Tech Solutions LTD project. Overall, my internship experience has been excellent this semester. As an Intern SQA Engineer, I've gained firsthand experience with industrial development of software and maintenance. Additionally, I have also had a considerable amount of professional interaction on multiple levels: helping, advising, and providing feedback. My supervisor was open-minded and allowed me to interact friendly. The report will explore the different aspects of IT development.

I am very content to take part in this internship program. I would cordially thank you for giving me the chance to do this internship report.

Yours sincerely,

Zakaria Khan

ID: 161-35-1532

B.Sc. In Software Engineering

Daffodil International University

ACKNOWLEDGEMENT

First and foremost, I would like to express my heartfelt gratitude to Almighty God for His blessings and guidance, which enabled me to complete my internship report on time.

I am deeply thankful to the Faculty of Science and Information Technology for incorporating the internship credit into the graduation program curriculum, providing me with the opportunity to gain firsthand experience in the industrial sector and apply my knowledge in a real-world setting. I also appreciate the efforts of the **Faculty of Science and Information Technology, Honorable Head Sir Imran Mahmud, and my Supervisor Md. Khaled Sohel**, for facilitating the chance to choose an organization aligned with my interests and successfully complete my internship there.

I would like to extend my sincere thanks to the **Tour Project Team (OTA)** for their unwavering support, constructive supervision, and valuable advice, which inspired and motivated me throughout my internship.

I am particularly proud and grateful to have been under the supervision of the Tour Project team and to have received direct guidance from **Imtiaz Murshed, Project Manager at Prime Tech Solutions LTD**. The daily reporting, coupled with both emotional and professional support, significantly enhanced my overall internship experience.

Furthermore, I am grateful to the employees of the Tour Project team for their tremendous support, both in client-facing tasks and overcoming technical challenges. I would also like to thank all team members who assisted me with preparing this report and other related documentation, offering advice and help whenever needed.

Executive Summary

Internship reports highlight the key tasks carried out by the author, covering both academic and non-academic aspects. This report aims to analyze and describe my experience, focusing on the projects I completed, the skills I gained, and the credit earned as an intern. I worked as an Intern SQA Engineer at the **Tour Project**, a web-based travel solution by **Prime Tech Solutions LTD**.

Before joining **Prime Tech Solutions LTD**, I didn't fully understand the meaning of "luck." However, now I truly appreciate it. During my time at the **Tour Project**, I received incredible support from my colleagues, and their kindness will always stay with me. Not everyone may have the same experience, so my advice to future interns is to actively engage with the office environment and its culture.

I believe that there should be arrangements for recreational time in the office to prevent work from becoming monotonous and disengaging. Everyone needs time for refreshment outside of their tasks to maintain a balanced and productive mindset.

Apart from the testing work, I faced several challenges—both technical and non-technical. As my internship came to an end, I realized that my communication and management skills had improved significantly. Additionally, I gained valuable insights that will undoubtedly assist me in my future career.

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Chapter 1: Introduction

Why Internship

Internships offer students the opportunity to bridge the gap between theoretical knowledge and the complexities of real-world environments. If an internship is part of a bachelor's program and students return to academics after completing it, the skills they acquire during the internship can significantly enhance their academic performance.

Daffodil International University (DIU) provides its students with a remarkable opportunity to participate in internships as part of their bachelor's program. I consider myself fortunate to be a student at DIU and to have secured an internship at Prime Tech Solutions Project LTD (Tour Management System). As my internship nears its conclusion, I can confidently say that it has been a truly enriching and valuable experience, exceeding my initial expectations.

The journey was not without challenges. I encountered various obstacles and had to familiarize myself with new technologies. However, each challenge I overcame helped me discover new potential within myself. The skills I have acquired are invaluable, and I am eager to apply them in my future endeavors. Moreover, the combination of technical and non-technical skills I have developed will undoubtedly prove beneficial in my professional career.

The internship program is exceptionally well-structured. However, allowing more flexibility by relaxing the minimum credit limit restriction would provide students with greater opportunities to complete the program successfully.

Internships are an excellent way to prepare for real-world experiences. I am grateful for the opportunity provided by Prime Tech Solutions LTD, which is why I chose to pursue this internship. Throughout this experience, I have gained practical knowledge of the Software Development Life Cycle (SDLC) and how to develop industry-ready software.

Internship education serves as a bridge between academia and industry, offering students supervised technical work experience that enhances both their educational journey and professional credentials. The experience comes with numerous rewards and can be counted toward undergraduate technical or applied elective credits.

As I begin writing this report, I am eager to reflect on how my academic knowledge has translated into practical skills. I firmly believe this report will highlight the significance of my internship experience and its impact on my personal and professional growth.

Report Objectives

This report encompasses both broad and specific objectives to achieve.

1.2.1 Broad Objective

Theoretical knowledge alone is insufficient for mastering software development. The industry must address various factors to deliver software effectively to end users. Achieving this requires direct engagement and hands-on experience.

1.2.2 Specific Objectives

This report aims to achieve the following specific objectives:

- Identify the challenges faced by the software industry.
- Understand the solutions to these challenges.
- Gain knowledge of coding systems and Integrated Development Environments (IDEs).
- Explore the Software Development Life Cycle (SDLC) and its models.
- Learn testing techniques and quality control processes.
- Work with software documentation and customization.
- Understand software maintenance practices and development methodologies.

Scope of the Report

This report is prepared solely for academic purposes and to fulfill the requirements of internship affiliation. It explores both the direct and indirect aspects of the software industry and its challenges. Additionally, the report places a strong emphasis on Software Testing.

Information Gathering

The information for this report has been gathered from both primary and secondary sources.

Primary Sources

For primary data collection, several face-to-face interviews were conducted with officials from various departments of the Tour Project. The insights they provided were crucial to this report. I collaborated with the following professionals:

- Atiqur Rahman, SQA Lead, Advance Pro Project, Prime Tech Solutions LTD.
- Md. Shafiqul Islam, Software Engineer, Tour Project, Prime Tech Solutions LTD.
- Md. AI Mubassir Muin, Software Engineer, Tour Project, Prime Tech Solution LTD.

Secondary Sources

To gain insights into SDLC, Software Quality Assurance, STLC, Agile, System Configuration, IDEs, and related topics, data has been collected from the internet and various articles. The sources are cited in the references section.

Limitations of the Report

While collecting, analyzing, and presenting information, I encountered several limitations. Despite these challenges, I have strived to prepare a comprehensive and engaging report. The key limitations are as follows:

- Some statistical and qualitative data were not fully accessible. Additionally, supply chain officers, finance officers, and accounting officers, who played a role in the core group's development, were often unavailable due to their busy schedules, making data collection difficult.
- Due to system confidentiality, certain information could not be disclosed in the report

Chapter 2: Company Overview

2.1 An overview of Prime Tech Solutions LTD

Prime Tech is a dynamic IT services provider based in Bangladesh, founded by a team of passionate IT specialists committed to innovation and technological advancement. Our mission extends beyond business success—we strive to push the boundaries of technology itself.

Our diverse team consists of developers, designers, business professionals, and technocrats dedicated to delivering cutting-edge IT solutions tailored to your business needs. Our services include:

Web design and development

Application services

Product engineering

Custom software development

Maintenance and re-engineering

Independent testing and validation

IT product distribution

Business process outsourcing (BPO)

With extensive experience in IT outsourcing, Prime Tech understands the unique needs of businesses and provides cost-effective, high-quality solutions for projects of all sizes. We adhere to standardized and customized processes outlined in our Quality Management System (QMS) to ensure excellence at every stage of production. Our team of highly skilled software developers and creative designers brings years of expertise to deliver exceptional results.

At Prime Tech, we are committed to helping businesses thrive through innovative and efficient IT solutions.



Figure 2.1: Logo of Prime Tech Solutions LTD.

2.2 Mission and Vision

2.2.1 Mission

Our Mission is to go beyond customer's expectation by maintaining transparency, provide user friendly software & solutions and to become clients 1st choice.

2.2.2 Vision

Our Vision is to create strategic long-term partnership with clients in Bangladesh and abroad by providing outstanding Customer experience.

2.3 Services

2.3.1 Expertise

Prime Tech expertise these thinks:

- E-governance application development
- Software development with hardware integration
- Mobile application development
- Web design and development
- Database development & management
- System integration & managed service
- ERP & MIS development and implementation
- Data Backup/Restore Facility
- Network & Security solutions
- It consultancy & out sourcing
- Data Migration from Existing System
- End to End project management
- Training & development
- Business process automation
- B2B/B2C solutions

Add on Modules:


List of Add on modules are given below:

- Auto Pay-In & Pay-Out
- Email Reporting to the client
- SMS Push-Pull Service to the client

2.3.2 Products

Table 2.1: Product List

	<p>This is the world where AdvancePro thrives and shines. Since 2001 our software products and services have been used successfully by thousands of people in hundreds of companies around the globe.</p>
	<p>At Air Imperial, our goal is to provide customers with a comprehensive range of travel services at highly competitive prices, making travel planning simpler and more affordable. Whether you're looking for a flight, accommodation, or car rentals, all you need to do is register and start searching on Air Imperial.</p> <p>Thousands of users trust Air Imperial every day for our fully automated, world-class services, designed to save both time and money. We're here to make your travel experience as seamless and convenient as possible.</p>
	<p>Buy Tickets, a sister concern of Airspan Limited, is committed to providing excellent service and affordable air tickets. Our primary goal is to offer the best value for your travel needs. On our platform, you can compare a wide range of airline ticket prices and choose the best option for your journey.</p> <p>In addition to flight bookings, we provide the convenience of booking hotels, holiday packages, and transportation services all in one place. We also offer visa assistance to help streamline your travel preparations.</p>

	<p>Let Buy Tickets make your travel planning simple, cost-effective, and hassle-free.</p>
	<p>Ticket Bari is an online mobile apps based travel agency with unique business concept in travelling sector. Our concept of business is not ordinary or as usual like the others. Now, in the era of internet we operate our business totally online, we got exclusive Ticket Bari Apps, Website, so that people don't have taken any hassle or tension regarding any kind of trip.</p>

2.4 Clients

List of some clients of Prime Tech Solutions LTD:

- Public
 - Local Government Engineering Department (LGED)
 - Bangladesh Overseas Employment & Services Ltd (BOESL)
 - Bangladesh Agro-Processors' Association (BAPA)
 - Essential Drugs Company Limited (EDCL)
 - Bangladesh Steel Engineering Corporation (BSEC)
 - Bangladesh Small and Cottage Industries Corporation (BSCIC)

- Private
 - InnoGlobe Travel & Tours
 - The Westin (Hotel)
 - Green Marketing Limited
 - e-Generation Ltd
 - Head Blocks
 - Orogenic Resources Ltd
 - Bangladesh Association of Software and Information Services
 - PHONIX Securities Ltd

