



Independent University Bangladesh

An Internship Report

On

**Mobile app development on
Employee Management System
(TechTrio Solutions)**

This Report Is Submitted By,

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**In partial fulfillment of the requirements for the
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Letter of Transmittal

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Subject: Submission of Internship Report for the completion of Graduation.

Dear Madam,

With due respect, I would like to inform you that I have completed my internship at TechTrioZ Limited. I was under the supervision of Mahmuda Isalm (Managing Partner, TechTrioZ Solutions). It was a great experience for me. I got the opportunity to work with the Flutter App Development Team. Through this internship I learn Flutter app development and Built an App for the company. In this report, I have tried to include my experience along with some relevant information to make the report informative and comprehensive. I am extremely grateful for your guidance and kind cooperation on this report. It would be great if you kindly go through the report and evaluate my performance.

Regards,

Md. Fazle Rabbi

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Attestation

I understand the nature of plagiarism, and I am aware of the University's policy on this. I certify that this is an original work by me during. However, following internationally accepted academic guideline of using others written work and / or software (in the form of code) in my University project is properly cited if used in any part of this work.

Signature:

Name: -----

Signature:

Name: -----

ACKNOWLEDGEMENTS

First and foremost, I would like to thank Almighty Allah for giving me the endurance and the ability to work hard. It is my privilege that I had the opportunity to do an internship in The TechTrio Solutions. I would like to thank all the people on whom I carry out my internship.

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Last but not the least, I would like to thank my parents and other family members for their eternal support given to me.

Md. Fazle Rabbi

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Abstract

This report describes my internship at TechTrio Solutions. This report is broadly categorized.

Into eight different chapters. This report focuses on the Employee Management System which I built during my internship.

The scope of this document is to identify and describe the analysis carried out, projects completed, experience gained and focus on achievement as software engineer Intern.

Independent University provides that glorious opportunity to their students of having an internship within their bachelor program.

During my internship at TechTrio Solutions was introduced to some new technology, languages and frameworks. But the most amazing was to work in a multicultural work environment culture.

Overall, I am very satisfied with the results of my internship. I was able to use my software development knowledge and apply it to a real organization working in a real-life platform, I was able to see some differences in functioning that resulted from efforts. Due to the character of the internship and the short period spent at TechTrio Solutions, I took this experience as an opportunity to provide TechTrio Solutions with the skills which I learned while a computer science and engineering student at Independent University Bangladesh.

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Chapter 1

Introduction

An internship allows a student to achieve first-hand exposure to operating within the globe. It additionally permits students to harness the ability and theoretical data they learned in university. they'll acquire endless amounts of education in their life, however, that data doesn't continuously translate to the operating life. Once strolling back from the spot, students get the abilities and confidence that they need developing throughout the spot that helps to realize work expertise and prepare them for his or her future career ahead as Associate in Nursing outcome.

I was granted the opportunity to work in TechTrioZ Solution to fulfill my requirements for the internship. I integrated whatever I have learned and put it to use. The environment in the office is always filled with friendliness, work-driven, and passion to achieve a better outcome in the work. I have mentioned my personal views about the company in detail in the report. TechTrioZ Solution has very hard Restrictions and ethical standards to maintain in the office. I get to understand their way of working, and eventually, the corporate culture in general.

1.1 Background

TechTrioZ Solutions wants a mobile application for its official use. They want to reduce their paperwork. They want a mobile app which can record their employee information. Which will help to reduce office paperwork. Keeping record on paper risky for any company. They want employee registrations in their mobile app. Providing information employees can create an account.

They want employee's attendance features in their mobile app. Using that feature register employees can submit their regular attendance and the admin can monitor the regular attendance of employees.

TechTrioZ also wants some features in their app like leave applications and advance payment applications submission. Applying for leave and payment employees are using paper or email. Sometimes the admin misses those emails, and the employee has to apply again. That's why TechTrioZ wants that employees can apply for leave and advance payment using that mobile app

and admin can approve those applications through admin profile. If the admin approves those applications, the status will be changed on the employee side.

The main requirement of TechTrioZ was building an app which can be used on both android and iOS versions.

1.2 Objective of the project

The main objectives of the EMS app to reduce office paperwork and All employees can connect to the admin directly through the app. Employees can use the features of that App which will help to save time.

- a. **Automate system:** The main objective is to automate the app. No need to record the information into paper. The app will be more user friendly so users can use it easily.
- b. **Save Time:** Manual systems take much time to record the data. This app is easy to use and save much time. Infected users can easily create accounts and submit their information.
- c. **Keep Record:** When an employee creates an account, he/she will have to provide all information. That information will be recorded in the database. Admin can see those employee details from the Admin profile.
- d. **Economical Values:** Of course, there is an economical value of this app. This application is being built for the TechTrioZ company for its official use. In future, this app can be used in many other offices.

1.3 Scope of the project

Features available to user and admin after developing this web application are:

- Admin and Employee registration.
- Admin, Employee login page.
- Admin dashboard
- Employee dashboard
- Employee information details.

1.4 Output of the Project

- Employees can submit their regular attendance.
- Employees can apply for advance payment.
- Employees can apply for leave.
- Admin can approve the advance payment application.
- Admin can approve the leave application.
- Admin can see all employee details.
- Employees can see application status.

Chapter 2 Company Profile

TechTrioZ established in November 2019. It is an IT and Business re-engineering company. Though TechTrioZ is a startup company it has multidepartment for various work with expert employees. TechTrioZ has a good understanding of full business processes and the existing systems of LHBL. It will significantly reduce the time of system analysis, re-engineered solution design, change management and user training & acceptance. TechTrioZ work in different projects and different functions with the blend of its Computer Science and Business educational background. TechTrioZ works with cutting edge latest technologies like web development (REST Framework at backend and Vue JS in the front end), Android apps development (Flutter Framework using Fire store) Amazon AWS cloud solution, Tableau BI.

2.1 Company Mission

To realize the Vision TechTrioZ will

- Generate technology-based ideas and solutions for the stakeholders for doing right things and for doing things right.

- Capacity development, process improvement and digital transformation are the key drivers.

2.2 Company Vision

To become a top-rated IT solution provider at home and abroad touching many hearts by innovation, transformation, and resource development.

2.3 Details of product line or service

TechTrioZ Key Project:

TechTrioZ Solutions, a fast-growing tech company working on various projects which helps people to experience the greater benefits. Their key projects which are ongoing:

- Price Analytics Dashboard (Technology: Django, RestAPI, Vue.JS, MySQL and QlikSense)
- Rebate Management System (Technology: Django, RestAPI, Vue.JS, MySQL)
- Easy ERP System. (Technology: Django, RestAPI, Vue.JS, PostgreSQL)
- Education system. (Technology: Django, RestAPI, Vue.JS, PostgreSQL).

2.4 Operation Details

TechTrioZ main Expertise are.

- IT services and solutions provider (Process re-engineering and smart web-based software development)
- IT Consultancy
- Mobile Computing (Apps Development)
- Data Analytics for Decision Making

- Big Data analysis, Application of Data Science, Market & Business Intelligence Cloud Migration
- BlockChain Process implementation.

Chapter 3 Development Phase of Employee Management System

3.1 App development process of Employee Management System

Employee Management System develops by following the Agile Model, this is flexible. Employee Management System is their own project of TechTrioZ Solution for their official purpose, it is a long-term project that is why the Agile model has chosen.

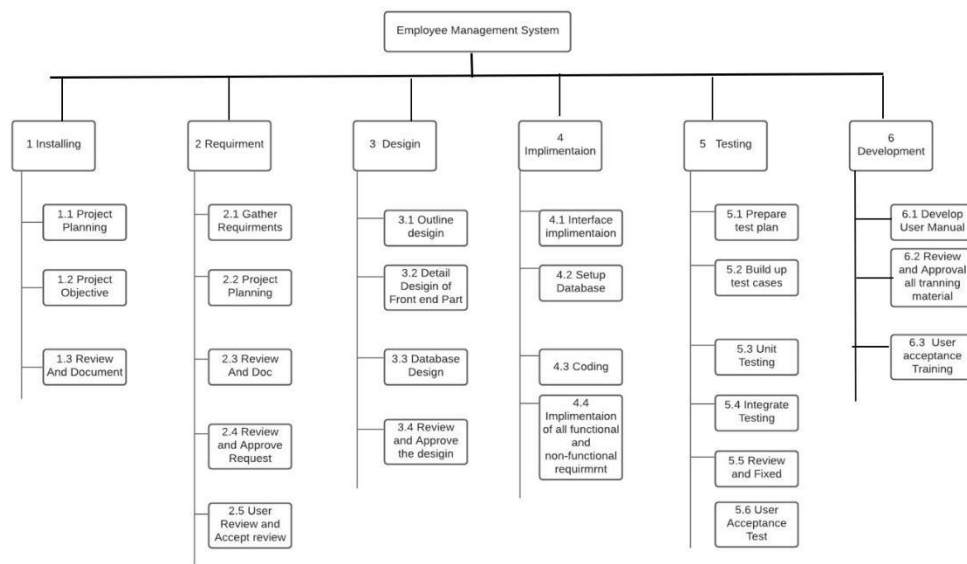


Figure 1. Development Process of Employee Management System

3.2 App development activities of Employee management system

- **Registration:**

- Admin and Employee can Create their account.
- Users need to provide all information for registration.
- Email and Password to specify the user. It will be used for firebase authentication.
- Date of birth will use a date picker, so the user does not need to put it manually.
- Users can choose to register as Employee and Admin. This will be a common register page for both employee and admin. If the user chooses the register as admin then it will create an admin account and if the user chooses to register as Employee, then it will create an employee account for those email and password.

- **Apply for Advance:**

- Register Employees can apply for an advance from their profile.
- Form advance applications from an employee can apply for the advance.
- There will be an auto date picker which will show the present date, there will be a time picker which will stamp the time of application.
- There will be a text field where the employee can put the amount.
- There will be a reason option from where the user can select why he/she Is applying for the advance.
- After all the Employee can submit the form by using a submit button.
- Those applications will be stored in a firestore.

- **Apply for Leave:**

- Users can apply for leave from their profile.
- Form leave application from an employee can apply for the leave.
- There will be an auto date picker which will select the current date, there will be a time picker which will automatically select the time stamp of apply time.

- There will be two date-selectors for leave days, the first one will be for the leave start date and the second one will be the end date of the leave.
 - There will be a reason option for which purpose of the employee applying for leave.
 - After completing the form there will be a submit button.
 - Those applications will be stored in firestore.
- **Regular Attendance:**
 - All employees can submit their regular attendance using this app.
 - Users need to go to the regular attendance form and submit the attendance.
 - Time and date will be auto generated.
 - That information will be stored into the firebase.
- **Admin can approve employee advance request:**
 - Admin can see the Employee advance request from their profile.
 - When the admin will go to the advance request table there will be an option for approving the request.
 - Admin can delete the request. If the admin wants to delete the request, then admin can use the delete button to delete the request.
- **Admin Approve Employee Leave Request:**
 - Admin can see the Employee Leave Request form their profile.
 - Admin can approve it from the admin dashboard. There will be an option when the admin will go to the employee leave applications table where the admin can see the option for approving it.
 - Admin can delete the request. If an admin wants to delete a specific request form an employee using the delete button admin can delete that application.
- **All Employee Details:**
 - Admin See all employee details from the admin profile.

