

Internship Report
on
“Cross-Platform Mobile Application Development
Using Flutter at AkijBashir Group”



Submitted to
Islamic University of Technology
in partial fulfillment of the requirements for the degree of
BBA in Technology Management

Submitted by
I understand that my final report will become part of the permanent collection of the Islamic University of Technology (IUT) in partial fulfillment of the requirements for the degree of BBA in Technology Management. My signature below authorizes the release of my final report to any reader upon request.

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Letter of Transmittal

July 25, 2025

Dr. Mohammad Shamsu Uddin
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Subject: Submission of Internship Report

Sir,

I hereby submit the internship report titled “Cross-Platform Mobile Application Development Using Flutter at AkijBashir Group” which is a mandatory part of the internship program.

It was a privilege to work under your supervision. I tried my best to portray my internship in the report. The opportunity enabled me to bridge my academic knowledge and corporate practices. I believe that the practical knowledge and experience I gained from this study added values to my professional career. I hope my effort will meet the expectations.

I will be available for clarification of any point of the report.

Sincerely Yours,

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Declaration

I, Abdullah As-Sadeed, a student of the Department of Business and Technology Management (BTM) of Islamic University of Technology (IUT) hereby attest to the fact that this report is purely my own work and has been prepared under the supervision of Dr. Mohammad Shamsu Uddin, Associate Professor in the Department of Business and Technology Management.

I also ascertain that I have not given this report to any other person or organization, in return for any kind of certificates. Furthermore, I take full responsibility for any violations of the university's plagiarism and AI usage detection policies.

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Acknowledgement

I express my gratitude to Islamic University of Technology (IUT) and to AkijBashir Group for giving me the opportunity to complete my internship as a Flutter Developer in the Department of Information Technology.

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I am grateful to everyone who contributed to making this internship a success.

Executive Summary

The report covers my internship experience as a Flutter Developer at AkijBashir Group in the Department of Information Technology during the tenure of February 05, 2025, to May 05, 2025. I worked for the group's operations at its headquarters, even though my SBU was Akij Ceramics Limited. The internship program was a partial fulfillment of the requirements for the degree of BBA in Technology Management.

It focuses on how in-house mobile application projects for Retailer Campaign Programs, Employee Self Service, and Tea Estate Attendance System were being developed at the group. The internship revolves around the essence of mission-critical projects that one of the biggest industrial conglomerates of Bangladesh depends on. I was assigned a number of those projects to work on as a developer, and I realized why appropriate technology management is crucial for the business organizations. Because the style of managing technical employees practiced there by the mid-level managers regarding the project developments was ineffective, as per my experience.

Recommendations for improvement include assigning dedicated project managers and providing the developers with complete documentations. Overall, the internship was a fulfilling experience that bridged my academic knowledge and corporate professionalism.

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List of Abbreviations

- **SBU:** Strategic Business Units
- **BRD:** Business Requirements Documentation
- **SDK:** Software Development Kit
- **SQA:** Software Quality Assurance

Chapter 1: Introduction

1.1 Background

The report is prepared to partially fulfill the requirements of the internship program for the degree of BBA in Technology Management program of the Islamic University of Technology. The main goal of the internship program is to prepare the graduates of the technology management major for the corporate workforce.

The study provides an overview of my internship experience as a Flutter Developer at AkijBashir Group's Department of Information Technology. I worked for the group's operations at its headquarters, even though my SBU was Akij Ceramics Limited. The study also provides information about the group, including its companies, brands, products, in-house projects, and the industries in which it operates.

1.2 Objectives

AkijBashir Group uses the Flutter framework to develop their cross-platform mobile applications, specially for the Android and iOS platforms. The main objective of my internship was to gain a significant experience with a number of mission-critical Flutter projects that the group relies on. The decomposed objectives are as follows.

- I. Developing cross-platform mobile applications for internal use at AkijBashir Group.
- II. Understanding the cost efficiency of single-codebase cross-platform mobile application development.
- III. Bridging academic knowledge with real-world corporate technology challenges.

1.3 Significance

Business organizations develop cross-platform mobile applications using a single codebase for each project. These mobile applications function similarly across different smartphone operating systems. The in-house developers do not have to develop and maintain separate projects for each platform, and as a result, this approach reduces the development costs. And Flutter is the most efficient, versatile,

popular framework to develop cross-platform mobile applications. Developers can even develop desktop and web applications using the Flutter framework for the businesses.

1.4 Methodology

Developers use the Dart language and other platform-specific SDKs (Software Development Kits) to develop the mobile applications in the Flutter framework. The office assigned me several Flutter projects to work on.

Some projects were already under development and in use by the group. Others were assigned to me as the initial developer. Different companies within the AkijBashir Group use these mission-critical mobile applications to operate in the market. I completed all my assigned works for each project during my internship period.

1.5 Limitations

Although my three-month internship provided me with valuable experiences, it was not enough to give me a comprehensive understanding of the group's technical operations across all of its SBUs.

I did not have enough time to optimize one of the assigned projects to meet the field requirements, and my internship period was about to end. The office planned to continue its development further. So, I handed over the project to my reporting senior upon the completion of my internship and did not get the chance to experience its implementation in the field.

Some aspects of preparing the internship report were limited in order to comply with the organizational policies regarding the disclosure of confidential information.

In spite of the limitations, I provided relevant information that I hope will be useful for further research on this topic.

Chapter 2: An Overview of the Organization

2.1 Introduction

AkijBashir Group emerged after the dissolution of Akij Group in 2023, although its SBUs had been established decades earlier under Akij Group. AkijBashir Group now operates with 14 SBUs divided into 3 clusters, 9 distinct brands, and more than 30 thousand employees. It operates across three countries – Bangladesh, Malaysia, and Singapore.



Figure 2.1: Group Logo

In its current markets, the group serves over 40 million customers each fiscal year. It serves the ceramics (tile and sanitaryware), bathware, tableware, steel, glass, polymer, biax film, board (panel, flooring, and door), jute, and tea industries. I worked for the group's operations at its headquarters, even though my SBU was Akij Ceramics Limited.

2.2 Brief History

AkijBashir Group emerged after the dissolution of Akij Group in 2023, although its SBUs had been established decades earlier under Akij Group. Akij Group was the largest industrial conglomerate in Bangladesh then. It was started in the 1950s by industrialist Sheikh Akij Uddin. At first, the company made cigarettes. Later, it expanded into other industries. In 2009, Akij Group paid 390 million euros in tax. It was the biggest domestic taxpayer that year, as the group gave two percent of the country's total budget.

Upon the dissolution of Akij Group, its then Managing Director, Sheikh Bashir Uddin, a son of Sheikh Akij Uddin, established AkijBashir Group by grouping many

SBU's of the former Akij Group. The remaining SBU's were divided among other groups of industries, such as those now known as Akij Resource Limited and Akij Venture Limited. The founder is the focal person of AkijBashir Group and is currently serving the interim government of Bangladesh as an adviser to three ministries.

2.3 Growth Trajectory

AkijBashir Group has been expanding its business since the beginning. The trajectory of its growth can be illustrated as follows.

- I. They started five new SBU's after the dissolution of Akij Group. They are: Akij Glass Industries Limited, Sonarupa Tea Estate Limited, Dhamai Tea Estate Limited, Atiabagh Tea Estate Limited, and Bahadurpur Tea Estate Limited.
- II. Akij Ceramics Limited broke the national sales record by selling over 2 crore square feet in May 2025. It is the first ever in Bangladesh's tile industry.
- III. In the Bangladeshi fiscal year 2024-2025, Akij Ceramics Limited captured 22.74% of the country's tableware market, the highest share.

The highest market share and sales ever recorded indicate the group's dedication to rapid historical growth.

2.4 Vision, Mission, and Core Values

2.4.1 Vision

Under the slogan "Towards a Better Future", the group's vision statement is as follows.

"Our vision is to create a better future for all. We believe that by exploring the limits of what's possible, we can create products and services that have a positive impact on the world. We are committed to making a difference in everything we do through sustainable manufacturing practices."

The vision statement is presented here without any alterations.

2.4.2 Mission

Under the slogan “Going Further, Together”, the group’s mission statement, which they call it their philosophy, is as follows.

“We firmly believe that progress is a collective endeavor. By working hand in hand with our employees, customers, and partners, we create a sense of community and shared purpose. Together, we pool our resources, skills, and expertise to build a better future, positively impacting the world.”

The mission statement is presented here without any alterations.