- Kranti Triofil Ltd
- Biz Bangla Media Ltd
- Paribohon.com
- Gulshan Society
- COWATER International
- Telecommunication
 - Banglalink Digital Communications Limited
 - Grameen Phone Limited
 - Robi Axiata Limited
- Bank & Financial
 - The City Bank Ltd
 - Lanka Bangla Finance Limited
 - Lanka Bangla Securities Ltd
- Manufacturing
 - ZXY-Apparel Buying Solutions Ltd
 - Alzahra food & Beverage
 - NK Distributions
- ICT
 - Spectrum Engineering Consortium Ltd.
 - Zanala Bangladesh Ltd.
 - Electro Craft Corporation Ltd.
 - Tour Planners Ltd.
 - akhoni.com
 - DEVNET LTD.
 - Business Automation Ltd.
 - Mediasoft Data Systems Limited, BITM
- Education
 - Canadian International School
- International
 - Travel Curve Inc (Ontario, Canada)
 - De Gournay (London, UK)
 - London Flying SCHOOL (UK)
 - Great Adventure Tours
 - UK – Bangle Trading Corporation (UK)
 - WA Cabes Pty. Ltd
 - Advance Pro Technologies (Canada)
 - sellofvacation.com
 - Zaeem Jalal
 - Book Your DJ
 - Pacific Luxury Air

2.5 Project

❖ Tour Project

A Web Based API Project of Prime Tech Solutions LTD. There are two stakeholders:

- ◆ B2B (Agent)
- ◆ B2C (All Users)

2.5.1 Tour Project: Revolutionizing Travel Services

The **Tour Project** is a travel-based initiative designed to tackle the challenges of the 21st century, especially for travelers planning to visit other countries. It aims to streamline the process of purchasing air tickets, booking vacation packages, arranging Hajj and Umrah trips, purchasing bus tickets, booking movie tickets, and easily communicating with travel agents (admins) for any travel-related inquiries.

As part of a three-year-long reform effort, the project focuses on improving the quality, relevance, and efficiency of travel services. It also seeks to enhance the employability of technical graduates, both domestically and internationally, with an emphasis on reducing poverty and improving the quality of life for the general population.

Specific Objectives of the Project:

- **Easy Ticket Purchasing:** Ensure that travelers can easily buy air tickets for their international or domestic journeys through the Tour Project platform.
- **Ticketing Details Access:** Users can check and track their ticketing details by date, ensuring all necessary fields are filled to locate their respective tickets. Additionally, users can communicate directly with the admin for ticket support.
- **Automation of Travel Processes:** The Travel and Tourism Management System aims to automate the processes and activities involved in travel, offering a seamless method to manage all travel-related operations effectively.

The **Tour Project** is dedicated to simplifying the travel experience, making it more accessible, efficient, and user-friendly for all.

Chapter 3: Tools and Technology learned

3.1 Tools and Technologies

The list of Technologies we use for Tour Project:

- Operating System: Windows
- Developers Tools:
 - Front End: Angular.js, HTML5, CSS, Jscript
 - Back End: MVC, Jscript
- Testing Tools:
 - Karma: Unit Testing (Developer tools)
 - Cucumber: Functional Test
 - JMeter and BlazeMeter: Performance Test, Load Test, Stress Test
 - Bug Tracker: Trello
- Database: SQL Server 2014
- Security: Microsoft identity
- Search Engine: Chrome, Fire fox, Mozilla
- Source Control: GitHub

3.2 Tools and Technology I Learn

As an SQA I learn the real life testing methodology in Tour project. The list of technology I learn are given below:

- JMeter: It is used as a load testing tool in this project. JMeter is an Apache project which is used for load testing tool for analyzing and measuring the load, stress and performance of any web application.
- BlazeMeter: It is also a load testing tool in this project. Using BlazeMeter is easier than JMeter. I use it in chrome browser. It is compatible with open-source Apache JMeter.
- Postman: I use Postman to test the API functionalities in this project. It is the only complete development environment for API developers.
- Selenium IDE: I use Selenium for automate the sign up and login page tests. I use Java code library in Eclipse for automate the tests.

As I am a tester, Understanding the testing methodology is more important rather than tools and technologies.

Chapter 4: My Project Involvement

4.1 Overview

Tour Project is Private Project of Prime Tech Solutions LTD. This Tour Project founded by agent. The list of the project modules is given below:

4.1.1 Air Imperial Agent Module List

Table 4.1: Air Imperial Agent Module List

	Air Imperial Agent
1.	Registration (B2B/B2C)
2.	Login (B2B/B2C)
3.	Social Login (Facebook, Google)
4.	Search Engine(Air, Hotel)
5.	Deposit (Offline(Cheque, Cash, Bank Transfer) / Online)
6.	Deposit (Clam Bonus)
7.	Package
8.	Support
9.	Air Booking and Ticketing
10.	Hotel Booking
11.	Sub agent creating
12.	Sub agent Mark up , commission
13.	Special Offer
14.	Welcome bonus
15.	Passenger info
16.	Locality program
17.	Itinerary Email
18.	Static pages
19.	Query for any think

Total Modules: 19

4.1.2 Air Imperial Admin Module List

Table 4.2: Air Imperial Admin Module List

	Admin
1.	Dashboard
2.	Agent Management
3.	Currency Management
4.	Markup Management
5.	API Management
6.	Email Management
7.	Booking Order
8.	Search log
9.	Reports
10.	CMS
11.	Package
12.	Support Ticket
13.	Airline Management
14.	Setting
15.	Loyalty Program

Total Module: 15

4.1.3 Ticket Bari Agent Module List

Table 4.3: Ticket Bari Agent Module List

	Ticket Bari Agent
1.	Registration (B2C)
2.	Login (B2C)
3.	Social Login (Facebook, Google)
4.	User Profile Set up
5.	Deposit (Offline, Online)
6.	Search Engine(Air, Bus, Lunch, Package)
7.	Air booking
8.	Bus booking
9.	Lunch booking
10.	Package booking
11.	Support
12.	Passenger info
13.	Itinerary email
14.	Booking info
15.	Static Pages

Total Module: 15

4.1.4 Ticket Bari Admin Module List

Table 4.4: Ticket Bari Admin Module List

	Admin
1.	Dashboard
2.	Agent Management
3.	Currency Management

4.	Markup Management
5.	API Management
6.	Email Management
7.	Booking Order
8.	Search log
9.	Reports
10.	CMS
11.	Package
12.	Support Ticket
13.	Notice
14.	Promotion
15.	Account info
16.	Airline Management
17.	Setting

Total Module: 17

4.2 Team

As an Intern SQA Engineer, I was assigned to work alongside my SQA Team Lead for the project. He provided clear instructions and guidance to help me understand the project modules in a short amount of time. He also entrusted me with the task of testing the project modules. Without his valuable mentoring, I wouldn't have been able to engage with the project successfully.

4.3 Modules I Worked On

➤ Agent

- Registration (B2C/B2B)
- Login (B2B/B2C)
- Social Login (Facebook, Google)
- Search Engine
 - i) Air
 - ii) Bus
 - iii) Lunch
 - iv) Package
- Air Booking
- Bus Booking
- Lunch Booking
- Package Booking
- Passenger info
- Deposit
 - i) Offline
 - 1. Cash
 - 2. Check
 - 3. Bank Transfer
 - ii) Online

➤ Admin

- Dashboard
- Agent Management
- Currency Management
- Markup Management
- API Management
- Email Management
- Booking Order
- Search Log
- Reports
- CMS
- Package
- Support Ticket
- Notice
- Promotion
- Account Info
- Airline Management
- Setting

4.4 Software Development Process at Tour Project

The Software Development Process at the Tour Project follows a structured methodology, commonly known as the Software Development Life Cycle (SDLC). This process is essential for the successful development of a software product and encompasses various stages, including planning, design, development, testing, deployment, and maintenance. The SDLC ensures that the software meets the required specifications and quality standards throughout its life cycle.

As part of my internship at Prime Tech Solutions Ltd., I had the opportunity to experience the practical application of the SDLC process. The internship allowed me to understand how each stage of the SDLC is followed to prepare the software for real-world use. Through this experience, I learned how various models, such as the spiral life cycle, can be applied in the software development process.

The internship was a valuable opportunity to prepare for real-life professional experiences. It provided me with insights into how a software development process works in practice, and I gained hands-on experience in testing and validating the software to ensure quality and reliability.

Additionally, the ISO / IEC 12207 standard, which defines the necessary tasks for developing and maintaining software, is often used in the industry as a benchmark for best practices in software life cycle management.

This experience at Prime Tech Solutions Ltd. has been an enriching learning journey, providing me with valuable knowledge and skills that will serve me well in my future career.

4.4.1 Software Development Model

There are various development models available, each with its own advantages and disadvantages. It is the responsibility of the development team to select the most suitable model for the project.

4.4.1.1 Agile Scrum

Characteristic

Scrum recognizes that software development is complex and unpredictable, treating it as a controlled black box instead of a rigid, theoretical process. This is a key distinction from methodologies like Waterfall and Spiral, which view software development as a fully structured approach. Some of the challenges faced when using these older, more formal methodologies include:

- A lack of complete understanding of requirements at the start of the process.
- Changes in requirements as the project progresses.
- The process becoming overly complicated when new tools and technologies are introduced.

To address these challenges with greater flexibility, Scrum provides techniques and controls to better manage the development process.

Delay creation

There are three categories of delays:

- **Product Delay:** This involves the collection of requirements meant for future launch. These requirements are usually high-level, with broad estimates provided by stakeholders interested in the product.
- **Version Delay:** This delay refers to requirements taken from the product order book, which are identified and prioritized for the next version. The release portfolio offers more detailed information about the requirements, including low-level figures calculated by the team responsible for execution.
- **Sprint Delay:** At the start of each sprint, the team sets a schedule with expected outcomes, which include a set of primary and secondary requirements that the team plans to complete by the sprint's end. By the sprint's conclusion, these requirements should be fully coded, tested, and documented. These elements form the basis of the team's work throughout the sprint.

Project segmentation

The project is segmented into time periods, each lasting up to four weeks. Each period, referred to as a Sprint, involves teams working on a specific build to be executed within the given Sprint.

Scrum meetings

- During each sprint, the team conducts daily scrum meetings.
- These meetings take place at the same location and time every workday.
- Each meeting lasts no longer than 30 minutes.
- A Scrum Master is appointed to facilitate the meetings.

The Scrum Master is responsible for asking each team member the following three questions:

1. What have you accomplished since the last scrum meeting?
2. What obstacles or challenges are hindering your progress?
3. What do you plan to accomplish before the next scrum meeting?

Why Choose Agile?

Customer benefits

- Clients are more actively involved in the development process and receive higher priority.
- They gain regular and comprehensive updates on the application's progress.
- Requirements are delivered incrementally after each iteration.
- With a focus on rapid delivery, Agile reduces time to market, allowing key functionalities to be available sooner.
- Delivery follows a fixed timeline, ensuring clients receive functional components within a defined period.
- Extensive testing is conducted throughout the process, leading to improved software quality.