- Admin can delete the specific employee.
- **Advance Applications Details:**
 - An employee can see all advance applications from his/her profile.
 - All applications will have a different unique id.
 - An employee can also see all Approve status. If the admin approves the request, then it will show approved otherwise it will show pending.
- **Leave Application details:**
 - An employee can see all leave applications from the Employee profile.
 - All applications will have a different unique id.
 - An employee can also see all Approve status. If the admin approves the request, then it will show approved otherwise it will show pending.

Software development activities of Employee Management System

- **Employee Activities:**
 - An employee can create his/her account.
 - An employee can log in to his/her account.
 - An employee can apply for an advance.
 - An employee can apply for leave.
 - An employee can submit his/her daily attendance.
- **Admin Activities:**
 - Admin can register his/her account.
 - Admin can see all employee details.
 - Admin can see all employee's regular attendance.
 - Admin can see employee advance applications.
 - Admin can see employee leave applications.
 - Admin can approve, reject or delete the employee leave or advance request.

3.3 Methodology

A software development methodology or system development methodology in software engineering is a framework that is used to structure, plan, and control the process of developing an information system.

There are several software development methodologies. Such as:

- Waterfall Model
- Prototype Methodology
- Rapid Application Development
- Dynamic System Development Model Methodology
- Agile Software Development Methodology
- Spiral Model

I choose the agile process as a methodology for this project.

The Agile Methodology is based on iterative and incremental development instead of a linear approach. It does not build an entire system at once, but rather develops incrementally. Less time is invested upfront for documentation and analysis, as clients are constantly seeing and testing the product and providing feedback. The development and feedback process adds accountability (tangible milestones of completed work, not just documentation), and tends to improve client satisfaction by allowing ongoing input.



Figure 2. Agile Software Development Methodology

There are several reasons for choosing agile processes.

Better product quality: Agile methods have excellent safeguards to make sure that quality is as high as possible by

- Taking a proactive approach to quality to prevent product problems.
- Embracing technological excellence, good design, and sustainable development.
- Defining and elaborating on requirements just in time so that knowledge of product features is as relevant as possible.
- Incorporating continuous integration and daily testing into the development process, allowing the development team to address issues while they are fresh.
- Taking advantage of automated testing tools to develop during the day, test overnight, and fix bugs in the morning.
- Conducting sprint retrospectives, allowing the scrum team to continuously improve processes and work.
- Completing work using the definition of done developed, tested, integrated, and documented.

Higher customer satisfaction: Agile project teams satisfy customers by

- Keeping customers or users involved and engaged throughout projects.
- Having a product owner who is an expert on product requirements and customer needs.
- Keeping the product backlog updated and prioritized to respond quickly to change.
- Demonstrating working functionality to customers in every sprint review.
- Delivering products to market quicker and more often with every release.
- Possessing the potential for self-funding projects.

Customized team structures: Self-management puts decisions that would normally be made by a manager or the organization into scrum team members' hands. Because of the limited size of development teams — five to nine people — agile projects can have multiple scrum teams on one project. Self-management and size-limiting mean that agile projects can provide unique opportunities to customize team structures and work environments.

More relevant metrics: The metrics agile project teams use to estimate time and cost, measure project performance, and make project decisions are often more relevant and more accurate than metrics on traditional projects. On agile projects, you provide metrics by

- Determining project timelines and budgets based on each development team's actual performance and capabilities.
- Having the development team that will be doing the work provide effort estimates for project requirements.
- Using relative estimates, rather than hours or days, to tailor estimated effort to an individual development team's knowledge and capabilities.
- Refining estimated effort, time, and cost on a regular basis, as the development team learns more about the project.

- Updating the sprint burn down chart every day to provide accurate metrics about how the development team is performing within each sprint.
- Comparing the cost of future development with the value of that future development, which helps project teams determine when to end a project and redeploy capital to a new project.

Improved performance visibility: On agile projects, every member of the project team can know how the project is going at any given time. Daily scrum meetings, daily sprint reviews, and visible progress charts offer concrete ways to see progress.

Increased project control: The many opportunities to inspect and adapt throughout agile projects allow all members of the project team — the development team, product owner, scrum master, and stakeholders — to exercise control and ultimately create better products.

Improved project predictability: Agile project management incorporates several practices, artefacts, and tools for improved predictability:

- Keeping sprint lengths and development team allocation the same throughout the project allows the project team to know the exact cost for each sprint.
- Using individual development team speed allows the project team to predict timelines and budgets for releases, the remaining product backlog, or any group of requirements.
- Using the information from daily scrum meetings, sprint burn down charts, and task boards allows the project team to predict performance for individual sprints.

Reduced risk: Agile techniques virtually eliminate the chance of absolute project failure:

- Developing in sprints, ensuring a short time between initial project investment and either failing fast or knowing that a product or an approach will work.
- Always having a working product, starting with the very first sprint, so that no agile project fails completely.
- Developing requirements to the definition of done in each sprint so that project sponsors have completed, usable features, regardless of what may happen with the project in the future.
- Providing constant feedback on products and processes through daily scrum meetings and constant development team communication, sprint reviews and retrospectives, and releases in which the end user can see and react to new features on a regular basis

- Generating revenue early with self-funding projects, allowing organizations to pay for a project with little up-front expense.

3.4 Project Planning

Every work or project must have a plan. Without plan no project will be successful. In this project before start work a plan has been designed. Here already literature review has been done. Now first of all, a requirement analysis will be created. Requirement analysis will contain Functional and Nonfunctional requirements of the project. After Requirement analysis, the Designing of the project will be started based on the requirements. When Designing has been completed then Implementation will be started. After Implementation of the project Testing will be started.

Project Planning:

- Gather Requirements
 - Functional requirements.
 - Nonfunctional requirements.
- Design
 - Rich picture.
 - Use case scenario.
- Implementation
 - Language and Framework Selection
 - Frontend design.
 - Database design.
 - Frontend and backend connection.
- Testing
 - Prepare Test case.
 - Start testing.
- Deployment and Maintenance

3.5 Requirements

Requirements Analysis is the process of defining the expectations of the users for an application that is to be built or modified. Requirements analysis involves all the tasks that are conducted to identify the needs of different stakeholders. Therefore, requirements analysis means to analyze, document, validate and manage software or system requirements. High-quality requirements are documented, actionable, measurable, testable, traceable, helps to identify business opportunities, and are defined to facilitate system design.

To gather requirements of this Software and monetization plan, a survey questionnaire has been conducted with some employees of that office and admin. Questionnaire Survey added to

Appendix A

Advantages Questionnaire Survey:

1. It is practical due to the questions being straight forward.
2. Large amounts of Information can be collected in a short period of time.
3. The results of the questionnaire are easily qualified by the researcher.
4. It can be analyzed more objectively than other methods.

3.5.1 Functional Requirements

A functional requirement defines what a software and its components are and what these components are supposed to accomplish. The following functional requirements were gathered, and their inputs, behavior and output are discussed below.

Table: Compatibility

Name of the Function: Must be compatible with all devices like iOS, Android.		
Input: 1.N/A	Process: 1.App must develop in common development Environment	Output: 1.App must be use by any version like Android, IOS,
Precondition: User must have a smartphone		
Postcondition: User must know how to operate phone		
Alternate Option: N/A		

Table 1. Functional requirements: Compatibility

Table: Create an account.

Name of the Function: Create an account. Both for admin and employee		
Input: 1.User email and password required for authentication.	Process: 1.Need app in user device	Output: 1.View register interface.
Precondition: User must have a smartphone, Internet connection		
Postcondition: User must know how to operate phone		
Alternate Option: If the user missed any input field then it will show error		

Table 2. Functional requirements: Create an account.

Table: User login.

Name of the Function: Login to user account (Admin, Employee)		
Input: 1. User registered email and password required for authentication.	Process: 1. Need an app on a user device.	Output: 1.View login page where user can input email and password
Precondition: User must have a smartphone; Internet connection and a registered user		
Postcondition: Need register user		
Alternate Option: If user password or email is incorrect it will show error.		

Table 3. Functional requirements: User login.

Table: User dashboard.

Name of the Function: Every user can see an individual profile. (Admin or Employee)		
Input: 1.User email and password required for authentication. 2.User need to provide register email and password	Process: 1. Go to user profile page	Output: 1.View user profile interface
Precondition: User must have a smartphone; Internet connection and user must register.		
Postcondition: Need register user, need valid email and password. Users can see his/her apps features.		
Alternate Option: if user is not register then user cannot see login		

Table 4. Functional requirements: User dashboard.

Table: Employee regular attendance.

Name of the Function: An employee can submit his/her regular attendance from his/her profile

Input: 1.User email and password required for authentication and registration. 2. An employee needs to register an email and password. 3. An employee can log in to his/her profile.	Process: 1. Go to user profile page. 2.Select attendance button. 3.Then press submit button	Output: 1.The attendance will be stored into the firebase firestore.
Precondition: The employee must have a registered account with valid email and password.		
Postcondition: The employee needed to fill the whole form and press submit button		
Alternate Option: if the User is not registered then the user cannot log in. If the user doesn't provide all information, it will show an error. The employee needed to fill the whole form and press the submit button.		

Table 5. Functional requirements: Employee can submit regular attendance.

Table: Employee can apply for advance payment.

Name of the Function: Employee can apply for advance payment from his/her own profile		
Input: 1.User email and password required for authentication and registration. 2.Employee needs to provide a registered email and password. 3. Employees can login to his/her profile.	Process: 1. Go to the user profile page. 2.Select apply for advance button. 3.Then fill up the form. 4.Then press submit button	Output: 1.The application will be stored into the firebase firestore. 2.It will show pending until Admin approves it.
Precondition: Employee must have a register account with valid email and password		

Postcondition: Employee needed to fill the whole form and provide the advance amount
Alternate Option: if the user is not registered then the user cannot login. If user do not provide all information, it will show errors.

Table 6. Functional requirements: Employees can apply for advance payment.

Table: Employees can apply for leave.

Name of the Function: Employee can apply for leave from his/her own profile		
Input: 1.User email and password required for authentication and registration. 2.Employee need to provide a registered email and password. 3. Employees can login to his/her profile.	Process: 1. Go to the user profile page. 2.Select apply for leave button. 3.Then fill up the form. 4.Then press submit button	Output: 1.The application will be stored into the firebase firestore. 2.It will show pending until Admin approves it.
Precondition: Employee must have a register account with vail email and password		
Postcondition: Employee needed to fill the whole form and provide the Starting and End date		
Alternate Option: if the user is not registered then the user cannot login. If users do not provide all information, it will show errors.		

