



SECURE AND HUMANLESS AUTO EB METER USING LIFI

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ABSTRACT

Smart Meters assumes a vital part in measuring energy consumed by each user with device details. However, privacy of the users is not kept up. Automatic Meter Reading (AMR) is an answer intended for programmed accumulation of utilization and determination of information status from utility meters. After that the gathered information is exchanged after the recovery to a central database for different purposes like charging, investigating, billing and troubleshooting. AMR is worked for checking the vitality utilization and getting to the day by day vitality information which can bring about better vitality administration. This paper portrays the learning about Automatic Meter reading and the conditions under which it is working. It implements actualizing a WSN (Wireless Sensor Network) depending on Li-Fi innovation. Automatic Meter Reading is utilized for remote accumulation of the utilities information. What's more, these utilities may mean power information or some other. It will be on Electricity control observing framework which can get the power meter perusing in remote and figuring and sending the bill amount to the owner's mobile as SMS from the server in the EB office. This innovation basically spares utility suppliers the cost of occasional outings to area to peruse a meter. Another is billing can be founded on close utilization instead of on appraisals in light of past or anticipated utilization. Client conduct is checked, Current Consumption is ascertained. This framework even tracks clients in all probability TV Program by checking TV Remote from remote Place. Gadget control Time distinctive methods of the control are altogether observed. The principle point of the Project is to keep up the User Privacy. All the above data are stored preserved securely. Current Sensor is associated with the gadget to check the switching state of the device. Android Application is deployed to the client for Payment System. Cost is charged according to the government rules when the permitted utility of current is crossed.

Keywords: meter readings, EB home, android application, meter data, secure communication, premium maximum limit.

INTRODUCTION

Technology essentially spares utility gives the cost of intermittent outings to every area to peruse a meter. Another preferred standpoint is that charging can be founded on close constant than on appraisals based utilization. This auspicious data combined with investigation can help both utility suppliers and clients better control the utilization and creation of electric vitality, gas use, or water utilization. With the appropriation of savvy/smart meters (SMs) in vitality dispersion arranges the utility providers (UPs) can screen the lattice more, and anticipate in the request more precisely. It utilizes the UPs to expand the efficiency and the unwavering quality of the grid by powerfully altering the vitality era and conveyance, costs in this manner, likewise influencing the uses requests. SMs likewise benefit the clients by permit them to screen their own particular vitality devour profile continuous [1]. Customers can utilize this data to cut pointless utilization, or to diminish by moving utilization in view of the set by the UPs. SM arrangement is spreading quickly around the world. In Europe, the reception of SMs has been commanded by an order of the European Parliament, which requires 80 percent SM appropriation in every single European family by 2020 and 100 percent by 2022. Notwithstanding, the monstrous arrangements of SMs at homes have additionally raised genuine concerns in regards to client protection. High SM readings can permit who has entry to this information to gather important private data in regards to client conduct, including the sort of electrical supplies utilized, the time, recurrence and

length of utilization and even the TV channel that is being watched, as announced in. The protection of is more basic for organizations, for example, server farms, processing plants, and so forth, whose energy utilization conduct can uncover vital data about their business to rivals. As pointed out in, depending on the monitoring granularity different consume patterns are identified. With a granular of hours or minutes, one can identify the user presence, with a granular of second or minutes one can derive the exercises of apparatuses, for example, TV or fridge, and with a granularity of one could distinguish blasts of force and recognize the action of apparatuses, for example, microwaves, espresso machines [2].

A few strategies have been proposed to give security to SM clients while keeping the benefits of SMs for control and observing of the matrix. In client, anonymization is proposed by the interest of a trusted outsider. Propose sending the totaled vitality utilization of a gathering of clients and in clients by adding arbitrary commotion to their SM readings before being sent to the UP essentially, proposes quantization of SM readings. In the majority of the above mentioned work, protection is gotten by bending/changing the SM readings sent to the UP. Notwithstanding, vitality is given, and on a basic level, the UP can without much of a stretch track clients introducing its own brilliant at focuses where the client interfaces with the lattice. It appears that no amount of security can be accomplished under such a solid presumption; nonetheless, clients can cover the examples to individual gadgets and utilization designs by control their vitality utilization. This can be accomplished either



