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An Undergraduate Internship on Topic on Robotic Process Automation Monitoring

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Independent University, Bangladesh

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An Undergraduate Internship on Topic on
Robotic Process Automation Monitoring

By

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Summer 2023

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Dissertation submitted in partial fulfillment for the degree of

Bachelor of Science in Computer Science

Department of Computer Science & Engineering

Independent University, Bangladesh

Attestation

This is to certify that the report titled Robotic Process Automation Monitoring is completed by me, Mariam Islam (1820862), submitted in partial fulfillment of the requirement for the Degree of Computer Science and Engineering from Independent University, Bangladesh (IUB). It has been completed under the guidance of Dr. Ashraful Islam (Academic Supervisor). I also certify that all my work is original which I have learned during my Internship. All the sources of information used in this project and the report has been duly acknowledged in it.



Signature

Date: 26th May, 2023

Name: Mariam Islam

Acknowledgement

Firstly, I would like to thank my supervisor, Dr. Ashraful Islam, Assistant Professor Department of Computer Science and Technology. I was really appreciative for his guidance, understanding, and support throughout my internship. His expertise and future vision inspired me to strive beyond my comfort zone and to the greatest standards.

Furthermore, I would like to thank Dotech Limited for allowing me to join their team and finish my internship under their supervision. The organization's commitment to promoting a caring and encouraging learning atmosphere has considerably aided my personal and professional growth. Without a doubt, the knowledge and experiences I've learned here will have an impact on my future pursuits.

Finally, I genuinely appreciate their efforts and their willingness to share their expertise and thoughts with me. I am grateful to finish my internship at Dotech Limited under the supervision of Mehraab A. Anwar, the Chief Executive Officer of Dotech Limited. My gained skills and knowledge will surely serve as a solid foundation for my future ambitions.

Letter of Transmittal

Dr. Ashraful Islam
Assistant Professor
Department of Computer Science and Engineering
Independent University Bangladesh

Subject: Internship Report submission Summer, 2023

Respected Sir,

I am submitting my internship report on the Robotic Process Automation Monitoring under your esteemed direction. I will be presenting the results of my internship work, experience and accomplishments through this report with great pleasure and honor.

From 3rd July 2023 to 3rd October 2023, Dotech Limited has given me the honor to complete my internship. I have had the good opportunity and fortune to learn new skills and broaden my knowledge of this field during this time.

I am thankful for your perseverance, kindness and how you guided me during my internship. Your advice has been of immeasurable value in helping me develop my knowledge and skills in the area of Robotic Process Automation Monitoring. I have committed myself to completing this report with the utmost honesty and sincerity, working hard to meet all the demands and expectations.

I hope and pray that this report fulfills to your standards and satisfies all necessary requirements. I appreciate the chance to learn and develop through this internship because working under your direction has been an enlightening experience. I would like to express my gratitude for your invaluable assistance and for giving me the chance to expand my knowledge and skill set. I eagerly await your comments and recommendations regarding my internship report.

Sincerely Yours,
Mariam Islam
ID: 1820862
Department of Computer Science and Engineering
Independent University, Bangladesh



An Undergraduate Internship/Project on your Topic

By

Mariam Islam

Student ID: 1820862

Summer, 2023

Consent from Supervisor

The student modified the internship final report as per the recommendations made by her academic supervisor and panel members during and before final viva, and the department can use this version for archiving as well as the OBE course material for CSE499.

This internship report is checked with Turnitin and/or Ithenticate plagiarism checker, and the score is:

Turnitin Score (%): 08%

Ithenticate Score (%): —

(Signature of the Supervisor)

Ashraful Islam 2-15/10/23

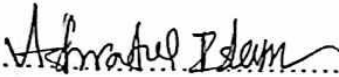

Ashraful Islam, PhD

Department of Computer Science & Engineering


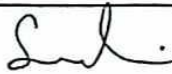
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Evaluation Committee

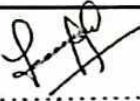

Supervision Panel

 Academic Supervisor	 Industry Supervisor
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Panel Members

 Panel Member 1	 Panel Member 2
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Office Use

 Program Coordinator	 Head of the Department
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Abstract

This report represents the outcome of my three months long internship at dotech ltd, from 3rd July 2023 to October 3rd 2023 as a business analyst assistant and developers assistant. The primary objective of this internship were to gain practical experience in front end development, teamwork and automation processes. The internship project was to focus on enhancing the AIW dashboard that is used to automate the verification process of banks in opening savings account and school banking through NID and birth certificates.

The methodology used during the internship included two significant projects. First, the task was to make AIW dashboard mobile responsive which helped me focus on user experience and establish my skills on HTML,CSS and javascript to create a dynamic and visually appealing website. Second I undertook the responsibility to make Dotech Ltds corporate website using HTML and CSS. I was also assigned to make use cases for different processes required for banks to automated and weekly reports on the bots performance.

The results of this internship were the improvement of AIW dashboard's front-end functionality, enhancing their user friendliness and making it adaptable for mobile phones. This enhancement has optimized the accounts verification process for Bank Asia, reducing errors and increasing customer satisfaction.

To conclude I will say that the opportunity to work at Dotch has been unique which has helped me develop my theoretical knowledge into practical applications, particularly focusing on front end development and automation. By contributing to AIW dashboard and the Dotech website , the internship significantly enriched my role as a business analyst assistant and developer in enabling efficient automated processes.

Introduction.....	9
1.1 Overview/Background of the Work.....	9
1.2 Objectives.....	10
1.3 Scope.....	11
Literature Review.....	11
2.1 Relationship with Undergraduate Studies.....	11
2.2 Related Works.....	12
Project Management & Financing.....	13
3.1 Work Breakdown Structure.....	13
3.2 Process/Activity wise Time Distribution.....	14
3.3 Gantt Chart.....	15
Methodology.....	16
Body of the Project.....	18
5.1 Work Description.....	18
5.2 Requirement Analysis.....	19
5.2.1 High Level Diagram.....	19
5.2.2 Detailed To Be Process.....	19
5.2.2 Functional Requirements.....	23
5.2.3 Non Functional Requirements.....	24
5.3 System Analysis.....	26
5.3.1 Six Elements Analysis.....	26
5.3.2 Feasibility Analysis.....	27
5.3.3 Problem Solution Analysis.....	28
5.4 System Design.....	29
5.4.1 UML Diagram.....	29
5.4.2 Architecture.....	29
5.5 Implementation.....	30
Result and Analysis.....	33
6.1 Result.....	33
Project as Engineering Problem Analysis.....	33
7.1 Sustainability of the Project/Work.....	33
7.2 Social and Environmental Effects and Analysis.....	34
7.3 Addressing Ethics and Ethical Issues.....	35
Lesson Learned.....	35
8.1 Problems Faced During doing Project and their Solution.....	35
Future Work & Conclusion.....	37
9.1 Future Works.....	37

Chapter 1

Introduction

DoTech is a cutting edge technology company that specializes in AI- based robotic process automation (RPA) solutions for financial institutions. It was founded in 2023 which committed to help financial institutions to optimize their operations and automated all the manual processes they have to save labour work through the use of RPA and AI technologies.

Dotech's AI- generated RPA services enables banks to automate their monotonous, repetitive and time consuming tasks such as data entry, account reconciliation, loan approval and compiling reports.

The company also provides a range of consultancy to financial institutions to implement AI and RPA services to enhance their work and bring in efficiencies. The company's team of experts has years of experience in the field of technology development and has worked with financial institutions of all sizes and types. They are also dedicated to help clients achieve their business goals and keep themselves ahead of the competition.

