

**A SMART WAREHOUSE MANAGEMENT SYSTEM IN THE
RURAL AREAS OF *BANGLADESH***

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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/internship titled “**A SMART WAREHOUSE MANAGEMENT SYSTEM IN THE RURAL AREAS OF BANGLADESH**”, submitted by Shamim Ibrahim, ID No: 181-15-11142, Md Foyez Ahmed, ID No: 181-15-11167 and Shampa Rani Deb, ID No:181-15-11189 to the Department of Computer Science and Engineering, Daffodil International 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 04/01/2022.

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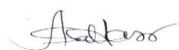
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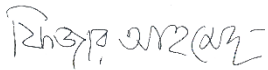
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DECLARATION

We hereby declare that, this project has been done by us under the supervision of **Dr. Fizar Ahmed, Assistant Professor, Department of CSE, Daffodil International University**. We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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ABSTRACT

There are many warehouses in our country. They do not have any calculation and track record of their electricity cost and humidity of their warehouse. If they have access to their temperature, amplitude, volt they can calculate the cost of their warehouse. Even though they have no idea about their warehouse humidity, that's why they sometimes face a large amount of loss. In this case, this is a huge problem for the store owner. Most of the people of our country are using android operating system based mobile applications. So, an android base phone and IoT base solution can solve this project's problem. If the owner can calculate their warehouse unit of electricity they can make a huge profit from this. They reduce the losses and also save their products. Impact of using electricity for rural warehouse moisture control system has opened a new era of modern warehouse system. It is based on the IoT and is intended to make it easier to measure and regulate temperature and humidity. By using this warehouse humidity control system, it is possible to store and recover large amounts of crops without interruption. Our research for this project to make the model very easy to use and low cost. Though Bangladesh is an agricultural country, it's economy and major parts of rural jobs depends on agriculture. But there is lack of moisture control system technology and knowledge in rural areas. For this, 33% crops are spoiled every day for using manual moisture system. In this project, we have presented a modern moisture control system model using NodeMCU and DHT-11 sensor. The main goal of this project to help the rural farmers in our country to save their valuable crops & give assurance to control humidity by using our projects. For this, our country will capable of enriching foods and fulfill its internal demand. Besides, we are able to exports crops, seeds, foods from different crops and earns a lot foreign exchange.

TABLE OF CONTENTS

CONTENTS	PAGE
Board of examiners	ii
Declaration	iv
Acknowledgements	vi
Abstract	vii
CHAPTER	
CHAPTER 1: Introduction	1-4
1.1 Background of the Project	
1.2 Objective of Project:	
1.3 Aim of The Project:	
1.4 Existing System:	
1.5 Problem Statement:	
1.6 Research Methodology:	
1.7 Proposed System:	
1.8 Conclusion:	
CHAPTER 2: Requirement Analysis	5
2.1 Introduction	
2.2 Requirements analysis	
2.3 Conclusion	
CHAPTER 3: Literature review	6-7
3.1 Introduction	
3.2 Literature review	
3.3 Research Methodology	
3.4 Conclusion	
CHAPTER 4: System Analysis and Design	8-11

- 4.1 Introduction
- 4.2 System Analysis
- 4.3 System Design
 - 4.3.1 Block Diagram
 - 4.3.2 Flow chart
 - 4.3.2.1 Application Module Flow-Chart
- 4.4 Conclusion

CHAPTER 5: System Evolution/Development **12-15**

- 5.1 Introduction
- 5.2 Front end development
 - 5.2.1 User interface Design
 - 5.2.2 Dashboard Design:
- 5.3 Back End development
 - 5.3.1 Database Design
- 5.4 Conclusion

CHAPTER 6: Testing and Implementation **16-19**

- 6.1 Introduction
- 6.2 Testing
- 6.3 Implementation
- 6.4 Data Analysis:
- 6.5 Analysis Result:
- 6.6 Conclusion

CHAPTER 7: Critical Appraisal **20-21**

- 7.1 Introduction
 - 7.2.1 Strength
 - 7.2.2 Weakness
 - 7.2.3 Opportunity
 - 7.2.4 Thread
- 7.3 Conclusion

CHAPTER 8: Conclusion **22**

LIST OF FIGURES

FIGURES	PAGE NO
Figure 1.1: Meter for measure current.	2
Figure 1.2: NodeMCU setup with DHT11	3
Figure 2.1: Steps of Requirements Analysis.	5
Figure 3.1: Annual number of publications in the field of IoT in food safety.	6
Figure 4.1. WATERFALL MODEL.	9
Figure 4.2. System Design	10
Figure 4.3. Flow Chart	11
Figure 5.1. Application Dashboard Design.	14

Chapter 1:

Introduction:

1.1 Background of the Project:

In our country, many companies are expanding their business. They created warehouses for their business goods. But they have no clue of costing and analyzing this. This creates a mess for a company and makes less profit for the company. In our country most of the people have android base phones. For this purpose, we are trying to create a device where the company owner can check the temperature, volt, and humidity. People can see the result in their android phone via an application.

1.2 Objective of Project:

We are setting some objectives to make this project successful.

- We make it in android system analyzer
- We will create a database to set the record
- Set a record system so that people analysis the situation

1.3 Aim of The Project:

We have an aim to solve the problem. We will follow the objective to complete the aim of our project:

- System analyzer for the company owner.
- Make an easier system for all to handle it.

