

IoT Based Weather Monitoring

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GitHub: <https://github.com/Tinkerers-Lab-VESIT-ETRX/IoT-based-Weather-monitoring-13.git>

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INTRODUCTION

A. Existing Problem: - The satellite weather reporting system provides the current condition that does not give the exact location condition. The drawbacks are in conventional approach where the devices are costly and have no visualization of information. There is no such automatic graph tool to offer the alert signal in case of any abnormalities, so it is difficult to regulate this abnormality.

B. Overview: - Here we propose a smart weather reporting system over the internet. Our proposed system allows for weather parameter reporting over the internet. It allows the people to directly check the weather stats online without the need of a weather forecasting agency. System uses temperature, humidity sensor to monitor weather and provide live reporting of the weather statistics. The system constantly monitors temperature using temperature sensor, humidity using humidity sensor. The system constantly transmits this data to the microcontroller, which now processes this data and keeps on transmitting it to the online web server over an internet connection. This data is live updated to be viewed on the online server system. Thus, the IOT based weather reporting system provides an efficient internet-based weather reporting system for users.

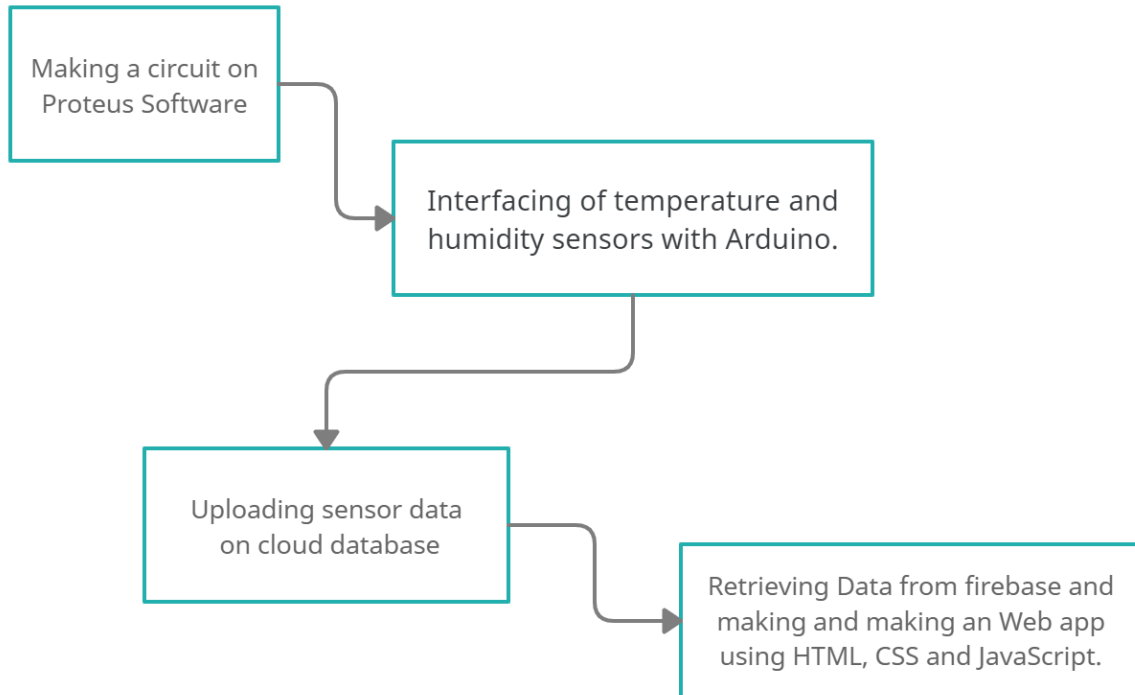
C. Purpose: - Climatic change and environmental monitoring have received much attention recently. Man wants to stay updated about the latest weather conditions of any place like a college campus or any other particular building. Since the world is changing so fast so there should be the weather stations. Here, we build a weather monitoring system that is very helpful for any places. This weather monitoring system is based on IOT (internet of things). It is equipped with Temperature and humidity sensors used for measurements at any particular place and report them in real time on cloud.