Table 7. Functional requirements: Employees can apply for leave.

Table: Admin can approve employee advance applications.

Name of the Function: Admin see all employees advance applications form admin profile

Input: 1.User email and password required for authentication and registration. 2.Admin needs to provide a registered email and password. 3. Admin can login to his/her profile.	Process: 1. Go to the Admin profile page. 2.Select advance applications button. 3.If the admin wants to approve it then the admin can click on the approve button. 4.If admin want to reject it then admin can click on delete button	Output: 1.Information will be stored into the firebase firestore. 2.Employee can see the advance status from employee profile
Precondition: Admin must have a register account with valid email and password		
Postcondition: Admin can approve or delete the applications		
Alternate Option: If admin is not registered then Admin cannot login.		

Table 8. Functional requirements: Functional requirements:

Table: Admin can approve employee leave applications.

Name of the Function: Admin see all employees leave applications form admin profile		
Input: 1.User email and password required for authentication and registration. 2.Admin needs to provide a registered email and password. 3. Admin can login to his/her profile.	Process: 1. Go to the Admin profile page. 2.Select the leave applications button. 3.If the admin wants to approve it then the admin can click on the approve button.	Output: 1.Information will be stored into the firebase firestore. 2.Employee can see the leave status from employee profile

	4.If admin want to reject it then admin can click on delete button	
Precondition: Admin must have a register account with valid email and password		
Postcondition: Admin can approve or delete the applications		
Alternate Option: If admin is not registered then Admin cannot login.		

Table 9. Functional requirements: Admin can approve employee leave applications

Table: Admin can see employee attendance.

Name of the Function: Admin see all employees attendance details form admin profile		
Input: 1.User email and password required for authentication and registration. 2.Admin needs to provide a registered email and password. 3. Admin can login to his/her profile.	Process: 1. Go to the Admin profile page. 2.Select employee attendance button.	Output: 1.Admin see which employees' attendance and time
Precondition: Admin must have a register account with valid email and password		
Postcondition: Admin can see the employee attendance with time stamp		
Alternate Option: If admin is not registered then Admin cannot login.		

Table 10. Functional requirements: Admin can see employee attendance.

Table: Admin can see all employee details.

Name of the Function: Admin see all register employees' details form admin profile		
Input: 1.User email and password required for authentication and registration. 2.Admin needs to provide a registered email and password. 3. Admin can login to his/her profile.	Process: 1. Go to the Admin profile page. 2.Select employee details button. 3.Admin delete specific employee.	Output: 1.Admin see all employee details including name email phone number
Precondition: Admin must have a register account with valid email and password		
Postcondition: Admin can see the employee attendance with time stamp		
Alternate Option: If admin is not registered then Admin cannot login.		

Table 11. Functional requirements: Admin can see all employee details.

3.5.2 Non-Functional Requirements

The non-functional requirements are listed in this section to identify the major operations of the system. There are various types of non-functional requirements like performance, security, reliability, maintainability, extensibility, feasibility, economical, operational, technical which are listed in this section and they are often called qualities.

- **PERFORMANCE REQUIREMENTS:** This Software should be the best performance for the user. The main reason to build this App is to manage daily information in the office. Amin can get updated and consistent information through this app and can see an employee's information. App should run fast enough to satisfy users.
- **SECURITY REQUIREMENTS:** Security and administration is always a concern. All information on the main app is secured. The only app administrator has access to firestore

database. This project uses Dart language as a backend, which has various layers of security, security requirements have been taken care of.

- **EXTENSIBILITY AND MAINTAINABILITY REQUIREMENTS:** There is one standard template used for one look and feel throughout the site. The app can be expanded to accommodate many further modules without making any changes to any existing modules. The application is created in such a way that the administrator can easily maintain both at a server and user sides.
- **FEASIBILITY STUDY:** An important outcome of the preliminary investigation is to determine the feasibility of the project. The main aim of the feasibility study activity is to determine whether it would be financially and technically feasible to develop a project. The feasibility study activity involves the analysis of the problem and collection of all relevant information relating to the product such as the different data items which would be input to the system, the processing required to be carried out on these data, the output required to be produced by the system as well as the various constraints on the behavior of the system. During feasibility study most of the high-level architectural design decisions are made.
- **OPERATIONAL FEASIBILITY:** The proposed project is beneficial only if it is turned into information systems that will meet the organization's operating requirements. This test of feasibility asks if the system will work when it is developed and installed. A factor considered for operational feasibility is that the proposed project be beneficial to users because it offers greater support to potential members and pin regards to interface friendliness, easy access and easy in understanding the flow of the system. This project meets operational feasibility as it has information that is being continuously updated.
- **TECHNICAL FEASIBILITY:** Technical feasibility involves the software and hardware requirements to develop this App. Hardware is not an issue as it runs on any Smart phone which is connected to the Internet. The proposed technology must meet all software requirements, by considering factors.

- **ECONOMICAL FEASIBILITY:** Suitable budget, financial benefits, investment vs. profit are big factors for economic feasibility. This application needs less people than before who can control. Thus, any extra manpower to maintain is not required. Also, as this project was developed using open-source technology no additional funding is needed for technology. So, this project is perfectly economically feasible.
- **LESS RESPONSE TIME:** Because of fast speed of server people can reach this without delay. As this software using firebase firestore for storing data so it's non-SQL cloud database so the performance will be good enough.
- **USER FRIENDLY INTERFACES:** All the interfaces of this apps is very user and clean. Users can understand the app very easily.

3.6 Designing

Designing an app is the most important part of software development. This app focuses on both admin and employee. So, designing is a very crucial part of this development session. You must visualize the app feature and think about how to implement it and design it so that it becomes user friendly.

3.6.1 Rich Picture

Admin Module:

When the admin goes to his/her profile, the admin sees the dashboard. Admin can see employee regular attendance details, Admin can approve employee advance and leave applications, Admin can see all details of employee and can check employee attendance.

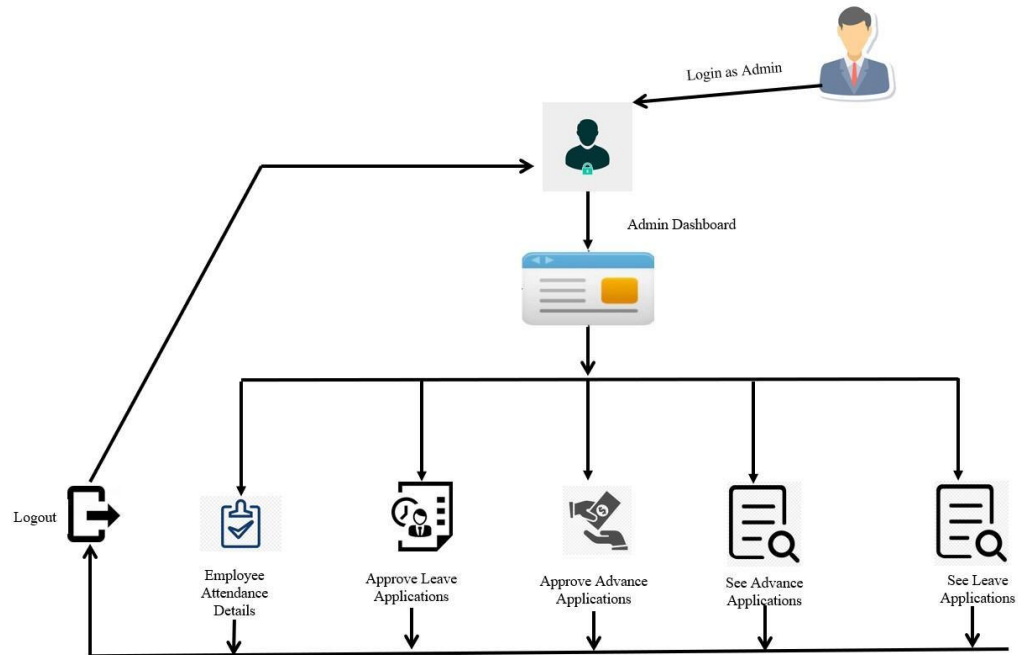


Figure 3. Admin Side Rich Picture

Employee Module:

When an employee goes to his/her dashboard. Employees can Submit their regular attendance; employees can apply for Leave and Advance applications. Employees can see their applications details from employee profile.

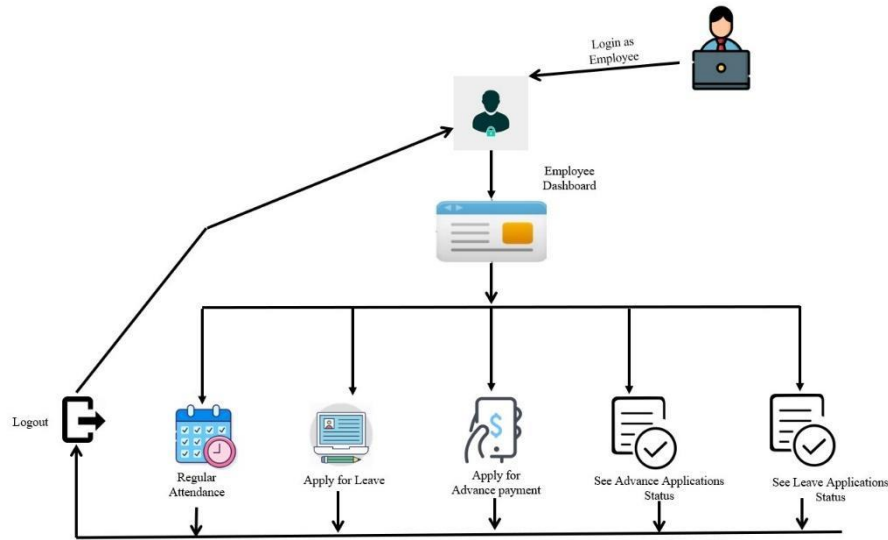


Figure 4. Employee Side Rich Picture

3.6.2 Use Case

Every App has some common features and some different features and scenarios. By using the use case scenario, we can understand which features are common and different. Use case scenario helps to understand which user can do what. In this use case scenario first, both admin and employee need to create an account for login. Then in the login section users need to provide register mail and password. It will check for authentication in an included case. If the mail and password are valid then it will log in to admin or employee user profile.

When an employee applies to submit their attendance then see employee details include it then admin can see the employee attendance.

When an employee applies for leave or advances application then admin leave approval and advance approval included both cases will be included. So that admin can see the applications.

When admin updates the status for employee leave or advance applications from admin leave or advance approval state. then employee leave status and advance status will include the admin leave and advance approval so that employee can see the status.