2.4.3 Core Values

The group has established three core values to guide its operations and aspirations. These values define its identity and purpose. They are presented here without alteration.

- I. **“Thinking Ahead”**: “AkijBashir aims to continue driving progress and positively impacting the world. We are soothsayers who love going miles for our passion to make things happen. A place where great things happen.”
- II. **“Raising The Bar”**: “AkijBashir aims to push itself to improve and build a better future continuously. We are fearless. Dare to do what no one has done before, hence exploring the opportunity to do the unthinkable. Go beyond the comfort zone.”
- III. **“Setting Standard”**: “AkijBashir aims to set high standards and be a trusted brand. We leave legacies for others to match. What we do today determines what our competitors will try to achieve tomorrow. Home of creative insanity.”

“Thinking Ahead” focuses on foresight and driving progress. “Raising The Bar” centers on continuous self-improvement and pushing boundaries. “Setting Standard” emphasizes establishing high benchmarks and industry influence.

2.5 Organogram

I prepared the following abstract organogram of AkijBashir Group, illustrating their generic organizational structure.

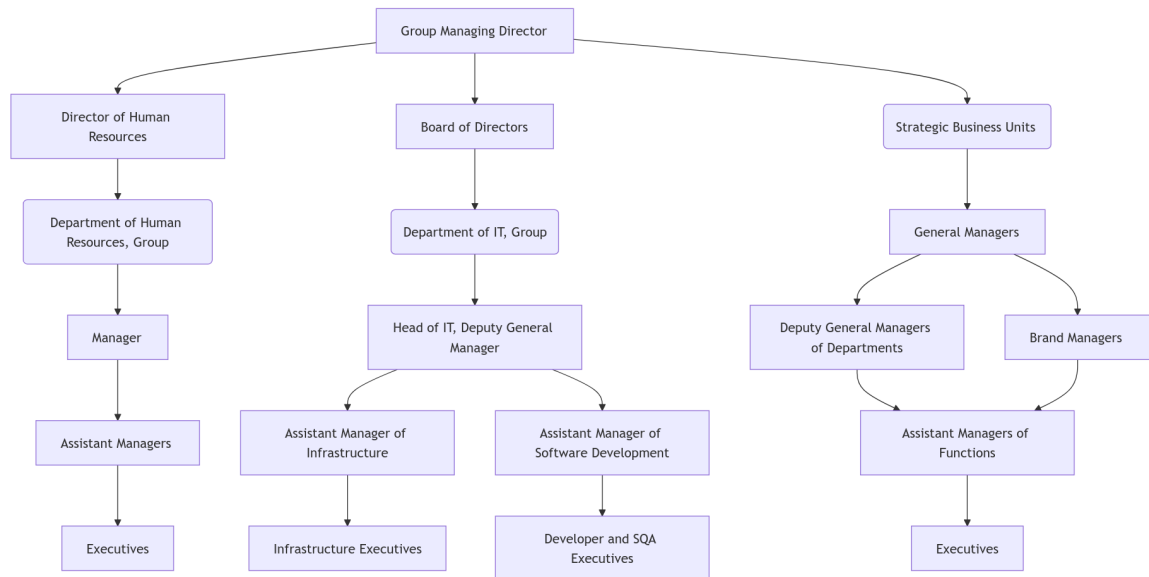


Figure 2.2: Abstract Group Organogram

The group does not follow the conventional hierarchical structure. Instead, it operates as a unified whole. The rounded rectangles represent the formation, and the sharp-edged rectangles represent the positions.

2.6 Products

The SBUs of AkijBashir Group are divided into the following three clusters.

Cluster One: This cluster groups AkijBashir Group's jute and tea businesses. The group has two jute mills limited companies and four tea estate limited companies as follows.

- I. Janata Jute Mills Limited
- II. Sadat Jute Mills Limited
- III. Bahadurpur Tea Estate Limited
- IV. Sonarupa Tea Estate Limited
- V. Dhamai Tea Estate Limited
- VI. Atiabagh Tea Estate Limited

Cluster Two: This cluster includes six manufacturing companies producing ceramics, packaging, polymer, and glass materials as follows.

- I. Akij Ceramics Limited
- II. Akij Bathware Limited
- III. Akij Cartons Limited
- IV. Akij Particle Boards Limited
- V. Akij Polymer Industries Limited
- VI. Akij Glass Industries Limited

Cluster Three: This cluster consists of two manufacturing companies producing steel and biax films materials as follows.

- I. Akij Steel Mills Limited
- II. Akij Biax Films Limited

I worked for the group's operations at its headquarters, even though my SBU was Akij Ceramics Limited. The assigned projects – except for the Epitome project – spanned only the following SBUs.

- I. Akij Ceramics Limited
- II. Akij Bathware Limited
- III. Bahadurpur Tea Estate Limited
- IV. Sonarupa Tea Estate Limited
- V. Dhamai Tea Estate Limited
- VI. Atiabagh Tea Estate Limited

Thus, I only covered the brands from these six SBUs.

2.6.1 The Akij Ceramics Brand

This is a tile brand operated by Akij Ceramics Limited. The brand has a daily production capacity of 70,000 square meters of tiles. It has more than 4,700 display and sales points across Bangladesh, serving over 180,000 homes and offices each year.



Figure 2.3: Logo of Akij Ceramics

The brand currently offers tiles in over 900 designs, categorized according to surface types, prints, and usage. It has 4 sub-brands as follows.

- I. **Sierra:** Porcelain Wall Tiles
- II. **Kathena:** Floor Tiles
- III. **Vanita:** Wall tiles
- IV. **Double Charge:** Vitrified (marble-like) Tiles
- V. **Espacio:** Porcelain Wall and Floor Tiles

It also offers the following three tile series beyond the mentioned sub-brands:

- I. **Granula Series:** Wall Tiles with Granular Effects
- II. **Rocker Series:** Wall and Floor Tiles
- III. **Lappato Series:** Semi-Polished Floor Tiles

The brand has a special collection called **Architect Choice** tiles.

2.6.2 The AURA Brand

The AURA brand is a distinct spin-off from the Akij Ceramics brand, operated by the same SBU, Akij Ceramics Limited.



Figure 2.4: Logo of AURA

This brand offers more elegant tile designs, and its prices comparatively. It also offers a 25-year guarantee on its lifespan. The retailers of both brands are separate in the market.

2.6.3 The ROSA Brand

The ROSA brand includes sanitaryware and bathware products from AkijBashir Group. It is jointly operated by Akij Ceramics Limited and Akij Bathware Limited.



Figure 2.5: Logo of ROSA

Currently, the brand offers over a hundred sanitaryware options. The **sanitaryware** product lines from the brand are as follows.

- I. Asian Pan
- II. Commode
- III. Table Top Basin
- IV. Wash Basin
- V. Water Closet
- VI. Water Tank
- VII. Urinal

And the **bathware** product lines from the brand are as follows.

- I. Basin
- II. Basin Mixer
- III. Bathtub Mixer
- IV. Geyser
- V. Shower Mixer
- VI. Sink with Tap
- VII. Sink Mixer

All products of the brand are further categorized by usage, such as, commercial, dining, kitchen, and washroom. The brand has a daily production capacity of over 6,000 sanitaryware products and 2,500 bathware products.

2.6.4 The Tea Estates

The four tea estate limited companies mainly produce tea leaves of the following three types.

- I. Black Tea
- II. Green Tea
- III. White Tea

They market the produced tea leaves as raw materials to other tea companies. Thus, their operation is B2B (Business-to-Business).

2.7 Future Endeavors

AkijBashir Group is working to achieve its sustainability goals as follows.

- I. The group aims to utilize 100% of its wastewater – 200,000 liters daily – by the fiscal year 2025-2026. Currently, they have achieved nearly 50% progress.
- II. The group distributed 500,000 plants free of charge last year. For the fiscal year 2025-2026, the group aims to distribute 2.5 million plants.
- III. They plan to improve the efficiency of industrial heat recovery, solar energy management, carbon emission control, natural gas conservation, and water recycling over the coming years to attract more foreign investors.

2.8 SWOT Analysis

I have subjectively identified the strengths, weaknesses, opportunities, and threats (SWOT) of AkijBashir Group as a whole, as follows.

2.8.1 Strengths: Strengths are internal positive attributes that give the company a competitive advantage. The strengths of AkijBashir Group are as follows.

