মৎস্যজীবী -Android Apps

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FINAL YEAR DESIGN PROJECT REPORT

This Report Presented in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science in Computer Science and Engineering

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APPROVAL

This Project titled "মৎস্যজীবী -Android Apps", submitted by Md. Emamul Huk Meon to the Department of Computer Science and Engineering, Daffodil International University. This university has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 13-01-2025.

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DECLARATION

I hereby declare that this project has been done by us under the supervision of **Md. Sazzadur Ahamed, Assistant Professor, Department of Computer Science and Engineering, Daffodil International University.** Additionally, I have stated that neither this research nor any of its components have been submitted for consideration for a degree elsewhere.

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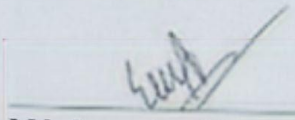

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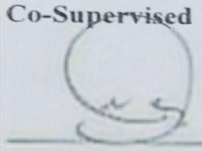

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ABSTRACT

Bangladesh is a riverine country. Different types of fish are available in different rivers. With the evolution of time, people have started farming in ponds and fish from the river but most of the fishermen suffer due to not knowing the rules of fish farming. I think that a fisherman should know how to farm fish in a modern way. Fish farming contributes significantly to global food security and economic development, particularly in coastal and rural communities. Compared to traditional agricultural practices, fish farming can provide higher economic returns per unit of land and water. Additionally, fish farming requires less space and resources, making it a more sustainable option for food production in areas where land and water are limited. Ongoing research and innovation aim to enhance the sustainability and productivity of aquaculture, ensuring it can continue to provide a reliable source of protein for the growing global population while minimizing its environmental footprint. As the present age is the age of information and communication technology and every person has a smart phone in their hands, I decided that I will create a mobile app where modern fish farming will be described. Fish farming in Bangladesh is playing an important role to the total national income of this country. If all fishermen follow my mobile apps, our country will progress further in fish farming and the economic condition of our country will improve further.

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CHAPTER 1

INTRODUCTION

1.1 Overview

Bangladesh is a densely populated country of 147 570 km2 with a population of 130 million people. It is fortunate in having an extensive water resource in the form of ponds, natural depressions (hors and heels), lakes, canals, rivers and estuaries covering an area of 4.56 million ha (DoF, 2005).

Bangladesh is one of the world's leading inland fisheries producers with a production of 16,46,819 tonnes during 2003–4, with marine catch total of 455 601 tonnes and a total production from aquaculture of 914 752 tonnes during 2003–4. Bangladesh's total fish production for the year totaled above 2.1 million tonnes (DoF, 2005). FAO (2005) ranked Bangladesh as sixth largest aquaculture producing country with its estimated production of 856 956 tonnes in 2003 (FAO, 2005). Aquaculture accounted for about 43.5 percent of the total fish production during 2003–4, with inland open water fisheries contributing 34.8 percent (DoF, 2005).

The origin and development of aquaculture practices in Bangladesh are not well documented. Historically the country's natural water bodies were stocked during the monsoon season through natural spawning. Many of the kings used to create ponds and tanks for drinking, bathing and sometimes for small-scale irrigation, these ponds and tanks were also used for rearing fish although more from a recreation aspect than for any commercial purpose (National Aquaculture Sector Overview, Bangladesh).

That’s why I have decided that I will create an apps will be proper direction for fish farming. Many types of fishermen it will be use it and profit big amount of many. The shortage of meat in this country will be met. Bangladesh can export fish and earn foreign currency. Every year many types of fish death and wasted cause of wrong food supply system and wrong way to fall medicine on pond or any kind of reservoir.

These apps contribute to improved productivity and reduced costs. Modern technology fish farming of mobile application ensured fishermen stay informed, increase yields and achieve sustainable growth in their aquaculture ventures. Food supply management, disease diagnosis, education resources and pond or reservoir management system appropriate all management system.

All of them I think my project I mean my mobile application will be very helpful for many fishermen and improved all fisheries sector and export many types of fish and earn foreign currency.

1.2 Background and Present State Development

- **Data collection and management:** Mobile apps in fisheries focused on data collection and management. These apps allowed users to record catch data, monitor fish health, and track inventory. The ease of data entry and access facilitated better decision-making and resource management. I have gone many fishermen and government section on fisheries for what will be keep for this apps. After that I have worked in this mobile apps. Every fisherman said the same thing that they are not profit from fisheries project on their pond or reservoir, they also said that in the current situation, the fisheries sector has not been modernized. If they get a mobile apps or at the same type of think it will be help for them. I have collected all think and data for creating this apps.

- **Education and training:** Apps providing educational resources and training modules became popular. They offered tutorials on fish farming techniques, disease management, and sustainable practices. In this app I have create a video tutorial function, it will be helpful for any fisherman. They will be learned from this apps. I have created many functional like pond management, food supply rules, small fish collection and store and etc. Some scope of this project it become successful of all think and all fishermen learn from this apps. My apps have one function for tutorial or learn, I will add more function this apps and set online teacher who are teach all time every fisherman. I think it will more than good from others.

- **Market access:** Some early apps aimed at connecting fish farmers and fishermen with markets, improving the supply chain and ensuring fair prices. But most of the apps not all function for improving fisheries site. Those apps have just some functional like food list medicine list that's it. I will give access all fishermen and any market place that will grow up all Bangladesh fishermen. I will add many AI tools and sensor after that it will be release all market place. After release this apps I will monitoring this apps all time. That's why it will be most secure apps of fisheries sector.

Present State:

- **Disease diagnosis and management:** They suggest treatment plans and preventive measures. This apps have all direction for disease. A fishermen can find out disease and learn from this apps. The fishermen match symptom with potential diseases and fall medicine like amount.

- **Food supply chain management:** After that this idea creates all food through fixed time and this Apps now support food supply chain management, from production to market. First of all, there are many types of fish in this country, and many types of ponds or reservoir in our area that's why fish food doing measurement are so difficult. First

knowing all system of food supply and then give it. My apps have many types of food supply system like age wish food supply, non-vegetarian food supply normal mixed fish food supply etc.

Future Trends:

- **AI and machine learning:** The integration of AI and machine learning will continue to enhance disease diagnosis, food supply maintenance, predictive analytic, and personalized recommendations for fish farming practices. Now a day world leading by AI tools. My apps will be best performance of AI tools and using machine learning. It is analytic that without AI we can not grow up any things that's why we using AI and machine learning tools for improving this system.
- **Sustainable Practice:** There will be a greater emphasis on apps promoting and facilitating sustainable and environmentally friendly fishing practices, aligned with global efforts to combat climate change and protect marine ecosystems.

1.3 Problem Statement

With the evolution of time, people have started farming in ponds and fish from the river but most of the fishermen suffer due to not knowing the rules of fish farming. I think that a fisherman should know how to farm fish in a modern way. Many types of fishermen can't know how to profit from fish farming and they loss every year and demotivated from this sector. As a result, most of the fishermen eliminate fish farming that's why in our country day by day decrease fish production. As our country many people can't get non- vegetarian food, that's why fish farming is very important for our country. If it will work properly than it will be fill up non- vegetarian food of our country and it will be low price food that's why all people getting that non- vegetarian food. I think my mobile apps will be work properly and our fishermen will fishing proper way and we will get fish in low price.