Use case:

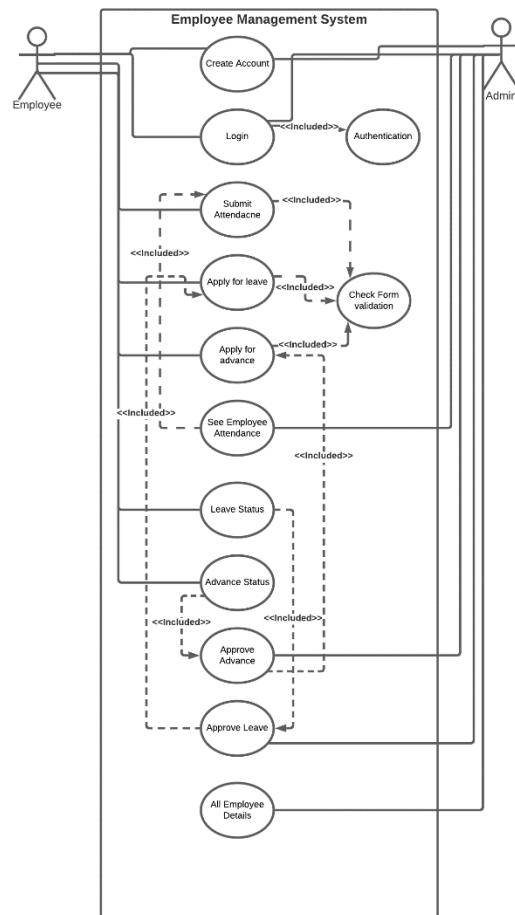


Figure 5. Use case Scenario.

3.6.3 Flow Chart

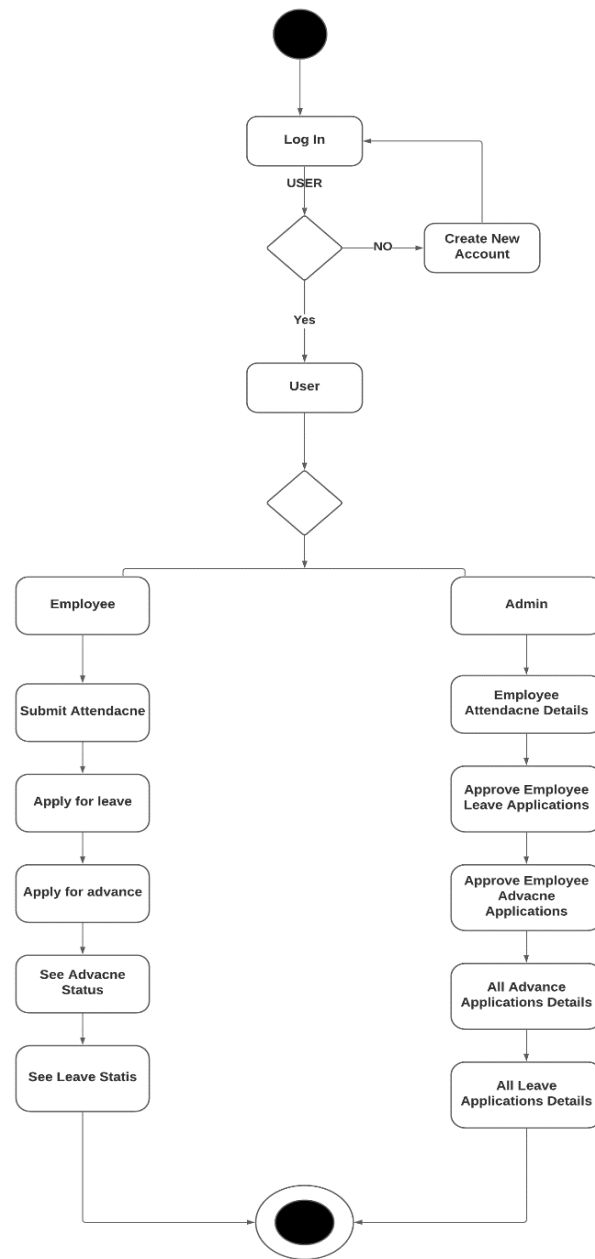


Figure 6. Flow Chart

3.7 Implementation

3.7.1 Language and Framework Selection

Currently, Flutter is one of the best cross-platform app development technologies you can find. As TechTrioZ main requirement was that they built an application which can be used by both android and iOS users. It's easy for both a native and cross-platform mobile app developer to learn because it's close to native languages, it has great performance, and there are lots of off-the-shelf solutions. Flutter is a free and open source.

Why Flutter:

1. **One Code for iOS and android:** For software developing for both iOS and Android it has been very difficult in the past. We need to write different code for the same software to support iOS and Android. Like android supports Java or Kotlin where iOS support swift or object-c. But thanks to flutter to solving this problem. Flutter is first which use the same codebase for both iOS and Android. It reduces the developer work and time.
1. **Support Community and Documentation:** Community plays a huge role in app development. Here flutter has a large community for support and documentation. For framework documentation is very important, flutter provides good documentation for the developer it helps a lot when developing an app.
2. **Core Elements:** Flutter Use widgets as its core elements. It allows the developer to see immediately what they are developing, and it reduces time consumption for developing UI elements for each screen and resolution. You need to create a UI element once it will adapt automatically for any screen. Flutter has its widget toolkit, but all the components are rendered natively. This gives apps a native feel and improves performance.

3. **Working with native functionality:** Flutter is a wrapper around an app that uses a special communication method called Platform Channels to connect Data to native languages. It is easy to use and allows developers to access hardware.

Currently, Flutter has libraries that allow it to connect with device hardware like GPS chips, cameras, and microphones. Until recently, this framework had no way to access a device's AR capabilities, but a library for that has appeared as well. When you use a library, it's harder to tweak something, so this may cause restrictions for your project. However, you can accomplish all basic tasks using Flutter libraries.

4. **Performance:** Comparison to all other native language flutter is one of the heights performing frameworks. The standard is 60 frames per second, and this alone is rather high. For smooth initialization screen flutter use JavaScript bridge. It helps to allow them smoothly.

To keep up performance, standard Dart analysis and flutter inspector help developer to analyze their code. Similar tools are also available in Android Studio that helps develop debug and optimize their code.

Flutter uses a tool it called Hot Reload it helps to see the change immediately no need to build the app for various changes. Change something in your code press hot reload it will show immediately.

5. **Adaptation in the industry:** Flutter has different types of widgets and it has out of box solution. This makes flutter easy to the developers and saves their time.

Flutter currently supports six types of operating systems. The developer needs to just write one code and some simple modification can launch their app in six systems.

- Android
- iOS
- macOS

- Windows
- Linux
- Web

Developer basically does anything with flutter because it supports native code.

6. **Lifecycle management:** An application's lifecycle is usually managed by the operating system. This means changing the states of an app. Flutter used to be not that great at lifecycle management, as it didn't have any tools that would allow developers to track each stage of their app's lifecycle.

Now, developers can see their app's lifecycle in Stateful widgets. You can also use additional widgets such as OrientationBuilder, which tracks changes in screen orientation.

7. **Code Structure:** The code structure of Flutter is very close to the native Android code structure that inspired it. Google gave the Flutter framework the best features of native Android languages.

Flutter's main selling point is its ability to separate styles and executed code into different classes. This greatly accelerates development, as you can have one custom view with all the styles that will work for every part of your app. Also, you can use default styles for your widgets, and it will work great as well.

8. **Free and open source:** Flutter is an open-source platform and lets developers gain access to hundreds of third-party packages for ads, videos, databases, cloud, etc., for absolutely free. This further indicates its low-cost scalability benefits that businesses would ideally prefer in any scenario.

Why Firebase as backend:

1. **Firestore:** It is a flexible, scalable NoSQL cloud database for mobile, web and server development. It keeps data in sync across client apps and provides offline support so we can build responsive apps regardless of internet connectivity. In addition, it is possible to create own security rules to protect user's data even more.

2. **Authentication:** Firebase Auth product provides various methods to authenticate that includes email and password. Additionally, more methods are available to authenticate 3rd party providers like Google. You can either create your own interface or use the open-source customizable user interface. Firebase offers easy to use SDK and ready-made UI libraries to authenticate the apps.
3. **Real Time Database:** This feature ensures that the data between the users are stored and synchronized in real time with the help of the NoSQL database. When you want the app data to remain available even if the app goes offline, firebase will be the right choice. It updates the data syncs in just a few milliseconds. Firebase for mobile app development is scalable and accessible from client devices.
4. **Dynamain Links:** With dynamic links, firebase ensures a customized user experience for your application across all the platforms. You can use dynamic links to drive the native app conversions. The user opening the dynamic link will be prompted to install the app in case the application is not already installed. By this, many people can install your application easily.
5. **Cloud Function:** One of the biggest advantages of firebase which makes it possible to create very complex and custom functionalities. We can run our own cloud https functions or trigger some functionality depending on Firestore/Storage updates. With this tool in hands, we are also able to integrate almost every third-party software like for example online payment processing.

3.8 Testing

3.8.1 Items to be tested.

All the features which are discussed in the functional requirement will be tested. According to the detail features, description, constraints of the website below functionalities will be scope of the testing-

1. Compatibility Test
2. Create a new account. Both for admin and employee

3. Login to user account
4. Employees can Submit their regular attendance from his/her own profile.
5. Employees can apply for advance payment from his/her own profile.
6. Employees can apply for Leave from his/her own profile.
7. Admin can see all employees advance applications form admin profiles.
8. Admin see all employees leave applications form admin profiles.

Test Case: Compatibility Test

Test case Name	Purpose	Precondition	Test Step to	Expected Result	Actual result	Status	Remarks
Compatibility Test	1.) Check app support all android version	1.) Built app APK first for the installation	1.Install the app into different android version mobile	1.) if everything ok then App will run successfully	1.) On every android version it works properly	Pass	No Remarks

Table 12. Test Case: Compatibility Test.

Test Case: Create a new account. Both for admin and employee

Test case Name	Purpose	Precondition	Test Step to	Expected Result	Actual result	Status	Remarks
Create new account. Both for admin and employee	1.) Check if the user registration is successfully done	1.) User must have android phone 2.) Must connected to the internet	1.) Fill up the registration form with valid email, password, name, and other details	1.) User input all the information correctly and submit the user will go to the login page	1.) User created successfully	Pass	No Remarks

Table 13. Test Case: Create a new account. Both for admin and employee

Test Case: Login to user account

Test case Name	Purpose	Precondition	Test Step to	Expected Result	Actual result	Status	Remarks
Login to user account	1.) To check register user can login to their account	1.) Users need to register first. 2.) Must connect to the internet	1.) Users need to register email and password.	1.) If user email and password is correct, then it will go the user profile	1.) User can login to their account successfully	Pass	No Remarks

Table 14. Test Case: Login to user account

Test Case: Employee can Submit their regular attendance from his/her own profile.