- I. Operates with 14 SBUs across 3 countries.
- II. Serves over 40 million customers yearly.
- III. Has more than 30,000 skilled employees.
- IV. Leading brands with high market shares.
- V. Akij Ceramics Limited set national sales records.
- VI. Fast expansion with 5 new SBUs.
- VII. Focused on sustainability and green goals.

2.8.2 Weaknesses: Weaknesses are the internal limitations that hinder the company's performance. The weaknesses of AkijBashir Group are as follows.

- I. Heavy operations based mainly in Bangladesh.
- II. High cost of managing many SBUs.
- III. Limited global brand recognition.
- IV. Overdependence on a few key products.

2.8.3 Opportunities: Opportunities are the external factors the company can leverage for growth. The opportunities for AkijBashir Group are as follows.

- I. Can enter more international markets.
- II. Growing demand for eco-friendly products.
- III. Increasing use of clean energy and recycling.
- IV. Potential for more foreign investment.
- V. Can launch new innovative product lines.

2.8.4 Threats: Threats are the external challenges that could negatively impact the business. The threats facing AkijBashir Group are as follows.

- I. Rising energy costs.
- II. Strong competition in ceramics and steel.
- III. Climate change may influence natural resource units like tea and jute.

Chapter 3: Industry Analysis

I worked for the group's operations at its headquarters, even though my SBU was Akij Ceramics Limited. So, I covered only the analysis of the ceramics industry in Bangladesh.

3.1 Brief Description of the Industry

The first ceramic factory in Bangladesh was established in Bogura in 1958 by Tajma Ceramic Industries. Since then, the industry has grown, primarily producing tableware, tiles, and sanitaryware.

According to BIDA, the key indicators of the industry are as follows.

- I. \$1,052 million total investment in the industry.
- II. 65% value is added during production.
- III. Products are exported to over 50 countries.

Bangladesh's ceramic industry is expanding rapidly due to the country's dedicated industrialization.

3.2 Size and Growth of the Industry

The country produces most of its ceramic needs domestically and is now entering more international markets. According to BIDA and Akij Ceramics Limited, the size and growth of the industry can be summarized as follows.

- I. \$660 million in domestic consumption (2017 - 2018).
- II. 20% average annual growth in the domestic market.
- III. 26% average annual growth in exports.
- IV. Domestic production covers 96% of tableware demand.
- V. 77% of tiles and 89% of sanitaryware are domestically produced.
- VI. 31 companies manufacture tiles.
- VII. 23.71 crore square meters tile capacity yearly.
- VIII. TK. 6,700 crore is the annual market size for tiles.
- IX. Tile exports grew by 377.78% in the fiscal year of 2023 - 2024.

This steady growth is supported by growing urbanization and rising middle-class demand.

3.3 Maturity of the Industry

The ceramic industry in Bangladesh is in a growth phase, moving toward maturity. New investments and factory expansions are signs of this progressing maturity.

- I. AkijBashir Group invested TK. 300 crore initially in 2018.
- II. Akij Ceramics Limited broke the national sales record by selling over 2 crore square feet in May 2025. It is the first ever in Bangladesh's tile industry.
- III. AkijBashir Group plans to invest TK. 1,000 crore more in expansion.

3.4 Seasonality of the Industry

The ceramic industry in Bangladesh operates year-round. Its demand is driven by real estate development and urban growth, so it does not have a significant seasonal pattern.

3.5 PESTEL Analysis of the Industry

I analyzed the external environment of the ceramic industry in Bangladesh using the following PESTEL (Political, Economic, Social, Technological, Environmental, and Legal factors) analysis.

3.5.1 Political Factors: Political factors refer to government policies, regulations, and stability that influence business operations. For the ceramic industry in Bangladesh, these factors are as follows.

- I. Export policy favors ceramic exports.
- II. Tax breaks are available for ceramic factories.
- III. Bonded warehouses reduce costs.
- IV. Political unrest sometimes affects sales.

3.5.2 Economic Factors: Economic factors encompass macroeconomic conditions, costs, and market trends influencing the industry. The key economic factors are as follows.

- I. The industry is growing every year.

- II. Exports are rising steadily.
- III. Gas prices increased.
- IV. Raw material costs also rising.
- V. Delivery and labor costs rising.

3.5.3 Social Factors: Social factors include demographic changes, consumer preferences, and lifestyle trends. The relevant social factors for the ceramic industry are as follows.

- I. Urbanization is boosting product demand.
- II. Middle-income class is growing fast.
- III. People want better home products.
- IV. Ceramics are now daily essentials.

3.5.4 Technological Factors: Technological factors involve advancements, automation, and innovation in production processes. The industry's technological landscape is as follows.

- I. Automation is slowly being adopted.
- II. Factories use modern machines now.
- III. Still have space for energy-saving technologies.

3.5.5 Environmental Factors: Environmental factors relate to sustainability, resource use, and ecological impacts. Key environmental considerations are as follows.

- I. Energy use is a big concern.
- II. Factories face utility supply problems.
- III. Cleaner technology is now in focus.
- IV. Sustainable production gaining more interest.

3.5.6 Legal Factors: Legal factors include laws, taxes, and trade regulations affecting the industry. The key legal aspects are as follows.

- I. Export laws favor the industry.
- II. 50% tax cut on export income.
- III. No VAT on export products.
- IV. Import duty waived for capital machinery.

3.6 Porter's Five Forces Analysis

I identified Porter's Five Forces for the ceramic industry in Bangladesh as follows.

- I. **Threat of New Entrants:** Starting a ceramic factory needs big money. Total industry investment is \$1,052 million. New businesses get some help from the government, like tax breaks and bonded warehouses. But the domestic market already has strong companies. There are 31 tile manufacturers and major players like Akij Ceramics Limited exist. Annual tile production capacity is 23.71 crore square meters. So, entering the market is not easy.
- II. **Bargaining Power of Suppliers:** The bargaining power of suppliers is increasing. Raw material and gas prices have risen sharply. Since most materials are imported, manufacturers remain highly dependent on external suppliers. This gives suppliers stronger control over costs.
- III. **Bargaining Power of Buyers:** The bargaining power of buyers is rising because consumers now have access to more domestic brands. There are 31 domestic tile companies and their production covers 77% of tiles demand. The domestic manufacturers cover 96% of tableware, and 89% of sanitaryware demand. In export markets, products go to over 50 countries. Buyers demand strict quality and standards. As a result, buyers hold stronger influence over producers.
- IV. **Threat of Substitutes:** The threat of substitutes is low. In some cases, plastic or metal may be used. But ceramics are preferred for their quality and durability. So, it helps ceramics remain the top choice for most consumers. Its domestic production meets 96% of tableware, 77% of tiles and 89% of sanitaryware needs.
- V. **Competitive Rivalry:** The ceramic industry faces strong competition. There are 31 domestic companies in the tile industry alone. The tile market size is TK. 6,700 crore annually. Tile exports grew by 377.78% in the fiscal year of 2023-24. Major players like Akij Ceramics Limited are expanding fast. They invested TK. 300 crore initially and plan TK. 1,000 crore more. The SBU sold over 2 crore square feet of tiles in May 2025.

Chapter 4: Main Internship Activities

4.1 Working Conditions

Office Location: Group Headquarters, Simpletree Lighthouse, Plot 53, Road 21, Block-B, Kemal Ataturk Avenue, Banani, Dhaka 1213, Bangladesh

Desk Location: The office desk was on the 7th floor. Then it was moved to the 6th floor due to office rearrangements.

Typical Days: My typical working days were Saturday to Thursday. Alternating Saturdays were off days.

Typical Working Hours: The office time was 09:00 AM to 06:00 PM. During Ramadan, the time was 09:00 AM to 04:00 PM. The launch break was of half an hour from 01:30 PM, after the Zuhr prayer.

Overtime: I did not have to do any officially recognized overtime during my internship period. But I had to work up to 07:00 PM on several days due to project deadlines.

Field Trip: I did not experience any field trip during my internship period, although the office had plans to arrange a field trip to their four tea estate limited companies for the TeaForge project.

4.2 Assigned Internship Tasks and Gained Experiences

I was assigned five projects in total. I enhanced the Epitome ESS mobile application by enabling multiple file uploads and iOS compatibility. For the ROSA RetailRise retailer campaign program mobile application, I added file upload/download features and iOS compatibility. I led the migration of APIs for the Ceramic Aponjon retailer campaign program mobile application to cut costs. I developed TeaForge, a facial attendance mobile application for tea estate workers, to a testable extent and integrated Bluetooth weight scale functionality. Additionally, I also developed a draft Support ChatBot mobile application. Besides, I handled Apple Developer Program enrollment for AkijBashir Group. The five assigned projects are as follows, **from sections 4.2.1 to 4.2.5.**

4.2.1 The Epitome Project

The Epitome project is the Employee Self Service (ESS) mobile application of AkijBashir Group. All corporate employees of the group use this mobile application to manage their employment-related tasks, such as marking attendance in emergencies, submitting various applications, approving others' applications, and monitoring key statistics.