1.4 Motivation and Objective

Various types of diseases are currently spreading due to environmental reasons but due to not paying attention to these diseases as a result many fish are dying. To prevent the death of fish, it is important to address the environmental factors that contribute to the spread of diseases. Implementing stricter regulations on pollution and waste disposal can help improve water quality and reduce the transmission of diseases. Additionally, promoting sustainable fishing practices and raising awareness about the importance of preserving aquatic ecosystems can contribute to the overall health and well-being of fish populations. My

mobile app will have symptoms and details of various diseases and how to get rid of this disease will also be described. Due to not knowing the amount of food, fish cannot consume food properly due to which fish either do not get enough food or excess food causes gas formation in the water. My mobile apps will describe the amount of food and when to give it. In this way, my mobile apps use Bangla language and are easily understandable. That is why it's easy to use and has an easy user interface. My Mobile apps all function very easy and fast that's why any fishermen use it easily. The positive impact of mobile apps on fisheries, such as improved resource management, increased efficient and better decision making. Sociology economic benefits for fisheries and other stakeholders. It will tell how often the water should be changed. It will also be told after how many days the amount of food should be reduced or increased.

1.5 Scope and Limitations

- **Scope:** My uncle is a fish farmer but he is not making enough profit from his pond, so I thought that I am working on mobile apps, so if I can give all the instructions in a mobile app, it will be useful for all fish farmers. Provides a controlled environment for fish growth, reducing the risk of disease outbreaks and ensuring consistent production. Fish farming provides a significant source of protein and essential nutrients to meet the growing global demand for food. Generates employment opportunities and contributes to the economy, particularly in rural and coastal areas.
- **Limitations:** Waste from fish farms, including uneaten food and feces, can lead to water pollution and eutrophication. Construction of fish farms can lead to the destruction of natural habitats, such as mangroves and wetlands. High stocking densities in fish farms can lead to the rapid spread of diseases and parasites, which can impact both farmed and wild fish populations. Use of antibiotics and chemicals to control diseases can lead to resistance and environmental contamination. Large quantities of water are needed, and improper management can lead to depletion and pollution of local water resources. Labor-intensive nature of fish farming can pose challenges, and in some regions, there are issues related to labor conditions and exploitation. Fish farming is subject to various regulations regarding environmental impact, food safety, and animal welfare, which can vary widely by region and can be complex and costly to comply with this.

1.6 Report Organization

This report will give a good idea about my project. How I did my project, how much work is left or how far to go, everything is given in the report. This report will describe all section of my project/ mobile apps how it will work. How can fishermen use all function? Fishing

all work describe properly. My apps have many functions of food supply management, disease diagnosis, child fish collect system and its utilization and how to store etc. This report organization given all functional requirement and how can create this project/mobile apps and work. All mathematics equations properly this report have all.

1.7 Summary

Fisheries mobile apps serve as technological tools designed to enhance various aspects of fisheries management, benefiting both fishers and stakeholders in Bengali-speaking regions. These apps typically offer a range of functionalities aimed at improving efficiency, sustainability, and communication within the fisheries sector. The actual features and functionalities may evolve over time based on technological advancements, user needs, and the specific challenges faced by the fisheries sector in Bengali-speaking regions. For the most accurate and up-to-date information, it's recommended to refer to the latest documentation and announcements from relevant app developers or fisheries management authorities.

CHAPTER 2

LITERATURE REVIEW

2.1 Overview

The significance of mobile apps in the fisheries sector. The increasing role of technology in fisheries management and the potential benefits of mobile apps. Traditional fisheries management methods and the challenges they pose. Explore how technology, particularly mobile apps, can address these challenges. Identify the key objectives of using mobile apps in fisheries, such as data collection, resource management, and communication. The use of GPS, data analytic, and other technologies in improving app functionalities. Mobile apps streamline various aspects of fish farming operations, leading to increased efficiency and productivity. Comparative studies evaluating the effectiveness of different mobile apps and features are limited. Research comparing various apps' performance in different farming contexts can provide valuable insights for developers and users. This literature review aims to explore the current state of "মৎস্যজীবী" mobile apps, their functionalities, benefits, and challenges, as well as gaps in existing research. Further research is required to fill existing gaps, particularly in understanding the long-term effects and ensuring that these technologies are accessible and beneficial to all farmers, regardless of scale. Mobile apps streamline various types of fish farming operations, leading to increased efficiency and productivity. Comparative studies evaluating the effectiveness of different mobile apps and features are limited. Research comparing various another apps performance in different types of farming contexts can provide valuable insights for developers and users.

2.2 Related Work

As of my last knowledge update in January 2024, specific works related to "মৎস্যজীবী" mobile apps in Bengali might not have been extensively documented in publicly available literature. Government agencies often publish reports on fisheries management and technology adoption. Industry-specific publications and magazines related to fisheries may cover technological advancements. Projects between technology developers, researchers, and fisheries stakeholders. These projects have documentation or reports on the development and impact of mobile apps in the fisheries sector. The Department of Fisheries has a variety of general apps where only general rules are discussed. like "মৎস্য ও প্রাপিস্ম্পদ তথ্য ভান্ডার" , This app contains some discussions about Livestock and Fisheries. There is one more such app like, "মৎস্য পরামর্শএবং চাষ পদ্ধতি. Those are how everything is usually explained in apps, but my app will have more like How much food should be changed after how many days, how much food should be fed, if the symptoms of any disease appear

suddenly, the treatment rules for that disease can be found here. Existing fishing mobile apps often lack content. Apps often lack relevant information on issues such as fisheries, fisheries and fisheries marketing. Existing fisherman mobile apps are often not connected to other systems. Fishermen may not be able to access government services or communicate with other fishermen through the apps. I have seen many types of apps but those apps are not had all function or requirement that's why those apps not running on markets. The fishermen will continue with this apps every time and every moment. There are many types have apps but that fishermen can't satisfied with those apps that's why they are using my apps and satisfied.

2.3 Comparison between existing work

An overview of current mobile apps designed for fisheries management. This project is based on functionality (eg, data collection, tracking, market information, etc.). Success stories or case studies where these apps have had a positive impact. There are many types of apps in this market or country but those have not all requirement or all function on it. Even those apps can't plan with AI tools and machine learning that's why they are can't modernization with this sector. Every fisheries sector needs to know how to globalization this sector for proper way. This fisheries sector should be focus on this apps and others apps. I think my apps or others apps whatever it is using but improving fisheries sector. Because we need to non- vegetarian food in our big population of country. In this case our productivity increase day by day. Those have just only on food list menu or medicine menu but my apps have many types of function like food supply chain management, small fish collection system and their store system, age wish food supply system and etc. There are different of my mobile apps and others mobile apps.

2.4 Open Issues

Existing fishing mobile apps often lack content. Apps often lack relevant information on issues such as fisheries, fisheries and fisheries marketing. Existing fisherman mobile apps are often not connected to other systems. Fishermen may not be able to access government services or communicate with other fishermen through the apps. Many mobile apps are designed for large-scale operations, with limited focus on small-scale and resource-poor farmers. The design of many mobile apps may not adequately consider the specific needs and capabilities of diverse user groups. Concerns about data security and privacy may prevent farmers from fully utilizing mobile apps. The cost of mobile devices and app subscriptions can be prohibitive for many farmers, particularly in developing regions. Many farmers lack the training and support needed to effectively use mobile apps. While mobile apps can promote sustainable practices, their environmental impact is not fully understood.

Cultural and social factors can influence the adoption and use of mobile apps in fish farming. There is limited comparative research evaluating the performance and effectiveness of different fish farming mobile apps.

Addressing these open issues is crucial for advancing the development and adoption of "মৎস্যজীবী" mobile apps. By focusing on these areas, researchers and developers can work towards creating more effective, user-friendly, and sustainable mobile solutions that cater to the diverse needs of the industry.

2.5 Summary

Specific literature on "মৎস্যজীবী" (fisheries) mobile apps may not be readily available. However, I can provide a generalized summary based on common themes found in literature related to fisheries mobile apps globally. The actual literature may vary, and it's essential to consult the latest research for the most accurate information. These apps provide a most expensive and productive operation. In this case, my mobile apps are different from others and expensive. I have fully focused on this project because in our country fishermen are depend on this apps for their profit. It is very complicated function and very useful apps for productivity.

