IoT Enabled Social Web Framework for Water Consumption Monitoring

Group No. 14
By-
Nakul Gagare(18204013)
Krutika Pawar(18204012)
Deeksha Kadam(18204007)

Project Guide -
Prof. Yaminee Patil

Content

- Introduction

- Objectives

- Problem Definition

- Technological Stack

- Review Suggestions

- Proposed System Architecture/Working

- Prototype Design Demonstration.

- Plan of Paper Publication

Introduction

- Currently, in world full of technologies the water is the basic and most important need to our lives

- Currently, the water department is using the water pump to measure the supply of water to particular area & societies

- In which, the pumps are fitted on the ground and according the measure is counted as per month

- But in process the officers has to personally visit the area to take the reading of the meter

- By using this technology ,we can send the reading to the authorized officer without personally visiting the area

- The report can be generated the usage of water and the quantity of water consumed in a day

Objectives

- Developing the ecosystem for smart water supply.

- Get the quantity of water supplied to area and analysis the water level present in tank.

- observing the water supplied to area and analysis the water quality present in tank.

- All the reading can analysis & helpful to water department to the problem of water scarcity in the town.

- By analyzing this, the report can generate which can tell usage of water.

- By using Elastic Stack designing the dashboard for the department end user

Problem Definition

- We observed that for the most part the employment is manual and requires a sensible technology to give organized distribution.

- To convert the manual water supply reading system to a automated sensor used dashboard

- To check the quality of the water which is provided in tank

- Get the accurate reading and mapping of the supply of water in the town.

- No officer can change the reading which leads to corruption.

- By using this we can future analysis the wastage of water.

Technological Stack

Hardware requirements:

- Water Level Sensor
- Water Flow Meter
- Arduino Uno -ATmega328
- Wifi Module
- Water Quality Sensor

Software Requirements :

- Browser: Google chrome , Mozilla Firefox
- Application : ELK Stack ,Android Studio,HTML
- Elastic Cloud

Review Suggestion

- Implement web interface (Dashboard).

- For Dashboard use Webpage HTML

- Dashboard should work in background continuously and analysis value.

- Fetch Daily, monthly, Yearly reports .

- Store your Data in the Cloud.

- It should be User Friendly

- **To measure the Quality of the Water supplied to the tank**

Proposed System (Working)

Water supplied to society tank passed through Water-Flow Meter

↓

Water-flow meter measure the quantity supplied to Tank

↓

• Analysis the Quality of water supplied to the tank.

↓

Water Level Sensor placed in Tank To measure the Balance Quantity of Water

→

Both The Data will stored in cloud

↑

Values will fetch from Cloud to Website

↑

By using , ELK Stack the values will be analyzed & Visualized

↑

Through this ,the reports will be Generated on Daily ,Weekly ,Monthly Bases

↑

Reports of Water Consumption & Water Level will be Visible in Gov – Website & Society - App

Proposed System (Architecture)

START

1. Tank

2. Water Level Indicator

3. Water Quality Module

4. Water Flow Sensor

5. Wi-fi Module

6. Store data in the cloud

7. Water Department (Admin)

Dashboard for generate report (Admin)

Water Management

Complex : DOSTI

Water Supplied ~

Tank Level ~

100.00

8. Society App to see generated report from WD (only for society secretary)

END

WATER MANAGEMENT

Report ~

Daily :
Weekly :
Monthly :

* Human Sensor Tap

Working of Application/Technologies :-

- **Elastic stack :** Visualizing the data and making a dashboard for the water department

- **Monitoring Module:** It determines the reading of water sensor and sends the data by using wifi module to the dashboard

- **Water Department Website :** Administrator receives status information from the monitoring module to their dashboard and maintained by the organization in real time.

- **Cloud :** Talend Cloud enables you to save the execution logs automatically to Amazon S3 Bucket. The flow for Talend Cloud logs to be working with ELK

Uses of Sensors :-

- **Wi-fi module:** The ESP8266 WiFi Module with integrated TCP/IP protocol s that can give any microcontroller access to your WiFi network.

- **Arduino Uno :** It is a microcontroller board based on the ATmega328P. It contains everything need to support the microcontroller

- **Water flow sensor :** Sensor is used to measure the flow of water.

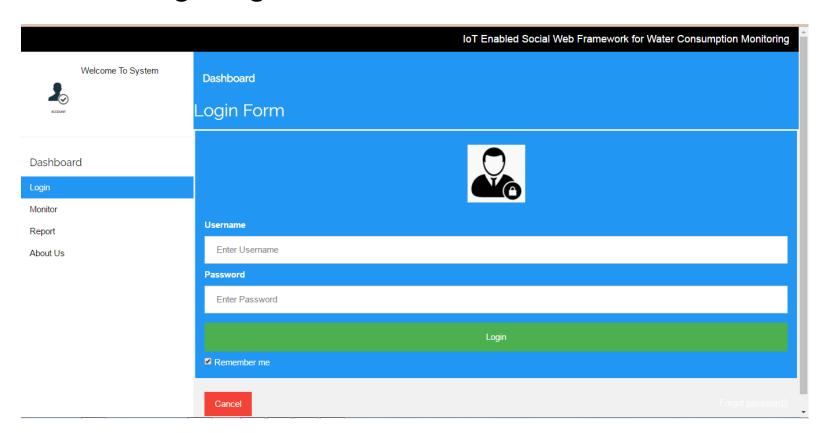- **Water Quality sensor :** Sensor is used to measure the Quality of water.