the vitality utilization after some time by methods for a capacity gadget, for example, an electric auto battery, or by considering the accessibility of an alternative energy source (AES) [3]. An AES can show an association with a moment vitality lattice, for example, a micro grid, or a renewable vitality source, for example, a sunlight based board. This paper depicts the learning about Automatic Meter Reading (AMR), executing a WSN (Wireless Sensor Network) in view of Li-Fi innovation. Programmed Meter Reading is utilized for remote accumulation of the utilities information. What's more, these utilities may implies power, gas, water devour or whatever other. Our fixation will be on Electricity control checking framework which can get the power meter perusing in remote and ascertaining and sending the bill add up to the proprietors portable as SMS from the server in the EB office [4]. Automation of electric meter is exceptionally important to diminish the workload and need for people to physically check the meter. Innovations for remote transmission of information including the security related issues. Light Fidelity correspondence framework makes utilization of LED light for transmission of information. Smart Grid (SG) and the many advancing difficulties in the brilliant matrix security. Insider dangers in savvy lattice can trade off a considerable lot of the security objectives of a framework. Advance metering infrastructure (AMI) arrangement of the brilliant matrix can have insider assaults at the client endpoint [5]. Validation and approval of clients, the intelligent electronic devices (IED), savvy meters, and outdoor field equipment (OFE) various sorts of clients and distinctive passwords for every part. The KA78XX/KA78XXA arrangement of three-terminal positive controller is accessible in the TO-220/D-PAK bundle and with voltages, as an extensive variety of utilizations [6]. Each sort utilizes inner current restricting, warm close down and safe working region insurance, indestructible. In the event that satisfactory warmth sinking is given, they can convey. Albeit planned principally as voltage controllers, these gadgets can be utilized with outside parts to get customizable voltages and streams. RS232 standard is a non concurrent serial specialized strategy. The word serial means sent one piece at once. Offbeat reveals to us that the data is not sent in predefined schedule vacancies. Information exchange can begin at any offered time to recognize when a message begins and closures [7].

RELATED WORKS

Toward the next generation of recommender systems

Around the up and coming era of recommender systems a review of the best in class and conceivable expansions presents array of recommender frameworks and depicts the dog lease strategies that are normally classified into the accompanying three primary classifications: content-based, communitarian, suggestion approaches. Different constraints of current proposal strategies and talks about that can enhance suggestion capabilities and make prescribe frameworks relevant to a scope of uses. These augmentations incorporate, a change

of comprehension of clients and things, of the relevant data into the proposal, bolster for multi criteria evaluations, and an arrangement of and less meddlesome sorts of suggestions.

Recommender systems with social regularization

Although Recommender Systems have been comprehensively broke down in the previous decade, the investigation of social-based suggest frameworks just began. In this paper, going for giving a general strategy to enhance recommender systems by joining interpersonal organization data, we propose a network factorization structure with social regularization [8]. The commitments of this paper are four-fold (1) We expand how interpersonal organization data can benefit recommender frameworks; (2) We translate the contrasts between social-based recommender frameworks and trust-mindful recommender frameworks; (3) We coin the term Social Regularization to represent the social requirements on recommender systems, and we methodically represent how to outline a lattice factorization and (4) general, which can be effortlessly reached out to consolidate other relevant information, like social tags etc. The empirical investigation on two substantial informational indexes shows that our methodologies beat other best in class techniques [9].

Social contextual recommendation

Exponential data produced by online social networks requests powerful recommender frameworks. Customary procedures get to be unqualified on the grounds that they disregard social connection information; existing social proposal approaches, yet social setting has not been completely considered meld social elements which are gotten from clients inspiration of social practices into social proposal. In this paper we, explore on the premise of psycho and human science ponders, which display two imperative variables individual and interpersonal influence. We first introduce the specific significance of these two figures, on detail selection and suggestion. At that point we propose matrix factorization technique to circuit them in latent spaces [10]. We direct tests on both Facebook style bidirectional and Twitter style unidirectional interpersonal organization informational indexes in China. The experimental outcome and examination on these two extensive informational indexes exhibit that our technique significantly beat the current methodologies.

Phrase dependency parsing for opinion mining

State Dependency Parsing for Opinion Mining we show an approach for mining feelings from item, where it changes over conclusion mining errand to distinguish item includes articulations of between them. By exploiting that a ton of item elements are expressions, expression reliance is presented, which stretches out conventional Parsing to expression level. This idea is then executed elements and articulations of suppositions. Exploratory the mining errand can benefit from expression reliance parsing [11].



EXISTING SYSTEM

In the framework that exist the insider assailant can access adjust meter readings and can see private data of the client at the client endpoint. Similarly, inside attacker can access the price of information on electricity, infrastructure information on network, and other communicated by protocols. Employees from EB office have to manually come and check the readings of the EB Meter which is a tedious task.

Disadvantages

- Waiting time is increased
- Less security
- More man power is required
- Less effective

PROPOSED SYSTEM

In the Proposed System we first identify role of user and verify identify of each user. The OTP is sent to user mobile phone for verifying the actual user. Finally a shared secret key is generated between user and device for secure communication. After authentication, user view and pay their EB bills through remotely The EB Meter is attached with Li-Fi transmitter and the Meter Data is sent to EB Server through LIFI Technology. Android Application is deployed to the customer for Payment System. In case of crossing the permitted maximum limit of current, money is charged as per the government rules.