The project was written in the Dart language and the Flutter framework by the group's in-house developer. I was assigned the following three tasks on this project, and I completed them during my internship period.

- I. I developed the multiple file upload mechanism for the mobile application, and then the users were able to attach multiple documents when submitting TA/DA applications. I attached a code segment of this work as a work sample in this report.
- II. I extended the device ID collection mechanism so that the mobile application can uniquely identify not only Android devices but also iOS devices.
- III. I arranged and configured workspace files of the project in such a way that I could build it for iOS. After each successful build, I debugged the project on an iPhone simulator and then uploaded it to Apple's iOS App Store Connect. I also set up its store listing on the Apple's iOS App Store.

I worked with the Software Quality Assurance (SQA) Executive to officially test the project after the changes and assisted him to update the user documentations for the project.

4.2.2 The ROSA RetailRise Project

The ROSA RetailerRise project is the mobile application for the Retailer Campaign Program of AkijBashir Group's ROSA brand. This brand, which consists of sanitaryware and bathware products, is jointly operated by Akij Ceramics Limited and Akij Bathware Limited. Retailers use this mobile application to place orders and participate in the retailer campaign programs. They are rewarded based on their achieved sales volume within each sales season. This project is one of the mission-critical projects of AkijBashir Group because retailers are unable to place orders if the mobile application is down.

The project was written in the Dart language and the Flutter framework by the group's in-house developer. I was assigned the following three tasks on this project, and I completed them during my internship period.

- I. I developed the multiple file upload and download mechanisms for the mobile application, and then the retailers were able to attach multiple challans when submitting orders. I attached a code segment of this work as a work sample in this report.
- II. I extended the device ID collection mechanism so that the mobile application can uniquely identify not only Android devices but also iOS devices.
- III. I arranged and configured workspace files of the project in such a way that I could build it for iOS. After each successful build, I debugged the project on an iPhone simulator and then uploaded it to Apple's iOS App Store Connect. I also set up its store listing on the Apple's iOS App Store.

I worked with the Software Quality Assurance (SQA) Executive to officially test the project after the changes and assisted him to update the user documentations for the project.

4.2.3 The Ceramic Aponjon Project

The Ceramic Aponjon project is the mobile application for the Retailer Campaign Program of two distinct brands: Akij Ceramics and AURA. Both brands are operated by Akij Ceramics Limited. Retailers use this mobile application to place orders and participate in the retailer campaign programs. They are rewarded based on their achieved sales volume within each sales season. This project is one of the mission-critical projects of AkijBashir Group because retailers are unable to place orders if the mobile application is down.

The project was written in the Dart language and the Flutter framework, initially by a vendor contracted by the group. The group wanted to migrate its backend project to an in-house one in order to cut subscription costs. So, I was assigned the following two tasks on the migration, and I completed it during my internship period.

- I. I documented the APIs (Application Programming Interfaces) used in the project's methods, via which it connects with its backend project. The documentation included the method names, the names of the parser models for requests and responses, and the data structure of each API.

- II. I tested each of the migrated APIs using the Postman application before integrating them in the project. The backend developer further tuned them to make them workable.

The cycle of these two tasks continued until the migration was complete. Then, I worked with the Software Quality Assurance (SQA) Executive to officially test the project after the changes and assisted him to update the user documentations for the project.

4.2.4 The TeaForge Project

AkijBashir Group owns four tea estates: Sonarupa Tea Estate Limited, Dhamai Tea Estate Limited, Atiabagh Tea Estate Limited, and Bahadurpur Tea Estate Limited. These companies use a subscription-based mobile application to place the attendance of their tea estate workers, either through NFC (Near Field Communication) or facial recognition.

The group wanted to cut the subscription costs by developing a similar in-house mobile application. So, they assigned me to develop the project named TeaForge as far as possible within the remaining period of my internship.

The backend developer worked with me to develop its backend project.

The TeaForge mobile application was intended to meet two needs on the field:

- I. The registration of tea estate workers would be done through a web application developed by the group's in-house developers. Only their faces would be registered through the mobile application.
- II. Field executives would place the attendance of their tea estate workers according to books through the mobile application's facial recognition feature to save time.
- III. Weight scales would be connected to the mobile application via serial Bluetooth connectivity, which would provide the mobile application with its real-time reading. The weight of the plucked tea leaves would also be recorded automatically for the tea plucking workers.

The project was written in the Dart language and the Flutter framework. I separated the core logic of the facial recognition feature into three phases:

- I. **Camera Stream Converter:** Mobile hardware provides live camera streams in hardware-video formats like “NV21”. I developed two mathematical converters to convert NV21 to a software-video format named “YUV_420_880_SP” and to “Flutter Image” object so that the live camera streams can be used in facial recognition. I also adjusted performance-related tweaks for efficiency, such as, decreasing the frame rate of the camera.
- II. **Face Detector:** I used “Google ML Kit Face Detection (Offline)” in Flutter to develop the face detector. It detected faces from the live camera stream and passed the coordinates to the face recognizer.
- III. **Face Recognizer:** I brought an offline face matching model developed by Google Inc. and used the “TensorFlow Lite” framework to utilize it. But this only reported the match between two given faces. So, I used a local/offline SQLite database to match the detected faces against the registered faces in a book. That’s how I developed the face recognizer in Flutter for the project.

The project was not yet fast enough to meet the field requirements, and my internship period was about to end. The office planned to continue its development further. So, I handed over the project to my reporting senior upon the completion of my internship.

I developed a small electronic device to mimic the weight scales’ connectivity with the mobile application, and I was able to debug the project. I worked with the Assistant Manager of Infrastructure to procure the modules needed, such as, “Serial Bluetooth Module HC-05” and “FTDI USB to TTL Serial Converter Adapter FT232RL”. The following figure shows the stock images of the two modules.

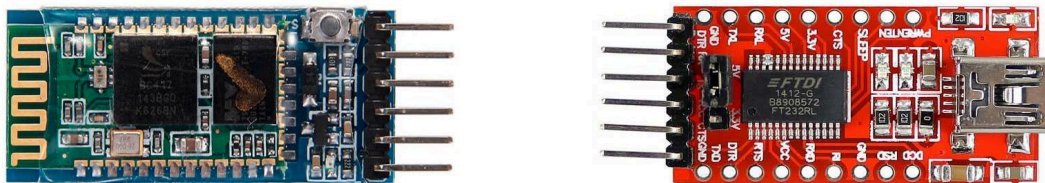


Figure 4.1: HC-05 and FT232RL Modules

4.2.5 The Support ChatBot Project

The Support ChatBot project was a draft project solely developed by me. The office proposed that I develop a support chatbot for the retailers of AkijBashir Group, so they could receive assistance with their Retailer Campaign Program mobile

applications before contacting the support team. I completed my assignment by demonstrating the mobile application. The office had plans for the project later.

The project was written in the Dart language and the Flutter framework. I used Ollama as a self-hosted LLM (Large Language Model) server on which I downloaded the “DeepSeek-r1 8b” model to provide the project with a test LLM. I attached a code segment of this work as a work sample in this report.

4.2.6 Enrollment in Apple Developer Program

Besides the five assigned projects, I handled the creation and enrollment procedures of a new “Apple Developer” account for AkijBashir Group. It included the following activities.

- I. I created an Apple account using the provided credentials. Then, I reviewed and set the security preferences according to the group’s requirements.
- II. I submitted an official request to Apple Developer Program to enroll the Apple account. I uploaded the necessary documents provided by the office.
- III. Once the first stage verification was done, I forwarded the first annual payment to my reporting senior so that the office can arrange the payment.
- IV. Apple Developer Program took a long time to complete the enrollment. Meanwhile, I had to keep them in contact through a number of official support cases.
- V. Once the group’s Apple Developer account is done, I generated and registered certificate files (computerized proofs of a developer’s identity), “provisioning profiles”, and bundle identifiers for the Epitome and ROSA RetailRise projects.
- VI. I also set up the projects’ store listings on the Apple’s iOS App Store.