1.4 Existing System:

There are few existing systems in our market. There are many companies that make Iot based projects to analyze humidity, temperature, voltage, and aperture. Most of the existing systems do not have a record system. They do not set up the analyzing system. For not having a record system, owners cannot get the opportunity to analyze their problem of their system and also understand their system situation.

1.5 Problem Statement:

In our country's perspective, warehouse owners have no idea about their warehouse situations. They are making huge losses because of this. They have no clue of their

electricity bill. They have no idea about their humidity. This also can be a huge cause of loss. Humidity up and down can damage the products. This is a problem for our country's warehouse owners. And they have been facing it in a long time.

1.6 Research Methodology:

Introduction:

Choosing a methodology is critical to the success of any project. It should be appropriate and relevant to the project's circumstances. Methodologies assist in the establishment of a project team as well as the understanding of the project's business requirements in connection to the end-requirements. This section provides a brief overview of the approach used in the proposed project.

Data Collection:

We collect the data to measure the flow of current used, by a meter. Here we calculate the cost of a cooling system of warehouse. To collect temperature and humidity, we use nodeMCU and DHT11.



Figure 1.1: Meter for measure current.

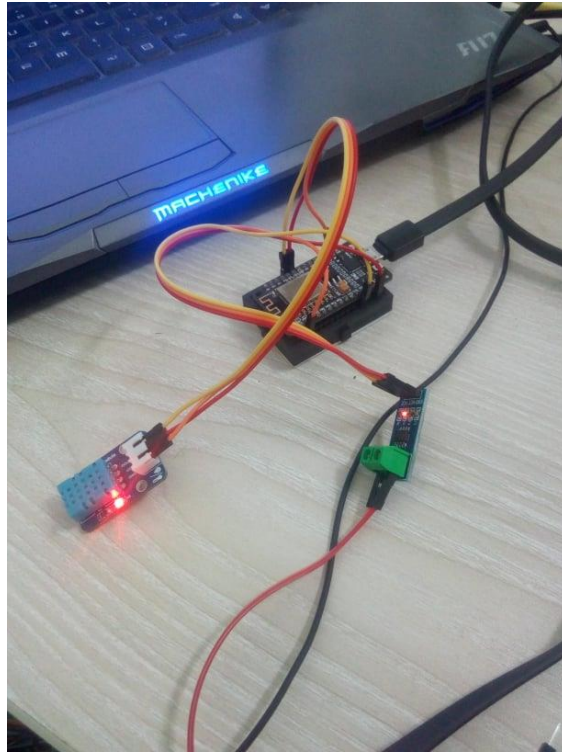


Figure 1.2: NodeMCU setup with DHT11.

Data Analysis:

After collecting data of current usage, room temperature with humidity we analyse the data. We will find the cost of the cooling system in warehouse. Then we compare the data with different temperature and different humidity. All the data will store in a database system.

1.7 Proposed System:

We are proposing an android base monitoring system. Where warehouse owners can see their warehouse humidity, temperature, volt and aperture. Data will be saved in the database. They can analyze the database's data and calculate their situation. They can even calculate their cost. A sensor will calculate the whole thing.

1.8 Conclusion:

We use meter to calculate the electricity cost. By using this, we can collect electricity cost in a fixed day. For this, farmers will get the benefit. They can plan to reduce the cost and also can bear the cost. For this, they have no sufferings to bear the cost. For lack of knowledge and technology of calculating electricity, they will expense a huge amount of money for this. Because, they do not know how much money will expense for this. Our system will solve this problem.

Chapter 2

Requirement Analysis

2.1 Introduction

Number of warehouses is increasing day by day. This is a good sign but they are facing many issues. Most of the common issues are product damage. In a year, they are paying many fee for this. This is a barrier for the company owners. And it is increasing day by day.

2.2 Requirements analysis

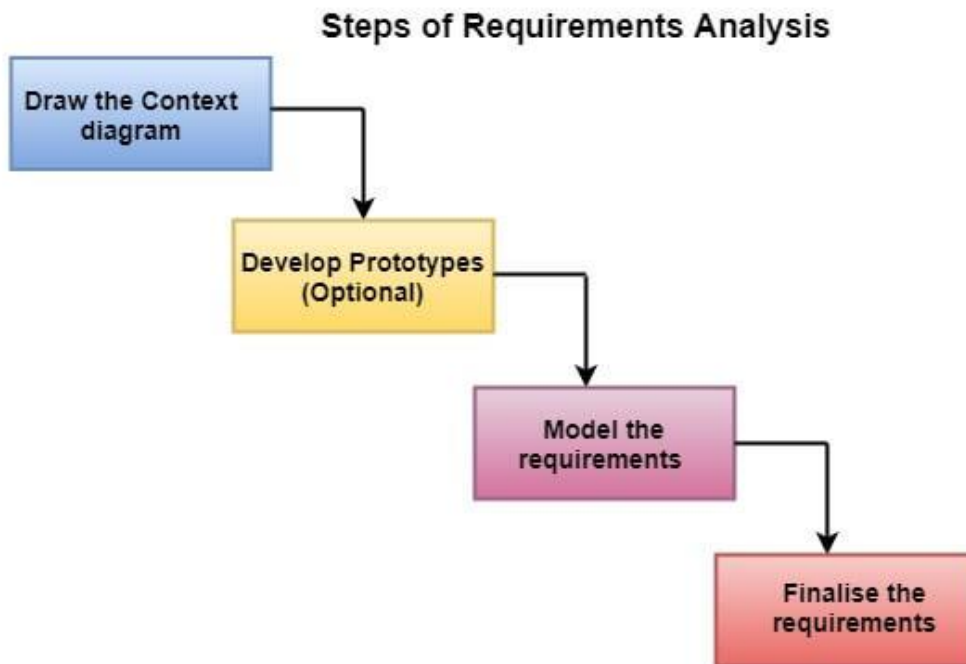


Figure 2.1: Steps of Requirements Analysis.