Advantages

- Waiting time is decreased
- High security
- Reliable
- High data transmission rate
- More effective

REQUIREMENT ANALYSIS

Requirement analysis is used for determining the needs of a new system. This project analyses on product and resource requirement, which is required for this successful system. The product requirement includes input requirements it gives and the output requirement it wants. The resource requirements give in brief about the software and hardware that are needed to achieve the required functionality.

Hardware Requirement

The hardware requirement serves as the basis for the implementation of the system and should therefore be a completed specification of the whole system. They are used by engineers dealing with software for the system design. It shows what the systems do and not how it should be implemented.

- Processor: Core i3/i5/i7
- RAM: 2-4GB

- HDD: 500 GB
- Embedded Fabrication Kit

Software requirement

The software requirements are the specification of the system. It should include both definitions and specifications of the documented requirements. It is a set of what the system should do rather than how it should do it. The software requirements provide a basis for creating the software requirements specification.

It is useful for deciding cost, planning team activities, performing jobs and keeping a tab on the teams and tracking the team's progress throughout the development activity.

- Platform: Windows Xp/7/8
- Front End: Java-JDK1.7, Android-sdk and Eclipse, Apache tomcat
- Back End: MYSQL
- Embedded C

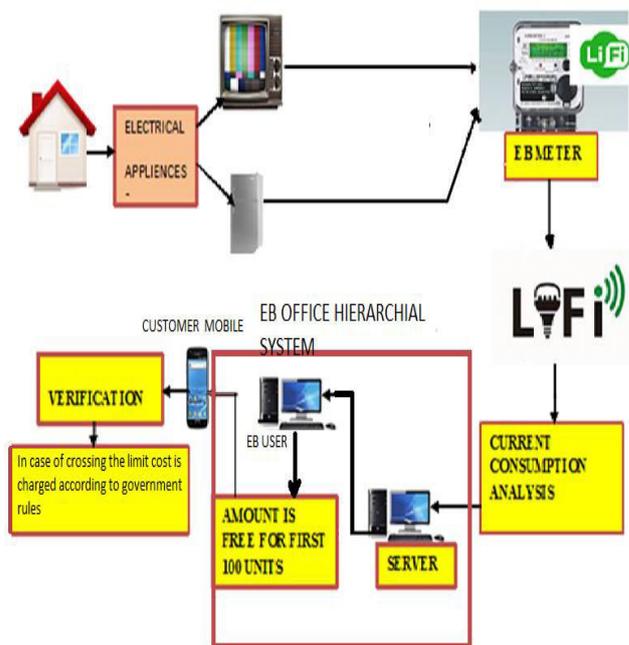


Figure-1. System architecture.

IMPLEMENTATION DETAILS

User registration

In this Module every user will be Register with the Server so user has to give User Name, Password, Address, Mobile number and other details. In the Login module mobile user can login by their User Id and password and make request for their home, office or electric bill details. This request will send to the central server mobile and collect data from it and response to the end user.



EB Server

In the Main EB Server all the details of the user are stored. LiFi boards are connected with the RS 232 Serial Port of the EB Server. Real time Mobile phone is connected with the EB Server for sending SMS to the customers regarding the amount information. This server will have the entire data of all the customers' information.

User behaviour monitor

In this module we monitor the behaviour of the user, the usage of the current monitoring, TV programming monitoring and if the current charge go beyond the limit it will be charged according to government rules.

LiFi communication

In this module we use advance technology LiFi, through the LiFi we can transfer the data with the help of light, so in this project we deployed a Lifi communication for data communication between the EB meter and Server.

Android payment system

Android payment System User can give the payment through online itself so that this process reduces customers going directly standing in the queue to pay money. And the payment system is developed by android application so that the user can pay by his android phone.

OUTPUT AND RESULT

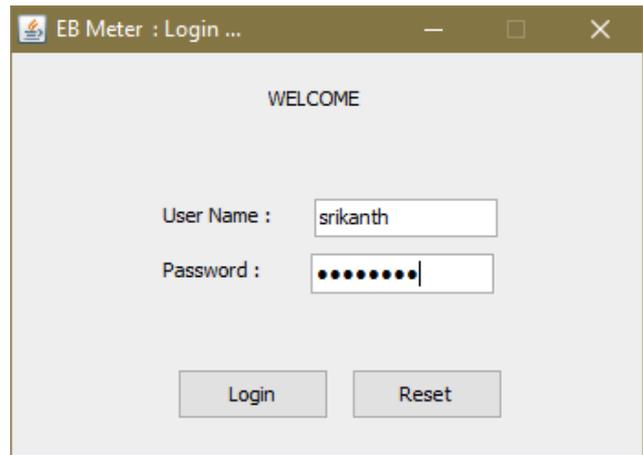


Figure-2. Login.