CHAPTER 3

METHODOLOGY AND REQUIREMENT ANALYSIS

3.1 Overview

The present age is the age of information and communication technology. The world is now at hand ever since mobiles came into people's hands. Now we can do all kinds of work through mobile. We can do everything from current communication to business through mobile. So why not improve the country by using mobile phones? We can create mobile applications for any task required. I did just such a thing through the mobile application. This is "মৎস্যজীবী", mobile-apps. In these mobile apps I have made everything easy for all the fish farmers so that they can use it very easily to benefit from their fish farming. These apps are designed to have a lot of requirements but with only a few requirements it gets the job done pretty well. This apps have more many mathematical equations like food supply chain management, age wish food supply chain, normal mix fish food supply, pond or any reservoir management system, child fish management, child fish collection and store and etc. First of all, I have created a diagram and design with android studio XML library and after all I have gave all process point by point. Activity and use case diagram would me help properly. To do this project, used some tools and software like XML tools and android studio software and language is java. This project was very difficult for me because I am a beginner for android and java programming language. That's why to do this project I have many times like more than 6 months. First of all, to do this project planning after that data collection and going to many fishermen and department of fisheries. For this apps give more time because it had resource planning, risk management, communication planning, testing plaining, security and privacy measurement and etc. After that financial, financially it very expensive project for me. Because I noticed that to do this mobile apps/ project, I have gone more money from my wallet. By the way, this mobile apps have more mathematical equations and functions. After all this apps need many requirements and equation. However, there are many types of fish get food and fishing system are very usable and productive. Conduct regular security audits and penetration testing to identify and address vulnerabilities. This project will implement all work with indexing and modifying all things and innovation. Using all requirements like software, tools, programming language and all requirements are sustainable. Proposed methodology direction of all workflow and work process. Strong security protocols must be implemented to protect user data and ensure secure transactions. Methodology and requirement analysis are getting all values in this report defensive of this project intentionally make previous work and make many functionality requirements. In this case, this project report will not only a defense report but also a management report. After reading this report, anyone can know about this project and how to work with this (my fishermen mobile apps) project.

3.2 Detailed Methodology

This apps created by android studio software. This software has library and function and using it by many languages. Like Java, Kotlin, etc. I have created this apps by Java. Using XML library it work properly. I have designed any kind of shape and giving java language. Child fish collection and those fish store any time or session. Pond management system and disease diagnosis system have this method. Adding database for store some data from according to age function. By using SQlite-database store some data and show this data with notification function. Day by day this notification will give the notification bar and the fishermen will continue with in this process. After show notification bar any fishermen will doing their process and improving food supply chain management system.

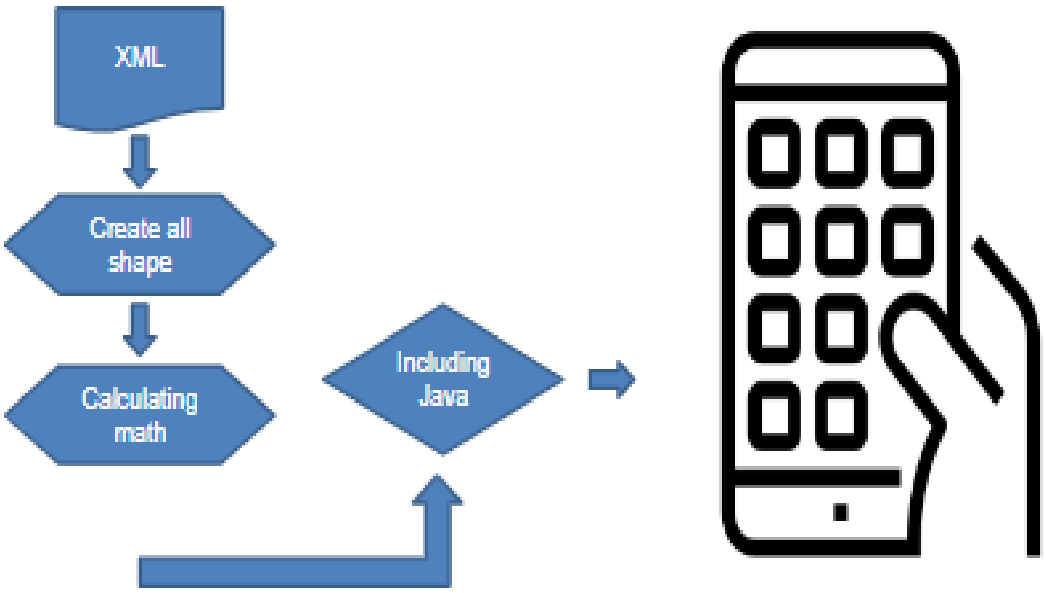

Figure 3.2.1: Basic mobile application design

The following figure:3.2.1 shows Basic Mobile Application Design. First, I designed all the functions of my apps in XML. After creating all the shapes, I did my math calculations through Java. This methodology design can explain all directions and understand how this app is made. Proposed methodology direction of all workflow and work process. It is just a demo for all work or a demo for processing of work and sample design for this (Mossho-jibi android apps) project. According to this design, I have done the entire work and implementation of my project.