Gantt Chart

WBS NUMBER	TASK TITLE	TASK OWNER	START DATE	DUE DATE	DURAT ION(W. chd)	PCT OF TASK COMPLETE
1	**Project Conception and Initiation**					
1.1	Research paper search	Nakul,Krutika,Deeksha	1/20/20	2/8/20	3	100%
1.1.1	Research paper finalization	Nakul,Krutika,Deeksha	2/8/20	2/26/20	3	100%
1.2	Project Title	Nakul,Krutika,Deeksha	2/28/20	3/14/20	3	100%
1.3	Abstract	Nakul,Krutika,Deeksha	3/14/20	3/20/20	1	100%
1.4	Objectives	Nakul,Krutika,Deeksha	3/21/20	3/27/20	1	100%
1.5	Literature Review	Krutika	3/28/20	4/3/20	1	100%
1.6	Problem Definition	Nakul	3/5/20	3/12/20	1	100%
1.7	Scope	Nakul	3/5/20	3/5/20	1	100%
1.8	Technology stack	Nakul,Krutika,Deeksha	3/5/20	3/5/20	1	80%
1.9	Benefits for environment	Deeksha	3/5/20	3/5/20	1	100%
1.1	Benefits for society	Nakul	3/5/20	3/5/20	1	80%
1.11	Applications	Krutika	3/5/20	3/5/20	1	100%
2	**Project Design**					
2.1	Prepared System	Nakul,Krutika	9/19/20	10/6/20	2	70%
2.2	Design(Flow Of Modules)	Nakul,Krutika,Deeksha	9/19/20	10/6/20	2	70%
2.3	Activity Diagram	Nakul,Krutika,Deeksha	9/19/20	10/6/20	2	50%
2.4	Use Case Diagram	Krutika,Deeksha	9/19/20	10/6/20	2	50%
2.5	Description Of Use Case	Nakul	9/19/20	10/6/20	2	30%
2.6	Modules					
2.6.1	Module-1	Prathmesh,Ritesh,Bhavana	9/19/20	10/6/20	2	75%
2.6.2	Module-2	Krutika	9/19/20	10/6/20	2	85%
2.6.3	Module-3	Nakul	9/19/20	10/6/20	2	85%
2.6.4	Module-4	Deeksha	9/19/20	10/6/20	2	85%
2.7	Preparation Of Report	Krutika,Deeksha	9/19/20	10/6/20	2	75%
3	**Project Implementation**					
3.1	Module-1	Nakul,Krutika,Deeksha	2/4/21	2/4/21	0	100%
3.2	Module-2	Nakul	2/5/21	2/5/21	0	100%
3.3	Module-3	krutika	2/11/21	2/12/21	0	0%
3.4	Module-4	Nakul,Krutika,Deeksha	2/25/21	2/26/21	0	0%
4	**Testing**					
4.1	Design of Test Cases	Nakul,Deeksha	3/3/21	3/9/21	1	0%
4.2	Architecture	Nakul,Krutika,Deeksha	3/10/21	3/16/21	1	0%
4.3	Prototyping	Nakul,Krutika,Deeksha	3/17/21	3/23/21	1	0%
4.4	Development	Nakul	3/24/21	3/30/21	1	0%
4.5	Testing QA	Nakul,Krutika,Deeksha	3/31/21	4/6/21	1	0%
4.6	Installation of Sensor & Motors	Nakul,Krutika	4/7/21	4/13/21	1	0%
4.7	Configuration Of Dashboard	Nakul	4/14/21	4/20/21	1	0%
4.8	Worked on wifi module	Krutika	4/21/21	4/27/21	1	0%
4.9	Connection Of Wifi Module	Deeksha	4/21/21	4/27/21	1	0%
4.1	Worked on Cloud	Krutika	4/28/21	5/4/21	1	0%
4.11	Configuration Of System through which Cloud will be connected	Nakul,Krutika,Deeksha	5/5/21	5/11/21	1	0%