1.1 Overview/Background of the Work

During my internship with Dotech Ltd, I was tasked with exciting challenges of using my technical skills and theoretical knowledge and converting it into practical solutions. My internship consisted of various projects , each of them were focused on different prospects of Dotech and AIW (Artificial Intelligence workflow) platform, indirectly contributing to banking clients.

One major significance of my internship was to optimize their AIW dashboard for mobile devices. In this generation of high tech evolution where smartphones are necessary for daily check up even if the person is not at the office or in front of a desktop or pc, the need of mobile application to overlook the dashboard works anywhere and any place is important. Through the application of CSS and javascript , I successfully made the AIW dashboard adapt to different screen sizes and create an application that would enable anyone to use it on their phone.

Furthermore, I had the opportunity to extend Dotech's services by creating an APK

(Android Application Package) for their website.

1.2 Objectives

Project objectives describe what we have to accomplish by the end of our project. A project's objective has to be precise, quantifiable, adhere to time while making sure the clients are satisfied with our work and we have kept our finance low respectively/ competitively. Here is the objectives of my project:

- **Enhance Mobile Responsiveness of AIW Dashboard:** Develop a more versatile and user-friendly AIW Dashboard by ensuring it is responsive across various mobile devices
- **Create a Mobile Application for Client Use:** Generate an Android Application Package (APK) for the Dotech website, allowing clients to conveniently download and install the application on their mobile.
- **Craft Use Cases for Innovative Banking Processes:** Collaborate with the product team to create comprehensive use cases for new processes within the AIW platform, enabling Dotech to offer innovative solutions to banking clients.
- **Optimize Performance and Reliability:** Improve the AIW Dashboard's reliability and speed through rigorous performance testing and optimization measures.
- **Streamline Reconciliation Processes:** This involves creating process design documents that include high-level diagrams, as-is process maps, and detailed process maps, while ensuring that all essential information required for efficient reconciliation is comprehensively documented.

1.3 Scope

Here is the scopes of my project:

- Monitor the Bots used for verification of accounts with NID, Birth certificate, Face match , signature and much more to find out how to make it more efficient and why it was running slow.
- Making Dotech X AIW dashboard mobile responsive.
- Generate CSS in their code to bring in changes.
- Make an APK which can help the clients to access the dashboard from their

mobile or tab.

- The monitoring system will provide detailed reports and analytics, allowing app owners to analyze trends, identify potential issues, and make informed decisions regarding their apps.

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

- **CSE 213 (Object-Oriented Programming):** Here, I have covered the principles of object-oriented programming and design patterns, which can be important for developing modular, scalable, and maintainable code.
- **CSE 307: System Analysis and Design:** Here, I have learnt about the tools and techniques used for design and analysis. How to draw a data flow diagram, make a decision table/ decision tree and make systems development life cycle .
- **CSE 309: Web Applications and Internet:** All the front-end work that I have done during my internship was taken from this course which includes css, html, http, javascript with jQuery libraries and API usage.
- **ENG 105: Business English:** Business English I believe teaches us how to communicate in the firm environment and the formal methods of writing letters, reports and creating client relational management. Presentations of your project and how to deliver your work through confidence and dedication.

2.2 Related Works

The skills acquired during my internship at Dotech Limited hold significant relevance for a variety of related tasks and projects. Whether it be in the realm of app monitoring, analytics, or process optimization, these skills provide a strong foundation for addressing similar challenges in the future:

1. Versatile Mobile Development Skills:

The enhancement of mobile responsiveness and the creation of a mobile application have equipped me with valuable skills in mobile development. These skills can be readily applied to develop mobile solutions for diverse purposes.

2. Process Design and Documentation Proficiency:

The creation of use case documents and process maps has honed my ability to analyze, design, and document complex processes. This skill can be used for optimizing workflows in different domains.

3. Automation and Scalability Expertise:

Working with everyone in this automation company has helped me learn many processes that are viable through RPA and I can utilize this in any company that uses automation to disclude repetitive tasks.

4. Communication and Reporting Skills:

Working in an office environment has improved my communication insights and and creating reports for systems overall in various analytical and decision making contexts.

Chapter 3

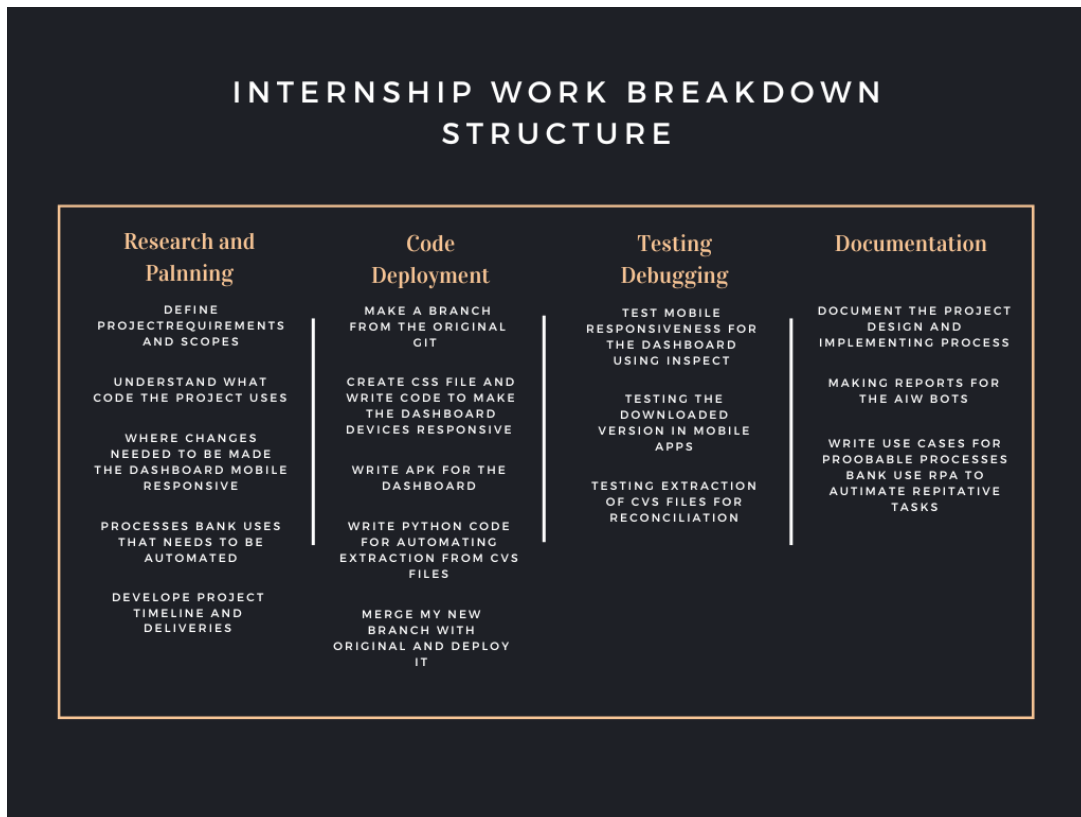
Project Management & Financing

3.1 Work Breakdown Structure

Work breakdown structure shows my vital roles in the successful execution of my project at Dotech Ltd. A WBS is a hierarchical chart or diagram that shows the project management and each task executed during the project. It dissects the project into manageable and well defined tasks. Its primary function is to specify and arrange project deliverables in a structured manner so that team members

can comprehend and manage the project effectively.

At Dotech Ltd, WBS gives a framework for the project management, planning and execution. Each work us a distinct package , task and milestone that is essential for project objectives.



3.2 Process/Activity wise Time Distribution

Project manager uses a time distribution approach to estimate the time taken for each activity. It entails decomposing the project into separate parts and estimating how long each action will take to complete.