2.3 Conclusion

We use diagram to understand this problem easily. Because, better diagram will give better implementation of the system. Rural peoples want to use and implement the system easily. For this reason, we make a diagram to understand the system easily.

Chapter 3

Literature review

3.1 Introduction

A literature review is essential because we can see the other scholarly paper. It helps us to get a complete understanding of any topic. We can find what other people research or find in this area. So it is imperative in any project development.

3.2 Literature review

The first publication on IoT in food safety appeared in 2011, as shown in Figure, and the number of articles are low at beginning but day by day it's increased rapidly, culminating in 2016. (11 articles). In 2018, a total of nine articles published. [1].

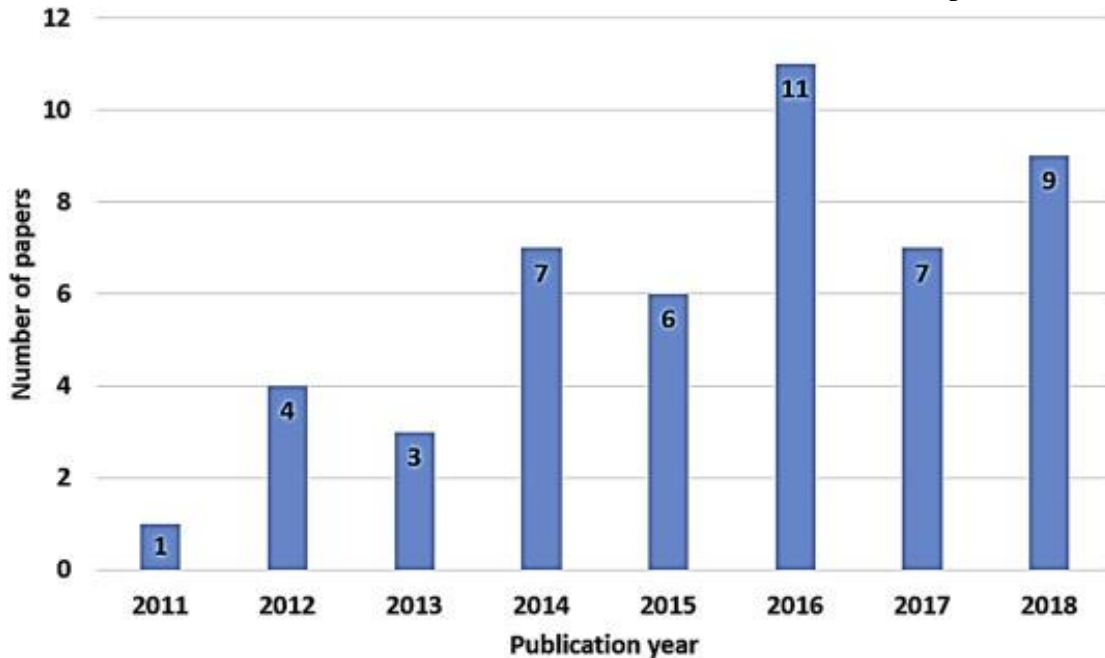


Figure 3.1: Annual number of publications in the field of IoT in food safety.

3.3 Research Methodology

Our IoT based project includes several layers: i) Requirements Analysis, ii) System Design, iii) Flow chart, iv) Setup, v) Front end development, vi) App dashboard Design, vii) Back End development, viii) Back End development.

All there implemented in the warehouse are included in the setups. That includes sensors (e.g. temperature, moisture, voltage, and amp), devices that receive information directly via NodeMCU.

The nodeMCU revive the data of the warehouse with the help of DHT11. Sensor will send the data to firebase database system with the help of a built-in nodeMCU Wi-Fi module. The data will be shown to our android based app.

3.4 Conclusion

Literature review is a part and parcel of a project. By using literature review, it is possible to make a project perfect and successful. We are also use literature review and absorbed in deep studies. For this, we make our project perfect and add advanced features characteristics in our project. We make this project for the rural people of Bangladesh whom are make the backbone of our country. For their convenience, we make this project easy and comfortable. We use all international literary review. For this, it is possible to make the project comfortable. For this, the people of Bangladesh specially our loving farmers will be helped highly.

Chapter 4

System Analysis and Design

4.1 Introduction

Systems Analysis and Design (SAD) is a term for describing system methodologies for developing quality automation systems. It combines information technology. It is a methodical process which

includes some phases such as planning, analysis, design, deployment, and maintenance. It includes the development process as well as the system's future maintenance work. The basic SAD methodology is the waterfall model which is very easy to implement following the model steps. hence the focus is on programming.