3.3 Activity Diagram

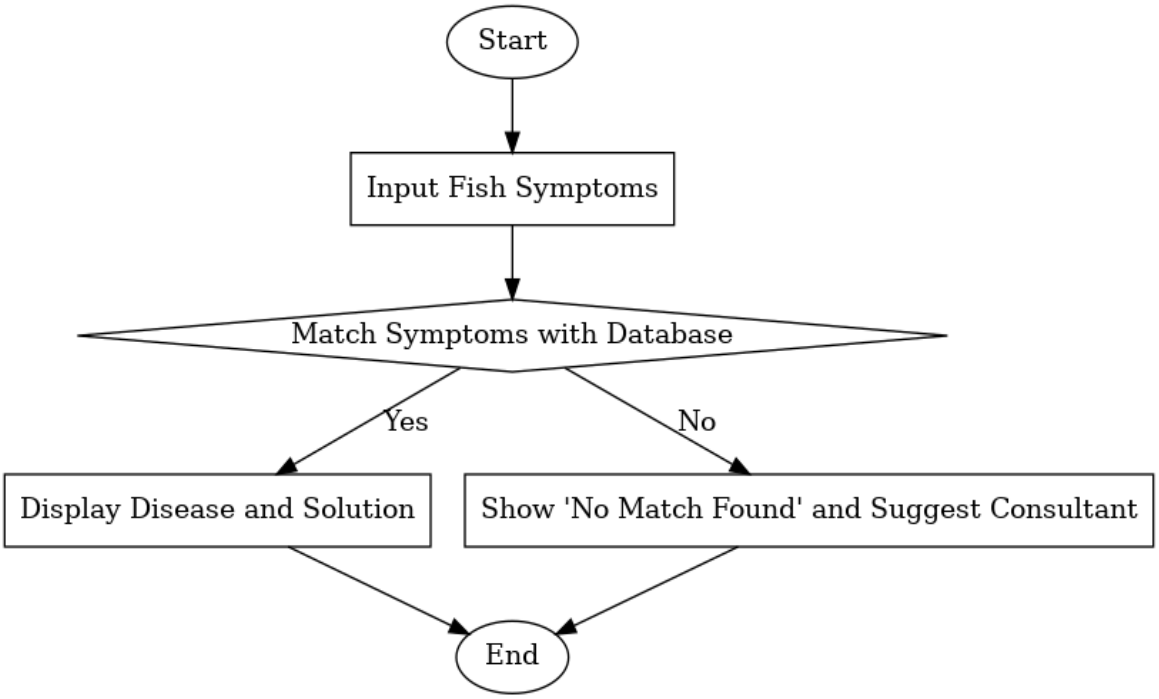

Figure 3.3.1: Activity diagram of fish farming

3.4 Use Case Diagram

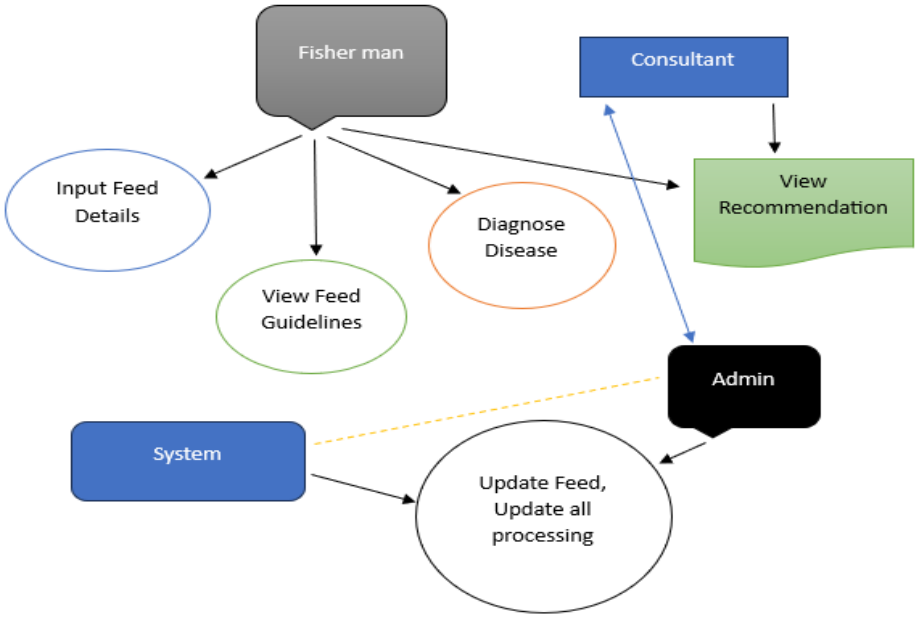

Figure 3.4.1: Use case diagram of fish farming

3.5 Requirement Analysis

Requirement analysis have many types of thinks in project like system requirement, user requirement and etc. It will be described with all requirement, software, tools, programming language and background of project as project insights.

- **System requirement:**

    1. Computer
    2. Hard disk/ Memory capacity
    3. Recover availability
    4. Maintenance
    5. Database server
    6. Data store
    7. Service
    8. Security

- **User requirement:**

    1. Performance
    2. Availability
    3. Regulatory
    4. Environment
    5. Usability

- **Project insights:**

    1. Software engineering and development
    2. Internet of things
    3. Using software
    4. Human computer interaction
    5. Computer vision
    6. Programming language

Software: Android studio

Tools: XML

Programming language: Java

This analysis is most relatable but some online tools and equipment are difficult and expensive. This project will implement all work with indexing and modifying all things and innovation. Using all requirements like software, tools, programming language and all requirements are sustainable. Accessible design for various user demographics. Notifications and alerts will be notifying any time for food supply chain management system.

Performance: Fast response time for data retrieval and processing. Efficient data synchronization for offline use. Saleable architecture to handle growing user base and data volume. Limited access to user data for support purposes.

This analysis includes functional and non-functional requirements, user roles, and various features that the app should provide to meet the needs of fish farmers. This project all function are wonderfully success and performance are so good. This project well played are so good and proper performance. This apps should have a user-friendly design with simple navigation and it have clear instruction. Enable key features to work without an internet connection. I will improve performance and add new features day by day based on user feedback. User reminders for tasks like feeding, water check and others by notification function.

3.6 Project Management

- **Project objectives:** There will be more fish farming in the country and meet the country's meat needs. But most of the fishermen can't profit from this business or fisheries sector. That's why they loss their motivation and come out from this site. So, I have decided that I will create a mobile apps which have all function and any fish farmer/ fishermen will use it and profit from fisheries sector every year. This project objectives from this situation of this country. Once upon a time I have notices that my uncle can't profit from fisheries sector then I said what the problem on it? Then he said this fisheries site have not a modernization or technology that why we have not got knowledge of news in exact time. As a results, we have loss every year. Then I have gone to fisheries department of my own district and they said that we have more mobile apps but those apps are non- usable those apps have not proper way for fisheries sector. Then I have decided that I will create an android-apps.

- **Project timeline:** This project I have created by few weeks. In this project, project planning, designing part, including java and store data from SQLite database and testing this project every time. In this case, this project had been a timeline design/ graph on this project.

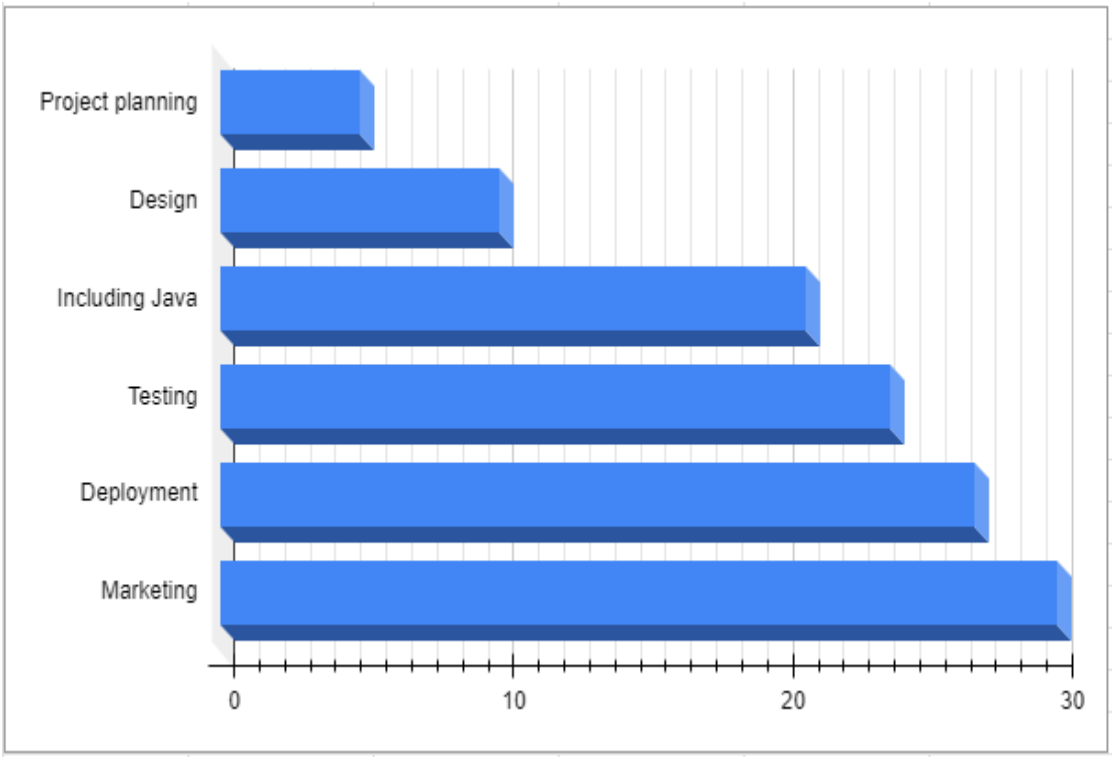

Table 3.6.1: Gantt chart for project timeline (Vertical axis= Tasks and Horizontal axis= weeks)

- **Resource planning:** Oversees the entire project, manages timelines and budget. Understands user needs, translates them into requirements, and creates user stories. Designs the user interface and user experience for the application, ensuring it is visually appealing, intuitive, and user-friendly. There are many times and many places I have collected many data and utilization with this project/ android-apps. Many types of data and function on this project. After collected all data, I have planning on this project.