4.3 Recurring Tasks

I did some recurring tasks during the office hours:

- I. **Email Communication:** I kept the inbox of my official email checked at all times and replied accordingly. `itintern3@akijbashir.com` was my address.

- II. **VoIP/SIP Communication:** I kept the inbox and recent call list of my extension checked at all times and replied and called back accordingly. My telephony extension was 2932.
- III. **Project Status Filing:** I maintained my project status file and updated it after each significant change to the assigned projects.
- IV. **Version Controlling by Git:** I committed, signed, and pushed changes I made to the assigned projects every working day before leaving the office so that other developers can develop the projects further without any conflict. I pulled the changes other developers made to the projects every day before starting my main activities so that I can work on the up-to-date project code.
- V. **Backing Up Files:** I ensured all kinds of my official files had at least one copy of backup before leaving the office on every working day.
- VI. **Submission of Weekly Report:** I got my weekly activities overview report reviewed by my reporting senior. After he resigned, I got the documents reviewed by the Assistant Manager of Software Development. And then my organizational supervisor, the Head of Group IT, signed the weekly activities overview reports every week.
- VII. **Reporting Technical Difficulties:** Whenever I faced any technical difficulty regarding my workstation, I reported it to my colleagues of the infrastructure team. They logged them officially and resolved the issue from their ends.

4.4 Working Tools

The office issued me the following devices to work on.

- I. **Windows Laptop:** The office issued me an HP ProBook laptop running Windows 10 as my main workstation, on which I did my most of the works except the iOS builds of the assigned projects.
- II. **macOS Laptop:** The office issued me an HP EliteBook laptop running macOS Sequoia 15 to build the iOS releases of the assigned projects.
- III. **Android Smartphone:** The office issued me a Xiaomi smartphone running Android 14 on which I debugged and tested the Android builds of the assigned projects.

Associated hardware accessories, such as, headphone, mouse, USB cable, and chargers were provided as well. Additionally, I used conference monitors, and HDMI cables to present during meetings.

I worked on the Windows laptop using the following software tools.

- I. **Flutter and Dart SDKs:** I used these SDKs (Software Development Kits) to install the Flutter framework and the Dart language on the laptop globally.
- II. **Android Studio:** I used it to install the **Android SDK** on the laptop globally and to fix some Android specific issues in the assigned projects.
- III. **Ollama:** I used it as a self-hosted LLM (Large Language Model) server on which I downloaded the **DeepSeek-r1 8b** model to provide LLM as a test for the Support ChatBot project.
- IV. **Postman:** I used it to test the APIs (Application Programming Interfaces) provided by my team's backend developer, which my assigned projects used to connect with their backend projects.
- V. **Visual Studio Code (VS Code):** I used it along with a bunch of its extensions to code in the assigned projects.
- VI. **Git:** I used it as the version control system (VCS) by tracking the assigned projects with the TFS (Team Foundation System) Git instance of AkijBashir Group.
- VII. **Visor:** I used it to mirror the screen of the issued smartphone to present the Android builds of the assigned projects during meetings.
- VIII. **Microsoft Outlook:** I used it to use my official email account and to book meeting rooms.
- IX. **3CX:** I used it to use my official VoIP/SIP telephony account.
- X. **Microsoft Excel:** I used it to document and update the status of the assigned projects.
- XI. **Microsoft Word:** I used it to write technical documentation of the assigned projects and to write my weekly activities overview reports.

XII. **Windows Snipping Tool:** I used it to take screenshots.

I worked on the macOS laptop using the following software tools.

- I. **Flutter and Dart SDKs:** I used these SDKs to install the Flutter framework and the Dart language on the laptop globally.
- II. **Homebrew:** I used it to install the Xcode, **iOS SDK** and CocoaPods on the laptop globally.
- III. **Xcode:** I used it to configure the iOS workspace files of the assigned projects. Then, I used it to debug, build, sign, and upload the iOS releases to Apple's iOS App Store Connect. It provided me with an iPhone simulator, on which I ran the debugs.
- IV. **CocoaPods:** I used it to manage and install the iOS-native dependencies or libraries of the assigned projects.
- V. **Visual Studio Code (VS Code):** I used it along with a bunch of its extensions to code in the assigned projects.

4.5 Interactions and Communications

I did significant official interactions and communications with the following personnel of AkijBashir Group during my internship period.

- I. **Taslim Md. Khan, Group Managing Director:** He was my first point of contact before joining AkijBashir Group. And he interviewed me the second time for the internship placement.
- II. **Dilruba Sharmin Khan, Director, Group HR:** She interviewed me the first time for the internship placement.
- III. **Md. Younis Mamun, Manager, Group HR:** He issued me the internship completion certificate.
- IV. **Shakil Alam, DGM, Head of Group IT:** He was my organizational supervisor. He signed my weekly activities overview reports every week. He set and updated the priority of my assigned projects according to the demands of the SBUs.

- V. **S. M. Homayoun Kabir, Assistant Manager of Infrastructure, Group IT:** I worked with him regarding the procurement of test electronics for the TeaForge project. He conducted the dependency clearance procedure upon the completion of my internship.
- VI. **Ziaul Hoque Ovi, Assistant Manager of Software Development, Group IT:** I reported to him daily about the ongoing status of the assigned projects. He reviewed my weekly activities overview reports after Waseur Rahman resigned.
- VII. **Md. Emdadul Islam, Senior Executive, Group HR:** He officially offered me the internship placement via email.
- VIII. **Abdullah Al Mamun, Senior Executive, Group HR:** He instructed me about the clearance procedure upon the completion of my internship. I once resolved an issue of him regarding the approval procedures of others' applications on the Epitome project.
- IX. **Saiyara Islam, Executive, Group HR:** She conducted the introductory session on my onboarding day.
- X. **Shuvo Paul, Software Implementation Executive, Group IT:** He planned my official visits to their four tea estate limited companies for the TeaForge project, although the office could not arrange them.
- XI. **Salman Al Fazri, Executive, Group HR:** He conducted my onboarding session and helped me to complete the document works then. He handled the issuance of my official identity card, and I submitted the card to him upon the completion of my internship.
- XII. **Subrato Sarker, ERP Developer, Group IT:** I worked with him regarding the issuance of dummy user accounts which would be used by Apple Inc. to test the Epitome project.
- XIII. **Naimul Hasan Shohan, Import-Export Software Developer, Group IT:** He was the project owner of the TeaForge project and I worked him regularly during the development of the project.
- XIV. **Sadia Farzana, Backend Developer, Group IT:** She helped me in the issuance of the macOS laptop. She conducted two knowledge transfer (KT) sessions on the Epitome project's backend project upon her resignation.

- XV. **Waseur Rahman, Flutter Developer, Group IT:** He was my reporting senior who managed me and reviewed my weekly activities overview reports every week. He worked with me on the assigned projects collaboratively. I introduced Ollama to him. He conducted numerous knowledge transfer (KT) sessions to officially hand over the assigned projects to me upon his resignation.
- XVI. **Bishozit Chandra Das, Flutter Developer, Group IT:** He was my reporting senior after Waseur Rahman resigned. He worked with me on the assigned projects collaboratively. I conducted numerous knowledge transfer (KT) sessions with video recordings to hand over the assigned projects to him upon the completion of my internship.
- XVII. **Md. Morshedul Islam Shuvo, Software Quality Assurance Executive, Group IT:** I worked with him to officially test the projects after significant changes for release. I assisted him to update the user documentations for the projects then.
- XVIII. **Md. Shafiqul Islam, Infrastructure Executive, Group IT:** He installed macOS Sequoia 15 on the issued macOS laptop according to my requirements. He also updated the availability of the backend projects inside their network to test the assigned projects.
- XIX. **Fahim Hossain Rafayet, Backend Developer, Group IT:** He developed the backend projects needed for the assigned projects except the Epitome project and provided me with the associated API (Application Programming Interface) documentations so that I can integrate them in the assigned projects.
- XX. **Mahmuda Keya, Infrastructure Executive, Group IT:** I worked with her regarding the issuance of dummy user accounts which would be used by Apple Inc. to test the Epitome and the ROSA RetailRise projects.
- XXI. **Mainul Hossain, Infrastructure Executive, Group IT:** He resolved the connectivity issues of my official Wi-Fi, email, and Windows accounts many times.
- XXII. **Shakil Hossain, Infrastructure Executive, Group IT:** He resolved the connectivity issues of my official Wi-Fi, email, and Windows accounts many times.