It has some objectives. These are:

- Most importantly, it focuses on systems where the other minor systems may have clashing destinations and it also enables the intellect of critical structures.
- System analysis assists with accomplishing similarity and solidarity of the other systems.
- This kind of analysis gives a fortunate position of intelligence and contrasts the other systems sizes, capacities and complete systems.

4.2 System Analysis

It is a method of gathering and interpreting data, recognizing a problem, and dissecting an automation system into its constituent parts.

This type of analysis investigates a manual problem or its components to determine its requirements or goals. It's a problem-solving fetch that enhances the process and ensures that all other parts of the automation system work together flawlessly to achieve their goals. The software development and life cycle are the most significant aspects of system analysis (SDLC). The Software Development Life Cycle (SDLC) is a method for producing high-quality software at the lowest possible cost in the shortest amount of time. This life cycle provides an organized sequence of stages that assist an organization in making well-tested software quickly. SDLC can be described using a variety of models. However, we shall employ the Waterfall model in our project.

WATERFALL MODEL is a sequential or follow-up model. This paradigm divides the software development process into many stages. Because the phases do not overlap, each one must be completed before moving on to the next. Each phase of the life cycle is designed to complete specific tasks or activities. Winston Royce [4] debuted this model in 1970.

The main benefit of this approach is that each stage of development must be completed before going on to the next. On the other hand, the project is entirely dependent on the project team, with little consumer engagement.

Developers and testers, on the other hand, spend a lot of time on documentation, which is an issue or disadvantage in this paradigm. Small changes or errors in the final software that occur during the project's deployment may cause a host of problems. Despite the fact that it has a number of problems, we chose it. Because requirements are explicit, the environment is adequate, and technology and tools are the most important variables, applications are not as complex and huge.

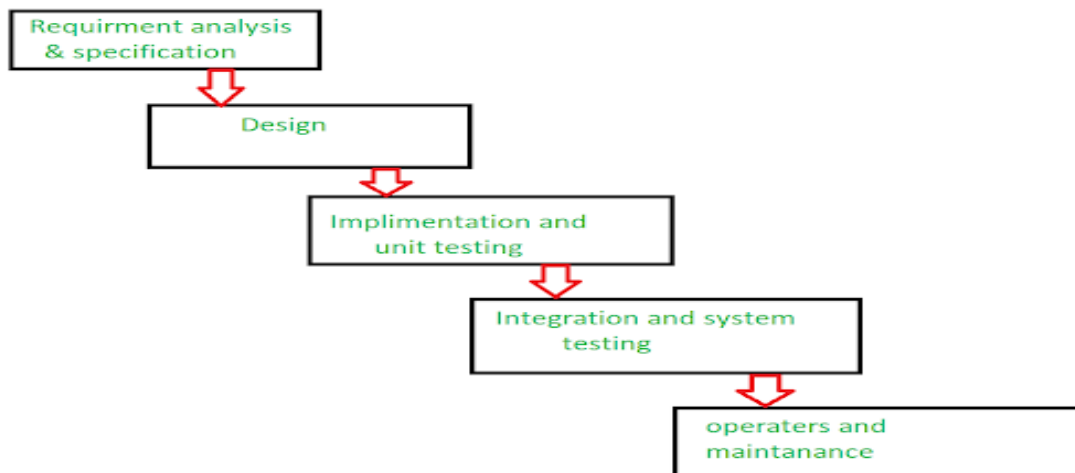


Figure 4.1. WATERFALL MODEL.

4.3 System Design

System design gives us the basic design of our system. It gives a clear vision of our project and makes it suitable to implement. Designing the system makes it possible to orient the components and architecture. Every project has a basic structure. However, when it is oriented and colorful looks, it is called system design. System design is very much important for a project. It gives the clear look of the project and system also. We have a beautiful and great system design in our project.

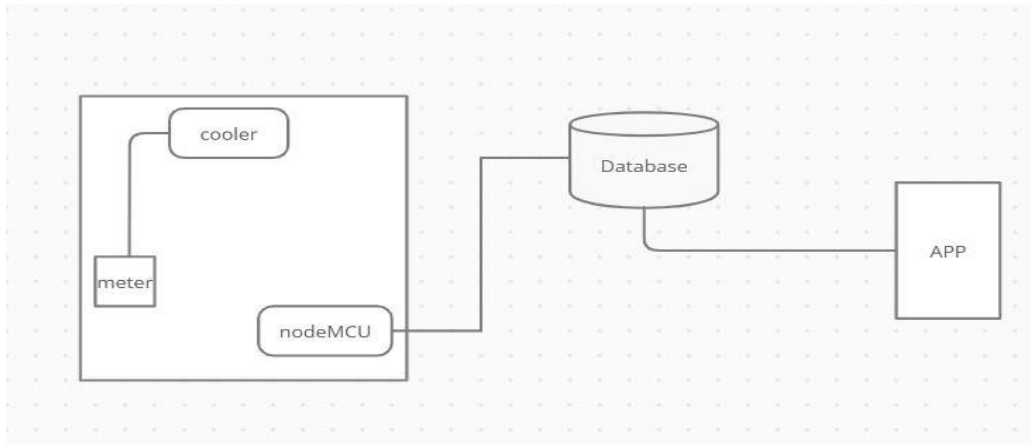


Figure 4.2. System Design.