- **Risk management:** Software bugs and defects affecting app functionality. Data breaches or unauthorized access to sensitive user information. Conduct regular security audits and penetration testing to identify and address vulnerabilities. This project has many types of risk like security problem, coding error, laptop memory backup etc. All about risk managed by me.

- **Communication plan:** There are many times I have to go to many fishermen, stakeholders and fisheries officers. I have got a lot of information and data which I need

in my project. Communication with fisheries sector and fishermen and they have given me some data that's why I have would create this project. When the plan for this project came to mind, I communicate with many fishermen and department of fisheries.

- **Testing plan:** Define a comprehensive testing plan covering functional, performance, and security testing. Conduct user acceptance testing with stakeholders to ensure the app meets their expectations.

- **Security and privacy measures:** Strong security protocols must be implemented to protect user data and ensure secure transaction and privacy measures must be defined to comply with data protection regulations. Security is the most important feather of any project or software. If there have no ideas then probably it will be hack by others and they will be procedure by them.

- **Training and support features:** Built in-app tutorials and guides to help users, A support system has been integrated for users to seek help and report issues within the app. If any parson trained with this project, they will teach other for marketing. Most probably I will add new feather every time that's why it may be some complicated for each other. On the other hand, it will be had many videos tutorial.

3.7 Financial Analysis

After complete this project I have notice that how many much money gone from my wallet. If anyone create a new project I hope, they have also realized that. When a project will process it will need many online tools and software. On the other hand, visiting stakeholder and software cost and buy books.

SN	Components	Estimate Cost (BDT)
01	Online tools and equipment	9500-11500
02	Visiting Stakeholder	10500-12000
03	Buy Books	4000-5000
04	Documentation and Report Printing	6000-8000
05	Contingency	10000-12000
	Total	40000-48500

Table 3.7.1: Financial Analysis

Another buying any cloud storage or database store and others. This project had been many functions and adding new feather like AI tools and machine learning. After all I have realize that when I will add machine learning and AI tools then it will be more than expensive from now.

3.8 Summary

Methodology, requirements analysis and design specification for "Fishermen" ("মৎস্যজীবী") mobile apps involve a systematic approach to ensure that the application meets the needs of users and fisheries management objectives. The methodology used in fishing mobile apps focuses on leveraging technology to address specific needs of fisheries management, aquaculture, and recreational fishing. The development of the "fisherman" mobile app aims to align with user needs, regulatory requirements, and technological advancements, contributing to a sustainable and effective fisheries management solution. This methodology ensures fishing mobile apps remain efficient, accurate, and user-friendly while addressing the unique challenges of fisheries and aquaculture.

CHAPTER 4

SYSTEM DESIGN AND IMPLIMENTATION

4.1 Overview

In this case, I have created a design for this mobile application. First of all, I have designed a methodology and then created a prototype. This design helps me implement it properly. After collecting data, I would implement value and work properly. These are salivary missions for system design. System design part is the very difficult part of the project. The goal of the "মৎস্যজীবী" mobile application is to give fish farmers an all-inclusive platform for efficient management of their businesses. The system will have features for tracking, documenting, and evaluating several facets of "মৎস্যজীবী" mobile application. Modernizing and optimizing "মৎস্যজীবী" mobile application operations is the goal of the application. Utilizing cutting-edge technologies and offering a wide range of tools, the program will assist fish farmers in boosting output, properly monitoring their operations, and becoming more efficient overall. I have created this apps with many functions and requirements. System designing and implementation will declare that all values and system. This project has many types of mathematical equations. Like child fish collection and those store, normal food supply chain management, age wish food supply chain management, pond or others reservoir management system and etc. In fishing mobile apps, system analysis and design entails determining user requirements, assessing problems, and developing a blueprint for effective solutions specific to aquaculture and fisheries. In order to identify non-functional objectives like performance and offline capabilities as well as functional needs like feeding schedules, disease control, and water quality monitoring, the process starts with requirements collecting. System architecture intuitive user interfaces, modular features, and safe databases for farm data storage are the main priorities of the design process. Addressing practical limitations in fisheries requires integration with IoT devices, AI for predictive analytics, and offline functionality. While regular updates and feedback systems keep the app current and user-focused, testing guarantees usability, performance, and dependability. This methodical approach guarantees the app satisfies the technological requirements of the industry.

4.2 Data Collection

In this project it needs some data and value. I have got all the values and data from some books. I have collected some books.

1. মৎস্য চাষ ব্যাবস্থাপনায় (উত্তম মৎস্য চাষ পদ্ধতি অনুশীলন ও গুনগত মান সম্মত মৎস্য পোনা ব্যবহার)

2. তেলাপিয়া মাছ বাণিজ্যিক চাষ
3. রুই মাছ বাণিজ্যিক মিশ্র চাষ
4. প্লাবন ভূমিতে মৎস্য চাষ
5. Carp- Golda poly- Culture and large Size Carp Fish Production techniques.
6. আধুনিক মাছ চাষ ও পরামর্শ

That book helped me create this project. I have got help from online books, videos and websites. For fish farms to be managed effectively, comprehensive and reliable data collection is necessary. The "মৎস্যজীবী" mobile application can offer useful insights to enhance operational efficiency, guarantee fish health, and optimize profitability by utilizing both human and automated data collection methods.

Adequate data security and privacy protocols are crucial in safeguarding users and their farms' sensitive information. The smartphone app receives data directly from farmers. Digital forms are used to enter data consistently. The software has dedicated forms for simple data entry. Permit several ponds and stocking events to be entered in the data. Connect sensors to monitor water quality in real time. Camera integration to take pictures of fish and track their growth. My "মৎস্যজীবী" android application can become a changing tool for fish farmers, enabling them to run their farms more effectively and sustainably by gathering important data with the least amount of work and protection of personal information.

Data like fish species, age, weight, pond size, water quality metrics, feeding schedules, and capture logs may all be entered into the app. It can also gather information on weather, disease symptoms, and the use of bait or feed. This application guarantees smooth data entry even at remote locations by utilizing user-friendly interfaces and offline storage features like SQLite. After processing, this data is transformed into useful insights, like growth tracking, disease treatment recommendations, and customized feeding schedules, which help fisherman make wise decisions and efficiently run their businesses.

To give individualized and useful insights, data collecting for a fishing, Android app entails obtaining pertinent information directly from users and outside sources. Pond size, fish species, fish count, feeding schedules, and water quality metrics are among the details that users can provide. Forms and surveys can record local customs, fishing patterns, and user preferences. Furthermore, the program can be improved by adding region-specific fishing restrictions, disease alerts, and market trends through the integration of APIs or government databases. The software makes correct recommendations and increases overall fishing efficiency thanks to this systematic data collection.

4.3 Implementation Prototype Design

- **Child fish store:** There are many types of fish are in one reservoir, but most probably those child fish will be death cause of wrong management system. I have created function by my collected data which manage this system.

  Mathematical equation: Total child fish = total volume * percent of child fish (they can store this fish in one reservoir)

  rui (32%), mrigel (26%), katol (17%), silver (15%), telapiya (9%), puti (1%).

  This sequence any fishermen will store child fish on their pond/ reservoir. There may have many types of fish on their pond or reservoir but those fish are not death on this system.

Figure 4.3.1: Pona stock Formula

Careful consideration of the environment, growth requirements, and health of juvenile fish is necessary when storing them. Adequate aeration, filtering systems, and routine water quality tests for pH, ammonia, and nitrate levels must all be present in the storage space. To promote quick growth, feeding should contain small, high-protein meals often. In order to prevent stress and overpopulation and to guarantee the highest survival rates, proper stocking density is essential. When they are ready to be moved to bigger ponds or tanks, it is crucial to keep an eye on their development and well-being.