Project team benefits

1. Project teams actively participate in all phases, ask the right questions, and make collaborative decisions, giving them greater autonomy.
2. Incremental development allows teams to focus on specific requirements at any given time.
3. The emphasis is primarily on application development rather than extensive documentation, with only minimal and essential documents used for communication.
4. Frequent feedback through integrated testing helps reduce rework and improves efficiency.
5. Less time is spent gathering requirements in advance, as they are addressed when they arise.
6. As a result, less time is needed for detailed planning.
7. Development costs are lower due to reduced expenses on rework, administration, and excessive documentation.
8. Teams work collaboratively in a cooperative and supportive environment to develop applications.

Challenges in Agile Software Development

Agile development presents several challenges, primarily due to its emphasis on frequent testing and active client involvement. It impacts management more than developers, as it requires

managers to be more transparent, actively engaged in the development process, and willing to empower teams to make decisions.

Internships provide a valuable opportunity to prepare for real-world experiences. I was fortunate to secure an internship at Prime Tech Solutions Ltd., which is why I chose this path. During my internship, I gained hands-on experience in preparing software while following the Software Development Life Cycle (SDLC) process.

The Agile software development process follows these key steps:

- 1. Initial Meeting** – The process begins with a kickoff meeting to align objectives.
- 2. Requirement Analysis & Prioritization** – Known requirements are identified, understood, and prioritized to guide the development plan.
- 3. Complexity Estimation** – The relative complexity of each requirement is assessed.
- 4. Minimal Design Approach** – A sufficient design is created using simple diagrams to maintain flexibility.
- 5. Test-Driven Development (TDD)** – This approach emphasizes writing tests before the actual code to ensure functionality and prevent excessive coding.
- 6. Collaborative Development** – Development occurs iteratively, often involving pair programming and strong team collaboration, with shared code ownership.
- 7. Frequent Testing & Integration** – Code is tested regularly, and continuous integration tools may be used to streamline the testing and integration process.
- 8. Code Refactoring Based on Feedback** – The code is refined without altering its external behavior, improving internal structure for better design and maintainability. Common refactoring techniques include consolidating interfaces, introducing superclass relationships, and restructuring classes.

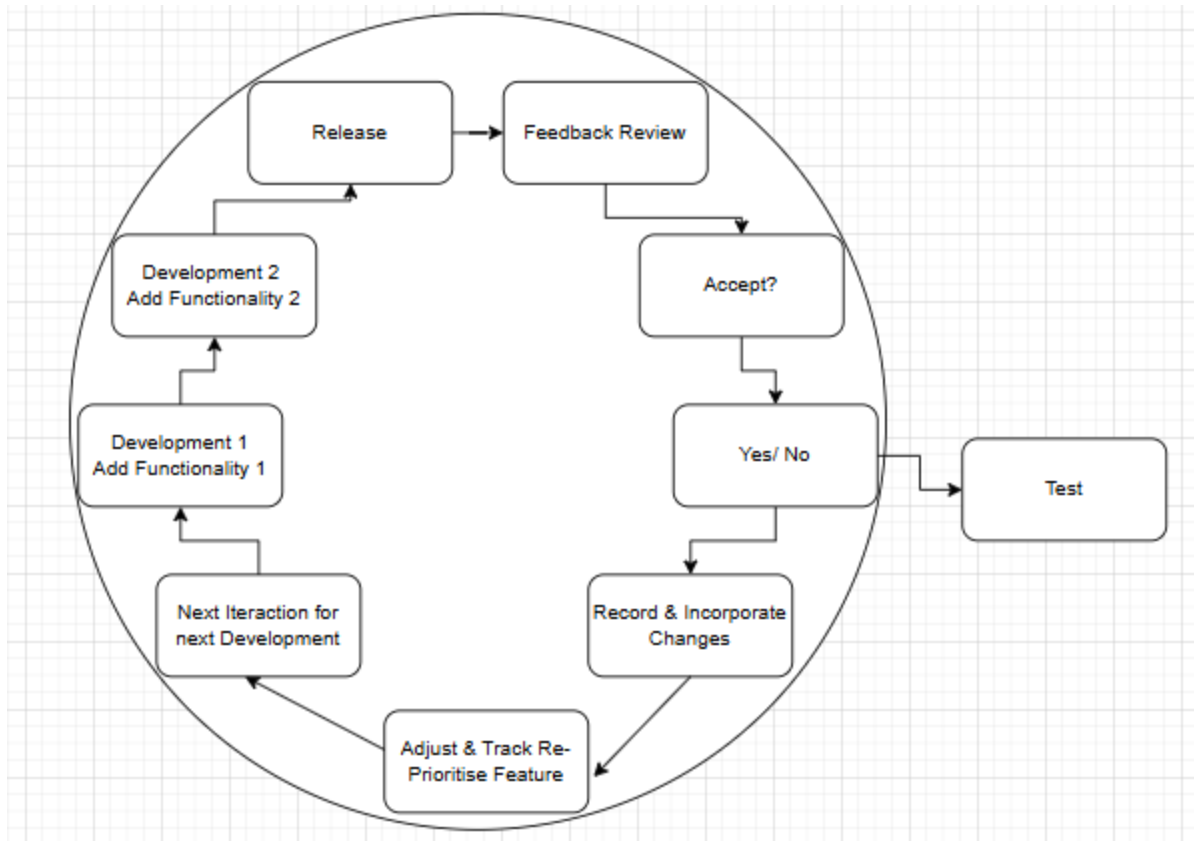


Figure 4.1: Agile Development Cycle

Chapter 5: Project Working Experience

5.1 Overview

Software testing is essential because mistakes are inevitable. While some errors may be minor, others can be costly and even dangerous. It is crucial to ensure that everything we develop is thoroughly tested, as human errors are a natural part of the process. Acknowledging that our work may contain mistakes, we must take responsibility for verifying it.

Internships provide an excellent opportunity to prepare for real-world experiences. I was fortunate to secure an internship at Prime Tech Solutions Ltd., which is why I chose this path. During my internship, I gained hands-on experience in software development while following the Software Development Life Cycle (SDLC). The internship program is highly beneficial; however, allowing more flexibility by relaxing the minimum credit limit restriction would give students greater opportunities to successfully complete the program.

However, some mistakes go unnoticed due to biases and blind spots. When reviewing our own work, we might overlook the same errors we initially made. This is why it is ideal to have a fresh pair of eyes—someone else reviewing the work is more likely to identify potential flaws.

There are several key reasons why software testing is vital and important factors to consider when testing any product or application. Thorough testing not only ensures reliability and quality but also helps prevent potential failures.

Software testing plays a crucial role in the development process for the following reasons:

1. It helps identify flaws and errors introduced during the development phases.
2. Ensuring software reliability is essential for maintaining client trust and satisfaction.
3. Quality assurance is critical, as delivering a high-quality product builds customer confidence and loyalty.
4. Testing enhances user experience by providing a well-functioning, high-quality software product with lower maintenance costs and more accurate, consistent, and reliable results.
5. It is necessary to ensure the software or application performs effectively under various conditions.
6. Preventing application failures is crucial, as fixing issues later in development or post-release can be costly.
7. Maintaining rigorous testing practices is essential for long-term business sustainability.

5.2 Software Testing Life Cycle

1. Test Planning & Control
2. Test Analysis & Design
3. Test Implementation & Execution
4. Evaluating Exit Criteria & Reporting
5. Test Closure Activities.

5.3 Following Model for Software Testing

V Model is the best practice for software testing. Like the waterfall model V-shaped life cycle is a sequential pathway of execution of processes. Each phase must be completed before next phase begins. We use this model for Software Testing activity in STEP Project.

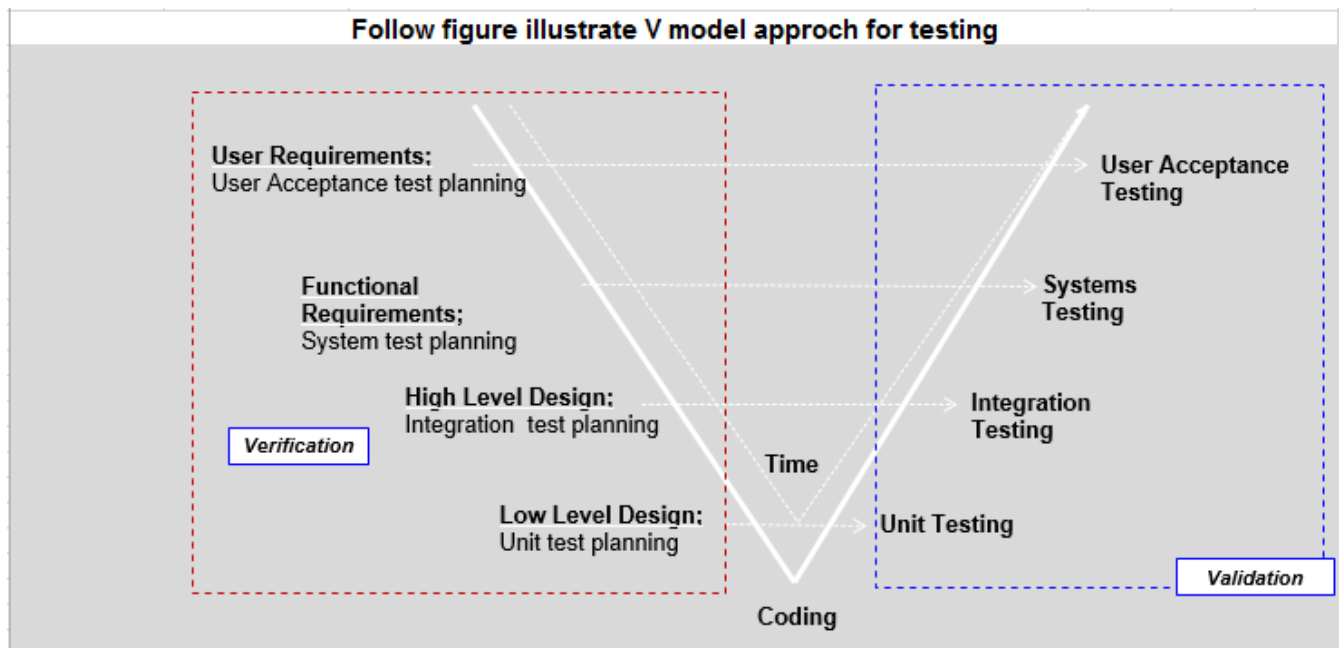


Figure 5.1: V Model

5.4 My Learning

- CRUD
- Test Case Create
- Test Case Execution
- Bug Report
- Bug Tracking

- RTM
- Re-test
- Regression Test
- Performance Test, Load Test, Stress Test
- Test Reporting
- Incident Management
- Exploratory Testing
- Impact Analysis
- Functional Testing
- UAT
- Test Scenario Create
- Test Plan
- Test Design
- Test Execution
- User Manual Writing

5.5 Description with Examples

CRUD

This is the first thing I learn from my supervisor. As a tester, the first thing is to remind that is CRUD. CRUD stands for CREATE, READ, UPDATE, DELETE.