LITERATURE REVIEW

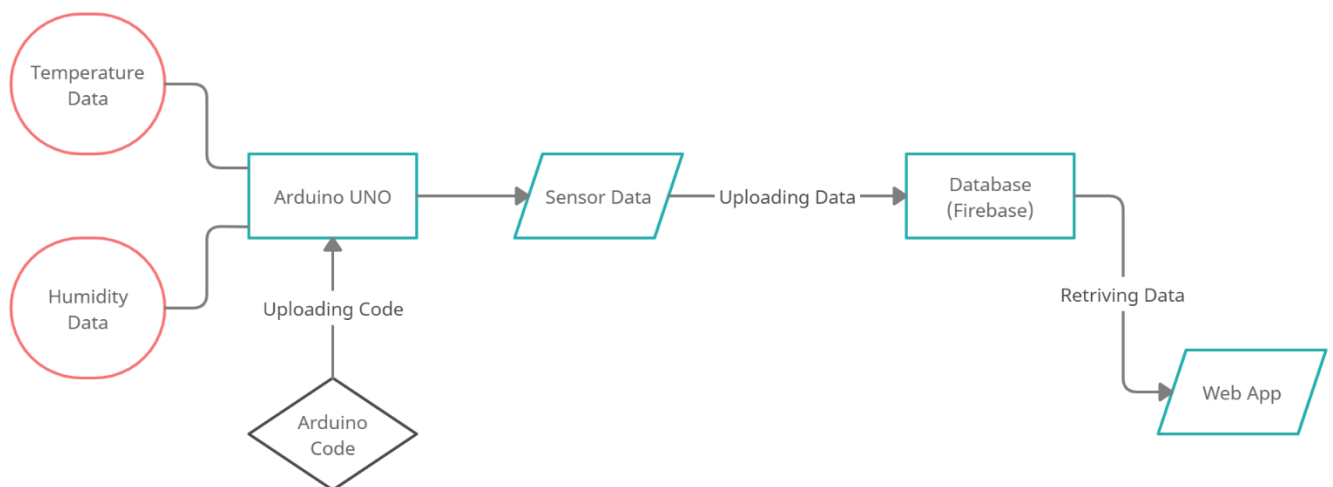
Existing system model is presented IOT based Weather monitoring and reporting system where you can collect, process, analyse, and present your measured data on web server. Here, circuit is made on Proteus software and Arduino is programmed using Hex file which came from Arduino Software. The circuit provide the readings of humidity and temperature data to Virtual terminal. Then the data is processed and uploaded to real-time database using Google firebase database. Less formally, any device that runs server software could be considered a server as well. Servers are used to manage network resources. The services or information provided through the Internet that are connected through Circuit and made available for users via smart phones, web browser or other web browser devices to make the system more intelligent, adaptable and efficient.