❖ **Determining the volume of the pond:** This is a simple mathematical equation. Although this is simple mathematical equation but most importantly main time, we can't remember any mathematical equation like this.

Mathematical equation: Total volume = length * width * height of reservoir

Figure 4.3.2: Determining the volume of ponds

For efficient fish farming, pond volume is essential since it aids in the calculation of feed amounts, stocking densities, and water treatment needs. The volume can be computed using the pond's geometry and is commonly expressed in cubic meters or liters.

Multiply length, width, and average depth for ponds that are square or rectangular in shape. For circular ponds, irregular shapes could need the use of sophisticated instruments like GPS and depth sounders or the division of the area into quantifiable portions. Precise control over water quality, feeding plans, and drug dosages is made possible by accurate volume measurement, which promotes sustainable aquaculture and healthy fish growth.

❖ **Application of lime & fertilizer:** Application of lime and fertilizer is very important for any reservoir. Because any kind of pond or reservoir is said of child mother. Although this are not qualified then every fish will be effect in disease that's why it's very important.

Mathematical equation: Pond volume (in percentage) = length × width ÷ 100

After this equation then Total amount of lime = (length * width)/1000

And then lime (%) = (total amount of lime / 100) * height of pond

That was the right equation of application in lime on pond or reservoir.

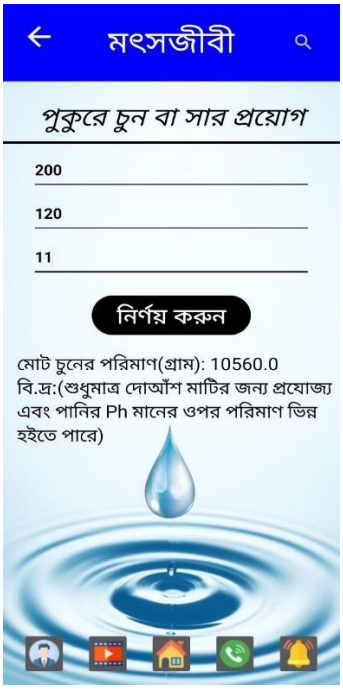

Figure 4.3.3: Application of lime and fertilizer

Maintaining water quality and encouraging the growth of plankton, the foundation of the aquatic food chain, need the introduction of fertilizer and lime to a pond. By neutralizing acidity, enhancing nutrient availability, and stabilizing pH levels, lime helps create a habitat that is conducive to fish. The dose of common lime type such as slaked lime, quicklime, or agricultural lime is established by soil and water analysis. Time and quantity of applications must be carefully considered in order to prevent overfertilization, which can cause algal blooms or oxygen deprivation. Maintaining balanced nutrition levels through routine monitoring promotes healthy fish growth and maximum pond productivity.

❖ **PPM determination formula:** The concentration of a certain material (such as dissolved salts, nutrients, oxygen, or contaminants) in pond water is expressed in ppm (parts per million). It is a common unit used to measure minuscule solute concentrations in liquids. First of all,

Mathematical equation: Volume of pond = length × width × depth

And after get this value then, Volume (in liters) = cubic feet × 28.317

After that, Dissolved matter (in grams) = PPM value × pond volume (liter) ÷10^6

Then we have got this accurate answer.

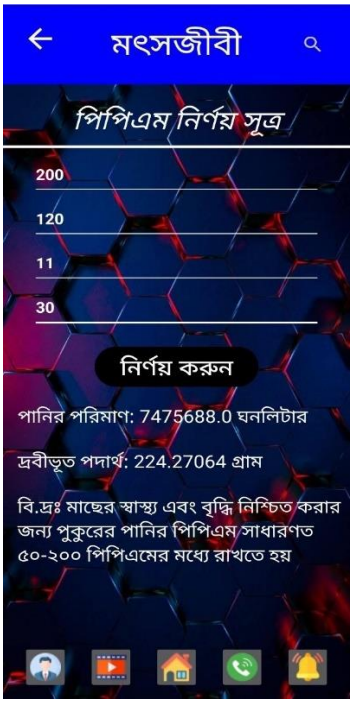

Figure 4.3.4: Determination PPM of water

A crucial stage in evaluating the quality of water for fish farming is determining its ppm (parts per million), which is the concentration of particular elements such as dissolved oxygen, carbon dioxide, ammonia, or nutrients. PPM is equal to ppm in water analysis and is computed as milligrams of a compound per liter of water (mg/L). Kits, chemical titration, or digital sensors for accurate results can all be used for testing. For instance, most fish should ideally have dissolved oxygen levels over 5 ppm and ammonia levels below 0.02 ppm. A healthy environment for fish growth and survival is ensured by routinely monitoring and maintaining water quality parameters within ideal ppm levels.

❖ **Food supply formula:** The food supply formula area of a fishermen's mobile app can offer useful resources and information to promote efficient feeding procedures for fish farming. Promote environmentally responsible feeding techniques, such as the use of locally or organic feed products.

Mathematical equation: Total weight of fish: (Total amount of fish * average weight of fish)/ 100

After that have to figure out and then, Amount of supplying food = (Total weight of fish * food rate (%))/100

And this is total weight of fish.

Figure 4.3.5: Food application method

Techniques to guarantee effective feeding, reduce waste, and encourage healthy fish growth are all part of the food application process in ponds. The fish species, size, and pond conditions all affect the technique. Which distributes feed uniformly throughout the pond surface. The kind and amount of feed should be in line with the fish's nutritional requirements; pellets are frequently used to provide consistent nutrient delivery.

❖ **Prepare non- vegetarian food:** For fishermen who depend on bait and feed to draw fish, a mobile app's part on cooking non-vegetarian meals for fishing can be rather helpful. Storage recommendations for dried or processed non-vegetarian feed.

Mathematical equation: Total amount of fish = (Amount of protein + Total food) * 0.70

After then Fishmeal = Total amount of fish * 0.55

shorishaKhoil = sorboMotKhaddo * 0.35

meaij = sorboMotKhaddo * 0.10

raisB = sorboMotKhaddo * 0.7

Figure 4.3.6: Non-vegetarian food preparation process

Feed quality is guaranteed and spoiling is minimized using proper storage methods like freezing or drying. Though it must be carefully regulated to prevent overfeeding and water pollution, non-vegetarian feed promotes faster development, greater health, and higher survival rates.

❖ **Age based feed application:** Users can input fish age and pond conditions to receive precise feeding schedules, quantities, and types of feed, which will help minimize waste, reduce costs, and maximize yields. Fishermen's mobile apps can include a section on age-based feed application to help users provide the right nutrition for fish at different life stages. This feature would offer tailored feeding recommendations based on fish species, age, and growth requirements, ensuring optimal health and development. For juvenile fish, the app could suggest protein-rich starter feeds to support rapid growth, while for adult fish, it could emphasize maintenance diets or pre-breed nutrition.

This system has spinner to do some information like 1-7 days, 8-18 days, 19-31 days and etc, this sequence stay with 3 months.

First of all, there are 3 function and then input values and get answer.

Mathematical equation: Total weight of fish = (Total amount of fish * average weight of fish)/1000

And then Total food intake = (total weight of fish * food rate)/ 100.

Figure 4.3.7: Age wise food application method

In this case, it has SQLite database after all when any fishermen will input there then it will be store with database and notify that database data value will restore that. An offline-first, seamless solution for managing crucial fishing data is provided via an Android app for fisherman that is linked to SQLite database.

Statistics like feeding schedules, fish types, pond statistics, disease management records,

and fishing logs may all be stored and retrieved by the app directly from the device's local storage. Strong data handling features offered by SQLite provide fast access, updates, and queries without the need for an internet connection.