4.3.1 Block Diagram

When we represent the principal parts or functions of a system by blocks connected by lines is called a block diagram. This is a diagram of a system which is used to show the relationship of the blocks. It contains the operating of the system, what are its intakes or inputs according to the given inputs, what are the outputs and the most important thing is how the information, findings or materials flow through it. The block diagram of our application is presenting below-

This academic activity application has a client server architecture. All the information of the users is kept in the Real-time database server. Now the question is what a real-time database server is. This is a database system which uses a special way to handle the data and the special way is Real-time processing. In this case if the state is constantly changing, there is no effect on database access. Anyway, this information can be accessed by users but before that they must install the application on their smartphone.

Each client will observe a different UI (User Interface) depending on client type. That means, each category of user will have a different user interface on the basis of the authorization given upon him.

4.3.2 Flow chart

First of all, a proposed system needs a blueprint which helps to guide a programmer through the progression of the development. This blueprint is called flowchart. It's an excellent way to communicate the details of a system to others. Without drawing process flow development is impossible.

There is a different flowchart in our system depending on different modules. Each module has different conditions, process or flow. But most of the processes in different modules are almost the same according to logic. Here we are described main modules of our system-

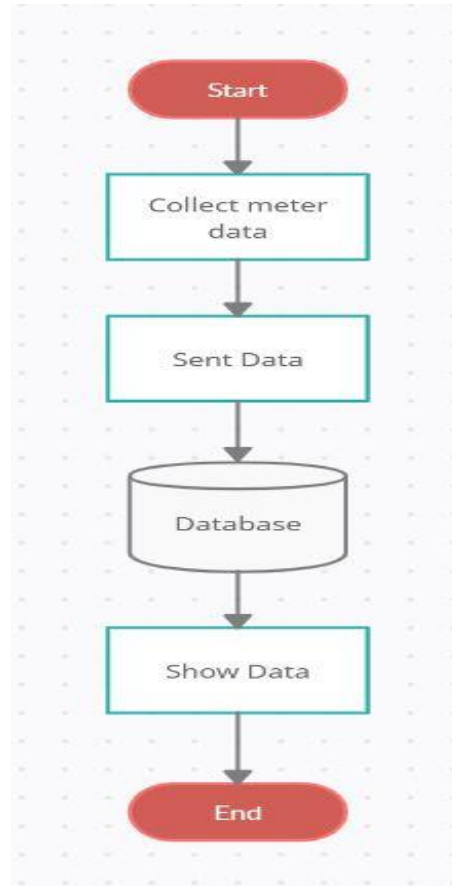


Figure 4.3. Flow Chart

4.4 Conclusion

The entire chapter has been devoted to the system analysis and design that will be utilized to construct this application. This app's system study entails a thorough examination of a system in order to discover areas for improvement and, if necessary, create upgrades. Without System analysis, a project goes in vain. In our project, we kept an advanced system analysis, and it enhanced our technical ability, which we used in our project. System analysis indicates the projects basic instruction and methodology. It analyses the essential components, instruments, programming language, or technical process. It is possible to build a first-class project by orienting a system analysis, and we have also built our project this way. It enables the system technology and gives us the capability to build a multifunctional project. Our project is oriented with system analysis.

Chapter 5

System Evolution/Development

5.1 Introduction

The process of defining, creating, or implementing a system based on system analysis and design is known as system evolution or system development. Because it is the general structure of how a system is produced or maintained, it is an important structure in the field of software development. Any information system's success is dependent on each phase of its development.

5.2 Front end development

Android Studio, Visual Studio, and Droid Script are just a few of the IDEs available for designing Android apps. We utilized Android Studio in our project. Because one of the greatest IDEs for Android programming is Android Studio. Google created this development tool, which has been praised by mobile app developers all around the world. The advantages of utilizing Android Studio as an Android development environment are numerous. Front-end and back-end development may be done in a fluid environment using this software.

5.2.1 User interface Design

Our project interface was created using xml. When we talk about xml, we're talking about the Extension Markup Language. It's a data-description markup language similar to HTML. Xml is easily readable by humans and machines alike. We utilize xml to develop our layouts on Android since it is a lightweight language that doesn't make our layouts too hefty. In fact, the hierarchy of View and View Group objects defines the entire idea of xml. A View Group is a hidden container for arranging child views. These child views are additional widgets that are used to create various UI components. The user interface varies depending on the user.