- XXIII. **Saara Yusuf Bristhy, Management Trainee Officer, Group HR:** She officially called me for the interviews regarding the internship placement.
- XXIV. **Saiful Islam, IT Executive, Sonarupa Tea Estate Limited:** I worked with him to document the use case scenarios and the requirements of the TeaForge project.
- XXV. **Meruj Hossain, Infrastructure Intern, Group IT:** He helped me in the requisition procedure of the issued devices and accessories.

I interacted with them in person, via email, through VoIP/SIP telephony, and in numerous meetings.

4.6 Difficulties and Challenges

I experienced some difficulties and challenges in the office during my internship period:

- I. **No Project Managers:** The office did not assign a project manager to any of the projects. They seem to consider these official projects as solely my personal responsibility, even at the cost of my personal and academic life.

The project owner of the TeaForge project neither provided me with any BRD (Business Requirements Documentation) nor described me anything about the project. As a result, I had to rely on my other colleagues who had no authority over the project and conflicts raised.

One of the conflicts was regarding the worker book selection dropdowns in the TeaForge mobile application. The options of the dropdown were abbreviated for faster use cases like placing attendance of the workers. The books were named like “SWB” which stands for “Sonarupa Women Book”. The office did not explain the full forms of the abbreviations to me, even on my numerous requests. Sadly, I added radio buttons for gender selection to make the mobile application faster and efficient. I attached the screenshot in Figure 4.4. But it was actually a redundancy because there was no need to make a gender selector if the workers of a tea estate were already organized into the books by their genders. The project owner explained the abbreviations upon the completion of my internship.

- II. **Procrastination in Procurement:** The office wasted the time span of the TeaForge project by procrastinating the procurement of the test electronics, even after getting official reminders numerous times.
- III. **Unclear Dependencies:** The office did not maintain any clear dependency graph or hierarchy. I faced endless dependency cycle which carried blames to each other regarding the issuance of dummy user accounts which would be used by Apple Inc. to test the Epitome and the ROSA RetailRise projects. The backend development team blamed the infrastructure team, and the vice versa continued. Since the issue had never been resolved even after reporting it to the Head of Group IT numerous times, I had to take the blame instead. But it was neither my responsibility nor I had official access to resolve the issue.
- IV. **Violation of Working Hour Policy:** The office neither followed their own official working hour policy nor officially recognized the overtimes. I left the office after the official working hour, 6:00 PM, and I was regularly accused of avoiding my responsibilities.
- V. **Reverse Mentoring:** The office recruited another Flutter developer who was my reporting senior after my first reporting senior resigned. He neither managed me nor did any work on the assigned projects during the remaining period of my internship. Moreover, I had to introduce him many aspects of Flutter development then. Besides, I had to write the official emails on behalf of him.
- VI. **Hazing:** Some low-level managers do abusive hazing practices publicly in the office, and I witnessed several incidents.
- VII. **Account Lockout Problem:** My official Wi-Fi, email, and Windows accounts got locked before every working day and the infrastructure team did not resolve the issue permanently even after getting official requests numerous times.

4.7 Correlation between Theory and Practice

I directly experienced numerous outcomes from the following seventeen academic courses during my internship.

- I. **BTM 4101, Principles of Management:** The course enabled me to realize the gaps in the managerial practices, such as, mismanagement of projects and

employees of the office. As I previously mentioned in the **section 4.6**, I experienced these gaps in the following categories.

- A. **Mismanagement of Projects:** No project managers, unclear dependencies, and procrastination in procurement.
 - B. **Mismanagement of Employees:** Reverse mentoring.
 - C. **Policy Violations:** Violation of working hour policy, and ragging.
-
- II. **EEE 4161, Electrical and Electronic Technology I:** The course enabled me to use a common ground line to join the modules when mimicking the weight scales for the TeaForge project.
 - III. **Hum 4163, Business English:** The course enabled me to write appropriate English in the official emails and VoIP/SIP telephony chats.
 - IV. **BTM 4203, Business Communication:** The course enabled me to write concise and clear official emails. It also enabled me to pick appropriate words with applicable styles on the UIs (User Interfaces) of the assigned projects.
 - V. **BTM 4207, Organizational Behavior:** The course enabled me to behave professionally and to avoid hurting my colleagues in the office.
 - VI. **EEE 4261, Electrical and Electronic Technology II:** The course enabled me to use the knowledge of digital states in the resetting procedure of the modules used in mimicking the weight scales for the TeaForge project.
 - VII. **CSE 4361, Computer Science and Technology I:** The course enabled me to think about the projects from a developer's perspective.
 - VIII. **CSE 4461, Computer Science and Technology II:** The course enabled me to normalize the local/offline SQLite database in the TeaForge project.
 - IX. **BTM 4531, Product and Services Development:** The course enabled me to plan the development of the TeaForge project appropriately.
 - X. **CSE 4561, Computer Science and Technology III:** The course enabled me to develop a future plan for the inclusion of visualizations for workers' attendance data in the TeaForge project.

- XI. **Hum 4561, Psychology:** The project enabled me to strengthen my emotional intelligence, and I was able to remain calm during tense meetings about project deadlines.
- XII. **BTM 4609, Management Information System:** The course enabled me to realize the relationships between AkijBashir ERP and the assigned projects.
- XIII. **BTM 4627, Enterprise Resource Planning:** The course enabled me to use my AkijBashir ERP account with confidence.
- XIV. **BTM 4703, Quality Management:** The course enabled me to take the quality considerations into account while performing my official activities.
- XV. **BTM 4707, Technology Management:** The course enabled me to realize the gaps of the managerial practices the office used for their in-house project developments.
- XVI. **BTM 4763: Systems Analysis:** The course enabled me to consider the use case scenarios, the users' requirements, and the relationship between the users during the development of the TeaForge project.
- XVII. **Hum 4761, Business Ethics and Leadership:** The course enabled me to consider my actions ethically. It also enabled me to realize the gaps of the leadership practices of the office.

4.8 Work Samples

The three snaps of the code segments were captured using the CodeSnap extension of the Visual Studio Code application during my internship period. And the four screenshots were taken on an Android Emulator with an emulated camera stream during a debugging session. I managed these work samples with the prior verbal permission from my organizational supervisor.



Figure 4.2: ROSA RetailRise - Multiple Challan Upload - Code Segment


```

5  MultiFileUploadResponse multiFileUploadResponseFromJson(String str) =>
6      MultiFileUploadResponse.fromJson(json.decode(str));
7
8  String multiFileUploadResponseToJson(MultiFileUploadResponse data) =>
9      json.encode(data.toJson());
10
11 class MultiFileUploadResponse {
12     String code;
13     bool status;
14     String message;
15     DateTime responsetime;
16     dynamic fileResponse;
17     List<Base64FileResponse> base64FileResponse;
18
19     MultiFileUploadResponse({
20         required this.code,
21         required this.status,
22         required this.message,
23         required this.responsetime,
24         required this.fileResponse,
25         required this.base64FileResponse,
26     });
27
28     factory MultiFileUploadResponse.fromJson(Map<String, dynamic> json) =>
29         MultiFileUploadResponse(
30             code: json["code"],
31             status: json["status"],
32             message: json["message"],
33             responsetime: DateTime.parse(json["responsetime"]),
34             fileResponse: json["fileResponse"],
35             base64FileResponse: List<Base64FileResponse>.from(
36                 json["base64FileResponse"]
37                     .map((x) => Base64FileResponse.fromJson(x))),
38         );
39
40     Map<String, dynamic> toJson() => {
41         "code": code,
42         "status": status,
43         "message": message,
44         "responsetime": responsetime.toIso8601String(),
45         "fileResponse": fileResponse,
46         "base64FileResponse":
47             List<dynamic>.from(base64FileResponse.map((x) => x.toJson())),
48     };
49 }
50