Test case Name	Purpose	Precondition	Test Step to	Expected Result	Actual result	Status	Remarks
Employee can Submit their regular attendance from his/her own profile	1.) To check register employee can successfully submit their regular attendance	1.) Employees need to register first. 2.) Then login to their account 3.) Must connect to internet	1.) When an employee clicks on the daily attendance button then the user can see the attendance	1.) If employees successfully submit their attendance it will save into the firestore.	1.) Employee can submit their attendance successfully and those attendance stored into the firestore	Pass	No Remarks

			s page. If user submit their attendance it will store into the firestore	2) Employee can see their attendance form regular attendance			
--	--	--	--	--	--	--	--

Table 15. Test Case: Employee can Submit their regular attendance from his/her own profile

Test Case: Employee can apply for advance payment from his/her own profile.

Test case Name	Purpose	Precondition	Test Step to	Expected Result	Actual result	Status	Remarks
Employee can apply for advance payment from his/her own profile	1.) To check employee can submit their advance application form correctly	1.) Only registered employees can apply for advance. 2.) Must connect to internet	1.) When an employee clicks on apply for advance, it will show the employee advance application from. 2.) Employees need to fill up the	1.) If employees successfully submit their form it will store into the firestore. 2.) Employees can see the advance status form his/her profile.	1.) Employees can submit the advance application successfully. 2.) Application stored into the firestore. 3.) Employee can see the status	Pass	No Remarks

			form correctly and press submit				
--	--	--	--	--	--	--	--

Table 16. Test Case: Employee can apply for advance payment from his/her own profile.

Test Case: Admin can see all employees advance applications form admin profile.

Test case Name	Purpose	Precondition	Test Step to	Expected Result	Actual result	Status	Remarks
Admin can see all employees advance applications form admin profile	1.) To check employee can submit their leave application form correctly	1.) Only registered employees can apply for advance. 2.) Must connect to internet	1.) When an employee clicks on apply for leave, it will show the employee leave application from. 2.) Employee s need to fill up the form correctly and press submit	1.) if employees successfully submit their form it will store into the firestore. 2.) Employees can see the advance status form his/her profile.	1.) Employees can submit the leave application successfully. 2.) Application stored into the firestore. 3.) Employee can see the status	Pass	No Remarks

Table 17. Test Case: Admin can see all employees advance applications form admin profile

Test Case: Admins approve advance approval.

Test case Name	Purpose	Precondition	Test Step to	Expected Result	Actual result	Status	Remarks
Admins approve advance approval	1.) To check admin can approve the employee advance application	1.) Only the registered Admin can approve the advance application. 2.) must connect to the internet	1.) When the admin clicks on the advance approval it will show the advance application of employees. 2.) if the admin approves the application the application	1.) if admin select approve or rejected it will change the status and update the status of the application	1.) Admin can approve the employee advance application successfully and employee can see the status from their profile	Pass	No Remarks

			status will be changed. 3.) Employee can see the status of the application from employee account				
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Table 18. Test Case: Admins approve advance approval.

Test Case: Admin see all employees leave applications form admin profile.

Test case Name	Purpose	Precondition	Test Step to	Expected Result	Actual result	Status	Remarks
Admin see all employees leave applications form admin profiles.	1.) To check admin can approve the employee leave application	1.) Only the registered Admin can approve the leave application. 2.) must connect to the internet	1.) When the admin clicks on the advance approval it will show the advance application of employees.	1.) if admin select approve or rejected it will change the status and update the status of the application	1.) Admin can approve the employee leave application successfully and employee can see the status from their profile	Pass	No Remarks

			<p>2.) if the admin approves the application the application status will be changed.</p> <p>3.) Employee can see the status of the application from employee account</p>				
--	--	--	--	--	--	--	--

Table 19. Test Case: Admin see all employees leave applications form admin profile.

3.9 Deployment and Maintenance

After testing and fixing the error product is ready for use. First, we need to generate the apk-release. More details in Appendix C

Generate APK:

1. Go to the Flutter Project.
2. Then select the project Employee Management system.
3. When your project is open then go to the build option.
4. Select Flutter after that you can see Build AAR, Build APK, Build APK bundle, Build iOS.
5. Then select Build APK for android.

6. It will take some time to build successfully.
7. When it is built apk-release file will be generated.

It is necessary to become a paid member of the Play Store with your Google account, estimated prices are 25 dollars per year.

TechTrioZ is a reported company with expert employees. They can maintain and update the system very easily.

Chapter 4 Project Management

4.1 Activity Wise Time Distribution

I divided my whole project into this timeline.

Serial	Activity	Days	Work Percentage
1	Installing	5	5%
2	Requirements	5	5%
3	Design (Front end Backend)	20	40%
4	Implementation (codes)	20	40%
5	Testing	5	5%
6	Development	5	5%
	Total Days	60	100%

Table 20. Project time distribution.

4.2 Gantt Chart

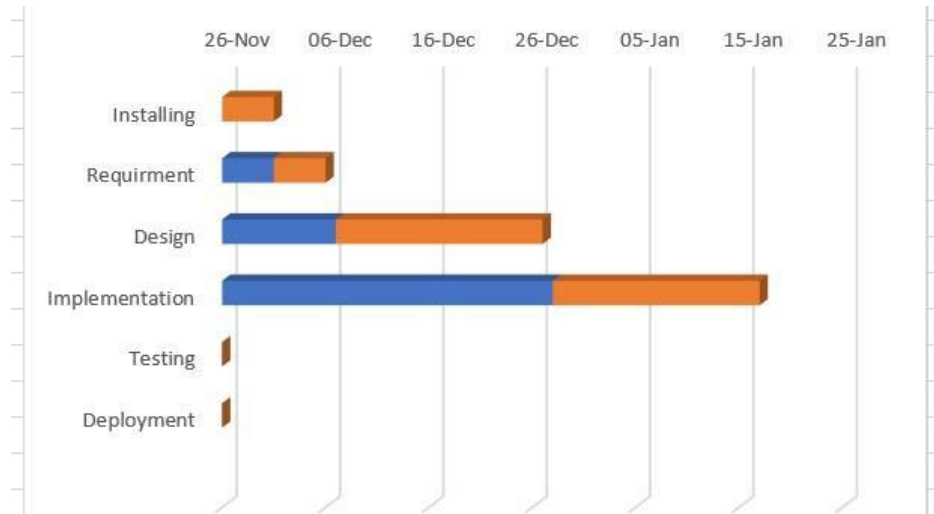


Figure 7. Gantt Chart

Chapter 5 Project as Engineering Problem Analysis

5.1 Sustainability of the project

The use of mobile smartphones and the internet, among all classes of people, have increased dramatically in Bangladesh over the last decade. The growth suggests that the use would increase even further in the future. Starting from ordering food to booking plane tickets everything has become more digitized in their manner. Considering such a change in the social atmosphere, it is safe to say that the Employee Management System is highly sustainable. It works just like any other site or mobile app. It is very likely that soon people would be more interested to meet their everyday needs through online activities and transactions. The Employee Management System advocates for such a change, securing its sustainability.

5.2 Social and Environmental effect analysis

The most important effect of the Employee Management System on a social level is its time-saving quality. Time is priceless and the extent to which the usage of the Employee Management System saves time and hassle is extraordinary. Managing employee in an office is very difficult. In an office, there is lots of work. The employee management system will reduce some regular paperwork which will help the employee to save some extra time. Regular attendance is a hassle for every employee they need to submit attendance on paper or signature the attendance with time and date stamps. By using This app employees can easily submit their regular attendance by clicking one button.

An employee can easily submit their Leave application without writing on paper they only need to select the Starting date and End date and the application day and time will be auto-selected the don't need to write a whole paper it will save time then admin see all application form admin profile if admin approves the application then the employee will see the update status it will save both admin and employee time.

This would result in a more comfortable and pleasant environment in the office environment.

5.3 Addressing Ethics and Ethical issues

The Employee Management System does not hold any ethical hazard. The employees need to provide some general information during registration. The privacy of the system was strictly maintained. This app is being built for TecTrioZ company and they will use it for their official purpose. The app will be maintained by the office admin. To use this app everyone needs to register, and it will track the user so anyone outsider cannot log in to the app. Only the admin sees all the details so the employee information will be safe.

Chapter 6 Internship Experience and observation

I have started mine working at TechTrioZ Solution from 26th November 2020 as an Intern in their Android App Development Team. My supervisor was Mrs Mahmuda Islam (Managing Partner, TechTrioZ Solutions).

TechTrioZ is Startup company. From the first day of my working, I have found a friendly environment. My supervisor was very friendly and cooperative. She was always there whenever I faced any problem, she helped me to understand the root of the problem and give me hints to solve that problem. She always supports me to gain confidence in my work. I have learned many important things during my internship time. The most important thing that I learned from there, first think about your work then visualize and then start working. During my internship, I observed many things. The most important thing was that you must work mandatory besides that you have to communicate with the other people. During my internship, I observed many things. The most important thing was that you must work mandatory besides that you have to keep communication with the other people. Another thing that I learned is that in our life we must work in a different situation in every situation we need to handle that.

TechTrioZ is very concerned about their employee health. In this COVID situation, they provide masks and sanitisers to their employees and everyone must maintain 6 feet distance from each other. They maintain punctuality very strictly; the office starts from 9:30 am to 5 pm. I tried my level best to maintain the punctuality. I also tried my best to do the assigned work without any error.

Understanding the Software Farm work Environment:

During my internship period, I experienced how a Software company works. I learn who employees behave in a software company and how they deal with their regular tasks and get the solution. I observed the situation very deeply and the office culture became very clear to me.

Understanding the Software Industry:

Before my internship, I had no experience with any desk job. I had some basic ideas about the software industry. Now I have got deep knowledge about software companies, how they work and how they deal with their clients. I also observed how they divide the work into timestamps and maintain the deadline. I also learn how they impress their clients and how they understand the concept and ask the potential question. I also learn how they present their work to their clients.

Learn How to Work Under pressure:

My other supervisor Mr Naimul Baset (Partner, TechTrio Solutions) is a very experienced person. He served in different sectors for a long time. He always discussed his experience with us. He used to say that never lose hope to gain confidence that you can solve this, it will take time but if you try you can solve it. He also said that in a pressure situation you have to control your mind. Learn things first then apply that in your work. If you have no basic idea about your work, then it will be very difficult for you to finish that. He also said that if you have lots of work then finish it one by one and make a schedule.

Communication Skill:

During my internship, it's like an ice-breaking session. That enhances my communication skills.

Analytical Experience:

There were times when I had to use my judgments. I needed to make choices and give the verdict using my judgment. Usually, the whole thing helped me to boost up my confidence for the future.

Personal Development:

I always appreciated my punctuality and work. I always tried to finish the work in time and explain that very clearly. It helps me to build my working capabilities and time management and how to solve problems. First few days it was very hard for me to cope with the situation, but it became easy when I found a friendly office environment.

Interaction with Co-worker:

Interaction with co-worker is very important in the workplace. In TechTrioZ employees used to sit straight to each other with their team members, it helps them to discuss the issues and progress. If any member has some problem with the work another team member can help them easily. I was assigned to the Android apps development team. My team members always help me if I face any problem, I never hesitate to ask them. All employees of TechTrioZ were very friendly.