Test Case Create

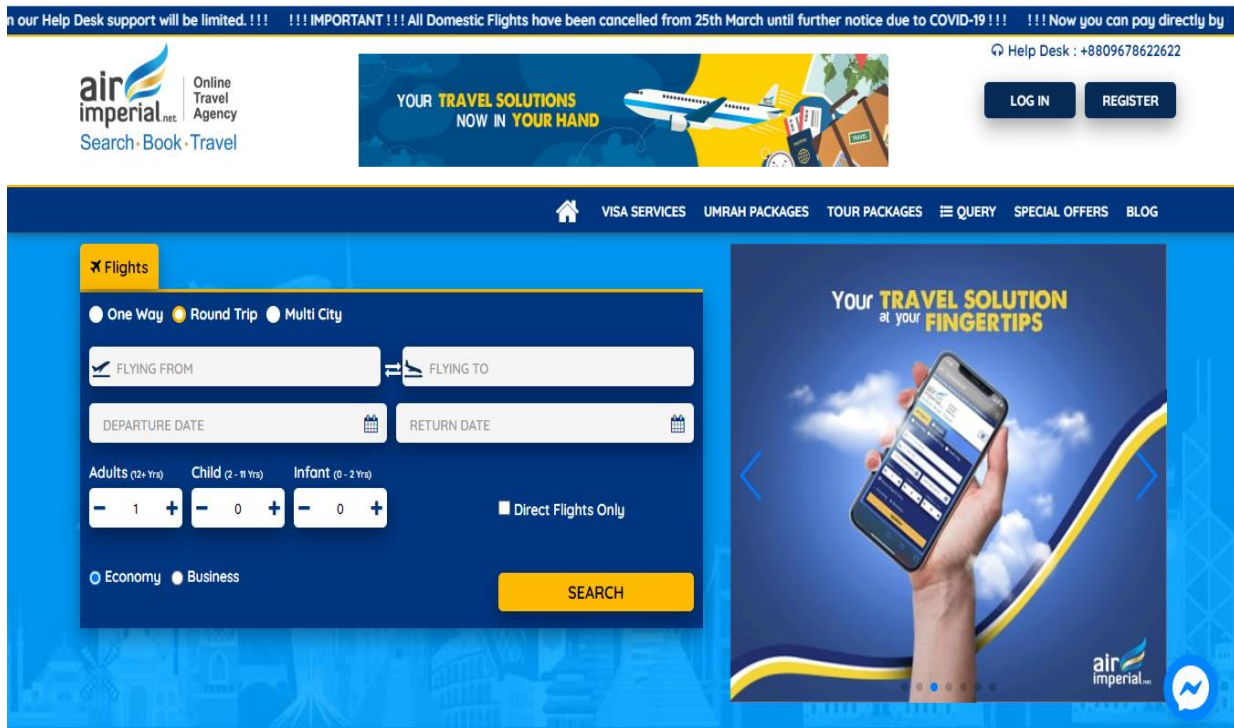


Figure 5.2: User Search Engine

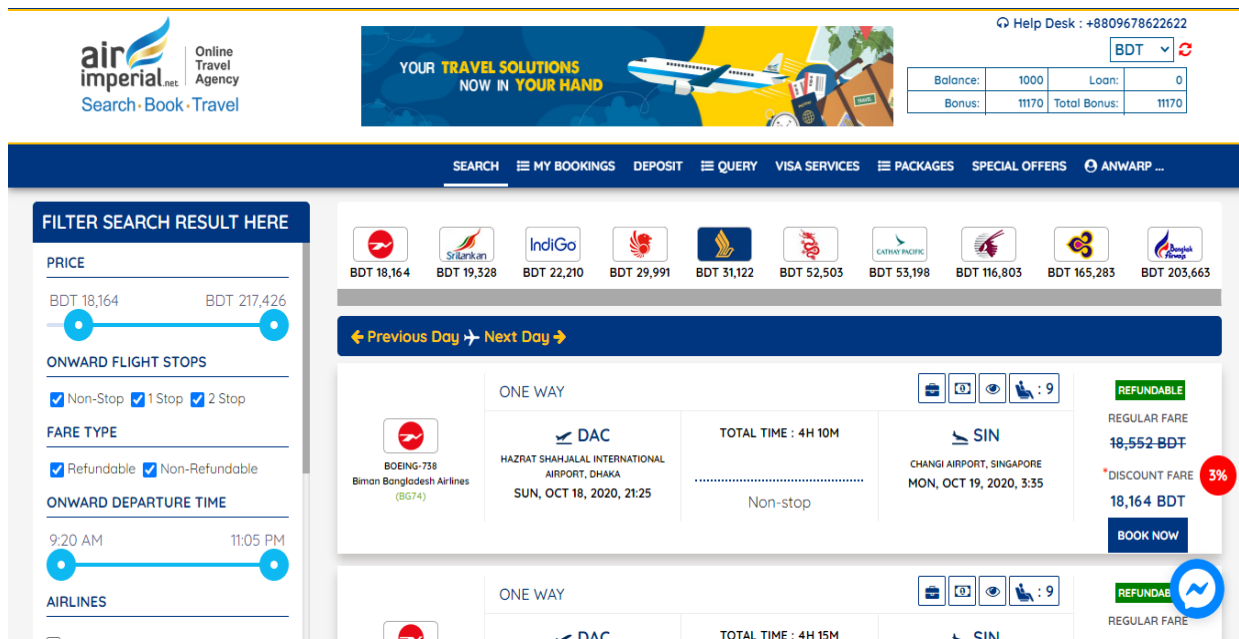


Figure 5.3: Flight list

42 results found

ONWARD FLIGHT STOPS
0 1 2

FARE TYPE
 Refundable
 Non-Refundable

PRICE
 BDT 17,303 ————— BDT 201,011

ONWARD DEPART TIME
 Select All 00-06 06-12
 12-18 18-00

ONWARD TRANSIT HOUR
 Show All 0h - 6h 6h - 12h
 12h - 18h 18h +

ONWARD LAYOVER AIRPORT

BDT 17303 BDT 17964 BDT 22492 BDT 27814 BDT 28858 BDT 56790 BDT 102373 BDT 201011

Prev Next

DAC 17,303 BDT Refundable
 Hazrat Shahjalal International Airport, Dhaka, Bangladesh
 4h 10m NON-STOP
 Changi Airport, Singapore, Singapore
 Wed, Oct 21, 2020, 9:25 PM Thu, Oct 22, 2020, 3:35 AM
 Book Now

DAC 17,303 BDT Refundable
 Hazrat Shahjalal International Airport, Dhaka, Bangladesh
 4h 15m NON-STOP
 Changi Airport, Singapore, Singapore
 Wed, Oct 21, 2020, 8:25 AM Wed, Oct 21, 2020, 2:40 PM
 Book Now

DAC 17,964 BDT Refundable
 Hazrat Shahjalal International Airport, Dhaka, Bangladesh
 16h 0m 1 STOP LAYOVER: BH 35H
 Changi Airport, Singapore, Singapore
 Wed, Oct 21, 2020, 2:30 PM Thu, Oct 22, 2020, 8:30 AM
 Book Now

Figure 5.4: Flight list

Test Case for Search Engine

1	Name	Description	Request Date	Developer Name	Developer Start Date	Expected Delivery Date	Developer's status
2	1. validation isn't working in the contact us page.						Done
3	2. login button is redirecting to the wrong page from the registration page.						Done
4	3. validation message is not displaying in the registration page	if the user clicks on the "register" button without giving any info, system should provide the mandatory filed validation message					Done
5	4. new user can't get registered.						Done
6	5. remove the EMI from the flight list						Done
7	6. Flight page redesign with filter						Done
8	7. After login -> in the menu -> Add a menu name "Query"		12/03/2019	Imtiaz			Done
9	8. After login -> deposit menu -> Add a new button for Clam bonus.		12/03/2019	Anwar			Done
10	9. before login -> in the header menu (SPECIAL OFFERS) -> when Click this button -> it redirect a page where show Packages (UMRAH and Latest Package)		12/03/2019	Anwar			Done
11	10. before login -> in the header menu (group tickets) -> when click this button -> it not redirect any thing		12/03/2019	Anwar			Done
12	11. Menu should be highlight		12/03/2019	Anwar			Done
13	12. After login -> user must be redirect into the dashboard		12/04/2019	Anwar			Done
14	13. Remove all icon from the Query tab		12/04/2019	Anwar			Done
15	14. Query tab color should be Change Same as Search panel color		12/04/2019	Anwar			Done

+ ☰ Latif Travels ▾ Fly Ahad ▾ Hajee ▾ Air trip ▾ Air Top ▾ Acertrip ▾ Air Imperial ▾ mytriperz ◀ ▶ Explore

Figure 5.5: Test Case Template (Search engine)

1	Name	Description	Request Date	Developer Name	Developer Start Date	Expected Delivery Date	Developer's status
2	home>>register> Fill all field>>register button	SMS/E-mail verification code submit box is not showing	30/12/2019	Sourav			done
3	login page	After login, landing page is not showing	30/12/2019	Sourav			done
4	Class type drop down button	Drop down button is not showing for economy or business class	30/12/2019	Sourav			button is already there
5	Flight search	After flight search, price should be shown in top side Reference : makemytrip.com	30/12/2019	Sourav and joti			
6	Flight search	After flight search, filter or more filter option should be shown up to the top of flight list	30/12/2019	Sourav and joti			
7	Flight search	After flight search, EMI option color should be change	30/12/2019	Sourav			emi option is removed
8	Flight search	After flight search, airport code is showing many times do not show airport code suggestion	30/12/2019	Sourav			pls elaborate
9	Messenger option	After login as a B2C user , messenger option should be shown	30/12/2019	Sourav			domain publish needed
10	Menu Bar	Upper case is showing for "Docs Entry" sub menu	30/12/2019	Sourav			done
11	Deposit option	Bank transfer option should need from deposit page	30/12/2019	Sourav			elaborate
12	Doc Entry>>Add new	Field alignment is breaking for "Gender" field All option of title menu is showing after selecting specific gender	30/12/2019	Sourav			done

Figure 5.6: Test case Template (Flight list)

1	A	B	C	D	E	F	G
1	Name	Description	Request Date	Developer Name	Developer Start Date	Expected Delivery Date	Developer's status
30	B2C> Home>Dashboard > Flight Search	a.Adult option b.Infants This field should work as properly	30/12/2019	Sourav			
31	B2C> Dashboard > Flight Search	After flight search there should be show Baggage info	30/12/2019	Sourav			done
32	B2C> Dashboard > Flight Search menu	When select "One way, Round trip or multi-city", it should highlight more specific	30/12/2019	Sourav			done
33	B2C> Search menu	a. Transports b.Visa Remove this two option from Searchn menu	30/12/2019	Sourav			done
34	B2C> Reports > Ledger	User can not show previous report.	30/12/2019				
35	B2C> Booking >	a. Transports Remove this option from Booking	30/12/2019	Sourav			done
36	B2C>Search>Multi City	No warning message is showing after selecting more than six cities	30/12/2019	Sourav			done
37	B2C>Search>Multi City	After selecting source and destination, the destination city should be loaded by default in second city source field	30/12/2019	Sourav			done
38	B2C> Sign in > Forgot password	a. Text field name is showing "User name", which should be "User email" b. Forgot password link are not working, which is send by email	30/12/2019	Sourav			done
39	...	Registration option would be as similar as sign in					

Figure 5.7: Ticket Bari Test Case

Here, Ticket Bari, Air Imperial and Test Case all are test cases for Search. Ticket Bari stands for which entities are existing in all pages of the system, Project Test Cases are for functional entities and Test Cases are for the specific fields/Pages of the system.

