SMART BILLING SYSTEM FOR WATER SUPPLIERS

Submitted by

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CONTENTS :-

1.<u>INTRODUCTION</u> :-

a.*Overview:*

In recent times, development in computing and consumer electronics technologies have triggered Internet of Things (IoT) paradigm. Internet of Things (IoT) is described as enabler that links seamless objects surrounding the environment and performs some sort of message exchange among them. The Internet of Things (IoT) is a collection of objects that work jointly in order to serve consumer tasks in a federated manner. It binds computational power to deliver data about the surrounding environments.

The technological solutions for the measurement of water consumption are supported on an IoT architecture, and this refers to the design of the layers of the system that will allow communication between smart devices, together with analysis and decision-making based on the data collected of these devices. Now a day's metropolitan cities operate water tanker services for delivery to residents needing drinking water from several fill stations across cities. This model has designed and implemented on node red platform for measuring utilities such as amount of water purchased from a water supplier across the cite. This system performs tasks such as taking water tank meter reading, distribution of bills, amount detected for RFID Card and sending notice. An automatic water level reading and showing the amount detected based on NODE-RED FLOW is presented.   .

This is useful to metropolitan cities operate water tanker services for delivery to residents needing drinking water from several fill stations across cities. And to make the payment easy by using RFID card. By using this model the customers does not need to go to the filling station to purchase the water. The water tank services send water tank to the residents to fill their tanks by using the RFID card. Firstly the customer needs to know the water level of that particular tank and then he is able to purchase the desired amount of litres. Next he has to scan the card and pay the bill according to the amount of water they purchased. After the purchase the user gets the message that, the amount of water that he purchased and amount that he as to pay for water and the amount left in the card. Once the amount in RFID card becomes zero or insufficient for the next purchase then the user has to recharge the card. This is the overview of this module

B.*Purpose:-*

The purpose of "**Smart Water Billing System for Water Suppliers**" is to present the water billing system for home. **RFID Card** based water billing system measures the water consumed through the tank to house hold purpose and sends an SMS at the end of every purchase. In addition to that, detail information of the water usage of the user is stored in the database that

is created in the cloudant DB.

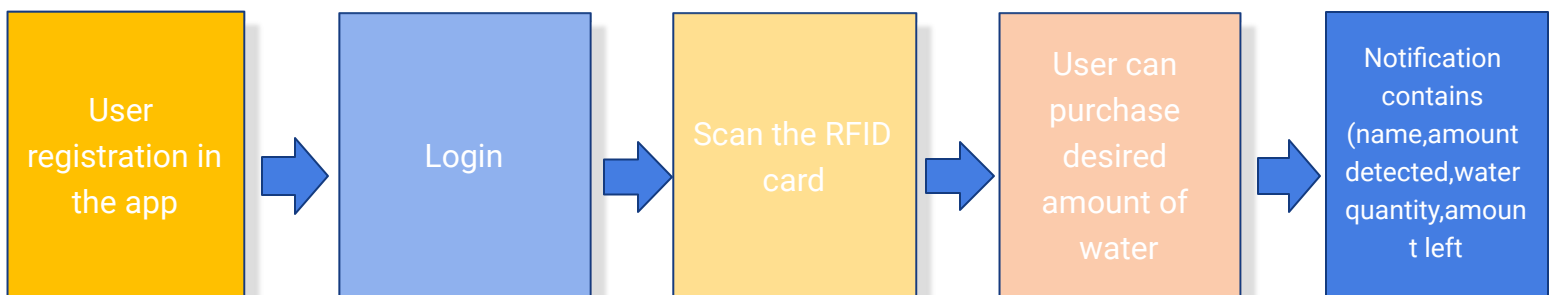## 2.*LITERATURE SURVEY:-*

A.EXISTING PROBLEM:-

Massive populations in many parts of the world, including in India, continue to grapple with lack of access to clean and safe water. It describes the conditions under which water is produced and supplied to domestic consumers and explains the capacity of the water and sewerage agency to discharge its duties. The analysis finds challenges in five aspects related to water supply in metropolitan cities: quantity; quality; coverage; use; and disposal. It offers recommendations for collaborative efforts and sustainable solutions to ensure that the people of India are provided adequate supply of safe and clean water.

B.PROPOSED SOLUTION:-

In day to day life every user needs proper management of its all resources which are in use. Water is one of the important resource daily required for the user. In societies proper management is used for water, like automation in detecting the leaks of pipes, automation in bill creation according to usage. This leads to the proper use of water because of every user has to pay for individual usage and the money is the most important resource required to fulfil all requirement. If user has to pay for something then there gets automatic control over usage. The smart measurement system is based on the development of an architecture for IoT that covers main important aspects. First, the capture of water consumption, then the local pre-processing services should receive the consumption report.