Organization Culture:

Organizational culture includes an organization's expectations, experiences, philosophy, as well as the values that guide member behavior, and is expressed in member self-image, inner workings, interactions with the outside world, and future expectations. Culture is based on shared attitudes, beliefs, customs, and written and unwritten rules that have been developed over time and are considered valid.

Work Environment:

First, TechTrioZ office environment is very nice. Every employee has their own workstation. Well decorated interior. High configured computer for employees and discussion room. Wifi and other facilities are also available.

Chapter 7 Internship outcome & issue analysis

7.1 Problem and Challenges face in the workplace

During my internship, I had to face many problems. Three months is not enough for working on a software firm without any experience.

First, I had no idea about the Flutter framework. Flutter Framework was new from me. It was a very short time for any student to learn and implement it into the project.

When TechTrioZ gave me the project I had zero idea about the project. I had never developed any project on flutter. So I had to learn from the very beginning.

7.2 Analyzing the issues based on relevant theory.

During my internship, my graduation courses help me a lot to develop the project. it became quite easy for me to relate my project with my graduation courses.

7.2.1 Literature Review

System analysis and design: Before developing any project, it is mandatory to design the project layout. To complete my project system analysis and design course played an important role. From that course, I learned about software development methodology. It helped me to select the perfect methodology for my project development. From a different type of methodology, I have selected the Agile methodology to create my project.

From that course, I have learned how to gather requirements for the project. How to use a different type of information-gathering methods. How to create an interview. How to create a Questionnaire for information gathering. When we need to use open-ended questions and closed-ended questions. how to arrange a question for an interview. What type of questions arranging methodology should we follow from the pyramid, diamond, funnel structure? I also learned the system development life cycle (SDLC), seven-phase of system, Identifying Problems, Opportunities and Objectives, Analyzing System Needs, System proposal.

From the system analysis course, I learned how to create Context-level data flow diagrams, what is the use case diagram, physical and logical data flow diagram. How to create an activity diagram.

System analysis course helped me a lot during project development.

Database management: Database management course is another most important course which helped me to develop my backend. I had learned how to design an Entity relationship diagram from that course. From that course, I have gained knowledge about the primary key, foreign key concepts. When I was facing any problem with my project entity and entity fields then the basic idea which I gained from the database management system helped me a lot. I had designed my whole database depending on this course.

Software Testing: When my project was testing phase I had implemented those methods which I have learned from my Software testing course. From that course, I learned which testing method I should choose for my project. How to conduct the white box and black box testing?

How to fix the error. how to test the software after fixing the error. how to document the testing process. Which functionality of my project should I test first? how to divide the testing process.

Software testing course helped me a lot during my project testing phase.

Web application: From that course, I have learned how to use the real-time database. how to host the project. From that course, I have learned about MongoDB which is a non-SQL database just like firebase Firestore.

Java (OOP): Still, I can remember what a friend function in java is. The basic concept about the method, function I have learned from that course. My project was flutter based. Flutter support both android and iOS. If you want to develop anything for android, you might have basic knowledge about java programming language. So, the basic concept of OOP helped me a lot during my internship project development. I have created a project for my OOP course, which basic idea helps me a lot to develop my internship project.

C++: This course is the foundation of all programming. I have learned about variable data types from that course. How to call a function on how to use the method.

Chapter 8 Conclusion and Future work

8.1 Future Work

Here is some future work Employee Management System

1. Introduce user Profile where admin and employee can edit their profile.
2. Introduce chat option. Where user can chat with each other
3. Introduce file management system where user can add and download file
4. Virtual meeting where user can create meeting.

8.2 Conclusion

During internship I was trying to develop an Employee management system.

By using this app our office system will be automated. This app can save lot of time and save money. This app will keep track all employee and employee details. This app is very user friendly.

It has been a tremendous opportunity to work as an intern at the reputed software company TechTrio Solution. The internship program will help to gain important knowledge on how the IT sector is shaping in the country. It enabled me to understand the technologies that are frequently used in the software industry. The program has helped me develop good judgment, proceed on my own in new technological challenges, and develop better analytical skills. This internship was very successful to me. It has given me new knowledge, skills. This internship was also good to find out what strengths and weaknesses are.

It was a great feeling to be a part of this project. This is a wonderful way to improve skills and knowledge. It makes me feel very proud to be an intern of TechTrio Solution. It was really a great chance to gather knowledge of the corporate world before entering the job field. These practical experiences which gather in TechTrio Solution will help me in our professional life.

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Appendix A (Questionnaire)

Questionnaire

Please Answer All the questions

1. I am a/an _____
 - a. Employee
 - b. Admin
 - c. Staff
 2. My educational background can be described as _____
 - a. Secondary
 - b. Higher Secondary
 - c. BSc
 - d. MSc
 3. How is your work environment?
 - a. Extremely Comfortable
 - b. Comfortable
 - c. Not so comfortable
 4. Are you comfortable with your current work system?
 - ☐ Yes
 - ☐ No
 5. Do you want online Attendance?
 - ☐ Yes
 - ☐ No
 6. Do you want online System for advance payment applications?
 - ☐ Yes
 - ☐ No
 7. Do you want online system for leave applications?
 - ☐ Yes
 - ☐ No
 8. Do want to see all your attendance record?
 - ☐ Yes
 - ☐ No
 9. How you submit your current attendance?
 - ☐ On paper
 - ☐ No attendance
 10. How you currently apply for advance payment?

 11. How You Currently apply for your leave?

 12. Do you have any suggestion?

 13. How you approve your employee Advance or Leave applications?

-

Appendix B (UI Design)

Home Page

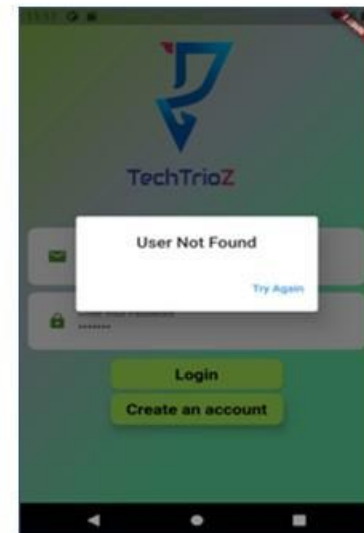
Register Admin or Employee can login to their account providing register email and password.

Using Create new Account user admin or employee can create new account.



Text Field Validation

1. In email field I used validation. When field is empty if user press login it will trigger the field validation and it will show its (Field cannot be empty).
2. If any user provides non register email it will show user not found pop up.
3. If user try to login with without connecting internet it will show check your internet connection.
4. Pressing on Try again it will take the user home page again then user can login properly



Registration Page

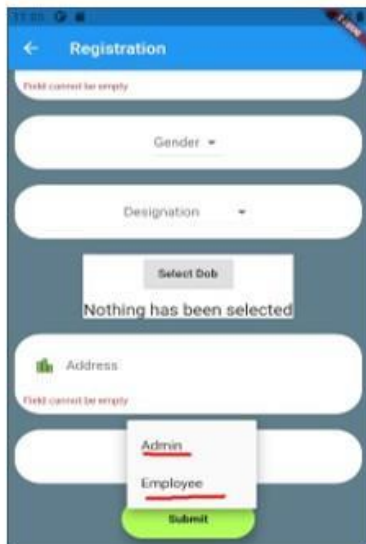
Create an account.

1. If Admin or Employee wants to create an account user need to go to the registration page, they need to provide all information.
2. Then submit the form. All information will be uploaded into the fire store.
3. New user will be created.
4. User email and password will be used during authentication.
5. If user select register as Admin, then the information will be saved into the admin Collection. If user select Employee, then all information will be stored into the admin collection. [fig: 2]
6. I also used form validation if the user submits the form empty then text field will show (Field Cannot be empty) [fig: 3]



A screenshot of a mobile application's registration page. The page has a blue header with a back arrow and the title "Registration". Below the header, there are six input fields: "Email" (with an envelope icon), "Password" (with a lock icon), "Name" (with a person icon), "Phone" (with a phone icon), "Gender" (a dropdown menu), and "Designation" (a dropdown menu). Each field has a small green checkmark icon to its left.

Fig: 1



A screenshot of the registration page showing validation errors. The "Email" field has a red error message "Field cannot be empty". The "Password" field has a red error message "Field cannot be empty". The "Name" field has a red error message "Field cannot be empty". The "Phone" field has a red error message "Field cannot be empty". The "Gender" field has a red error message "Field cannot be empty". The "Designation" field has a red error message "Field cannot be empty". Below the fields, there is a "Select Job" button. Below the button, there is a message "Nothing has been selected". Below the message, there is a dropdown menu with "Admin" and "Employee" options. Below the dropdown menu, there is a green "Submit" button.

Fig: 2



A screenshot of the registration page showing validation errors. The "Email" field has a red error message "Field cannot be empty". The "Password" field has a red error message "Field cannot be empty". The "Name" field has a red error message "Field cannot be empty". The "Phone" field has a red error message "Field cannot be empty". The "Gender" field has a red error message "Field cannot be empty".

Fig: 3

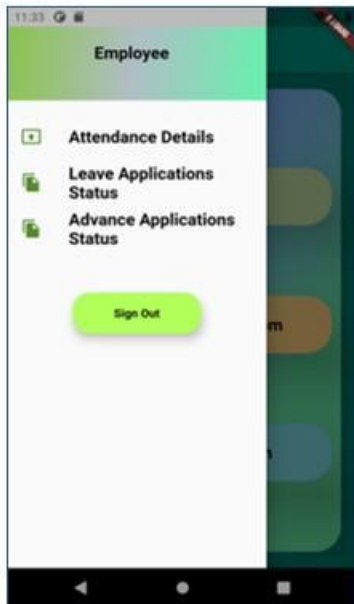
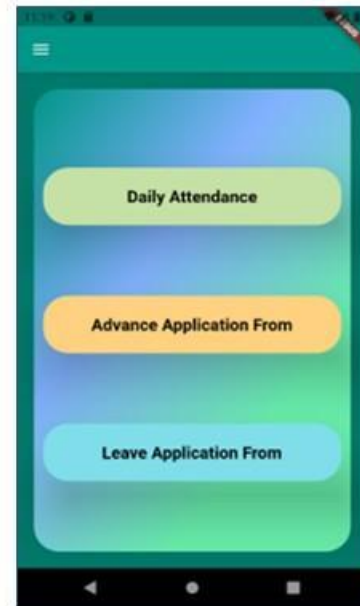
Employee Dashboard

Employee Dashboard

A registered employee can log in to their account using their email and password.

In employee dashboard employee will find Attendance, Advance Application form, Leave Application form.

In-app bar employee will find attendance details, leave application status, advance application status.



Employee Dashboard

Submit Attendance, Leave application, Advance Application.