PORPOSED SOLUTION

A. Block diagram



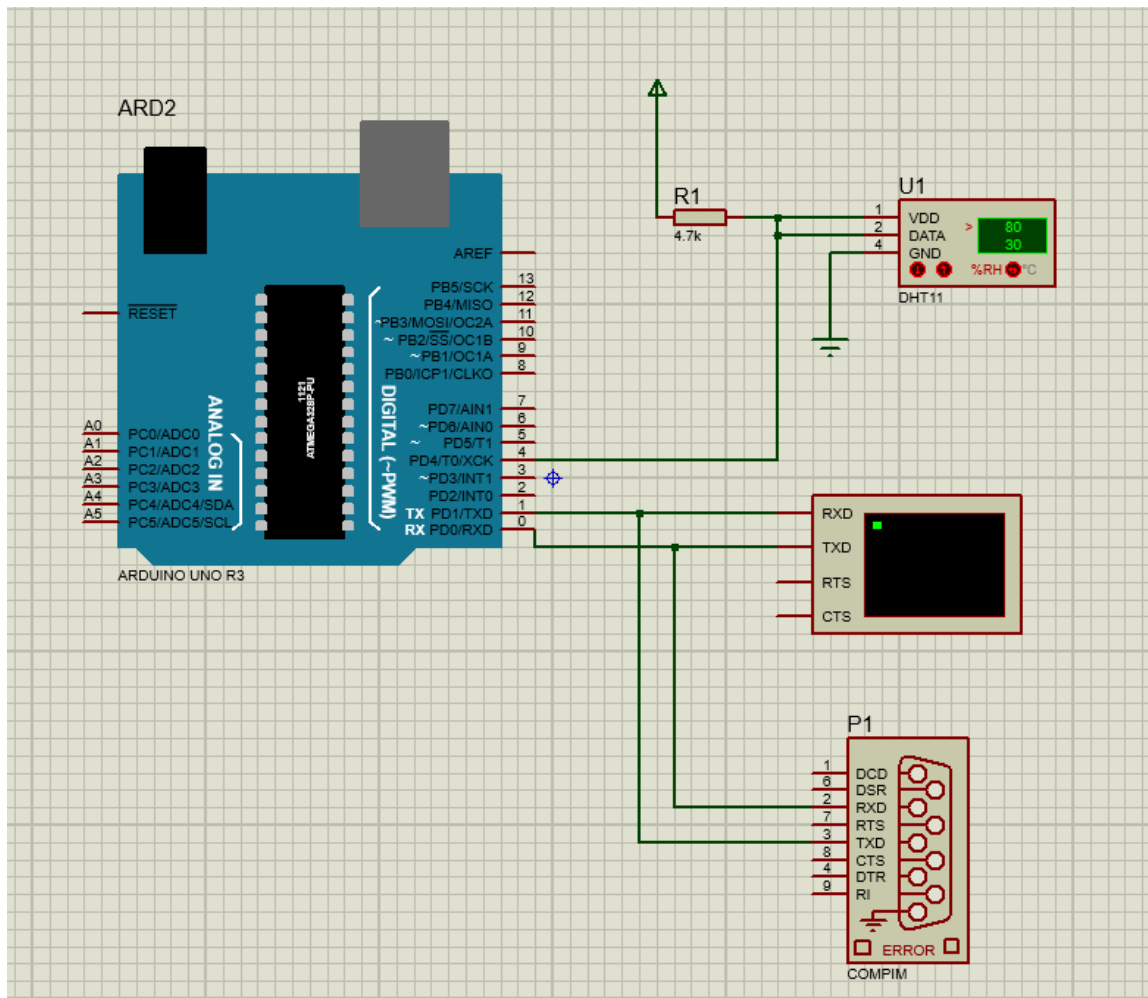
B. Flow Chart



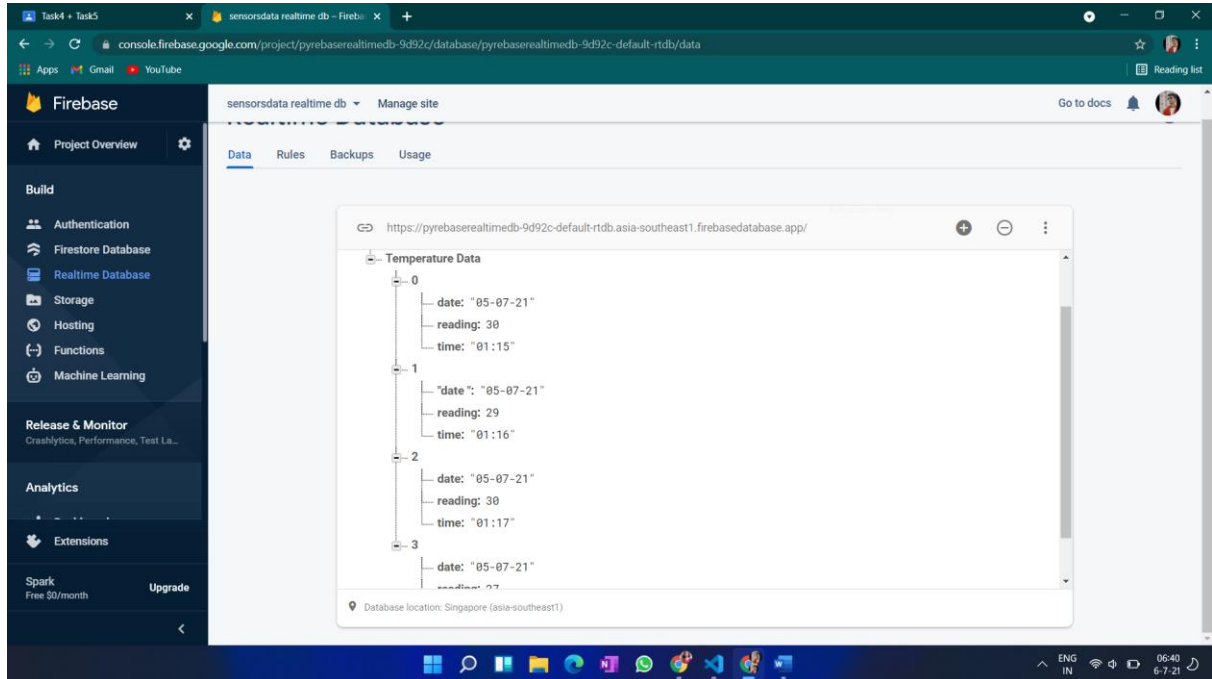
RESULT

Link of Web App: - <https://weathertempdata.tiiny.site/>

A. Circuit Diagram in Proteus Software.



B. Database Stored in Firebase.

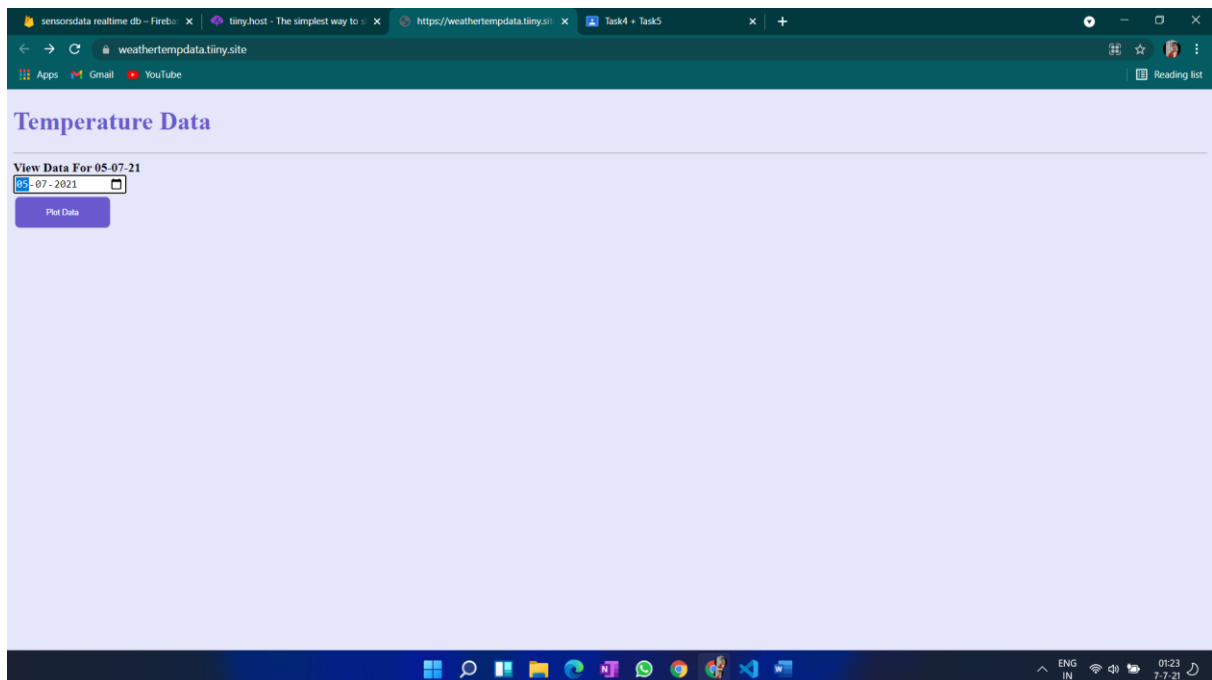


The screenshot shows the Firebase console interface for a project named 'sensorsdata realtime db'. The 'Data' tab is selected, displaying a tree view of the database structure. The root node is 'Temperature Data', which contains an array of four objects. Each object has the following properties:

- date: "05-07-21"
- reading: 30
- time: "01:15"