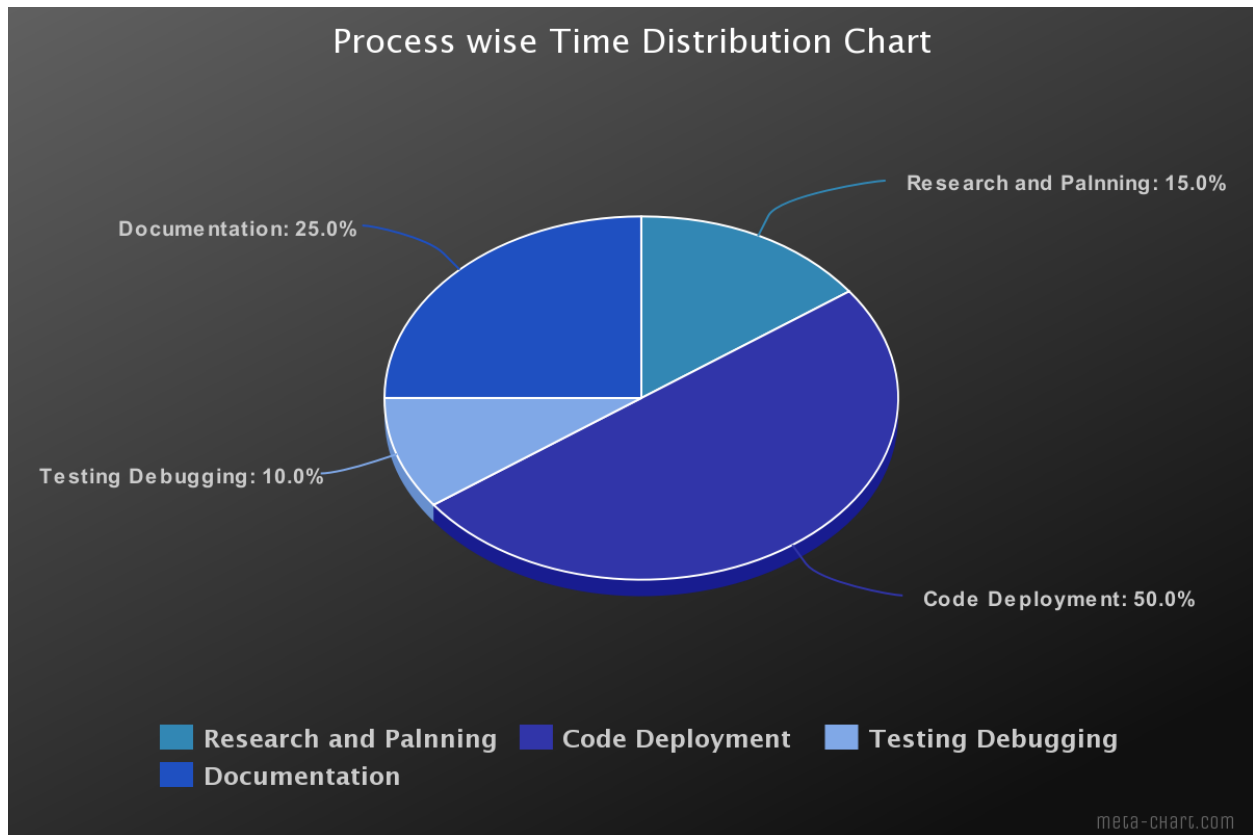


Figure 2 Process wise Time Distribution Chart

This activity-based time distribution estimate for my internship results in a 2.5 months overall timetable which was flexible so the timing could have been changed according to our team members availability.

3.3 Gantt Chart

This chart is one of the most often used project management charts, and is particularly helpful for planning projects and figuring out the sequence in which activities must be done. Typically, the length of time needed to finish each stage of the project is depicted in a graphical table with a bar designating the display format. There are also the start date, finish date, tasks, and milestones. Gantt charts substantially simplify the scheduling, organizing, and keeping track of certain activities and resources within a project.

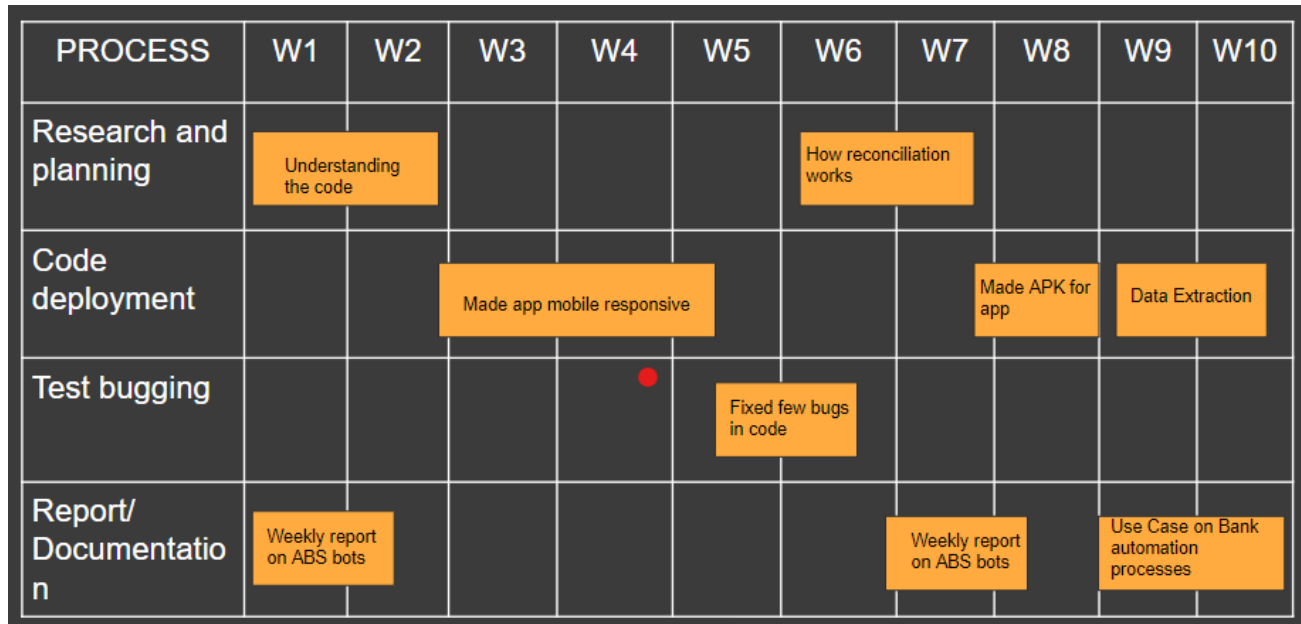


Figure 2 Gantt Chart

In this Gantt chart, I divided the total timeline of my internship into 10 weeks. I focused on 4 out of 5 steps of our development process. The initial 2 weeks was for learning my company's workplace policies and structure along with how their code was structured. I had also made weekly reports on their automation bots for the past six months. Then my task was to make their AIW dashboard and the whole website mobile responsive which took me 2.5 weeks to complete. This was followed by deploying my work with the main branch.

Chapter 4

Methodology

The design, development, and testing of new computer programs are all heavily influenced by software development processes. They provide developers organized procedures that let them move quickly through each step of development. Additionally, these strategies frequently involve design principles, connecting product features and development techniques with functional goals. Developers can explain what the product does and the issues it solves, giving

information about their design philosophies.

I have carefully evaluated using the Agile software development technique as the developer of the "AIW" project to assure the project's success. Agile technique is the best strategy for this specific project since it strongly emphasizes cooperation, adaptability, and iterative development.