5.2.2 Dashboard Design:

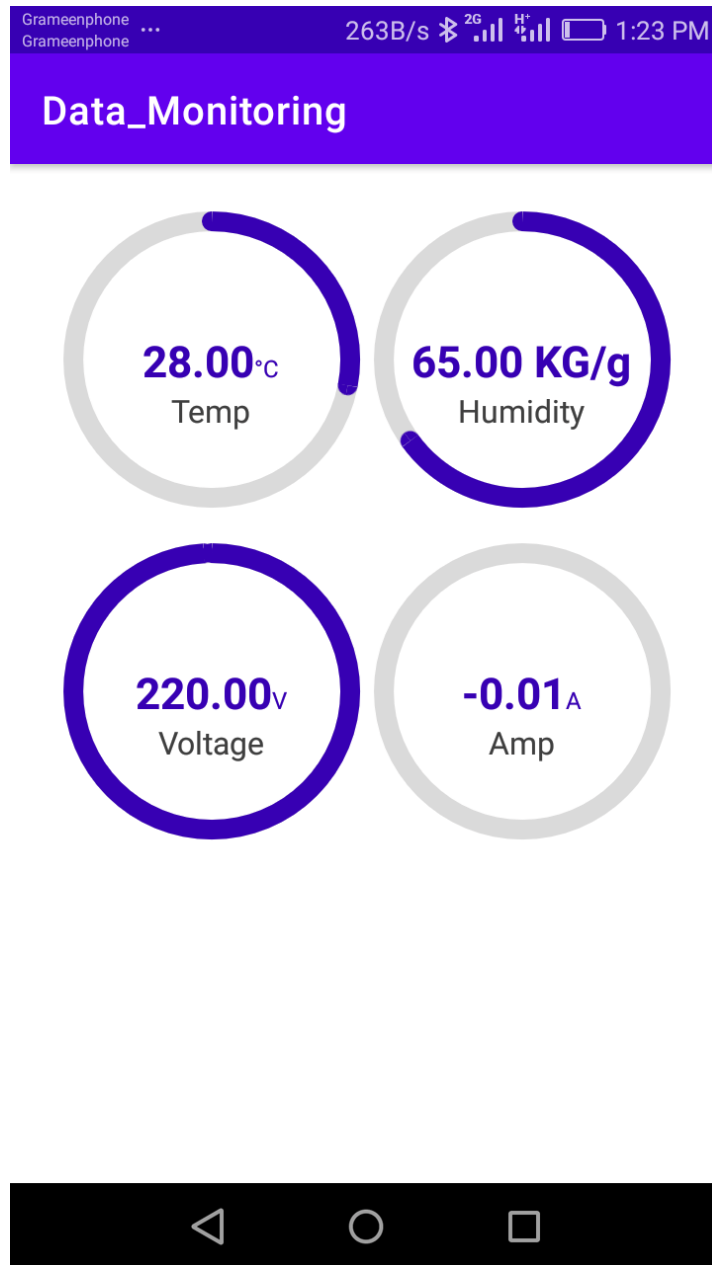


Figure 5.1. Application Dashboard Design.

5.3 Back End development

For the back-end portion of our project, we implied the JAVA programming language. Java is a programming language that focuses on objects. It is a class-based general-purpose programming language that works on any platform. It necessitates as little dependencies as possible, which is rather impressive. The run-time code executes as compiled code within the Java Virtual Machine (JVM). Generally, The Android SDK and the JAVA programming language are used to develop Android applications (Software Development Kit). It is the most popular and commonly used programming language for Android App Development.

The major goal of the Android expansion application was to build a platform application environment that could operate on any device. It's incredibly simple to turn your software into a dynamic system. Because Java has this type of standard, it was picked for Android development.

5.3.1 Database Design

A database is a logically ordered collection of organized data stored in a computer system electronically. The security of databases and the safeguarding of personal information are both strictly controlled. The core of an automation system is a secure database. To store data in our app, we use a Firebase database behind a room database.

Firebase is a backend software. It's a software that lets users interact with a database in a relational format. It's a Google platform for creating interactive mobile apps and online applications. As a result, we may classify it as a Google backend application that delivers excellent services such as app crash resolution, analytics reporting, and tracking. A database in Firebase is kept in a single file, which sets it apart from other database engines. The fundamental goal of adopting Firebase is to make the app as real-time as possible. Because Firebase is the original platform through which we may obtain real-time read and write services. Because the database table is stored in a hierarchical manner, accessing the main key is as simple as contacting the root data. It does, however, have several distinct components, such as authentication, database, cloud fire store, and real-time database.

We've also included a report issue option leveraging the Firebase advantage. Any user who encounters a systemic problem or illegal bugs can report it to the developers. He must provide the subject's name and details for this. His ID will be sent with the report systematically with actual time and date inside the technique. The developer may identify the individual and solve the problem by utilizing the ID. We can simply describe the specifics in the following database snapshot.

These are used to handle the data very nicely. In this project we are using the following features:

- 1) Real-time database

- 2) Real-time read and write data
- 3) Push notification

For further development we can use app messaging service from this firebase.

5.4 Conclusion

We learned about front-end design in this chapter, and we built back-end development based on the front-end design. For creating user interfaces, xml (Extension Markup Language) is used, which is a human language rather than a computer language. It's also easy to read and comprehend, even for beginners, and it's not that complicated to code. We utilize java for backend development in order to create the front-end components as user listeners. Java is a popular language because of its amazing capabilities and performance.

Chapter 6

Testing and Implementation

6.1 Introduction

At first implementation means the process of putting an action for the formulated plan. The implementation phase involves putting the project plan into action. On the other hand, after implementation project testing is a crucial phase for bringing the success of the project.

6.2 Testing

In our project, the testing outcome is largely reliant on the database's proper transaction. As previously stated, students might use the question as the basis for their queries. As a result, anytime people search or post a query, the data in the database should be adjusted using SQL commands. Simultaneously, a powerful authentication system is installed. As a result, the testing outcome is nearly entirely dependent on the authentication system. During testing, all exceptions should work regardless of the mistake. All toasts and error messages must be shown flawlessly.