The software analyzes information entered by users, such as fish age, weight, or pond conditions, and provides personalized feed, disease diagnosis, and maintenance task recommendations. The application's interface with SQLite guarantees data dependability, simple online synchronization, and effective administration of fishing-related documentation.

- **Emergency call:** For any kind of the fishermen can contract with any fisheries department.

Figure 4.3.8: Contract fisheries officers if necessary

❖ **Motivational videos:** Some kinds of, most of the fishermen never knowing how to fishing system that's why it has some videos for fishermen.

Figure 4.3.9: Some videos about fish farming system

❖ **Fisheries android apps creator:**

Figure 4.3.10: Creator of apps

- **Others information:** Upper it has some page screenshot for showing mathematical equation but one of the created pages, it needs to many pages but there are some pages have not all mathematical equation that's why I have not showing others page. This fishermen apps have many functions like emergency call item, video tutorial item, notification bar, child fish store and management those, pond or reservoir or any things, Disease and treatment and etc.

  After all, that project have all whatever is needed.

Here the design of "মৎস্যজীবী" android apps. I have tried to design these apps very carefully and sincerely. After creating this app's prototype designing it would implement the Java programming language.

The focus is on user-centric features including streamlined processes for entering data on ponds or fish, real-time alerts for feeding schedules, and detailed instructions for treating illnesses. Interactive features that improve interest and usefulness include feed calculators, graphical growth tracking, and offline functionality. Feedback loops are incorporated into prototypes so that consumers can quickly report bugs or request improvements, guaranteeing ongoing development.

An offline-first, seamless solution for managing crucial fishing data is provided via an Android app for fisherman that is linked to an SQLite database. statistics like feeding schedules, fish types, pond statistics, disease management records, and fishing logs may all be stored and retrieved by the app directly from the device's local storage.

Strong data handling features offered by SQLite provide fast access, updates, and queries without the need for an internet connection. The software analyzes information entered by users, such as fish age, weight, or pond conditions, and provides personalized feed, disease diagnosis, and maintenance task recommendations. The application's interface with SQLite guarantees data dependability, simple online synchronization, and effective administration of fishing-related documentation.

4.4 Summary

The mobile application for "মৎস্যজীবী" is made to assist fish farmers in effectively managing their operations by giving them access to tools for tracking, reporting, and evaluating different elements of "মৎস্যজীবী" . The mobile application for "মৎস্যজীবী" is intended to bring fish farming operations up to date by offering a wide range of tools for better productivity, efficient monitoring, and higher efficiency. For "মৎস্যজীবী" , the system architecture and implementation strategy guarantee reliable, sellable and easy-to-use solutions. An essential part of any software system's development life cycle is system design and implementation. It entails converting the requirements acquired during the analysis stage into a thorough construction plan for the system. To guarantee that the finished product serves its intended function, this blueprint describes the system architecture, parts, modules, interfaces, and data flow.

CHAPTER 5

RESULT AND IMPACT ON SOCIETY

5.1 Overview

This is a notice that these apps always work with fish firmer. This app is improving the system and farmers always feedback with this good rating system. They believe that this mobile application improves their fish grouting and market price without losing. Economic grouting systems have an informative equation and motivation. Improved resource or water monitoring encourages sustainable agricultural methods. The productivity, sustainability, and efficiency of aquaculture operations are greatly increased by "মৎস্যজীবী" mobile applications. By providing farmers with the necessary tools for efficient management, they can increase fish production, lower costs, and improve fish health. Increased food security, community development, employment creation, and economic growth are some of the wider societal effects. These applications benefit both society and the aquaculture industry by encouraging sustainable practices and facilitating access to cutting-edge technology. Thorough analysis and information visualizations support well-informed decision-making based on current and historical data. Alerts in real time about illness and water quality allow for prompt action, which lowers death rates. More growth and production can be achieved by optimizing ratios for feed conversion through accurate tracking of fish growth and feed utilization. Systematic logging and real-time monitoring cut down on mistakes and save time. Making decisions and managing the farm gets easier by combining all of the data. This "মৎস্যজীবী" apps can't impact on society, if it will be impact on society obviously it will be good impact on the society.

5.2 Background

Bangladesh Directorate of Fisheries Raj-shahi Division has given me a lot of support in this project. Helped me with many types of books and some information. These projects have documentation or reports on the development and impact of mobile apps in the fisheries sector. The Department of Fisheries has a variety of general apps where only general rules are discussed. like "মৎস্য ও প্রাণিসম্পদ তথ্য ভান্ডার" , This app contains some discussions about Livestock and Fisheries. There is one more such app like, "মৎস্য পরামর্শ এবং চাষ পদ্ধতি" . This is how everything is usually explained in apps, but my app will have more like How much food should be changed after how many days, how much food should be fed, if the symptoms of any disease appear suddenly, the treatment rules for that disease can be found here.

5.3 Resource Utilization

- **Android studio:** The primary Integrated Development Environment used for coding, debugging, and testing the Android app.
- **Programming language:** Java were likely used for coding part logic, UI and UX components.
- **XML:** Used for designing the app's layout and UI elements.
- **SQLite database:** This is the back-end logic. There are some value or data store on this file and repaid data from database by SQLite database.
- **Version control system:** Tools like Git for managing source code versions and collaboration among team members.
- **Word processing software:** Tools like Microsoft Word or Google Docs for creating project documentation, reports, and user manuals.
- **Video conferencing:** Tools like Zoom or Google Meet for virtual meetings, discussions, and presentations.

5.4 Result and Performance

These mobile apps will perform well as well as.

- **Time saving:** Time gained by using reduced data entry forms to automate gathering information. Efficiency increases from alarm systems, environmental monitoring, and automated feeding schedules.
- **Financial performance:** Decreases in expenses related to water purification, feed, and manual labor. decreased operating expenses for facilities and machinery as a result of prompt notifications as well as preventative actions.
- **Fishing growth:** Increases in fish weight and dimensions typically occur as a result of better ecological and feeding conditions. A rise in the total produce for each farm or pond.
- **User satisfaction:** Fish farmers and workers routinely use the app for day-to-day tasks. high rates of use for important services like assessment, reporting, and observing. They are review that this apps quality is best.
- **Data accuracy:** Decrease in disparities and mistakes in data entry as a result of computerized data collecting. thorough data gathering including every facet of agricultural maintenance.

- **Feedback:** Great feedback about the features and ease of use of the app from users. reduction in support queries as a result of thorough in-app instructions and debugging tools.
- **Environment impact:** Enhancement of water-related factors via ongoing observation and modification. reduction of waste from the environment as a result of improved waste management techniques and optimizing resources. creation of insights that can be put into practice via data reports and analytics. Efficient evaluation of current and historical data to spot developments and patterns.

5.5 Summary

Numerous indicators reflecting operational efficacy, fish health and productivity, financial success, consumer happiness, impact on the environment, legal compliance, and data correctness can be used to assess the effectiveness of a mobile application for "মৎস্যজীবী". Fish farmers can make sure the application offers real benefits and contributes to more successful, productive, and profitable fish farming businesses by regularly tracking key KPIs. Mobile apps for "মৎস্যজীবী" provide notable benefits in the areas of cost savings, adherence to regulations, fish health and productivity, and operational efficiency. In terms of the environment, they support climate adaptation and better habitats by maximizing resource management and encouraging environmentally friendly behaviors. These applications improve ecology and production by incorporating modern innovations into aquaculture, which benefits both farmers and the natural world.