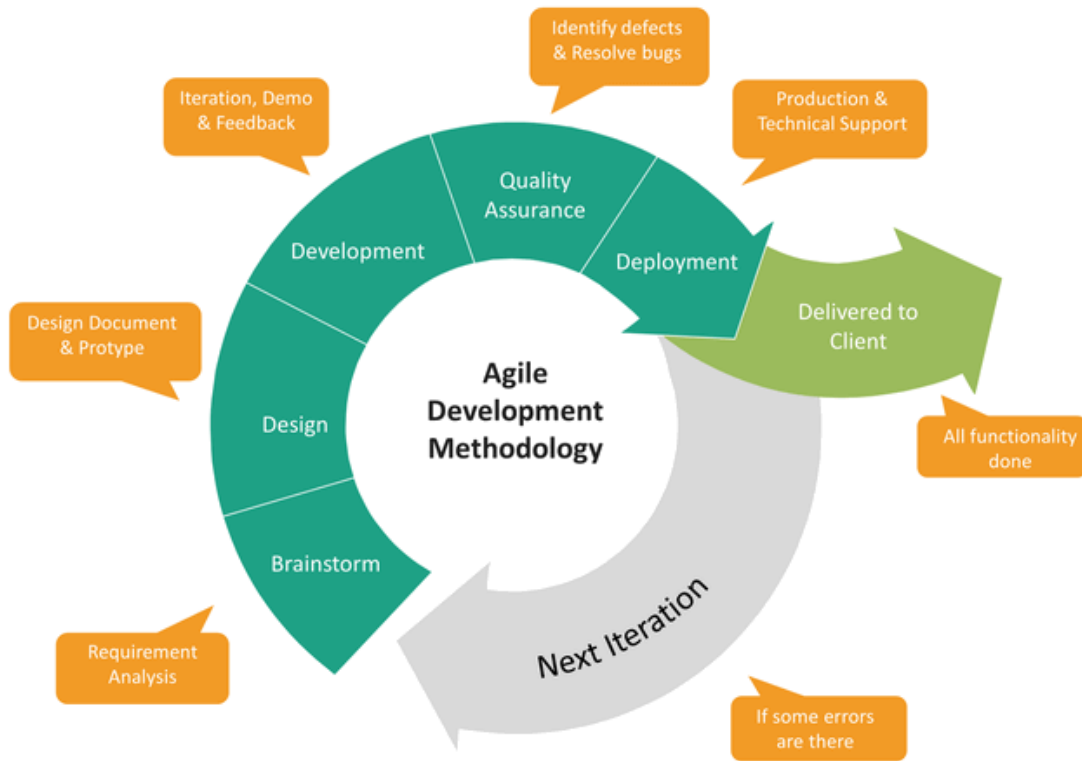


Figure 5 Agile Methodology

The Reasons to choose Agile Methodology for my project:

Collaboration: Agile encourages teamwork between stakeholders, end users, and stakeholders. As a result of the ongoing communication fostered by this collaborative atmosphere, the project is kept in line with changing goals and needs.

Flexibility: It is necessary since the app monitoring industry is dynamic. Throughout the project's lifespan, agile enables for adjustments and alterations to accommodate changing requirements and difficulties.

Iterative Development: The development team may construct, test, and improve the monitoring system progressively thanks to agile's iterative methodology. This method is ideal for a project that has to be adjusted and improved in real-time, like app monitoring.

Efficiency: Agile techniques place a strong emphasis on producing functional software in less time. This strategy guarantees that project milestones are met on time and enables ongoing feedback and improvement.

Overall, the "Robotic Process Automation Monitoring" project aims to take advantage of a methodology that fosters adaptability, cooperation, and responsiveness to the constantly changing environment of app monitoring by incorporating Agile concepts into the development process. This strategy is expected to make a substantial contribution to the project's overall performance and the provision of a highly effective app monitoring solution.

Chapter 5

Body of the Project

5.1 Work Description

During my internship at Dotech Ltd as a Business Analyst's and Developer's Assistant, I played a crucial role in contributing to the organization's mission of providing cutting-edge solutions to its banking clients. My work was centered on front-end development, process optimization, and automation, focusing on the enhancement of the AIW (Artificial Intelligence Workflow) Dashboard along with

finding the processes that a bank can automate and preparing use cases for those processes.

Key Responsibilities and Achievements:

Mobile Responsiveness Enhancement:

Developed and implemented mobile responsiveness improvements for the AIW Dashboard. Ensured seamless access and usability on various mobile devices, catering to the increasing importance of mobile technology in the digital landscape.

Mobile Application Development:

Created an Android Application Package (APK) for AIW Dashboard. This innovation allows clients to download and install the application on their mobile devices enhancing the user experience and accessibility.

Use Case Documentation:

Collaborated with the product team to create process designs for all the processes that were needed to be automated in banks and make use cases for each processes. These documents included high level diagrams, is as process maps, and detailed process map, providing a blueprint for optimizing reconciliation process.

Comprehensive Reporting and Analytics:

Developed a reporting system that provided detailed insights and analytics. This empowered app owners to analyze trends, identify potential issues, and make informed decisions regarding their apps, enhancing their performance.

5.2 Requirement Analysis

5.2.1 High Level Diagram

A high-level diagram is like a simplified picture that shows the most important parts of something complicated..

The following diagram shows the steps of processes required for Bank Account verification. Each of these steps are crucial and need to be automated.