3. THEORETICAL ANALYSIS:-

a. Block diagram:-

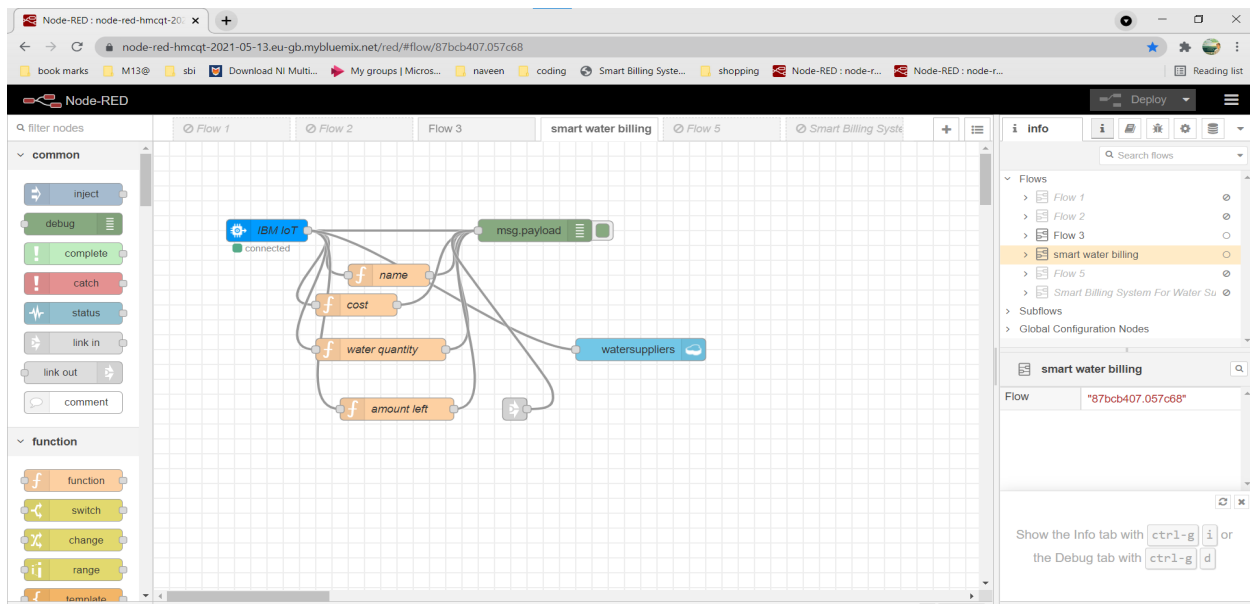| User registration in the app | → | Login | → | Scan the RFID card | → | User can purchase desired amount of water | → | Notification contains (name,amount detected,water quantity,amount left |