Gantt timeline columns: PHASE ONE (Week 1, Week 2, Week 3), PHASE TWO (Week 4, Week 5, Week 6), PHASE THREE (Week 7, Week 8, Week 9), PHASE FOUR (Week 10, Week 11, Week 12), each divided into days M T W R F.
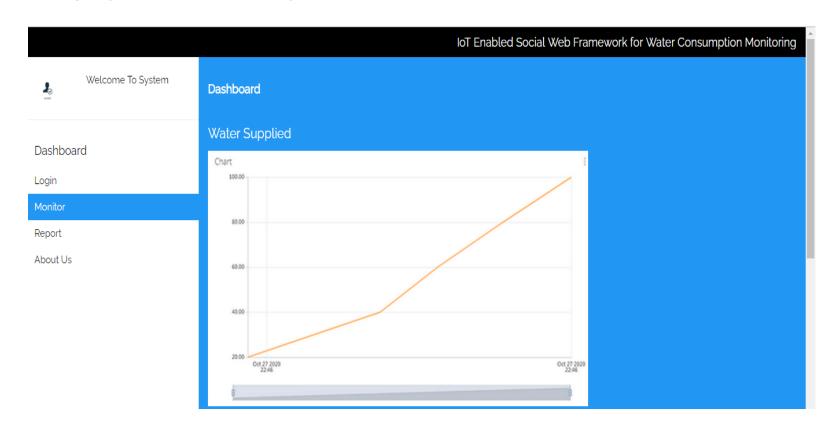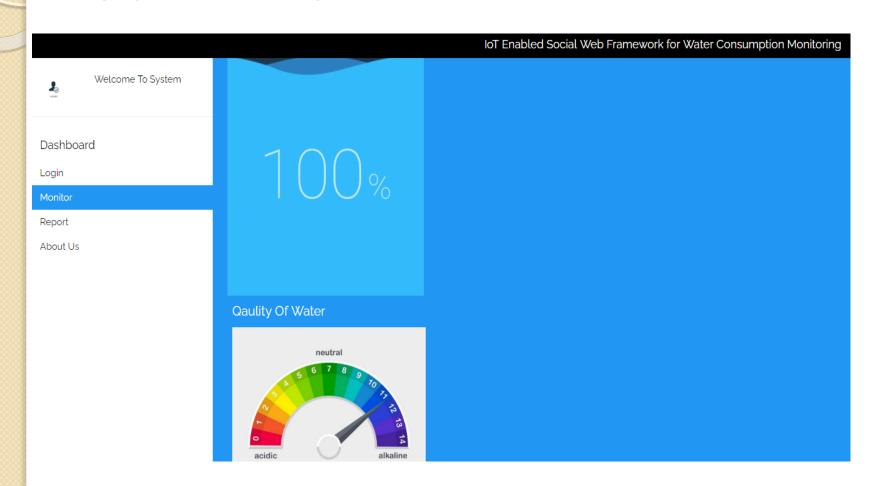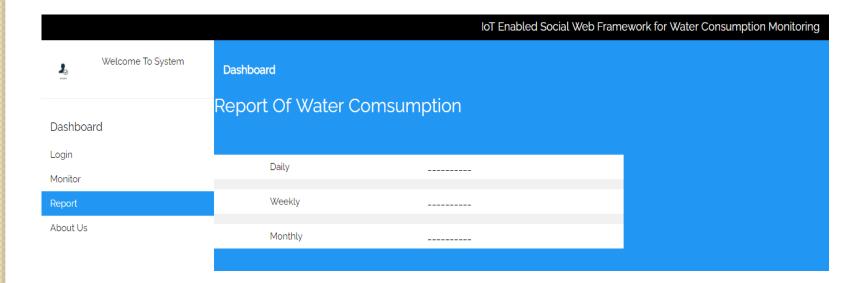
Prototype Design Demonstration
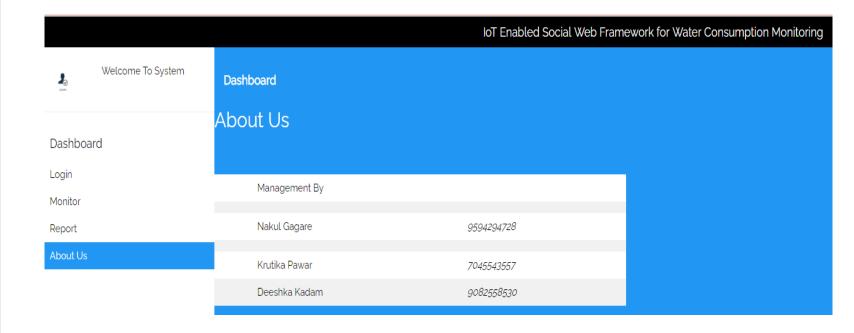
Website : Login Page

Webpage : Monitoring

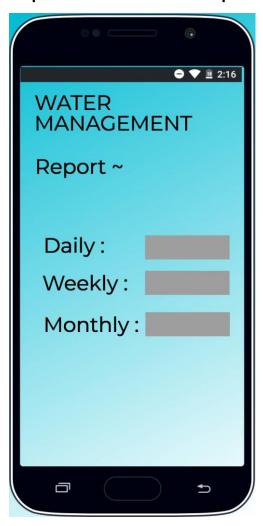# Webpage : Monitoring

Webpage : Report

Webpage : About Us

App For : Society Committee
LOGIN

App For : Society Committee

Generated report from water department

Plan of Paper Publication

- **Springer :**

    Springer is a leading global scientific, technical and medical portfolio, providing researchers in academia, scientific institutions and corporate R&D departments with quality content through innovative information, products and services.

    Submitted the Paper for the Springer Paper Publication

- **IEEE :**

IEEE provides a wide range of quality publications that make the exchange of technical knowledge and information possible among technology professionals.

We are trying to publish paper because its improves writing skill, helps in knowledge up-gradation , teaches about literature survey & appreciate our work that will help in our career.

Thank You