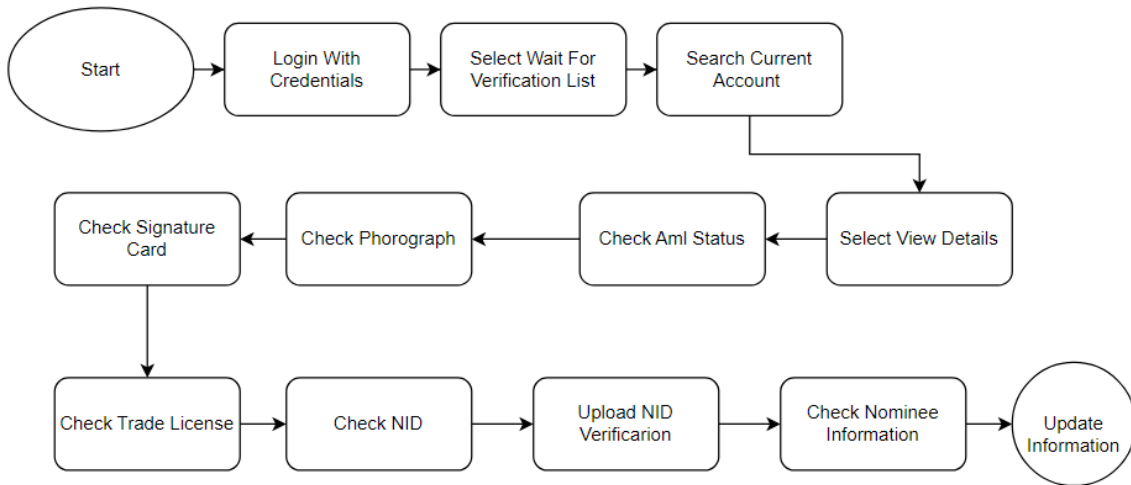
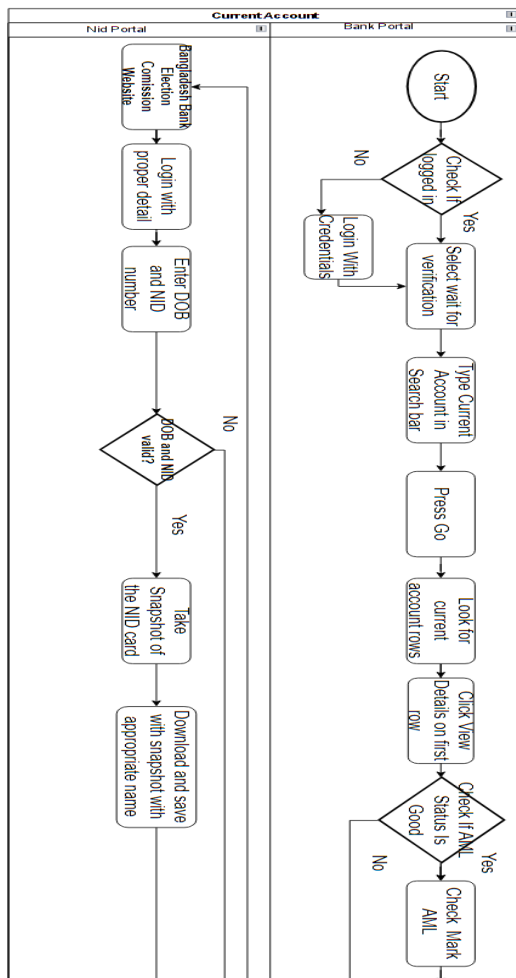
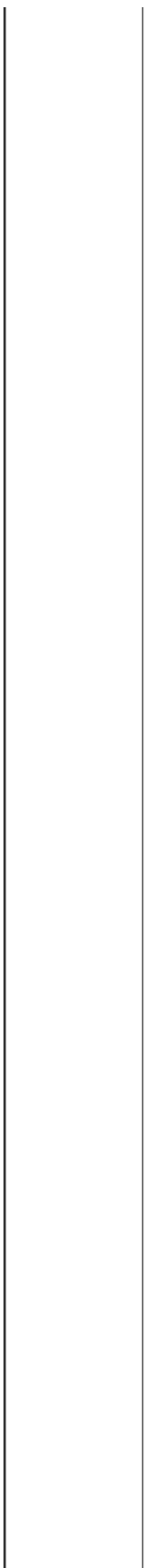
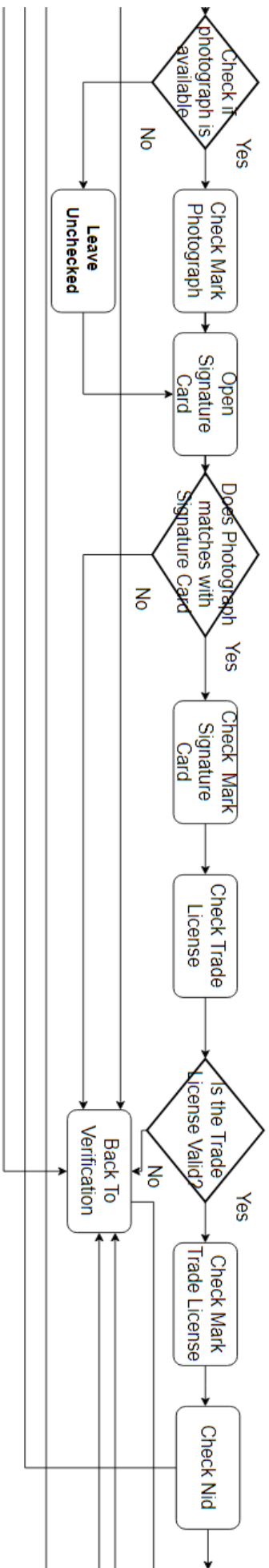


Figure 5.2 1: High Level Diagram

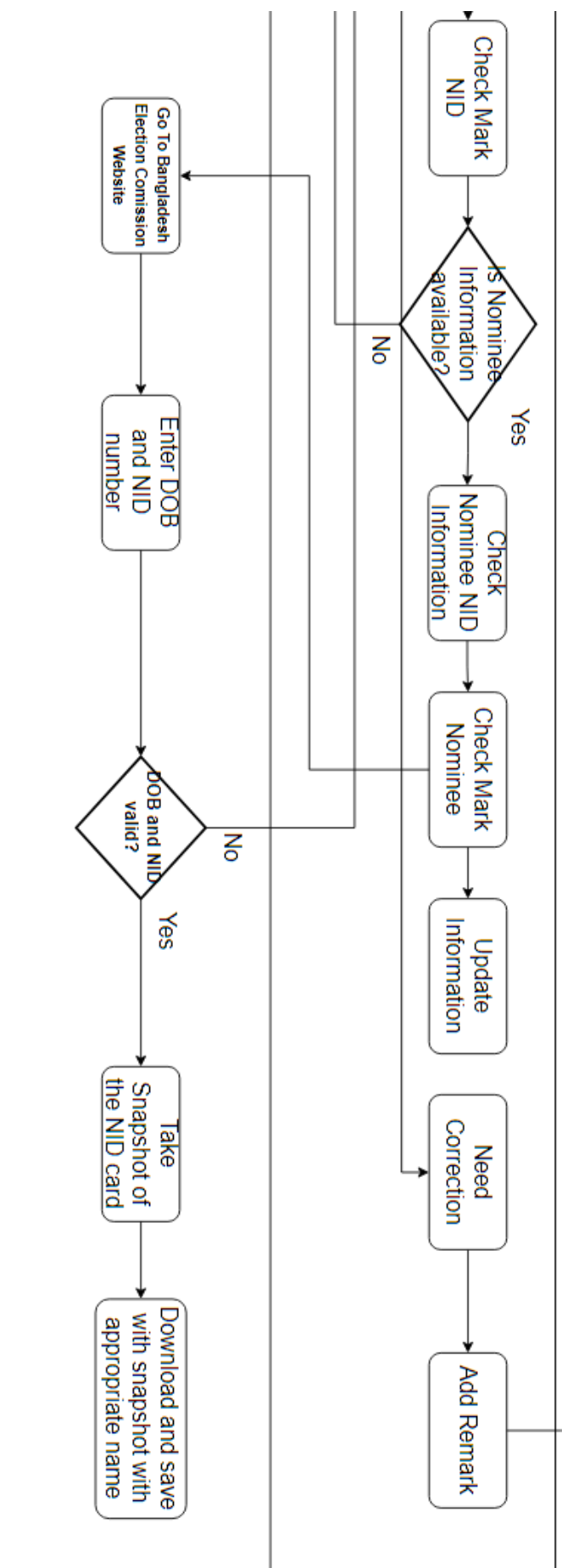
5.2.2 Detailed To Be Process

The detailed to be process diagram shows the steps, roles, inputs, outputs and tools used. It shows the detailed functionality and portal sites that needs to be accessed for the bots to run properly and automate the process.





- Types Of Remarks:
1. Picture Missing
 2. Nid Missing
 3. Signature Card Missing
 4. Nominee Information Missing
 5. Customer NID information Invalid
 6. Nominee NID information Invalid
 7. Facematch fail
 8. Permanent Address Mismatch
 9. Father Name Mismatch
 10. Trade License Unavailable
 10. Trade License Incorrect



5.2.2 Functional Requirements

The process of obtaining and defining the duties and responsibilities that a system must fulfill is known as functional requirements analysis.

Function: Start and stop a bot from verifying		
Input: N/A	Process: An email is sent to every bot operator automatically when the bots are turned off. Then someone has to login to turn on bots again.	Output: The bots start verifying accounts again
Pre-condition: Username and password and internet connection		
Post- condition: User receives email notification		
Alternative: N/A		

Table 5.2.2: Functional Requirement 1 - Start and stop a bot from verifying

Function: Check Bots activity in real time		
Input: N/A	Process: A live view portal opens which shows the the activities of the bot in real time	Output: A view on the bots activity
Pre-condition: Username and password and internet connection		
Post- condition: owner receives real-time update		
Alternative: N/A		

Table 5.2.2: Functional Requirement 2 - Check bots activity in live view

Function: Make reports		
Input: Specific Dates for the needed report	Process: AIW checks database and prepare reports for the given dates	Output: A csv file created for the report
Pre-condition: Username and password and internet connection		
Post- condition: Downloads a csv		
Alternative: Manually write down the report		

Table 5.2.2: Functional Requirement 3 - Make reports

5.2.3 Non Functional Requirements

Scalability:

The system must be able to manage an increase in the quantity of account verification requests, new banks, and users without sacrificing its usability or dependability. It should be able to handle increases in verification requests and system load gracefully without affecting service.