An employee can submit his/her regular attendance when employee press on submit button login employee attendance will be stored into the fire store with time and date. [Fig: 8]

An employee can apply for leave by submitting a leave application form. After filling up all the required field like starting date end date reason when employee press submits his/her application will be stored into the cloud fire store for approval. [Fig: 9]

An employee can apply for advance payment by submitting a advance application form. After filling up all the required field when employee press submits his/her application will be stored into the cloud fire store for approval. [Fig: 10]

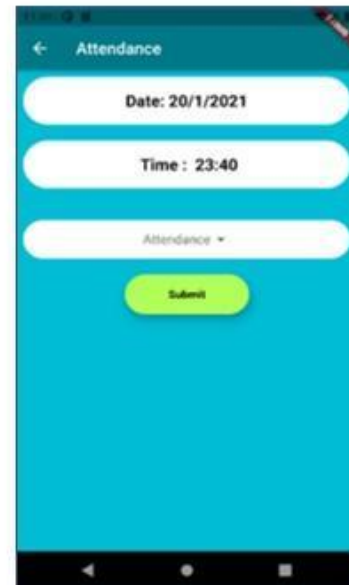
A mobile app screenshot of the 'Attendance' form. It has a teal header with a back arrow and the title 'Attendance'. Below the header are three white input fields: 'Date: 20/1/2021', 'Time: 23:40', and 'Attendance' with a dropdown arrow. At the bottom is a green 'Submit' button.

Fig: 8

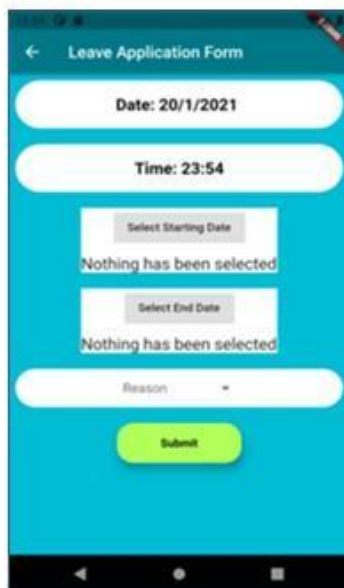
A mobile app screenshot of the 'Leave Application Form'. It has a teal header with a back arrow and the title 'Leave Application Form'. Below the header are white input fields for 'Date: 20/1/2021' and 'Time: 23:54'. There are two date selection sections: 'Select Starting Date' and 'Select End Date', both showing 'Nothing has been selected'. Below these is a 'Reason' dropdown menu and a green 'Submit' button.

Fig: 9

A mobile app screenshot of the 'Advance Application Form'. It has a teal header with a back arrow and the title 'Advance Application Form'. Below the header are white input fields for 'Date: 20/1/2021' and 'Time: 23:52'. There is an 'Advance Amount' field with a currency icon, a 'Reason' dropdown menu, and a green 'Submit' button.

Fig: 10

Employee Dashboard Drawer

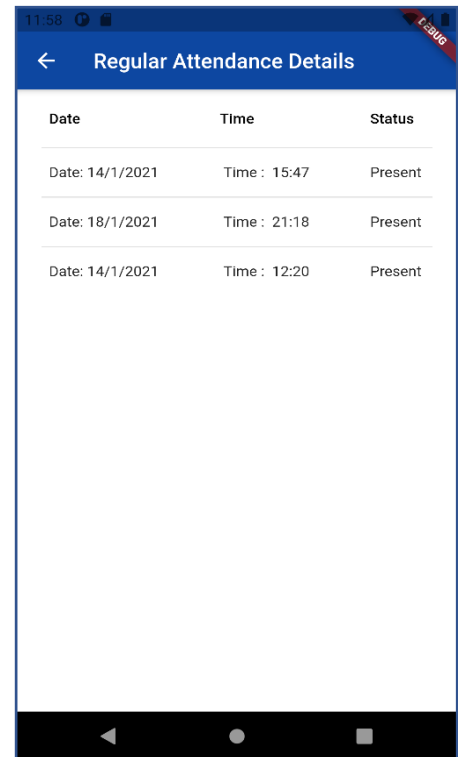
Attendance Details, Leave Status, Advance Status, Sign out

An employee can see their attendance details with submitted time and date. [Fig: 12]

An employee can see his/her leave status whether it is approved or rejected it will show approved or rejected by and name of the admin who approved the application. [Fig: 12]

An employee can see his/her advance status whether it is approved or rejected it will show approved or rejected by and name of the admin who approved the application. [Fig: 13]

Employee can sign out form his/her account.

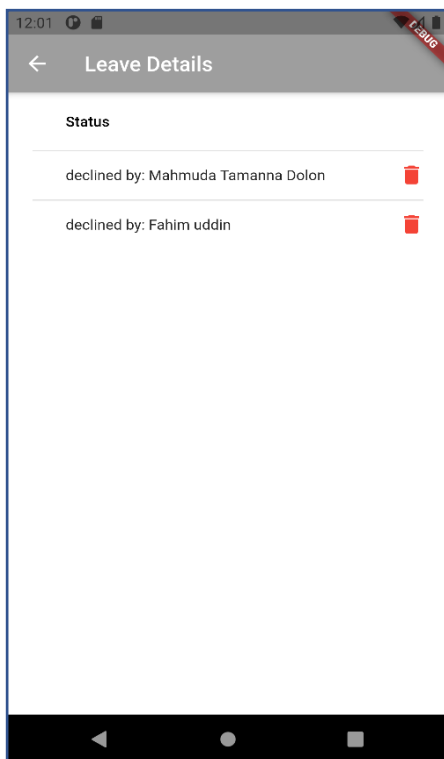


11:58

← Regular Attendance Details

Date	Time	Status
Date: 14/1/2021	Time : 15:47	Present
Date: 18/1/2021	Time : 21:18	Present
Date: 14/1/2021	Time : 12:20	Present

Fig: 11



12:01

← Leave Details

Status
declined by: Mahmuda Tamanna Dolon
declined by: Fahim uddin

Fig: 12



12:07

← Advance Details

Name	Apply Date	Apply Time
Rabbi	Date: 17/1/2021	Time : 14:42
Rabbi	Date: 17/1/2021	Time : 14:42

Fig: 13

Admin Dashboard

Admin Dashboard

- 1.Admin can see advanced applications, employee applications, all employee details from the admin dashboard. [Fig: 14]
- 2.From drawer admin can see employee attendance list, employee advance and leave applications details. [Fig: 15]

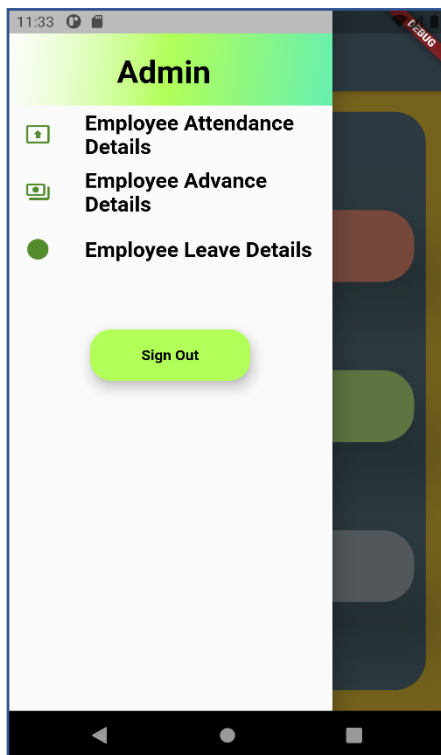


Fig: 15

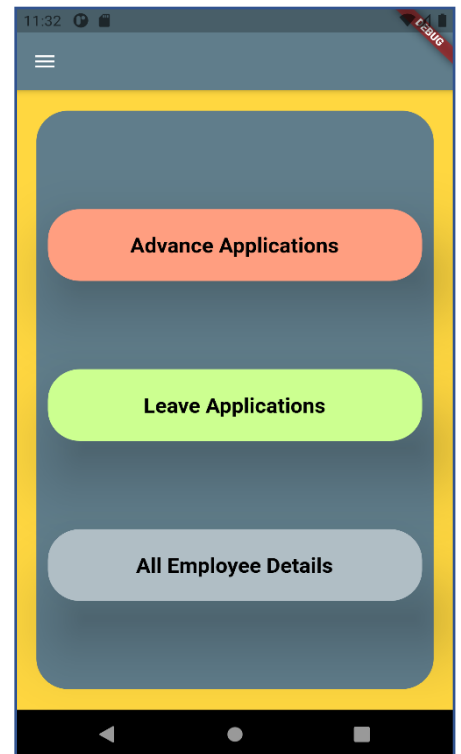
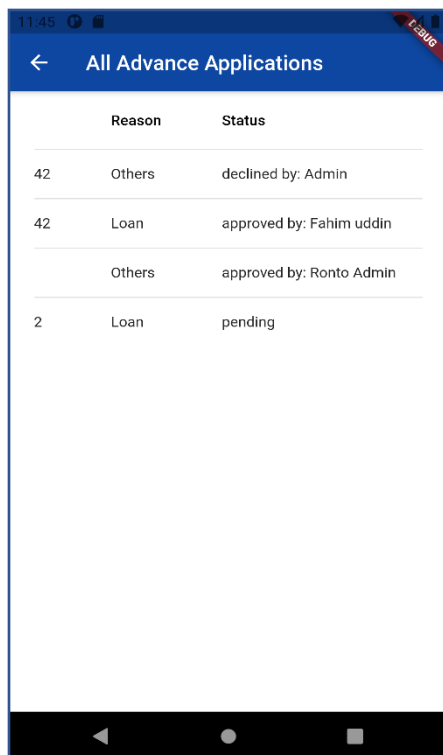


Fig: 14

Approve Advance and leave applications.