There are several aspects of our project that must be executed flawlessly in order for it to succeed. As an example, the authentication system, the fragment presented, the button listener's flawless listening, the intent from one activity to the next, and so on. The most crucial aspect is reliable internet access. Our system will not be able to access it without an Internet connection. The permission was obtained from the Android Studio manifest file. App messaging, quiz participation, and viewing previous questions all require internet access. Because we've already said that we're employing a live server for our real-time database. Users cannot access the database if their internet connection is down. As a consequence, they will not receive timely notification at the appropriate moment.

6.3 Implementation

Determined bearings are expressed in certain monographs concerning temperature and moisture at which articles will be put away and appropriated, when dependability information demonstrate that capacity and conveyance at a lower or higher temperature and dampness produce undesired outcomes.

Cold chain items are must be fundamentally put away under chilly condition. For items from class of cold chain, the capacity condition is kept up with at 2–8 °C. Additionally the general mugginess will be kept up with underneath 60% and 40% relying on the hygroscopic idea of item. [2]

6.4 Data Analysis:

DATE	Temperature (Degree)	Warehouse temperature (Degree)	Humidity (KG/g)	Volt	Unit	Total Unit
01.11.2021	23-32	22	55	220	16.1	16.1
02.11.2021	24-31	22	54	220	16.2	32.3
03.11.2021	23-31	22	56	220	16.2	48.5
04.11.2021	24-32	22	55	220	16.4	64.9
05.11.2021	22-32	22	57	220	16.5	81.4
06.11.2021	22-31	22	53	220	16.4	97.8
07.11.2021	23-31	22	56	220	16.5	114.3
08.11.2021	19-29	22	54	220	16.6	130.9
09.11.2021	22-30	22	54	220	16.4	147.3
10.11.2021	22-31	22	56	220	16.5	163.8
11.11.2021	23-31	22	56	220	16.5	180.3
12.11.2021	25-29	22	54	220	16.6	196.9
13.11.2021	24-27	22	55	220	16.5	213.4
14.11.2021	22-26	22	56	220	16.5	229.9

15.11.2021	22-25	22	53	220	16.3	246.2
16.11.2021	21-32	22	54	220	16.5	262.7
17.11.2021	22-31	22	56	220	16.3	279.0
18.11.2021	20-30	22	53	220	16.5	295.5
19.11.2021	21-30	22	56	220	16.4	311.9
20.11.2021	22-30	22	56	220	16.5	328.4
21.11.2021	22-30	22	56	220	16.6	345.0
22.11.2021	22-30	22	56	220	16.5	361.5
23.11.2021	22-30	22	55	220	16.5	378.0
24.11.2021	23-30	22	56	220	16.3	394.3
25.11.2021	21-30	22	54	220	16.5	410.8
26.11.2021	21-30	22	53	220	16.3	427.1
27.11.2021	21-29	22	53	220	16.4	443.5
28.11.2021	17-29	22	54	220	16.3	459.8
29.11.2021	20-29	22	53	220	16.1	475.9
30.11.2021	19-30	22	54	220	16.2	492.1

6.5 Analysis Result:

From the data sheet we see there is 492.1 unit electricity used. From DPDC (Dhaka Power Distribution Company) we can see the Commercial & Office electricity unit price is 9.80tk. So our total electricity bill will be 4,822tk. The bill is so cheap than other traditional cooling systems. And it will save a lot of money.

6.6 Conclusion

Overall, a number of essential project-related subjects have been clarified in this chapter. From the first sub point, we're talking about functional and real-world software testing, and how it affects actual success. Functional bugs can usually be fixed, but real-world bugs cannot, which is an uncommon exception. Mistakes can sometimes obscure further errors. That is why thorough testing is critical. The implementation process should be done after the module, according to the testing protocol. It was mentioned in the second point of this chapter. The real outcome of the implementation is shown in the attached screenshot. The smooth operating component is also discussed here, which brings an application up to par.

Chapter 7

Critical Appraisal

7.1 Introduction

Critical appraisal is the practice of simply and entirely reviewing research to determine its trustworthiness, value, and applicability in a specific context. In this chapter, a thorough study of this application is offered. Every project has its own set of constraints, flaws, strengths, and opportunities. Even so, there are a lot of threads to get to the application's target. In fact, this style of evaluation helps us to reduce c information overload by removing unnecessary or weak research and assessing the study's value and clinical application. This type of analysis may be beneficial in recognizing our strengths and weaknesses, as well as identifying the Opportunities and, as a result, the Threats we face.

7.2.1 Strength

This Iot base project can provide us with reports of humidity, electricity uses and temperatures. This will help a warehouse to calculate their expense in electricity bill. This can help to reduce the electricity bill and save a huge amount of money for a warehouse. This project can create a huge market in the existing Iot field market.

7.2.2 Weakness

Every project has weaknesses. We are using some sensitive technology. This can be damaged by any natural cause. And there is a small possibility of this device result. This device cannot give results 100% accurate. It can provide 98% accurate results.

7.2.3 Opportunity

Iot base project is one of the top listed interested projects for the government. And in our country there are many farms and advanced companies who work with temperature-containing products. So, there is a huge field for this project.