```

Figure 4.3: Epitome - Multiple File Upload - Code Segment

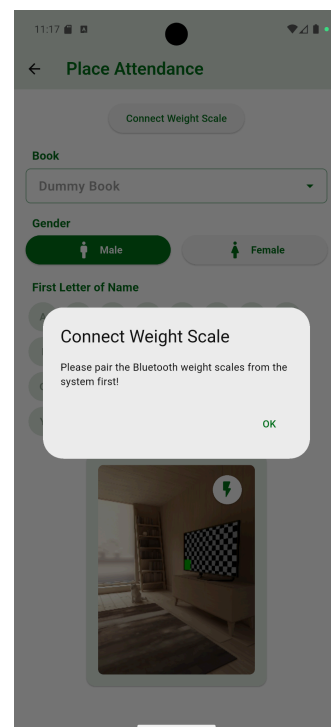
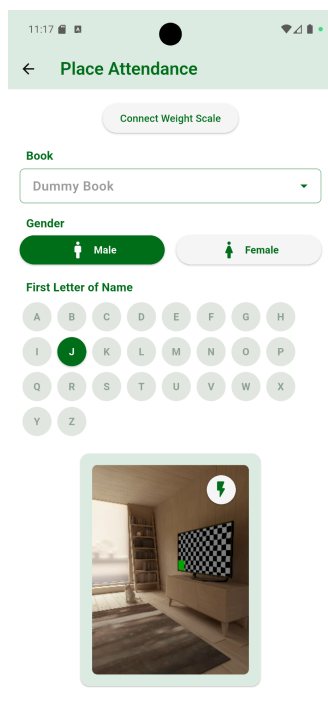
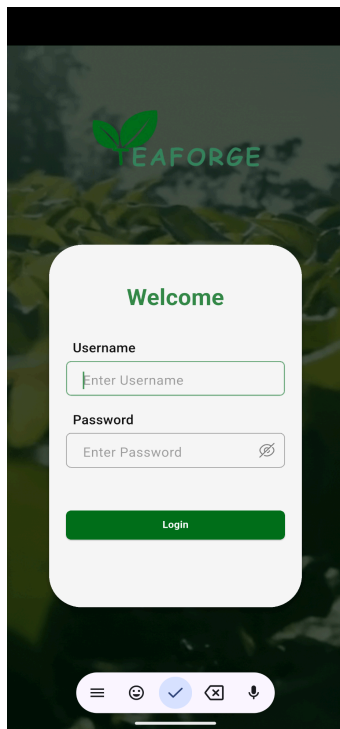


Figure 4.4: TeaForge on Emulator

```

itintern3_chatbot - main.dart

217 final client = ollama.OllamaClient(
218   baseUrl: ollamaApiUri,
219 );
220
221 final typingIndicator = types.TextMessage(
222   author: _bot,
223   createdAt: DateTime.now().millisecondsSinceEpoch,
224   id: const Uuid().v4(),
225   text: _typingIndicatorText,
226   showStatus: false,
227 );
228
229 await Future.delayed(
230   Duration(
231     seconds: 5, // 2 seconds after "seen"
232   ),
233 );
234
235 _addMessage(typingIndicator);
236 _startTypingAnimation(typingIndicator.id);
237
238 try {
239   final response = await client.generateChatCompletion(
240     request: ollama.GenerateChatCompletionRequest(
241       model: model,
242       messages: [
243         ollama.Message(
244           role: ollama.MessageRole.system,
245           content: systemMessage,
246         ),
247         ollama.Message(
248           role: ollama.MessageRole.user,
249           content: userMessage,
250         ),
251       ],
252       keepAlive: 1,
253     ),
254   );

```

Figure 4.5: Suppport ChatBot - Code Segment

Chapter 5: Analysis of Internship Activities

5.1 Key Learning Outcomes

I have identified **one** key learning outcome based on the experience I gained from my internship at AkijBashir Group. That is, as a student of BBA in Technology Management, I gained hands-on experience and realized, **why appropriate technology management is crucial** for the business organizations.

5.2 Work Environment Condition

The physical working condition of the office was satisfactory. Some characteristics of the physical environment delighted me throughout my internship period.

On the contrary, as I previously mentioned in the **section 4.6**, I experienced some significant difficulties and challenges related to the working culture of the office environment, such as the following categorization.

- I. **Mismanagement of Projects:** No project managers, unclear dependencies, and procrastination in procurement.
- II. **Mismanagement of Employees:** Reverse mentoring.
- III. **Policy Violations:** Violation of working hour policy, and ragging.
- IV. **Technical Problems:** Account lockout problem.

5.3 Company Level Analysis

5.3.1 Exceptionally Efficient Processes

The Department of Information Technology at AkijBashir Group responds and resolves any factory-related issues caused by their developed projects as fast as possible. They often work in the office even on weekends, beyond the working days, to address the issues. As a result, their factories never stand still due to digital errors, and they can always meet their targeted market demand. The management behind this internal process of the group delighted me.

5.3.2 Inefficient Processes

If retailers experienced difficulties regarding the mobile applications for the Retailer Campaign Programs, they reached out to my colleagues of the infrastructure team. They then addressed the issues one by one and the software development teams help them to resolve them. But this collaboration between the two types of teams was inefficient, as I experienced. And their management of addressing issues sequentially rather than dividing them among executives was inefficient as well.

5.4 Market Level Analysis

As I worked on the mobile applications of the two major Retailer Campaign Programs of AkijBashir Group, I experienced the following two market factors.

- I. **Market Penetration:** I went through the databases of the aforesaid Retailer Campaign Programs. There is no such a union council in Bangladesh, where are no dedicated retailers available. If any shop wants to become a retailer of these businesses, their shops have to be large as per the group's minimum requirements. So, their position in the ceramic and sanitaryware markets are irreplaceable due to their higher market penetration rates as far as I can analyze.
- II. **Product Differentiation:** The product list of each brand is so large that the developers of the projects had to handle them in the codes asynchronously and with specializations. Otherwise, the projects crashed. This led me to perceive the volume of their differentiation on the products as their competitive advantage in the respective markets.

These potentials made me perceive their brand positions as holding one of the highest positions in the respective markets.

5.5 Professional Level Analysis

5.5.1 Influence on Professional Career

The internship developed me professionally. The hands-on experiences strengthened my problem-solving skills and enriched me with patience and empathy. This combination of the enhanced problem-solving skills and the human skills broadened the domain of my professionalism. Now, I am able to realize the impacts of the actions I plan to do in my career and professional life critically.

5.5.2 Correlation with Academic Knowledge

As I previously mentioned in the **section 4.7**, the knowledge I gained from my university enabled me to perform many of the core activities associated with the assigned projects. These ranged from writing appropriately, behaving professionally, and performing technical tasks to realizing the managerial gaps in the office.

5.5.3 Main Challenges and Difficulties

As I previously mentioned in the **section 4.6**, I experienced some significant difficulties and challenges, such as the following categorization.

- V. **Mismanagement of Projects:** No project managers, unclear dependencies, and procrastination in procurement.
- VI. **Mismanagement of Employees:** Reverse mentoring.
- VII. **Policy Violations:** Violation of working hour policy, and ragging.
- VIII. **Technical Problems:** Account lockout problem.

Thus, I can classify them and identify that the main difficulty or challenge is **the ineffective style of managing technical employees practiced by the mid-level managers**, specially regarding project developments. I covered my recommendations in the report to address it accordingly.

Chapter 6: Recommendations and Conclusion

6.1 Recommendations

I would like to recommend the following two actions to address the difficulties and challenges I experienced during my internship period.

- I. **Assign Dedicated Project Managers:** Every project must have a dedicated manager. Lack of leadership caused accountability gaps and cross-team dependency conflicts, as I experienced. The project managers will perform the following management.
 - A. They will take the full accountability of a developing project and assign developers according to specialization. They will also shield them from unstructured overtime demands. They would eliminate scenarios like reverse mentoring, where new reporting seniors had less expertise than their interns.
 - B. They will maintain clear dependency graphs, and oversee project schedules, including deadlines. A dependency graph would prevent incidents like the Apple testing account deadlock (Epitome and ROSA RetailRise projects), where unclear dependencies between backend and infrastructure teams caused unresolved blame cycles. Besides, timeline management would avoid delays like the procrastination in the TeaForge project's electronics procurement, which stalled development despite repeated reminders.
- II. **Provide Complete Project Documentations:** Management should provide the developers with BRDs (Business Requirement Documentations). Missing details led to errors and redundancies, as I experienced.
 - A. The document would clarify terms like "SWB" (Sonarupa Women Book), avoiding UI redundancies such as the gender selector in TeaForge).
 - B. The document would prevent incidents like the Apple testing account deadlock (Epitome and ROSA RetailRise projects) when unclear

dependencies between backend and infrastructure teams caused unresolved blame cycles.