Test Scenario for Login Page

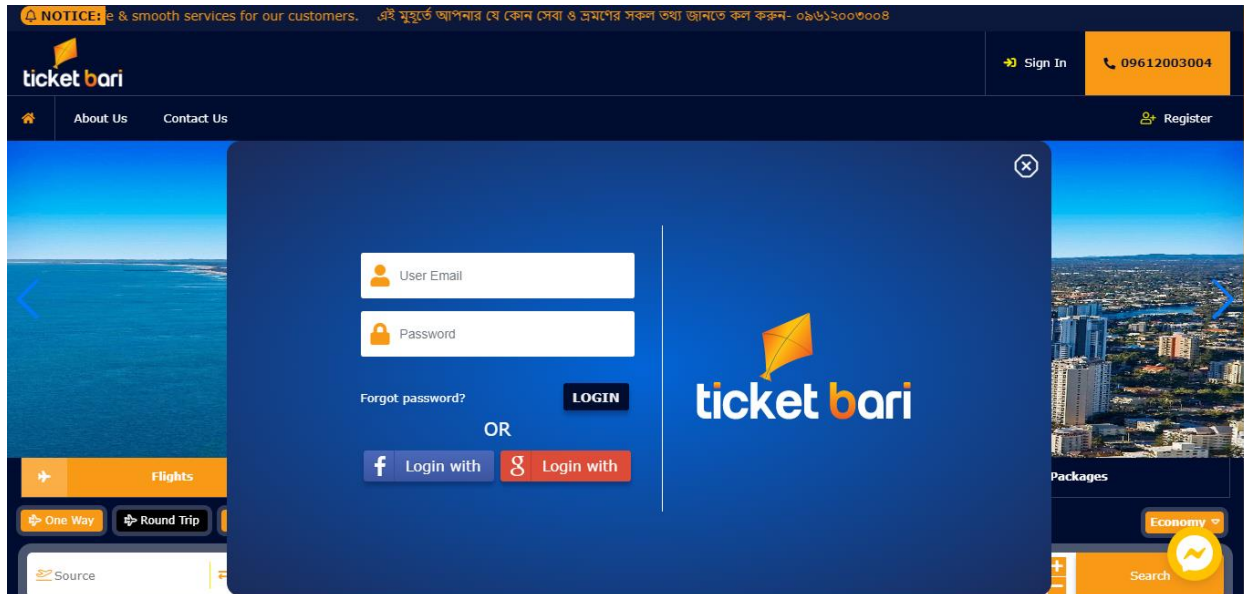


Figure 5.8: Login Page

Test Scenarios

- Ensure the login screen includes fields for entering a username and password along with a submit button.
- Verify that a user can successfully log in with valid credentials.
- Confirm that login is restricted when incorrect username or password is entered.
- Check if a validation message appears when the username or password field is left blank.
- Validate that an error message is displayed when the character limit for the username or password field is exceeded.
- Ensure placeholders are present for both the username and password input fields.
- Verify that the password appears in an encrypted format when entered.
- Test whether the password can be copied and pasted or if restrictions are in place.

Bug Reporting

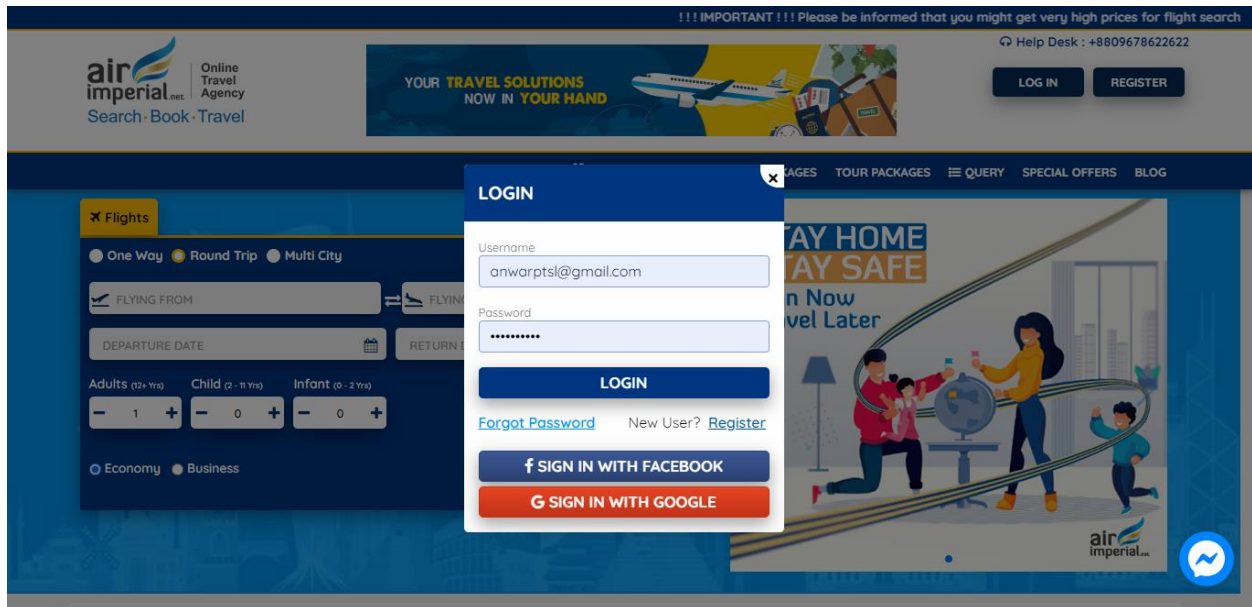


Figure 5.9: Login Portal

There are so many bug report templates exist in the industry. Now, I give an example how I report a bug to my Test Lead. Then, He use the template of Leads which is confidential to the company that's why I can't disclose it in this report.

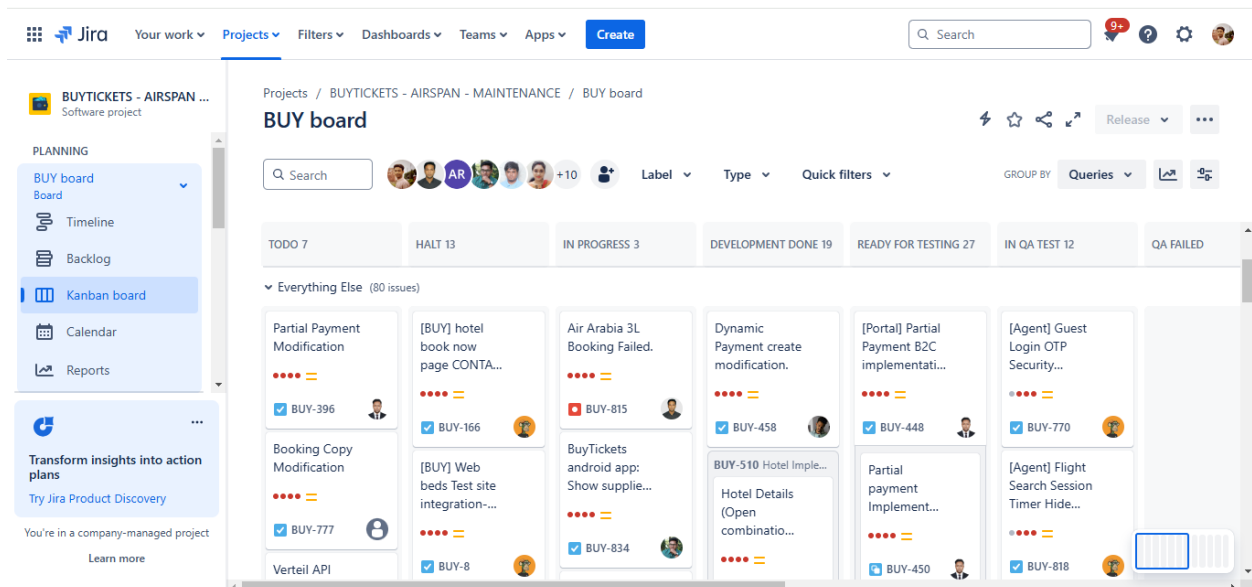


Figure 5.10: Bug Reporting

Here, I give priority to the bugs. There is a thing to understand.

Severity vs. Priority

From Testing Perspective Severity Priority is an important thing.

Two Parts of these things.

1. High Severity, Low Priority

As example- A functionality is not properly working, but it's not on current release scope /use.

2. Low Severity, High Priority

As example- Logo colors/ text are not OK.

Bug Tracking

We use Trello for Bug Tracking. As if I am intern in the organization that's why I have no access to the source control and bug tracking tool. My industrial supervisor is very friendly, that's why he allowed me to access to the bug tracker from his account.