7.2.4 Thread

There are no unmixed blessings on earth, and everything has a dark side. In our project, we are always aware of this. We detected all the threats of our project, fixed it, and solved it. We ensure continuous data supply facilities, moisture-controlling. By doing everything, our project is now threat-free, error-free and Self-sufficient. Electronic devices are another topic. A short circuit, overheating, and other natural causes can all destroy this equipment.

7.3 Conclusion

After all, one may argue that the purpose of a SWOT analysis is to identify a project's major strengths. It provides you a glimpse of the possibilities that await you. We may use this information to develop essential growth strategies based on our limits and strengths. These traits include a strong brand image, a big quantity of operating capital, a high customer standing, and even powerful distribution networks. The strength of a corporation is simply whatever advantage it has over its genuine competitors. Companies should, however, dissect their rivals' capabilities as well, since this offers a truer picture of how they will do in the marketplace.

It also supports the development of backup or alternative plans, as well as emergency plans. We can fix the faults in the near future, but we should also consider competing with other tech giant platforms that will strengthen our susceptible regions, defend against assaults, and take every chance.

The entire SWOT analysis technique, in fact, showcases our assets and gives inspiration and motivation to keep our marketing approaches going in the face of adversity.

Chapter 8

Conclusion

Agriculture is the backbone of an economy. Crop storage is one of the important things in agriculture. Grain crops dying because of not having the right moisture and storage system. We want to come with a solution to moisture management in the warehouse system. This is very important in agriculture but rural people are not aware of it. so many crops dying and our country deal with great loss. We work in some warehouse in rural areas with our supervisor. . Our agriculture mainly depends on agriculture. So, agriculture is our life part but every year 33% of crops are spoiled for proper maintenance and shortage of equipment. Our project data science a lot technology for agricultural warehouse management in rural areas will solve all of the problems and invented a new era in our agricultural sector. our project helps us. It maintains the temperature in an agricultural warehouse. It measures and properly maintains humidity which are very important for any kind of crop reservations. It saves farmer cost and time. My technology is very easy to cheap for everybody.

References

- [1] R. K. Kodali, "IoT Monitoring System for Grain Storage," *CALIFORNIA INSTITUTE OF TECHNOLOGY*, September 26, 2020.
- [2] R. S. AbdulWahhab, "Monitoring Air Quality: Toward an IoT-Based System for Monitoring Warehouses," *International Journal of Innovation in Computational Science and Engineering*, vol. 2, no. 1, pp. 76-85, May-2021.
- [3] Z. W. X. Haibing Yuan, "Design of Temperature and Humidity Detection System for a Material Warehouse Based on GM," *4th Information Technology, Networking, Electronic and Automation Control Conference*, 2020.
- [4] A. Nayyar, "Smart farming: IoT based smart sensors agriculture stick for live temperature and moisture monitoring using Arduino, cloud computing & solar technology," *The International Conference on Communication and Computing Systems*, 2016.
- [5] F. Ling, "Monitoring Platform for the Material Warehouse," *Conference on Social Science and Natural Science*, pp. 377-381, 2020.
- [6] T. S. Patil, "Internet of Things (IoT) based Warehouse Monitoring and Control Interface Implementation," *International Research Journal of Engineering and Technology*, vol. 6, no. 6, pp. 2395-0072, June 2019 .
- [7] YamineBouzembrak, "Internet of Things in food safety: Literature review and a bibliometric analysis," *ScienceDirect*, pp. 54-64, 2019.
- [8] NirmalKumar, "Temperature excursion management: A novel approach of quality system in pharmaceutical industry," *Saudi Pharmaceutical Journal*, pp. 176-183, February 2017.
- [9] A. P. A Balamurali, "Humidity and Temperature Monitoring System," *Control and Automation*, p. 2020, 2020.
- [10] School of Electronic Engineering, "Temperature and Humidity Monitoring System for," *International Journal of Science and Research (IJSR)*, pp. 2319-7064, 2018.
- [11] Y. C. Zhu, "The Design of Warehouse Temperature and Humidity Monitoring System," *Advanced Materials Research*, pp. 453-457, 2013.

- [12] B. Guo, "Research on the Temperature & Humidity Monitoring System in the Key Areas of the Hospital Based on the Internet of Things," *International Journal of Smart Home*, pp. 205-216, 2016.
- [13] T. Balachandran, "REMOTE HUMIDITY AND TEMPERATURE REAL TIME," 2013.
- [14] X. W. a. J. L. Yanghui Ou, "Warehouse multipoint temperature and humidity monitoring system design based on Kingview," *AIP Conference Proceedings 1834*, 2017.
- [15] K. Brindha^{1*}, "Improving Standards of Agricultural Product Improving Standards of Agricultural Product," *International Journal of Research in Engineering, Science and Management*, pp. 2581-5792, May-2020.
- [16] a. YAO Zhiqiang², "Design and Implementation of Automated Warehouse Monitoring," *Trans Tech Publications, Switzerland*, pp. 1099-1102, 2014.
- [17] N. Gondchawar¹, "IoT based Smart Agriculture," *International Journal of Advanced Research in Computer and Communication Engineering*, vol. 5, no. 6, pp. 2278-1021, June 2016.
- [18] M. Tohidian, "A Tiny Quadrature Oscillator Using," *IEEE MICROWAVE AND WIRELESS COMPONENTS LETTERS*, vol. 25, pp. 520-522, AUGUST 2015.

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