Availability:

To guarantee that banks may start and finish account verifications whenever they want, the system must maintain a constant state of availability. Any planned downtime or maintenance should be scheduled outside of busy times, and service disruptions should be kept to a minimum to guarantee ongoing functioning.

Usability:

The platform should be simple to use and navigate for system administrators as well as bank professionals who start verifications. The user interface should be simple to use and offer people clear instructions and direction. It ought to make for a simple user experience.

Performance:

A significant number of simultaneous requests for account verification should be successfully handled by the system. It needs to be able to handle verifications quickly and with a short response time. Verification findings should be sent with the fewest possible delays or lags, delivering a responsive user experience.

Security:

To keep all the data safe and prevent integration of unwanted malware along with fraud, the system needs strong security. Especially for our project where all the personal information about individual clients were input into the system. It should be encrypted at all times, whether it is in transit or at rest. User permissions should be properly enforced, and access to the system should be tightly managed to prevent unwanted entrance.

Portability:

It should be possible to use the system without any issues on a variety of platforms and gadgets, such as desktop computers, laptops, tablets, and smartphones. It needs users to install any special software or devices in order to access it from anyplace with an internet connection.

5.3 System Analysis

5.3.1 Six Elements Analysis

Gathering and analyzing data to find the problems and to break down the system's components are all processes in the system analysis process.

This technique is used to improve the system and fix all the hiccups made in the first few steps and make sure efficiency. It offers various opportunities for systemic solutions and activities associated with the analysis, system analysis is crucial. This analysis shows

1. Process - The activity being performed by the system
2. Human - The user(s) interacting with the system
3. Non-Computing Hardware - The physical components not directly involved in computation (e.g. printers, scanners)

4. Computing Hardware - The physical components involved in computation (e.g. servers, laptops)
5. Software - The programs and applications used by the system
6. Database - The storage system used by the system

Process	System Roles				
	Human	Computer Hardware	Software	Database	Comm. & Network
Login/ Signup	Employee or admin enters credentials into login screen	Computer/ Phone	Web browser	MySQL	Internet
Track live view for Bank Account verification	Employee or admin enters credentials into login screen	Computer/ Phone	Web browser	N/A	Internet
Make Reports	Employee or admin enters credentials into login screen	Computer/ Phone	Web browser	MySQL	Internet
Start and Stop bots	Employee or admin enters credentials into login screen	Computer/ Phone	Web browser	N/A	Internet

5.3.2 Feasibility Analysis

The sustainability of the suggested system is an essential inquiry to ask during this first research. This analysis is used to ensure best performance. It entails a preliminary examination of the project and determines if the organization will benefit from the planned system. If a flaw is identified during the early stage the months and years of hard work wont go to waste. These are the three types of feasibility check:

Technical Feasibility:

It deals with both hardware and software. Requirements. This involves evaluating the technical skills of the development team as well as the available gear and software. For our proposed system, the technology we'll be using is React for frontend with Django for backend and MySQL for our Database.

Operational feasibility:

It measures how the system can solve the problem and satisfy the requirements. When the system will be run by the customer, what kind of operational challenge they will have and how the operational issue would be feasible and that is feasible or not. Our project is user friendly and can be implemented in any kind of environment and will give the best performance.

Economic Feasibility:

In the examination of the project's economic viability, the costs and benefits are looked at. Cost of the project is considered, as well as hardware and software resources, UI/UX design, development costs, and ongoing 21 operating costs. For our project it's done by our team members as well as the project manager. For this project they just used 4 programmers and 2 interns . Once the system is set up there is no man power involved as this is an automated system so no extra charges are applicable.

5.3.3 Problem Solution Analysis

When we are working on a project as a team, we face many problems and need to solve these problems first. We try to understand the problem and user needs, then we analyze the problem proposing solutions to meet this need so that it helps us to better.

Problems	Analysis	Solution	Constraints
The bots used to stop randomly and employees had to turn it back on manually after getting the	If a verification took more than 4 minutes the website used to crash and stop.	The bot was automated with selenium and it restarts on its own if somehow stops	Internet connectivity

notification through email			
The verification was too slow. One account took more than 1 minute to completely verify	There were unnecessary loops included in the code. The bank server was slow as well.	The code was fixed omitting unnecessary loops and Bank Asia was contacted to change their server ports	N/A
Number of accounts verified decreased by 50% after the automation for starting deployed	The bot was rechecking all the checked accounts as well after restarting.	The accounts verified needed to be updated as soon as being check and saved in the banks site immediately	The permission for government sites.

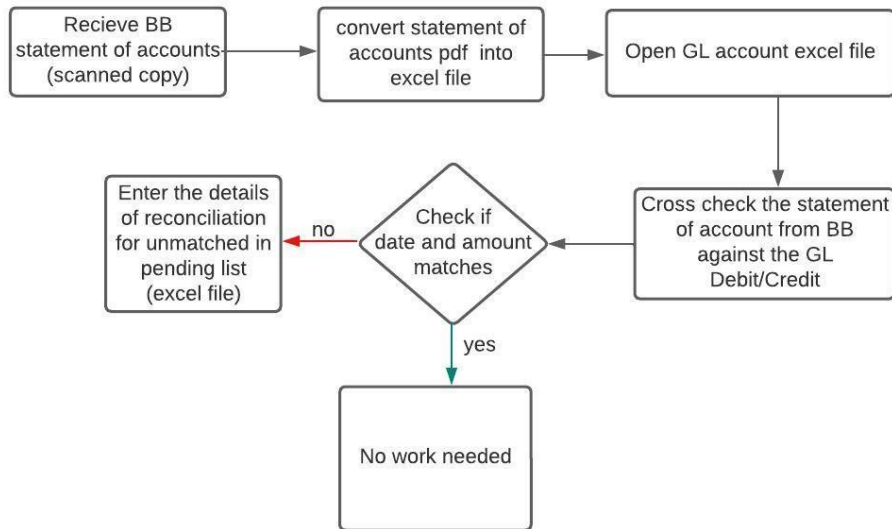
5.4 System Design

5.4.1 UML Diagram

The system is intended for two different user types: admins, who have the approval and power to manage any data, including adding and removing people, and basic users, who are all ordinary company employees.

In 5.2.1, The UML for Bank account opening verification was shown.

Here, the UML for Bank reconciliation process is being shown.