We follow a step-by-step procedure to set up all the interfaces required for our project and develop the code in python to send random sensor data to the cloud. The following software is required:
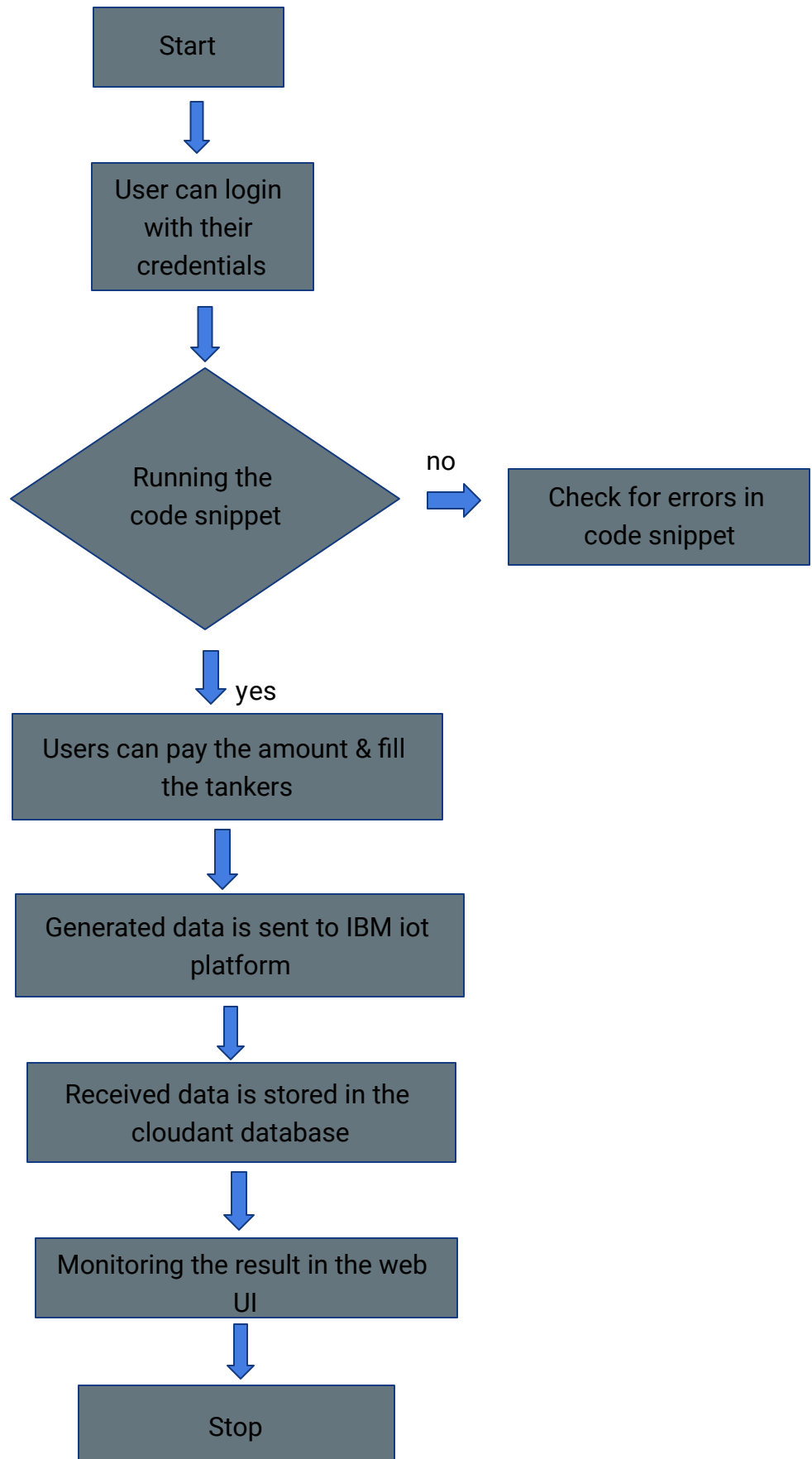
1. Python Idle (with specified packages installed)

2. IBM cloud

3. Node Red service

4. <u>EXPERIMENTAL INVESTIGATIONS</u>:-

To successfully monitor the usage of the water for the water services to user must contain the RFID card and he has to recharge the card when the funds are over. Since hardware is not available, a python code is used to generate random values such as name, amount detected, water quantity, and amount left in the RFID card. This randomly generated data is sent to IBM IoT platform. Using node red service, a node red flow is created which retrieves the data from IBM IoT platform. This received data is stored in Cloudant DB database.
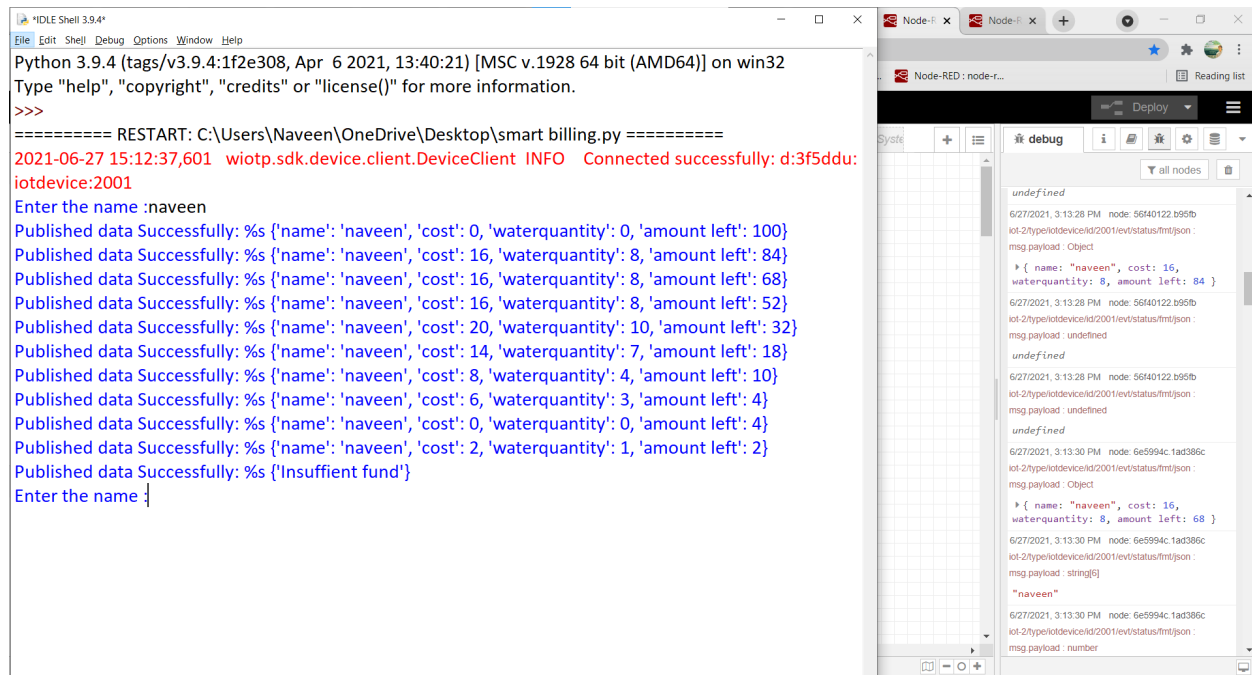
5. FLOWCHART:-