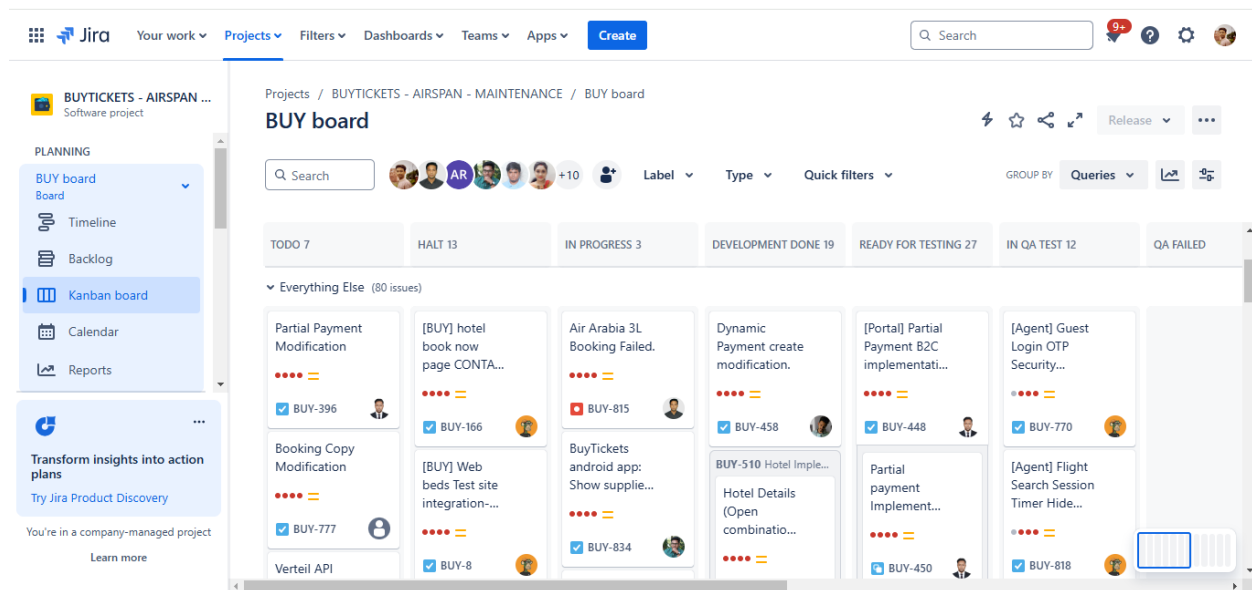


Figure 5.11: Jira Bug Tracking Interface

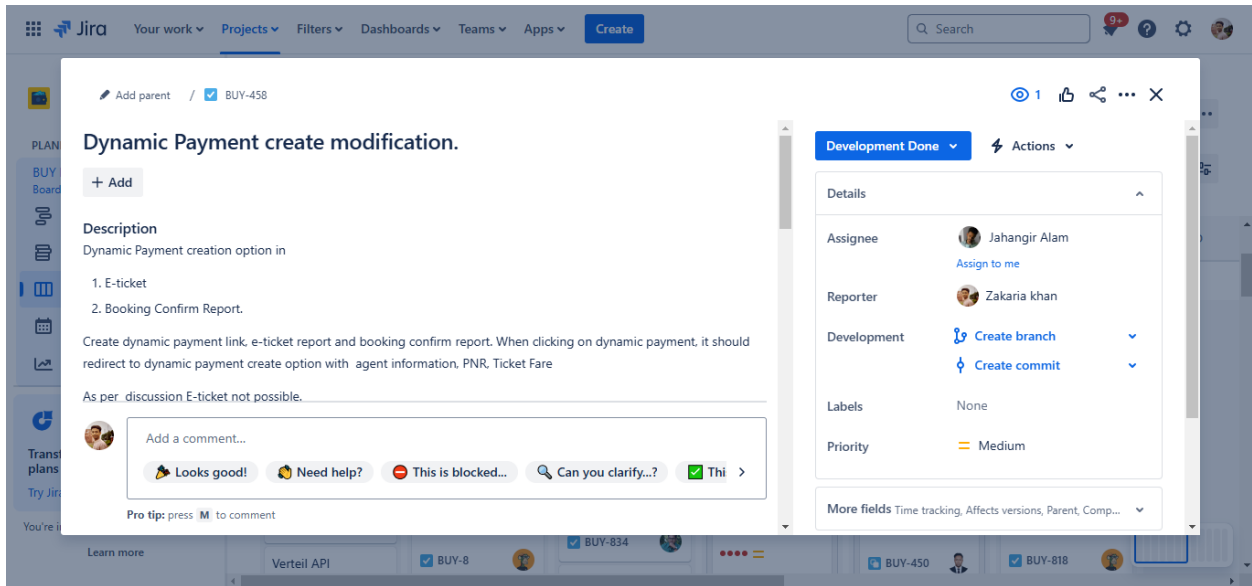


Figure 5.12: Bug Tracking Interface

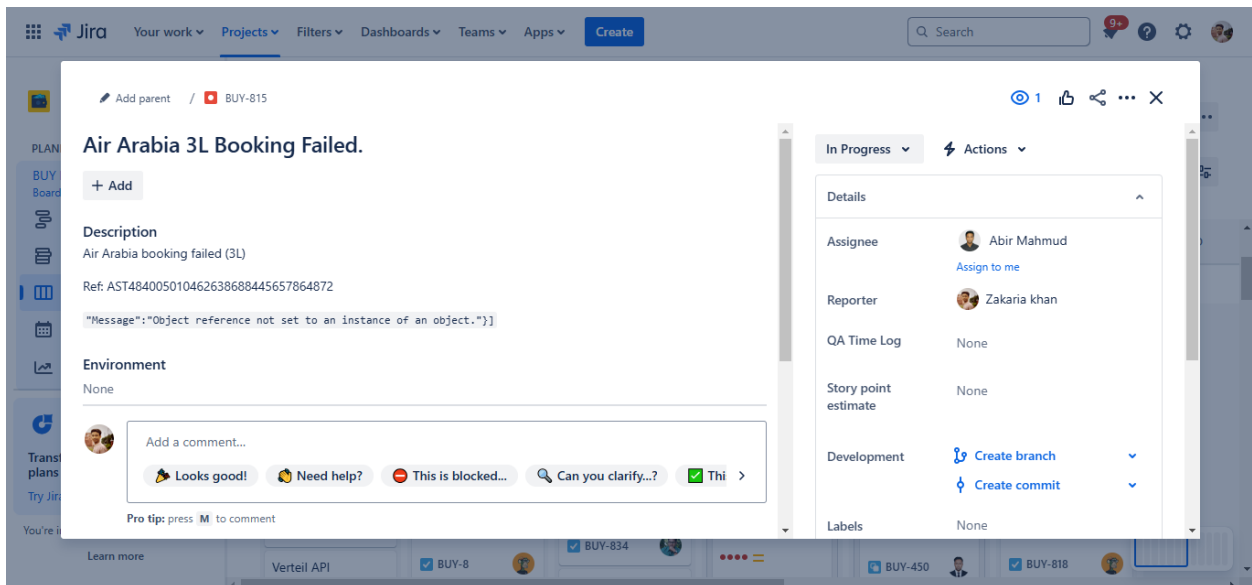


Figure 5.13: Bug Tracking Interface

Here, pending task meaning which bug are not fixed yet. Ongoing meaning which bug working to fixed. Ready for test means which work are done for going to testing.

Open are those bugs which are not solved yet and Closed are solved.

RTM

Now I give an example of Requirement Traceability Matrix (RTM).

Test Case ID	Type	Label no (Which is inside document)	Derived Reference Document	UI/Report	UC ID	Pre-Condition	Test Case Description	Input Type	Input	Expected Result
1 CVP-001-01.1	Functional	2.1.1.1.1	SRS	CVP-001-01-PT1: Registration	N/A	1. User has to go Registration page/URL. 2. User name must be unique.	Job Seeker Registration: User Name must be unique. System should check the availability of User name and email during registration.	Valid	Step 1: Insert valid data for "username", "Email address" and "Password". Step 3: Press <Save>	System will check for validation and if user name is available, it will give a confirmation message.
2 CVP-001-01.2	Functional	2.1.1.1.1	SRS	CVP-001-01-PT1: Registration	N/A	1. User has to go Registration page/URL. 2. User name must be unique.	Job Seeker Registration: User Name must be unique. System should check the availability of User name and email during registration.	Invalid	Step 1: Insert invalid data or existing data for "Username", "email address" and "password". Step 3: Press <Save>	system will show an error message "It already exists".
3 CVP-001-02.1	Functional	2.2.2.2	SRS	CVP-001-02-PT-01: Add/Edit resume	N/A	Only logged job seeker will create their profile after login.	Add/Edit resume of Job seeker: test the functionality so that only authorized user can setup.	Valid	Step 1: login as authorized user. Step 2: Go to Personal Information screen. Step 3: Insert all mandatory fields with valid data and select data from dropdown "Gender", "Marital Status", "Available For", "Religion". Step 4: Insert Image attachment.	System will check for validation for all mandatory fields and will show a confirmation message.
4 CVP-001-02.2	Functional	2.2.2.2	SRS	CVP-001-02-PT-01: Add/Edit resume	N/A	Only logged job seeker will create their profile after login.	Add/Edit resume of Job seeker: test the functionality so that only authorized user	Invalid	Step 1: login as authorized user. Step 2: go to personal information screen.	1. system will check for data validation and will show an error message.

Figure 5.14: RTM

Performance Test

Performance Test is done to know the system will perform well under expected workload. We perform performance test to know the system's condition. Load Test and Stress Test also included in this test.