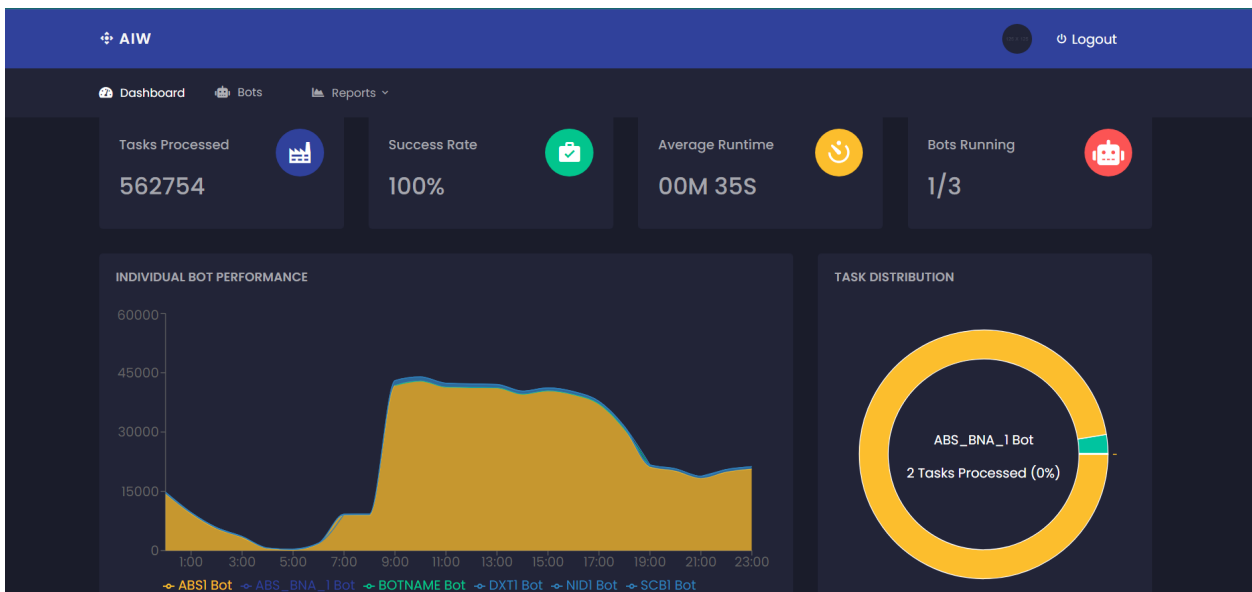
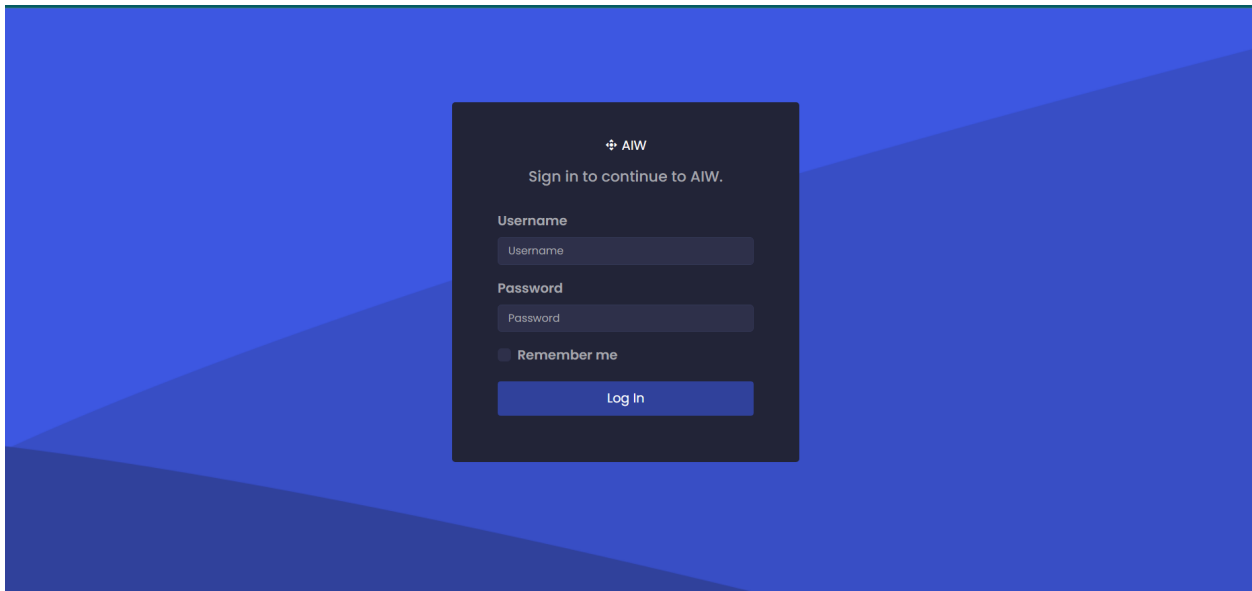
5.4.2 Architecture

The "Robotic Process Automation Monitoring " project follows a client-server architecture. The architecture comprises two major components: the client and the server. The client is a Bank who wants to automate their manual processes to reduce labour work while the server is responsible for automating the processes.

The server component comprises three ports, two government for NID and birth certification and another one is Bank's portal server. The bank's port has credential information about each new client NID, photos, and personal information so it is secured with admin username and password.

5.5 Implementation

Here are some visualizations of the implementation of my project "Robotic Process Automation Monitoring ".



ID	Bot Name	Status	Count	Runtime	Actions
6	ABS & BNA Bot 1 (Parent)	Running	548350	191 days, 8H 39M 45S	Play ▶, Stop ■
#	ABS Data Extractor Bot (Child)	Running	548350	191 days, 8H 39M 45S	View Live 📊
#	ABS Automation Bot (Child)	Running	548350	191 days, 8H 39M 45S	View Live 📊
9	SCB & BNA Bot 1 (Parent)	Stopped	288	17H 28M 46S	Play ▶, Stop ■
#	SCB Data Extractor Bot (Child)	Stopped	288	17H 28M 46S	View Live 📊
#	SCB Automation Bot (Child)	Stopped	288	17H 28M 46S	View Live 📊

AIW Logout

Dashboard Bots Reports

ABS Report AIW > Dashboard > ABS Report

Date: 13 Apr 2022 - 27 Sep 2023 Export to CSV

SELECT DATE

Apr 13, 2022 Sep 27, 2023

April 2022

Sun	Mon	Tue	Wed	Thu	Fri	Sat
27	28	29	30	31	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

TIME	ACCOU...	ACCOU...	FIRST ...	LAST N...	CUSTO...	CUSTO...	DOC TY...
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13/04/2...	Wahida Parvin	Single A/C	Wahida Parvin		Wahida Parvin	16-SEP-87	National Id
13/04/2...	Mst Nurasta ...	Single A/C	Mst Nurasta ...		Mst Nurasta ...	11-MAR-74	National Id
13/04/2...	Maychan Ba...	Single A/C	Maychan Ba...		Maychan Ba...	15-FEB-78	National Id
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13/04/2022 1...	1083452014...	nominee inv...	Sunil Chandr...	Single A/C	Sunil Chandr...	02-MAY-83	National Id

AIW Logout

Dashboard

ABS Report

Date: 13 Apr 2022 - 27 Sep 2023 Export to CSV

SELECT DATE

TIME	ACCOU...	REMARK
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6:30 PM

AIW

Sign in to continue to AIW.