Start
↓
User can login with their credentials
↓
Running the code snippet → no → Check for errors in code snippet
↓ yes
Users can pay the amount & fill the tankers
↓
Generated data is sent to IBM iot platform
↓
Received data is stored in the cloudant database
↓
Monitoring the result in the web UI
↓
Stop

6.RESULT:-

The result of this project fulfil ls our purpose of user to take desire amount of water and that makes easy for the water suppliers to transport all over the cities without any problems.

7.ADVANTAGES & DISADVANTAGES:-

- ✓ Within the touch of your fingers, your software and records can be checked and maintained via mobile devices; even while you are away.
- ✓ Reduces material costing that comes with manual billing and filing.
- ✓ Retail billing software helps small business to penetrate offline and online much conveniently.
- ✓ Quicker scanning via barcodes or offer codes helps in avoiding the use of calculators, hence, increasing unnecessary queues in the shop.

Disadvantages:

* It is not cost-effective for small scale business owners.
* Reaching offline customers who do not access the internet makes the process difficult.
* Irregularity of updates can lead to hardships and hassles between purchases and credits

8.APPLICATIONS:

1. **Instant New Invoices**- A good software automatically analysis your credit/debit tables in   a professional manner.
2. **Individual Customer Tracking**- Creates a single database that will easily segregate a clients purchases, relevant files along with a clean filter search option for effortless accessibility.
3. **Generate Tax Reports-** A smart software solution should eliminate the needs for any manual or different apps. It should easily summarise and present you with an accurate tax report depending on years of business.

9.CONCLUSION:-

Proposed system will provide accurate and real time water billing system. This overcomes existing systems in terms of cost and manpower required. This is suitable practical solution for water bill management. Water level of main tank water is monitored to avoid wastage of water.This system is user friendly for water supply management. This gives fully

control and proper management of the water usage. Therefore this system can be implemented in every society to avoid extra water usage and to save water.

10.FUTURE SCOPE:-

This project can be extended beyond by using it in controlling the leakage of the water from the tank, household usage of water.

11.BIBLIOGRAPHY:-

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3645321
https://electricitybilling.com/water-billing-software/

12. APPENDIX:-

a.Source code :-

```python
import wiotp.sdk.device
import time
import random
import sys
import string
myConfig = {
    "identity": {
        "orgId": "3f5ddu",
        "typeId": "iotdevice",
        "deviceId":"2001"
    },
    "auth": {
        "token": "Sindhu@27"
```

```python
    }
}

def myCommandCallback(cmd):
            print("Message received from IBM IoT Platform: %s" %
cmd.data['command'])
    m=cmd.data['command']

client = wiotp.sdk.device.DeviceClient(config=myConfig, logHandlers=None)
client.connect()
for  i  in range(1,10):
    name=input("Enter the name :");
    amount= 100
    while True:
      liter_rate= 2
      waterquantity=random.randint(0,10)
      amountdetection =  waterquantity * liter_rate;
      cost =  amount - amountdetection
      amount =  cost
      if(cost > 0):
                                                    myData={'name':name,
'cost':amountdetection,'waterquantity':waterquantity,'amount left':cost}
          client.publishEvent(eventId="status", msgFormat="json", data=myData,
qos=0, onPublish=None)
        print("Published data Successfully: %s", myData)
        client.commandCallback = myCommandCallback
        time.sleep(2)
      else:
         myData={'Insuffient fund'}
                      #client.publishEvent(eventId="status",  msgFormat="json",
data=myData, qos=0, onPublish=None)
```

```
        print("Published data Successfully: %s", myData)
        break
        client.commandCallback = myCommandCallback
        time.sleep(2)
client.disconnect()
```

B. UI Output:-

≡ Smart Billing System For Water Suppliers

Login

username

Password

LOGIN

Username

Password

Mobile number

SUBMIT   CANCEL

text

text