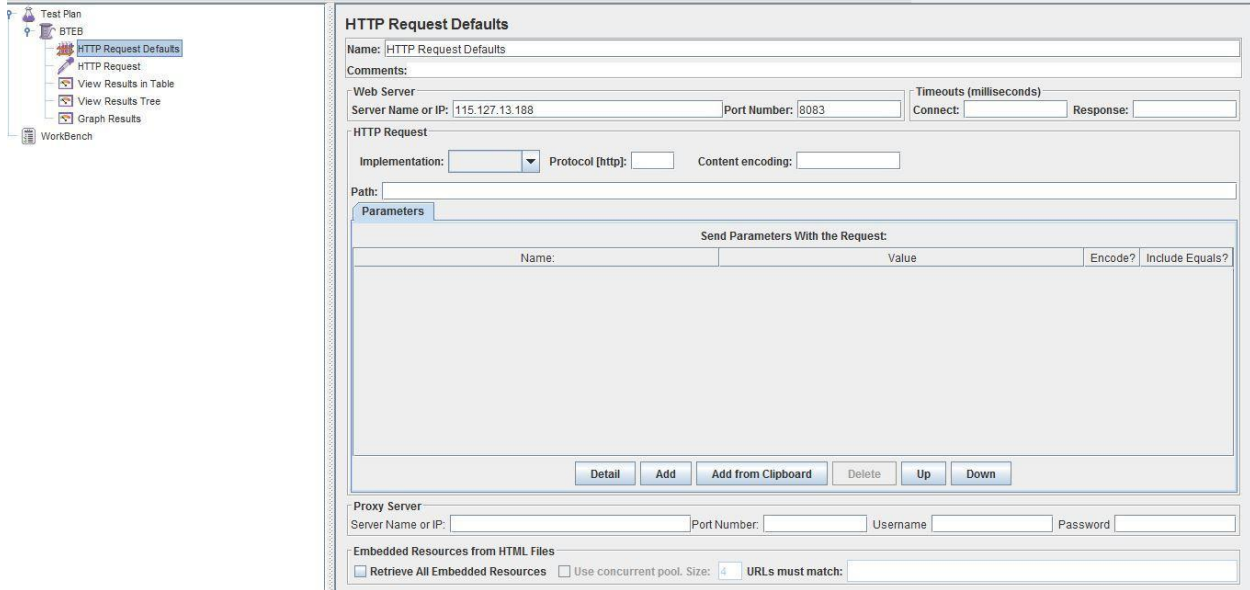


Figure 5.15: Performance Test of Air Imperial

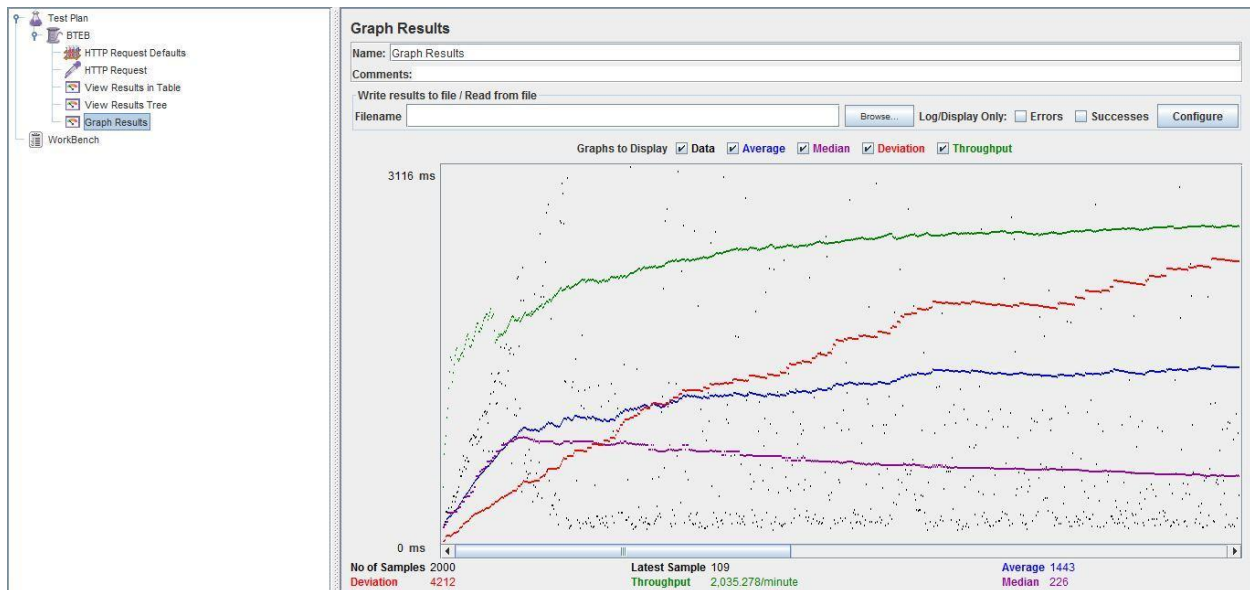


Figure 5.16: Performance Test of Air Imperial

Re-test & Regression Test

We conducted both Re-Testing and Regression Testing at every phase of the system testing process, as they are crucial components of the software testing life cycle.

Re-Testing is performed on failed test cases. When a bug is fixed, we retest the affected functionality to ensure the issue has been resolved.

Regression Testing is carried out on previously passed test cases to verify that recent changes have not introduced any unintended side effects in the system.

These testing methods help maintain software quality and ensure system stability throughout development.

Exploratory Testing

To be a good tester deep thinking is very important. Exploratory Testing is the way to test the software based on tester's own experience. It's all about discovery, investigation and learning.

Impact Analysis

Impact analysis involves evaluating the effects of changes made to a deployed product or application. This analysis considers various aspects, including requirements, design, architecture, testing, and scheduling. Below is a demo report showcasing the Impact Analysis:

Example:

Impact Analysis Document.

1. Change Request ID:
2. Title:
3. Description:
4. Date Prepare:
5. Prioritization estimate:
 - Relative Benefit
 - Relative Penalty
 - Relative cost
 - Relative risk
6. Estimated total effort:hours
7. Estimated lost effort:hours
8. Estimated schedule Impact:.....days
9. Quality Impacted;
10. Other Requirement affected:
11. Other tasks affected:
12. Integration issues:

Figure 5.17: Impact Analysis Report

How to write a Bug Report?

Here I give a Bug Report sample format which is used by the software industries:

Bug Name:

Bug ID:

Area Path:

Build Number:

Severity: HIGH (High/Medium/Low) or 1

Priority: HIGH (High/Medium/Low) or 1

Assigned to: Developer-X

Reported by: Tester Name

Reported On: Date

Reason: Defect

Status: New/Open/Active (Depends on the Tool using)

Environment: Windows 2003/SQL Server

Description:

Test Data:

Steps to Reproduce:

Conduct UAT

User Acceptance Testing (UAT) is the final phase of system implementation and plays a crucial role in ensuring a successful deployment. Skipping this step or cutting corners can lead to significant issues. UAT is essential for verifying that the system meets the expectations of end users. Without it, there is no complete assurance that the system functions as intended, increasing the risk of poor user adoption.

Chapter 6: Lifelong Professional Education

Although technical skills are important, the only purpose of an internship is Lifelong Professional Education. Prime Tech Solutions Ltd. is a great place to learn Lifelong Professional Education.

6.1 Supportive and Collaborative Work Environment

Software development is inherently a team effort, and communication breakdowns are a common part of the process. This holds true at Prime Tech Solutions Ltd., where, however, I have never witnessed team leads or project managers micromanaging or overly supervising team members.

Throughout my six-month internship, I made several mistakes, but the leadership of my SQA team has always been supportive and constructive. They never reacted harshly, which helped me learn and grow.

The internship program is well-structured, though relaxing the minimum credit limit restriction could offer students more flexibility and increase their chances of completing the program successfully.

Internships provide excellent opportunities to build real-world experience, and I am grateful to have had the chance to intern at Prime Tech Solutions Ltd. Here, I gained hands-on experience in software preparation, following the Software Development Life Cycle (SDLC) process.

This education has proven to be incredibly valuable in keeping work well-organized. Blaming others for one's own mistakes does not resolve the issue; it only strains relationships among colleagues.

6.2 Take Responsibility for Your Work

In the Tour project, there is no one giving orders such as "do this" or "do that." Each team member is assigned specific tasks and is responsible for their own work. During the Scrum meetings, everyone shares their progress and updates on their tasks.

Internships provide a valuable opportunity to build real-world experience, and I am thankful to have had the chance to intern at Prime Tech Solutions Ltd. This experience allowed me to gain hands-on knowledge in preparing software and following the Software Development Life Cycle (SDLC) process.

6.3 Celebrate Success, Don't Dwell on Failure

In the Tour project, success is viewed as a natural outcome of proper preparation and effort. The team I worked with recognized and appreciated each member's contributions. We celebrate each other's achievements, both in accomplishing business goals and in other areas. This positive environment encourages growth and fosters a sense of shared success.

6.4 Attitude

As an intern, I am greatly inspired by the friendly attitudes and behaviors of my colleagues. Their approach motivates me to follow their example and strive to become a prosperous software engineer and a successful individual.

6.5 Quality of work

Prime Tech Solutions Ltd. upholds a high standard of software engineering, ensuring that the quality of its products is exceptional. The code is regularly reviewed to maintain the development of top-quality software. I also made an effort to maintain a high standard of work in my role.

Internships provide an invaluable opportunity to gain real-world experience, and I am grateful to have had the chance to intern at Prime Tech Solutions Ltd. Through this experience, I learned how to prepare software and follow the Software Development Life Cycle (SDLC) process.

6.6 Planning

Before starting any task, I always made sure to plan how I would approach it from every angle. While these plans were primarily focused on my own actions, they gave me a sense of familiarity with the overall structure and helped me stay organized.

6.7 Organizing

A great way to learn is by adopting a methodical approach, and spending six months at Prime Tech Solutions Ltd. has helped me become more organized. By applying this mindset, I have developed better organizational skills, and now, having mastered the art of staying organized, I feel ready to help others do the same.

6.8 Punctuality and Attendance

Punctuality is a key trait in professional life. To attend the daily scrum, I needed to be at the office by 10:00 AM. However, for the team meetings every Tuesday, I made sure to arrive before 10:00. This practice significantly helped me improve my reliability, and I was present for nearly 99% of the business days.

6.9 Relations with Others

What stands out most about Prime Tech Solutions is its compassionate and supportive team, who foster a positive and productive environment. Whenever I encountered challenges, I always found it easy to discuss them with my colleagues, and they were always eager to offer assistance.

The internship program has been a fantastic opportunity for personal and professional growth, offering hands-on experience in preparing software and following the SDLC process. I am grateful for the chance to learn from Prime Tech Solutions Ltd., which has prepared me well for real-world experiences.

The team's willingness to help has been invaluable. During our free time, we would connect and share personal experiences, creating a sense of family within the workplace. Working with such experienced professionals was truly rewarding, and I developed close relationships with all of my colleagues, feeling fully integrated into the team.

6.10 Judgment

Judgment is a skill that matures over time; it doesn't develop overnight or within a month. Quality is cultivated gradually through experience. Effective judgment enables one to make the right decisions at the appropriate moments, which is crucial for any company to maintain its promises to customers.

During my time on the project, I worked on refining my judgment skills. I focused on adhering to standard testing procedures, meeting timelines, and planning tasks to be completed on time. These efforts contributed to the development of my judgment, which grew stronger as I gained experience.

The internship at Prime Tech Solutions Ltd. has been a valuable opportunity to prepare myself for real-world challenges, and through this experience, I have learned how to properly prepare software and follow the Software Development Life Cycle (SDLC) process.

Chapter 7: Conclusion

7.1 Summary

The internship program allowed me to adapt to the professional culture of the company and familiarize myself with the technologies they specialize in. It helped me enhance my problem-solving abilities, take initiative in tackling new technology challenges, and refine my analytical skills. The projects I worked on motivated me to become more diligent, responsible, and confident.

This internship at Prime Tech Solutions Ltd. has provided me with invaluable real-world experience, including how to prepare software and follow the Software Development Life Cycle (SDLC).

Furthermore, the program greatly contributed to improving my teamwork skills. In any organization, it is essential to work as a cohesive unit, valuing the ideas and suggestions of team members. Collaborative activities, like brainstorming sessions, were crucial in helping me identify and resolve problems that I might not have solved individually.

Lastly, I want to share a key lesson that will be useful to anyone, including my younger siblings: Google is an indispensable resource in the tech world. Becoming proficient at utilizing it effectively is crucial for navigating technological challenges.

7.2 Strategic action recommendations for the future

The internship program is nearly flawless. However, if the minimum credit limit requirement were relaxed, it would provide students with more flexibility and enhance their chances of successfully completing the program.

7.2.1 University

I would like to extend my gratitude to the Faculty of Sciences and Information Technology for providing me with the opportunity to experience the competitive environment of the professional field. This experience has significantly enhanced my software development skills, particularly in software testing. I now look forward to embracing the next challenges in the industry.