6.2 Conclusion

My internship at AkijBashir Group provided a fulfilling first corporate experience. I directly contributed to five mission-critical Flutter projects critical to AkijBashir Group's operations. Specifically, I: enhanced the Epitome ESS mobile application by enabling multiple file uploads and iOS compatibility; added file upload/download features and iOS compatibility to the ROSA RetailRise retailer campaign program mobile application; led the API migration for the Ceramic Aponjon retailer campaign program mobile application to reduce costs; developed TeaForge, a facial attendance mobile application for tea estate workers, to a testable extent and integrated Bluetooth weight scale functionality; and developed a draft Support ChatBot mobile application. Besides, I handled the Apple Developer Program enrollment for AkijBashir Group. While my three-month tenure was highly valuable, time constraints limited the development of one project. This hands-on role provided me firsthand observation of the challenge posed by ineffective management of technical employees by mid-level managers, particularly in project development contexts. As a BBA in Technology Management student, this experience made me understand the role of appropriate technology management in business organizations.

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Appendices

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Weekly Overview of Internship Activities

Name: Abdullah As-Sadeed

Information Technology Intern

Week: 1st

Date: Feb 5, 2025 – Feb 6, 2025

Activities

- Onboarding Session
- **Employee Self Service App Project**
 - Overview of Business Logic
 - Overview of Current Status
- **Retailer Campaign App Project**
 - Overview of Business Logic
 - Overview of Current Status
- **Tea State App Project**
 - Overview of Business Logic
- **Workstation Setup**
 - **Additional OS:** macOS Sequoia (15)
 - **Framework and Language:** Flutter 3.27 and Dart 3.6
 - **IDEs / Editors:** Android Studio, Xcode, Visual Studio Code
 - **SDKs with Tools:** Android SDK, iOS SDK, etc.



Supervisor

Shakil Alam

Head of Information Technology

AkijBashir Group

Dhaka



Academic Supervisor

Dr. Md. Shamsu Uddin

Assistant Professor

Department of BTM

IUT, OIC

Weekly Overview of Internship Activities

Name: Abdullah As-Sadeed

Information Technology Intern

Week: 2nd

Date: Feb 8, 2025 – Feb 13, 2025

Activities

- **Tea State App Project**
 - Technical Test of Facial Attendance using Google ML Kit and TensorFlow Lite
- **Employee Self Service App Project**
 - Multiple File Upload API Integration for TA/DA Applications
- **Knowledge Transfer Sessions**
 - On Frontend Development with Backend
- **Proposals**
 - Flutter Code Obfuscation
 - Separation of Debug Information in Flutter



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Weekly Overview of Internship Activities

Name: Abdullah As-Sadeed

Information Technology Intern

Week: 3rd

Date: Feb 16, 2025 – Feb 20, 2025

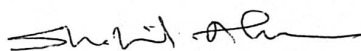
Activities

▪ **Retailer Campaign App Project**

- Multiple File Upload and Download API Integration for Order Challans
- Cross-Platform Device Identification
- iOS Project Configuration

▪ **Employee Self Service App Project**

- Cross-Platform Device Identification
- iOS Project Configuration



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Weekly Overview of Internship Activities

Name: Abdullah As-Sadeed

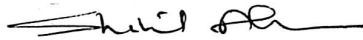
Information Technology Intern

Week: 4th

Date: Feb 22, 2025 – Feb 27, 2025

Activities

- **Tea State App Project**
 - Common HTTP Service in MVC Approach
 - Workers List API Integration (Assisted)
- **Retailer Campaign App Project (Ceramic)**
 - Discussion on Project Structure
- **Proposal and Demo App**
 - Ollama Chat Agent for Support (Technical Test)



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Weekly Overview of Internship Activities

Name: Abdullah As-Sadeed

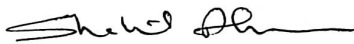
Information Technology Intern

Week: 5th

Date: Mar 2, 2025 – Mar 6, 2025

Activities

- **Tea State App Project**
 - Attendance Submission API Integration (Preliminary Technical Test)
 - Meeting with User on Project Progress
- **Retailer Campaign App Project (Ceramic)**
 - API Documentation
- Two Knowledge Transfer Sessions on App Projects



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Weekly Overview of Internship Activities

Name: Abdullah As-Sadeed

Information Technology Intern

Week: 6th

Date: Mar 8, 2025 – Mar 13, 2025

Activities

- **Tea Estate App Project**
 - Embeddings Rotation Remover for Pre-registered Faces
 - Object Converter from “CameraImage” to “InputImage”
 - Continuous Face Detection Mechanism

- **Retailer Campaign App Project (Ceramic)**
 - Documentation on Data Model and Repositories

- Knowledge Transfer Session on Frontend Development



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Weekly Overview of Internship Activities

Name: Abdullah As-Sadeed

Information Technology Intern

Week: 7th

Date: Mar 16, 2025 – Mar 20, 2025

Activities

▪ Tea Estate App Project

- Probability Calculations of Smile and Eyes Being Open
- Mechanism of Skipping Live Camera Frames
- “Fast” Mode Face Detection Mechanism

▪ Retailer Campaign App Project (Ceramic)

- Session on Documentation and Project Code to New Developer
- Changed Backend Integration and Testing (Continuous)



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Weekly Overview of Internship Activities

Name: Abdullah As-Sadeed

Information Technology Intern

Week: 8th

Date: Mar 22, 2025 – Mar 27, 2025

Activities

- **Tea Estate App Project**
 - Dropdowns API Service Methods and Controller
 - Converter from “NV21” to “YUV_420_880_SP”
 - Converter from “YUV_420_880_SP” to “Image” Object
 - Meeting with User on Use Case Environment for Facial Attendance

- **Retailer Campaign App Project (Ceramic)**
 - Changed Backend Integration and Testing (Continuous)

- Apple Developer Account Enrollment



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Weekly Overview of Internship Activities

Name: Abdullah As-Sadeed

Information Technology Intern

Week: 9th

Date: Apr 05, 2025 – Apr 10, 2025

Activities

- **Tea Estate App Project**
 - Continuous Face Recognition Mechanism

- **Employee Self Service App Project**
 - Release Build against Apple Developer Account

- **Retailer Campaign App Project (Bathware)**
 - Release Build against Apple Developer Account

- **Retailer Campaign App Project (Ceramic)**
 - Changed Backend Integration and Testing

- **Apple Developer Account**
 - Provision of Certificates and Profiles



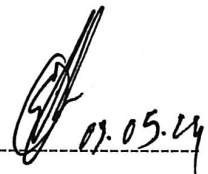
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Weekly Overview of Internship Activities

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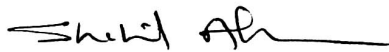
Information Technology Intern

Week: 10th

Date: Apr 12, 2025 – Apr 17, 2025

Activities

- **Retailer Campaign App Project (Ceramic)**
 - Updated API Documentation
 - Testing on Retailer Registration, Approval, and Login APIs
 - Testing on Retailer List API
 - Testing on Order APIs (Continuous)



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Weekly Overview of Internship Activities

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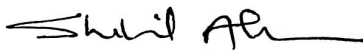
Week: 11th

Date: Apr 20, 2025 – Apr 24, 2025

Activities

- **Tea Estate App Project**
 - Integration of Updated Worker List API

- **Retailer Campaign App Project (Ceramic)**
 - Testing on Order APIs (Continuous)
 - Testing on Campaign APIs



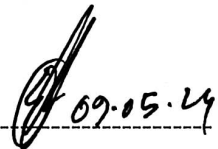
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Weekly Overview of Internship Activities

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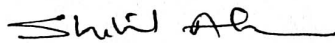
Week: 12th

Date: Apr 26, 2025 – Apr 30, 2025

Activities

- **Tea Estate App Project**
 - Worker Face Registration Mechanism
 - Serial Bluetooth Communication using HC-06 and FTDI UART Adapter

- Knowledge Transfer Sessions
 - Apple Developer Account
 - Apple Development Certificates, Identifiers, and Provisioning Profiles
 - Flutter iOS Builds using Xcode and CocoaPods
 - Source Code of the Tea Estate App Project
 - Credentials



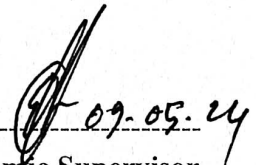
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Date: 05 May, 2025

To Whom It May Concern:

This is to certify that Abdullah As-Sadeed, a student of Islamic University of Technology, has attended internship program from 05 February, 2025 to 05 May, 2025 in our Information Technology Department of AkijBashir Group.

He has completed his internship program period successfully. During his internship he displayed an exceptional level of dedication, enthusiasm and a strong willingness to learn and grow.

We wish him every success in his future career.

For Akij Ceramics Limited,



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