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

6.1 Conclusion

With 130 million people living in its 147,570 km2 densely populated nation is Bangladesh. It is blessed with a plentiful supply of water in the form of lakes, ponds, streams, canals, and estuaries that span 4.56 million acres. Future improvements to its impact, usability, and functionality have a lot of potential. "মৎস্যজীবী" android apps can develop into a useful resource for stakeholders, experts, and aquaculture enthusiasts by giving priority to feature completion, content growth, performance optimization, and user engagement tactics. Additional future factors to be taken into account are partnerships, localization and worldwide expansion, monetization techniques, interaction with developing technology, and partnerships and adherence to legal obligations. The implementation of these strategic measures is expected to enhance the app's competitiveness in the market and guarantee its continued relevance and sustainability over time. With the evolution of time, people have started farming in ponds and fish from the river but most of the fishermen suffer due to not knowing the rules of fish farming. I think that a fisherman should know how to farm fish in a modern way. My mobile apps will describe the amount of food and when to give it. In this way, my mobile apps use Bangla language and are easily understandable. That is why it's easy to use and has an easy user interface. My "মৎস্যজীবী" Mobile apps all function very easy and fast that's why any fisherman uses it easily. There is little information available about the beginnings and growth of aquaculture techniques in Bangladesh. Historically, natural spawning occurred during the monsoon season to replenish the nation's natural water sources. Many monarchs are built ponds and tanks for bathing, drinking, and occasionally small-scale irrigation. These ponds and tanks were also used to raise fish, albeit primarily for recreational purposes rather than for commercial gain. By giving fish-farmer the resources and functionality they need for effective operation oversight, mobile apps for "মৎস্যজীবী" seek to improve and expedite aquaculture operations management. These applications combine a number of features to track, record, and evaluate various fish farming activities.

6.2 Future Scope

Give top priority to finishing the app's necessary features in order to improve its usability and functionality. Make a detailed review to determine what features are lacking and create a plan for implementing them. Make an investment in adding in-depth resources, manuals, and tutorials on a range of aquaculture-related topics to the app's content collection. Work together with industry professionals to give users insightful information.

To make the app better over time, have an innovative and constant improvement mindset. To be current and competitive in the market, regularly ask people for input, track performance indicators, and iterate on features and functionalities. Keep up with industry standards and legal requirements that are pertinent to aquaculture activities, and make sure the app conforms with all relevant laws and regulations. These apps I will be developing with IoT and machine learning. That's why "মৎস্যজীবী" mobile apps will be detect any geodesics properly and work with in that time.

6.3 AI and Machine Learning performance

By offering clever tools and insights to increase productivity and decision-making, artificial intelligence (AI) and machine learning (ML) can greatly improve the effectiveness of Android apps targeted for fishermen.

These systems can provide precise forecasts and suggestions for fish farming by analyzing large datasets, including fish growth metrics, weather patterns, and water quality.

Features driven by AI, such as resource management, ideal feeding regimens, and real-time disease diagnosis, can save expenses while boosting output.

Furthermore, by analyzing user behavior and preferences, machine learning algorithms may tailor the app experience, guaranteeing timely and pertinent recommendations.

AI-driven apps for fisherman have the potential to become vital resources for empowering fishermen, updating aquaculture methods, and advancing sustainable fisheries management if they integrate natural language processing for Bangla and user-friendly interfaces.

6.4 Summary

Bangladesh has enormous potential to advance aquaculture because it is a highly populated country with an abundance of water resources covering 4.56 million acres. Through an intuitive Bangla-language interface that includes features like agricultural methods and food application rules, the "মৎস্যজীবী" smartphone app seeks to alleviate the difficulties faced by fishermen, especially their lack of information about modern fish farming. The software, which emphasizes ease of use, accessibility, and quick functionality, was created to improve aquaculture management and is a priceless tool for enthusiasts and stakeholders. The app hopes to increase user participation, promote sustainable practices, and stay relevant in the changing industry by using contemporary technology, cultivating partnerships, and guaranteeing adherence to regulatory requirements. Through teaching, the app aims to transform Bangladesh's aquaculture industry, which historically started with small-scale, non-commercial operations.

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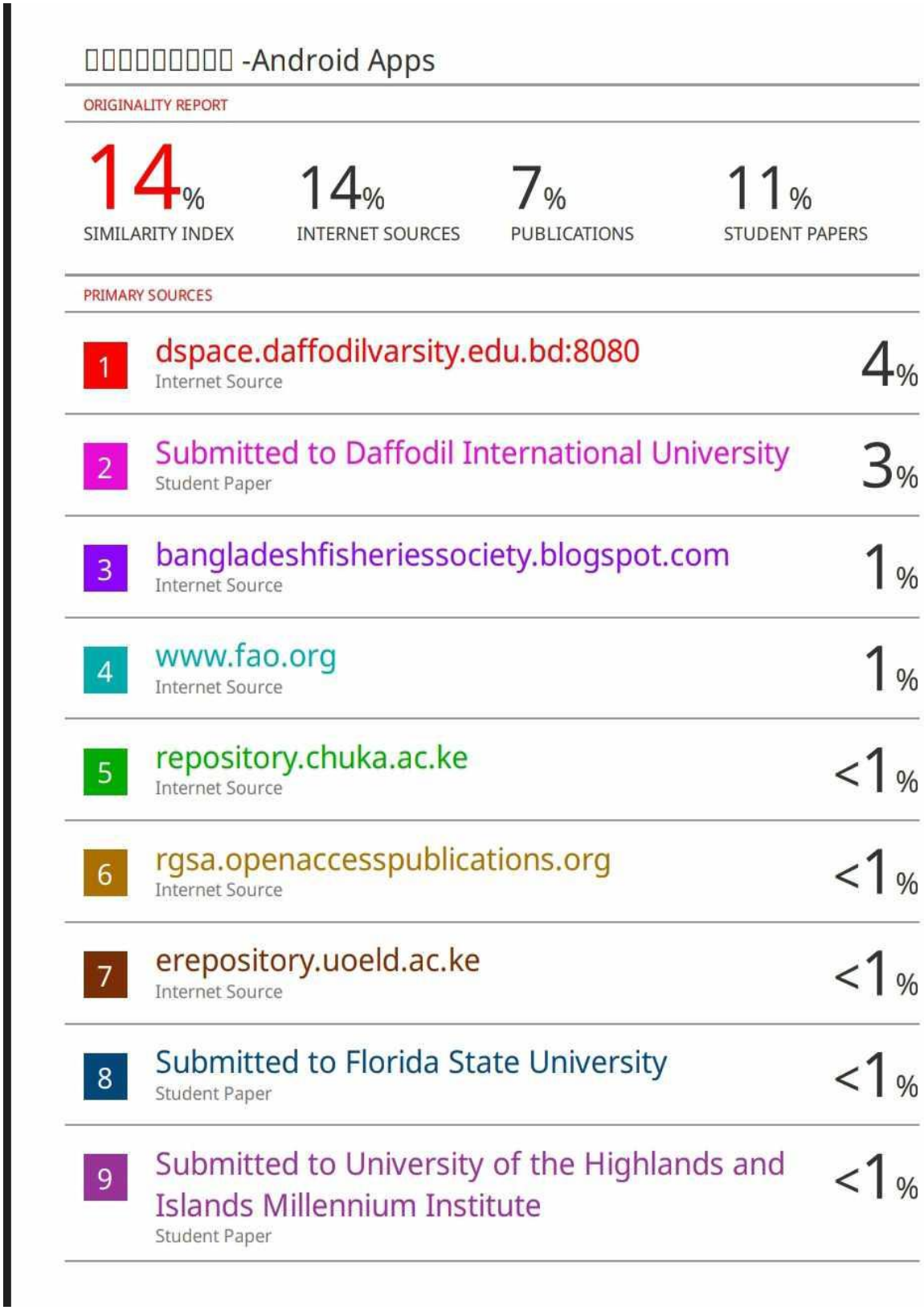
PLAGIARISM



□□□□□□□□□ -Android Apps

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