7.2.2 Personal/Professional

The internship program has been incredibly valuable in improving my teamwork skills. In a professional setting, it is essential to work as a cohesive unit and respect the ideas and input of fellow team members. Collaborative discussions, such as brainstorming sessions, allowed me to address and solve various issues that might have been insurmountable otherwise. Additionally, when faced with challenges, it is crucial to seek guidance from a supervisor. Regardless of how minor or major the problem is, it's important to share your concerns with experienced individuals without hesitation. Their insights can be incredibly beneficial for an intern's growth in their professional journey.

Furthermore, I have a simple piece of advice for my juniors: practice sending daily progress updates to your supervisor. This practice not only aids in preparing this report but also contributes to your overall development in the long run.

References

- [1] <https://www.primetechbd.com/>” About of Prime Tech Solutions LTD” Online:
<https://www.primetechbd.com/about-us/>
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- [4] <https://www.primetechbd.com/>”Our Clients” Online: <https://www.primetechbd.com/our-clients/>
- [5] “Tour Project” Online: <https://airimperial.net/>
- [6] “Tour Project” Online: <https://ticketbari.net/>
- [7] “Why is testing necessary” online: <http://istqbexamcertification.com/why-is-testing-necessary/>

Appendices

Appendix A: Screenshot of Air Imperial Dashboard

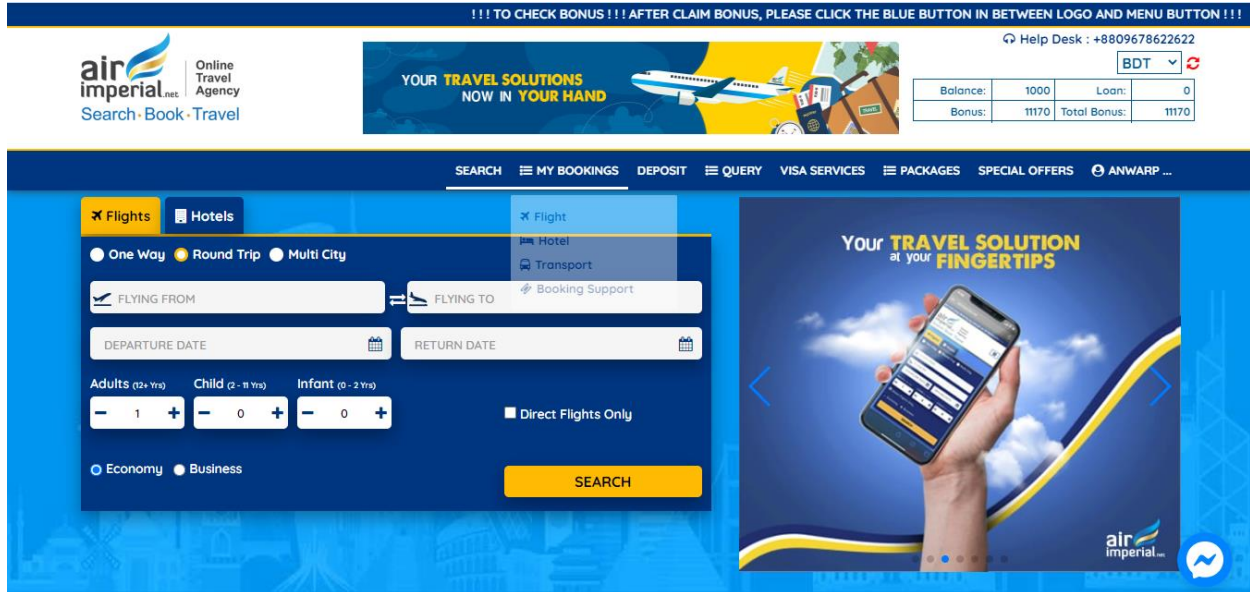


Figure: Air Imperial Dashboard

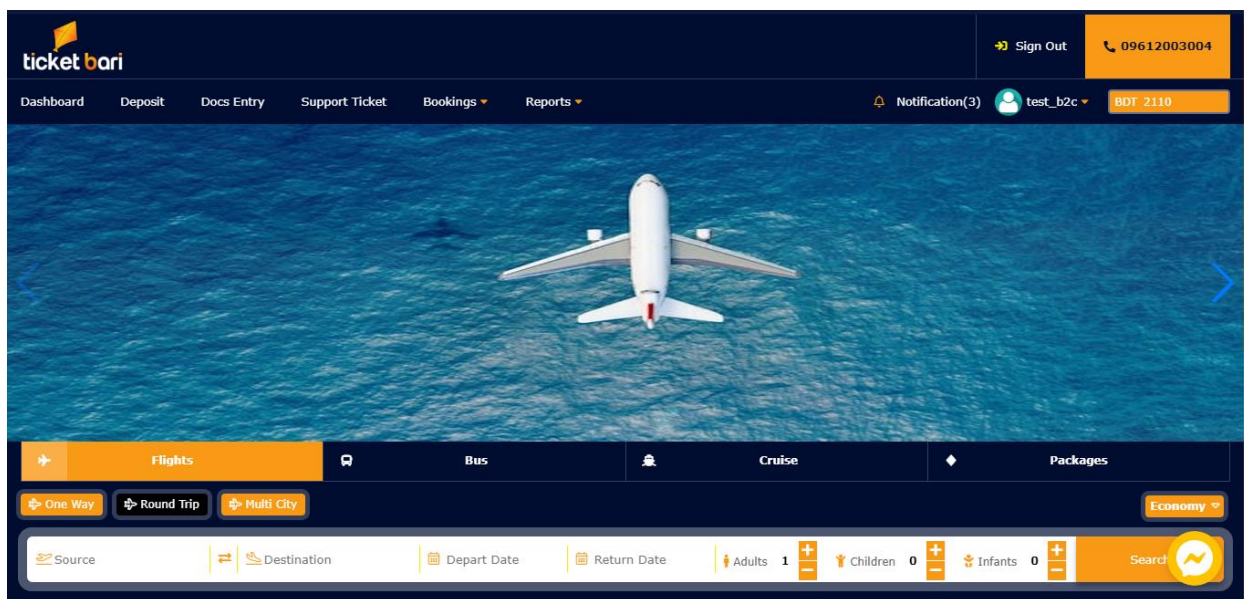


Figure: Ticket Bari Dashboard

Appendix B: Software Development and Testing Life Cycle in Tour Project

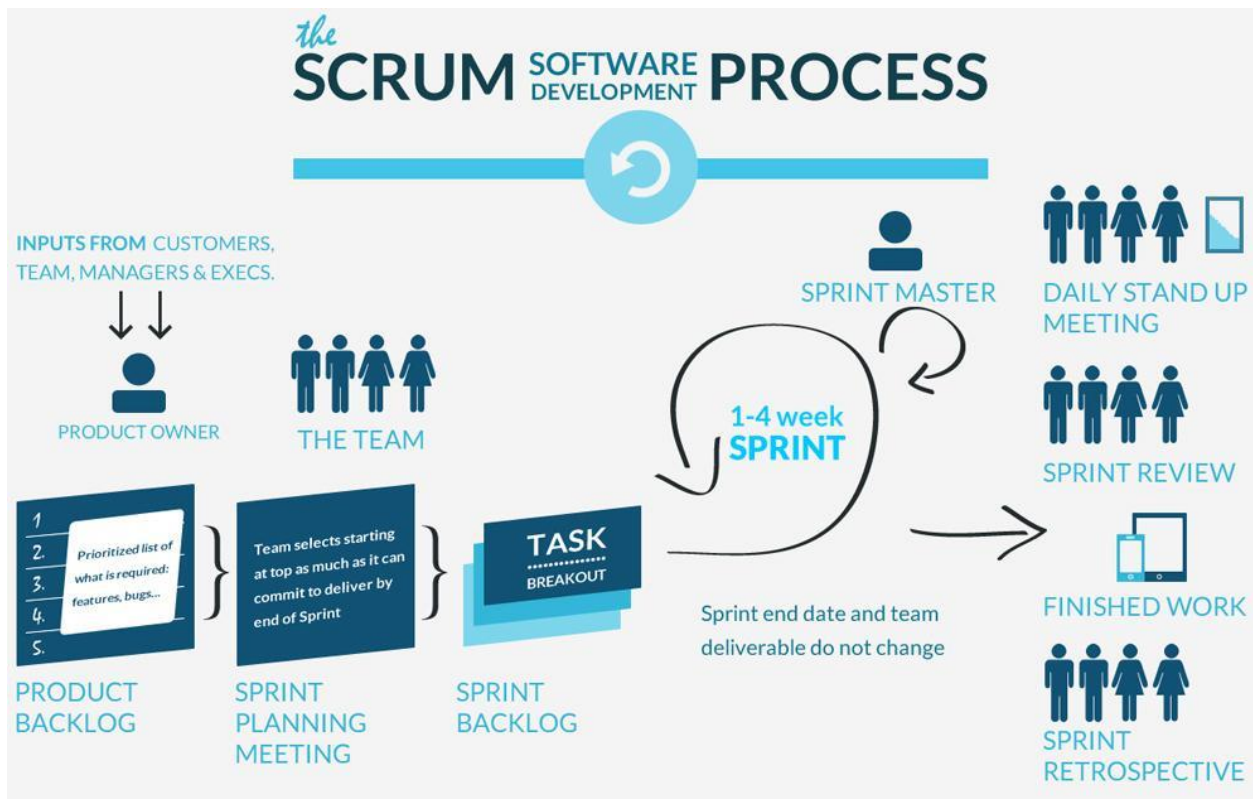


Figure: SDLC in Tour Project

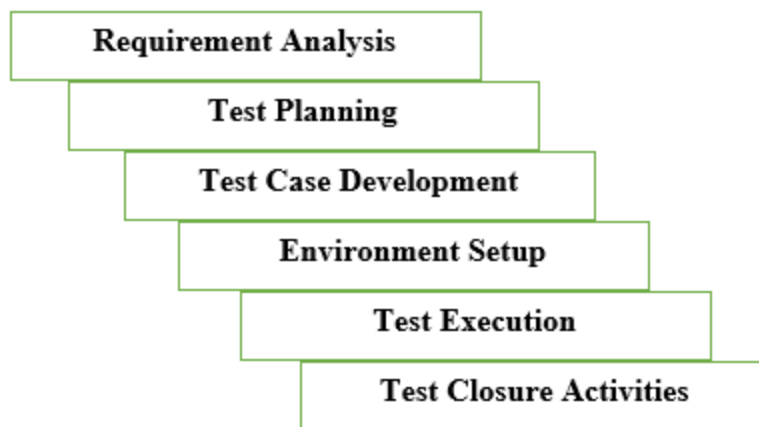


Figure: STLC in Tour Project

Plagiarism Test Report

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