1. Admin can approve and rejected applications.
2. Status will be update when change the status.

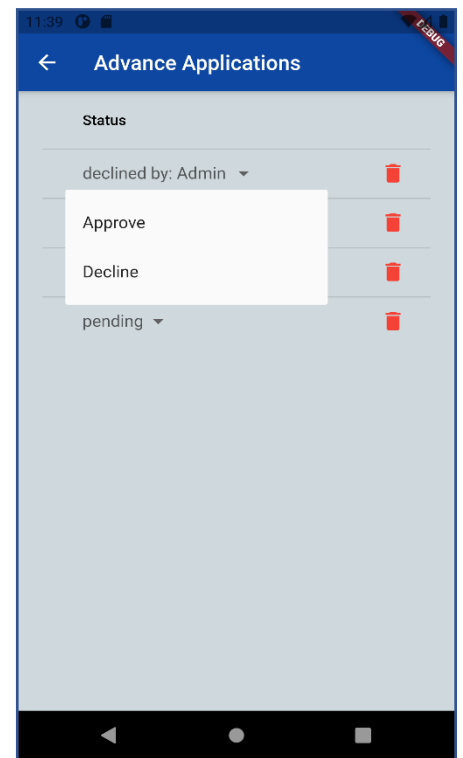


11:45

← All Advance Applications

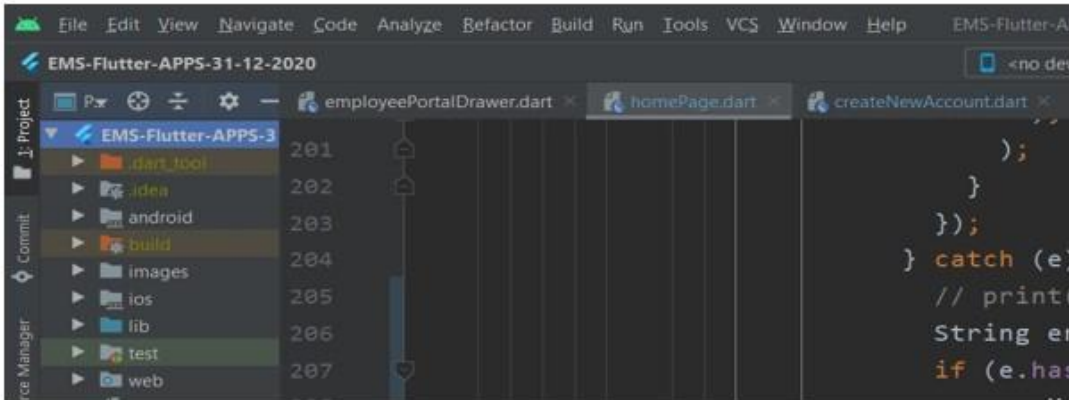
	Reason	Status
42	Others	declined by: Admin
42	Loan	approved by: Fahim uddin
	Others	approved by: Ronto Admin
2	Loan	pending

Fig: 17

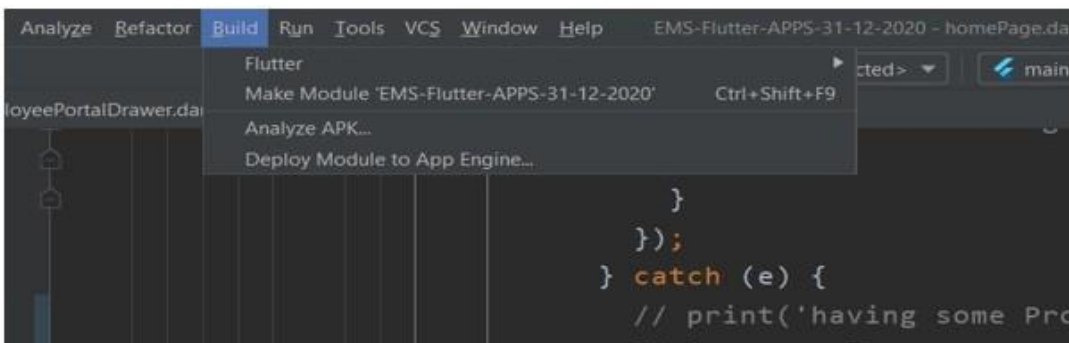


Appendix C (APK generate)

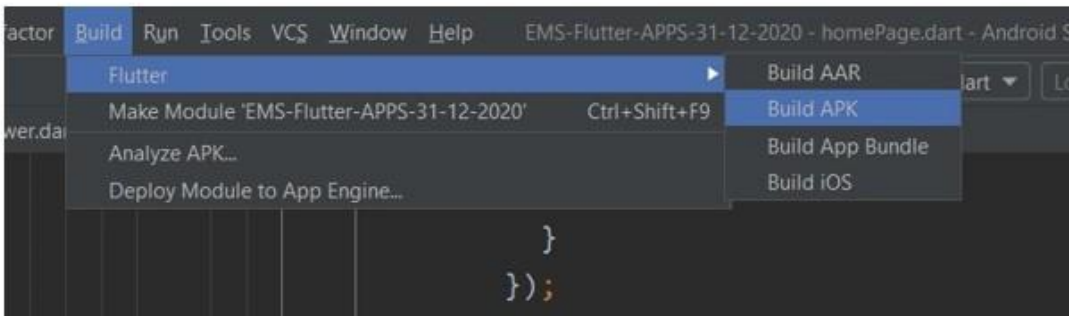
1. Open Project with Android Studio



2. Go to Build.



3. Go to flutter and Select Build APK



Project APK LINK:

https://drive.google.com/drive/folders/1zHq_KLaTY447HYraD7vD4Hxs0aNCytUO?usp=s
haring

Appendix D (Log File)

Internship Daily Task and progress

Date	Task
26/11/2020	Discussing the project and features. Which project should I work on? Choosing the framework and Language. Discussing the project in detail. the company gave me their app requirements.
29/11/2020	The company offered me to build an App for their office. Employee management system. Where employees can Apply for leave and ask for an advance and can submit employee regular attendance. An admin can see all the details of the employee and their request. The company told me to build that app using the flutter framework.
30/11/2020	Learning flutter framework to develop the project. Installing Flutter SDK and others required apps of flutter. Gathering information for flutter framework
1/12/2020	<p>Weekly progress presentation of my learning. Working with flutter Audio input, column and row Widgets learning.</p> <p>Working with project user and user fields. Creating an ERD model for the database.</p> <p>Learning flutter development working with row and column. this my github link where i regularly upload my work</p> <p>(https://github.com/Frabbi727/Flutter_AppDevelopment_04_Row_Column.git)</p>
2/12/2020	<p>Working on project entities and fields like employee fields and admin fields master classes.</p> <p>Creating a flutter app for regular practice. Design an app whose name is Card Game.</p> <p>(https://github.com/Frabbi727/Flutter_AppDevelopment_03_Card_Design.git)</p>
3/12/2020	discussing the project ERD details with my supervisor. She provides me with some suggestion and corrections for my ERD.

6/12/2020	Project Features discussion apps features. Employee profile admin profile page design in paper. Learning flutter work and design.
7/12/2020	Project login page design. Where users can see the Email and Password input form and sign In button and Create new account button.
8/12/2020	Building an app named Dice app. It's something like Ludo. Clicking on the dice will change the number. (https://github.com/Frabbi727/Flutter_AppDevelopment_05_Dice_App.git)
9/12/2020	Writing Project Features in detail. Process of a button. Like if I click on the create new account button it takes the user to the new account registration page. (https://drive.google.com/file/d/1fKfHRI9mSg4mORNrC31tFFm_6z-F5azG/view?usp=sharing)
10/12/2020	Working with String and Array List and other Widgets. Learning methods and functions. (https://github.com/Frabbi727/Flutter_AppDevelopment_06_AskMeAnything_app.git)
13/12/2020	Working with Stripe payment Gateway. Learning about SSLcommerz Payment gateway for BKash and others card payment. Those are online payment gateway systems. integrating those gateway clients can do payment in a merchant account. (https://github.com/Frabbi727/Flutter_AppDevelopment_stripe_paymentGateway_system.git)
14/12/2020	Designing Registration. Users can add their photos and name, email address, phone number and other details, there will be a button called Submit. Clicking on that user information will be saved into the fire store and take the user into the home page where the user can see the email and password. If registration is successful, then users can log in to the portal.

15/12/2020	Designing employee portal page. Where users can see the buttons for apply for leave and apply for advance. If they click on those buttons it will take them into the other page where they can see the form for advance and leave the application. There will be a drawer clicking on the drawer user can see the profile, leave applications details, advance application details. And a sign out button.
20/12/2020	Designing Admin Page. In the admin page there will be some features like Leave applications, Advance Applications, Employee Attendance. There will be an appbar where user will find the details about applications and sign out buttons.
21/12/2020	Connect the page with each other. it is very difficult to understand. When a user clicks on a button it will take the user to another page. If the navigation is not working properly then there will be some problems.
22/12/2020	Creating an account on firebase for storing data. To understand firebase searching on net and reading firebase documentation
23/12/2020	Adding data into the Fire store. Uploading data into Fire Store using sign up form. First, I need to understand how a firestore works. How firestore save data? so I am working with some demo data. I am creating collections and documents to understand the features. It's very interesting working with a firestore.
24/12/2020	Working with user authentication. When a user submits his/her email and password it will save into the firestore auth. It will generate an id for the specific user.
28/12/2020	Work in leave Applications form. it's one of project features where employees can apply for leave by Clicking on the Apply for Leave button by filling up a form there and if the employee submit the form those data will be stored into the firebase under that specific employee collection.
30/12/2020	In the home screen when the user provides their email and password for authentication then the user is automatically selected like if an employee provides his/her email and password it will detect the user and take the user to the employee portal. IF admin provides email and password it will take the admin to the admin portal. If an admin wants to see all employee information, the admin can log into his portal from

	there and press on the all-employee information button then admin can see the all employee information.
31/12/2020	Creating employee Advance Application form. Employees can submit their advance application using the app. The main concept is when an employee login to his/her profile. Employees can go to advance applications. There he/she will find the text field for the advance amount, there will be a dropdown list for selecting the reason. When an employee clicks on that button application will be stored into the Firebase FireStore.
3/01/2021	To develop the advanced application first I need to define the field. Like when an employee submitting an application which field will be stored into the database? This is the main problem. Firestore is a noSQL database so there is a primary key or foreign key. so Data should be stored in such a way that can be fetched easily. So I define some fields for the application Collection, application id will be auto generated in the document section there will be fields applyTime, applyDate, amount, reason.
4/01/2021	Designing UI for advance application form. Working with a date picker problem. I want to use the current date which will be generated automatically when an employee applies for the advance application. but facing some problems with the date picker it is not showing the proper date.
5/01/2021	Solved the date picker problem now date picker is working perfectly.
6/01/2021	solve the time picker problem. Now user can see the current date and time
7/01/2021	Today my main work is to store the advanced applications fields into the firestore. When a user clicks on the submit button in the firestore, create a new subcollection name "Advance application" under that specific user.
10/01/2021	An employee can create multiple applications. so in the subcollection there will be multiple documents with multiple id
11/01/2021	Advance application working perfectly when the user submits the application all information stored into the firestore successfully.
12/01/2021	today I am working with the approval of advance and leave application which is admin

	side.
13/01/2021	When the admin clicks on the advance application. admin can see all applications. if the admin wants to approve the application, he/she can select approve or reject from the dropdown menu
14/01/2021	Working with how to fetch data from employee advance application collections. I am facing some problems with this work. When I am trying to fetch data data from the collection it is providing null data. Trying to fix this problem.
17/01/2021	Successfully fetching data from advance and leave application which is an employee subcollection. alos created employee attendance features.
18/01/2021	today working with the admin side. from where admin can see the all employee details, and employee attendance.
19/01/2021	My project features are done successfully. Generating apk for the app test. Till now everything is working perfectly. Now Tectrioz will test the app.
21/01/2021	<p>techtrioz have found some errors while testing the app.</p> <p>The app is not working in Samsung A7. And my advance application submit button is not working properly.</p> <p>I have fixed the error. There was some version control problem. I also fixed the button problem. now the app is working perfectly.</p>