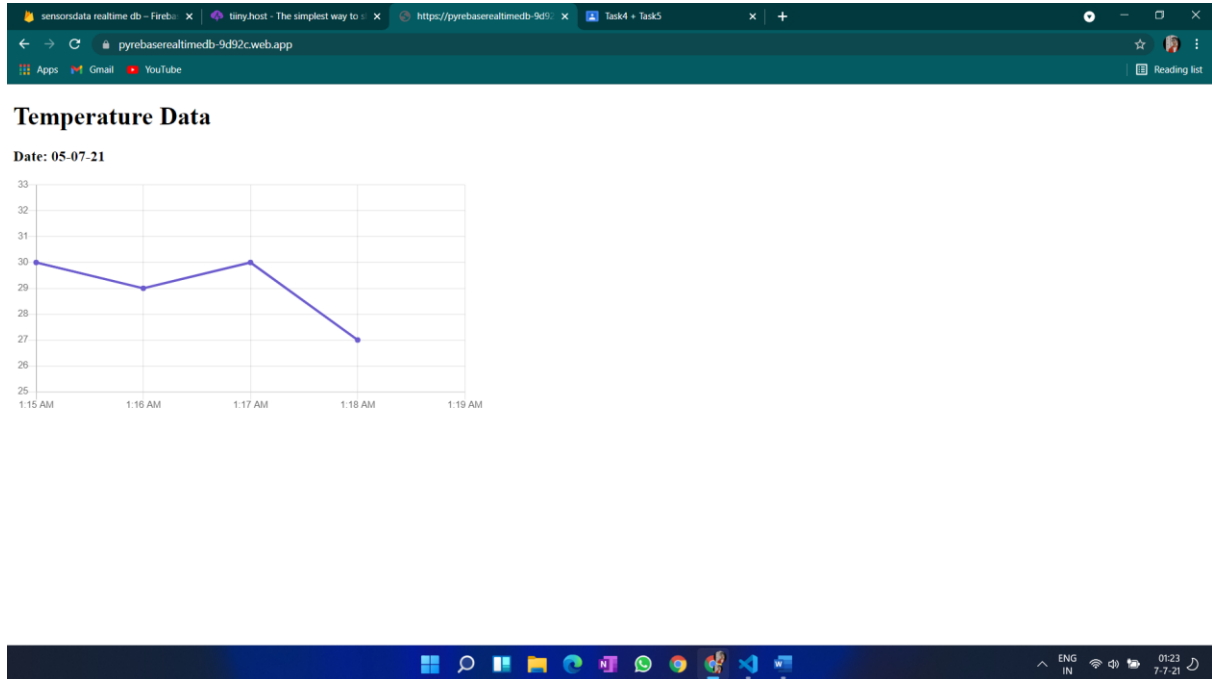
The objects are indexed 0, 1, 2, and 3. The database location is noted as Singapore (asia-southeast1).

C. Web App Screen Snaps.



The screenshot shows the web application 'weathertempdata.tiny.site'. The page title is 'Temperature Data'. Below the title, there is a section 'View Data For 05-07-21' with a date selector showing '05-07-2021'. A 'Plot Data' button is visible below the date selector. The page has a light purple background.

D. Plotted Graph on Web.



ADVANTAGE, DISADVANTAGES & APPLICATIONS

ADVANTAGES

- IOT weather mentoring system project using Arduino Uno is fully automated.
- It does not require any human attention.
- We can get prior alert of weather conditions
- The low cost and efforts are less in this system
- Accuracy is high.
- Self-Protection
- Smart way to monitor Environment
- Efficient

DISADVANTAGES

- Complexity
- Privacy & Security
- Safety
- Compatibility

APPLICATIONS

- The weather forecasting plays very important role in the field of agriculture.
- It is also helpful at places like volcano and rain forests.
- It is quite difficult for a human being to stay for longer time at such places.

LEARNING OUTCOMES

1. Implementing of circuit in a simulation-based software Proteus.
2. Learned uploading data in a real-time database.
3. Gone through some basics of Python, HTML, CSS and JavaScript.
4. Got an idea on how to work on web-based application.

CONCLUSIONS

By keeping the embedded devices in the environment for monitoring enables self-protection (i.e., smart environment) to the environment. To implement this need to deploy the sensor devices in the environment for collecting the data and analysis. By deploying sensor devices in the environment, we can bring the environment into real life i.e., it can interact with other objects through the network. Then the collected data and analysis results will be available to the end user through the Internet. The smart way to monitor environment and an efficient, low-cost embedded system is presented with different models in this paper. It can also be modified such that whenever a message or email is sent from a particular phone number or email id to the server, all the environmental parameters of the device along with its location will be delivered to that phone or email id. This device can also be used to monitor a particular room or place whose environmental parameters are required to be monitored continuously.

This data will be helpful for future analysis and it can be easily shared to other users also. This model can be expanded to monitor the developing cities and industrial zones.

an efficient and low-cost solution for continuous monitoring of environment.

REFERENCES

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APPENDIX

Source Code (Web App)

<https://github.com/Tinkerers-Lab-VESIT-ETRX/loT-based-Weather-monitoring-13/blob/main/Home.html>

<https://github.com/Tinkerers-Lab-VESIT-ETRX/loT-based-Weather-monitoring-13/blob/main/index.html>

Source Code (Arduino Code)

https://github.com/Tinkerers-Lab-VESIT-ETRX/loT-based-Weather-monitoring-13/blob/main/Task_2B_1_.ino

Proteus File (Circuit)

<https://github.com/Tinkerers-Lab-VESIT-ETRX/loT-based-Weather-monitoring-13/blob/main/loT%20Based%20WEather%20Monitoring%20System.pdsprj>