Username

Password

Remember me

Log in

6:33 PM

AIW Logout

Dashboard

Bots Reports

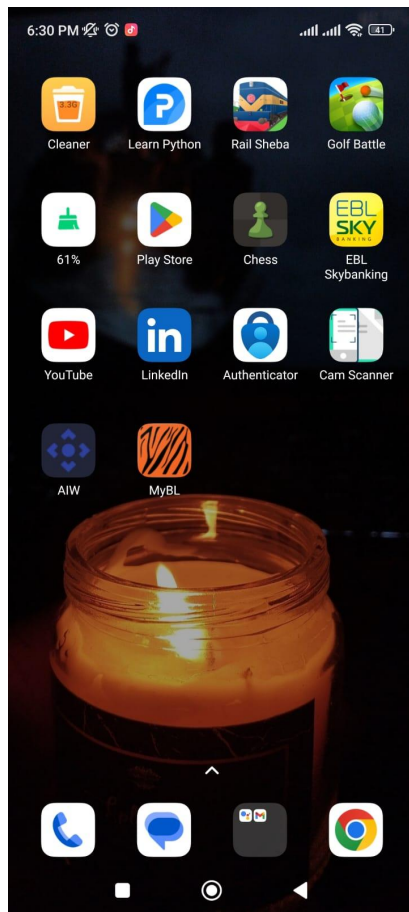
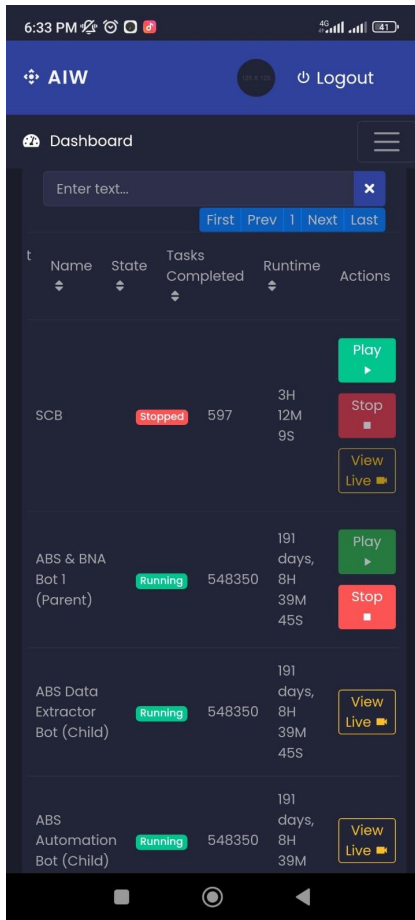
INDIVIDUAL BOT PERFORMANCE

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0:00 4:00 8:00 13:00 18:00 23:00

- ABS1 Bot
- ABS_BNA_1 Bot
- BOTNAME Bot
- DXTI Bot
- NIDI Bot
- SCBI Bot

TASK DISTRIBUTION



Chapter 6

Result and Analysis

6.1 Result

The overall work was difficult and oftentimes confusing but as the whole project was executed and coded by 4 developers and 2 interns it became comprehensible. The work that was assigned was making the front end of their official website and fixing their existing AIW dashboard front end to be mobile responsive and create an APK to launch in a phone or tab as an application which to me had few ups and downs and it was brought about by trial and error.

I went through several stages of trial and error as a completely inexperienced web developer, especially for the UI. Many of the lower-level employees had limited education, making it difficult for them to understand English instructions. So there were several conversations with them, back and forth to decide on answers, and in the end, the bare-bones, uncomplicated design was what made the difference.

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

Here , we can evaluate sustainability using a variety of elements, such as organizational, financial, and community sustainability.

Community Sustainability: Community Sustainability refers to the degree of user support for the project and may be measured by keeping track of user engagements like comments, website visits, referrals, and other user interactions. As long as there is a need for mobile apps, which will increase the requirement for app monitoring and maintenance, the project will have community support.

Financial Sustainability: The ability of a project to generate enough revenue to pay for its running costs, such as server costs, database storage costs, and third-party API costs, is referred to as financial sustainability.

Organizational Sustainability: Organizational sustainability refers to the project's ability to continue running and providing updates in the future. Our business continually makes investments to enhance our offerings with the assistance of our employees who work to advance their expertise in software development. This will enable them to strategically address specific difficulties in this sector and remain competitive with other businesses.

7.2 Social and Environmental Effects and Analysis

The positive outcomes seen in the automated app monitoring system are also evident in the banking process automation, which has significant social implications. In a highly competitive banking environment, it improves user satisfaction and trust in the first place. Processes that are streamlined and effective result in faster, more dependable services, lowering customer annoyance and fostering trust in the bank's products. This trust is further strengthened by prompt issue resolution, which guarantees that any monetary issues are dealt with right away.

Second, automation encourages greater financial inclusion by lowering the cost of banking services and increasing their accessibility to a larger population. With the help of this inclusive strategy, people who were previously underserved can now access and take advantage of crucial financial services.

Finally, automation places a high priority on data security and privacy, putting strong safeguards in place like encryption and access controls. Customers become more confident that their financial information is secure as a result. Additionally, by providing convenience and flexibility through online and mobile banking, it frees up customers' valuable time that was previously consumed by manual processes. In the end, these social advantages support a bank's favorable reputation and customer loyalty, two essential elements in today's competitive and digitalized financial environment.

7.3 Addressing Ethics and Ethical Issues

Transparency and Fairness: When automating banking procedures, customers should be informed clearly about the changes and their implications. Automation algorithms and decision-making procedures should be created without bias or discrimination based on characteristics like socioeconomic status, gender, or race. It is crucial to guarantee fairness and equal access to financial services.

Data security and privacy: Automation necessitates the gathering and processing of enormous amounts of private customer information. Strict rules for data security and privacy are required by ethical responsibility. Banks are required to protect this data from hacks and unauthorized access. Customers should also be able to control their data and understand how it is used.

Banks should obtain customers' informed consent regarding the use of their data and the degree of automation incorporated into their financial transactions. Customers ought to be given the option to choose whether or not to use automated services, and their choices ought to be respected.

Impact on the Workforce: Human employees may lose their jobs as a result of the automation of some banking tasks. Banks have an ethical duty to offer assistance, opportunities for retraining, and support to affected employees. It is crucial to make sure that the workforce transitions fairly.

Chapter 8

Lesson Learned

8.1 Problems Faced During doing Project and their Solution

In the course of my internship at Dotech Ltd, I encountered several challenges and obstacles while working on the Robotic Process automation monitoring. These challenges not only provided valuable learning experiences but also tested my problem-solving abilities and adaptability. Here are the key challenges I faced:

Technical Challenges: Throughout the internship I encountered technical hurdles related to code which was all done in react Js and I had to learn it through my internship and with a little help from my colleagues. The issues also included debugging code and optimizing performance.

Effective Communication: This was very crucial not for my project but for the whole integration system starting from project developers to clients from the bank. I faced few challenges in communication with my team and supervisor as they were need to stay updated with all my tasks and misunderstandings were adjusted during this time.

Time management/ Meeting deadlines: A strong time management skill was required as they asked for deliverables to be submitted within the given time mentioned by them. It was difficult to maintain multiple tasks and meet deadlines.

Feedback and criticism: It is hard to accept criticism at times but I understood that it was necessary to acknowledge my flaws professionally and personally as well. Accepting criticism helps in improving confidence and learn through my way of life.

Team dynamics: It is important to build a good relation with your team and have them by your side whenever a hurdle appears. To ensure effective communication and teamwork adjustments were required.

Chapter 9

Future Work & Conclusion

9.1 Future Works

In conclusion, my internship at Dotech Ltd and the project I worked on, Robotic Process Automation monitoring, have been transformative experiences that have enriched my understanding of real-world application of theoretical knowledge. Through the course of this internship, I encountered a range of challenges and obstacles, each of which provided invaluable opportunities for growth and learning.

From technical hurdles and a steep learning curve to the complexities of project scope management and effective communication, I passed these challenges with dedication and determination. These experiences helped me improve my problem solving skills and enhanced my capability if collaborate teamwork.

Throughout the internship, I recognized the critical importance of ethical considerations in the development and implementation of projects. Ethical principles guided our decisions, particularly in ensuring transparency, data privacy, and fairness in the automation of banking processes.

"Banking Process Automation" project underscored the broader implications of technology in shaping user experiences, trust, and social impact. In both cases, technology not only enhanced operational efficiency but also had profound social effects, improving user satisfaction, promoting financial inclusion, and upholding data security and privacy.

I conclude this internship report with gratitude for the guidance and mentorship provided by Dr. Ashraful Islam (Academic Supervisor) and Mehraab Anwer (Organizational Supervisor) and the entire Dotech Ltd team. This experience has deepened my appreciation for the intersection of technology and ethics in the modern workplace.

I look forward to continuing to contribute to the dynamic field of Technological development and to leveraging the lessons learned during this internship to drive positive change and innovation in the ever-evolving landscape of technology and ethics