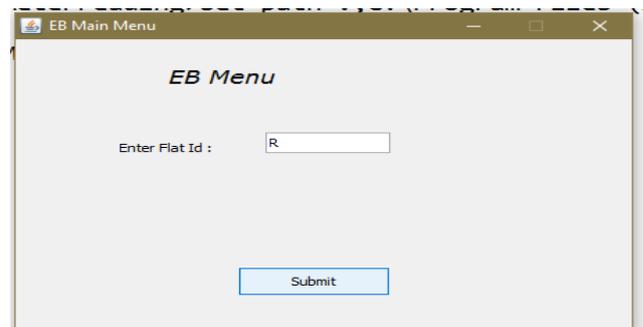


Figure-3. Flat ID.

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C:\WINDOWS\system32\cmd.exe

C:\Users\SriKanth\Desktop\ABE - EB\JAVA\Meterreading>set classpath=.;comm.jar;mysql-connector-java-3.2.0-alpha-bin.jar;SMS
App.jar;log4j-1.2.17.jar;httpmime-4.1.3.jar;httpmime-4.0.3.jar;httpcore-4.1.4.jar;httpcore-4.0.1.jar;httpclient-4.0.3.jar;
commons-logging-1.1.1.jar;commons-httpclient-3.1.jar;commons-httpclient-3.1.jar;jSMS.jar;C:\Program Files (x86)\Java\jdk1.
6.0_10\lib;

C:\Users\SriKanth\Desktop\ABE - EB\JAVA\Meterreading>set path=.;C:\Program Files (x86)\Java\jdk1.6.0_10\bin;

C:\Users\SriKanth\Desktop\ABE - EB\JAVA\Meterreading>javac *.java
Note: login.java uses or overrides a deprecated API.
Note: Recompile with -Xlint:deprecation for details.

C:\Users\SriKanth\Desktop\ABE - EB\JAVA\Meterreading>java EBMainServer
Values updated.....

Sending msg to=>9094999841
Msg =>Your%20Unit%20is%20.....4%20cost%20is8
log4j:WARN No appenders could be found for logger (org.apache.http.impl.conn.SingleClientConnManager).
log4j:WARN Please initialize the log4j system properly.
log4j:WARN See http://logging.apache.org/log4j/1.2/faq.html#noconfig for more info.
Message sent
Your Unit is .....4
Sending msg to=>9094999841
Msg =>Your%20Unit%20is%20.....4%20cost%20is8
Message sent
Your Cost is .....8

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Figure-4. Cost estimation and SMS.

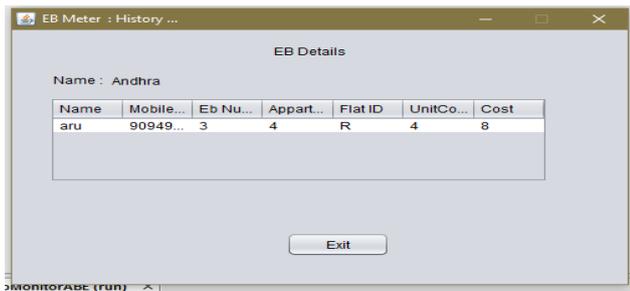


Figure-5. User monitoring.



Figure-6. Mobile application.

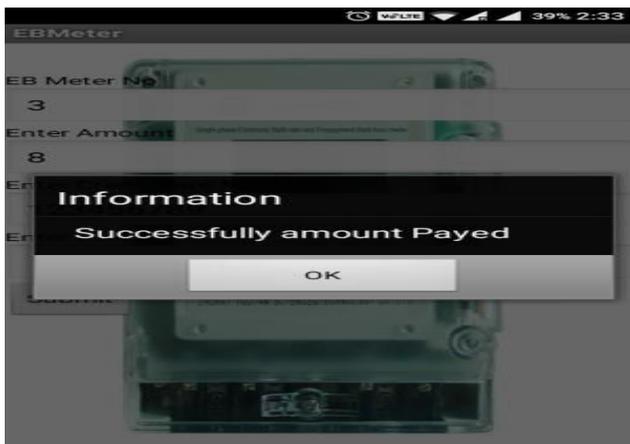


Figure-7. Payment successful.

CONCLUSIONS

In this paper, we have proposed a smart meter which would be automated using LiFi technology so that manual checking of Electric Bill can be avoided. In addition to that a user authentication and authorization scheme for various types of devices in the SG, our scheme can be easily applied to different user roles, such as auditors, operators, and etc., who access different devices in the SG system, as each user-role is computed dynamically based on attribute-based access control using a SHA256 hash function with (mode of access, department, location, SDP) attributes provided by each user. Our plan empowers two-figure verification so that a rebel gadget couldn't re-utilize the past caught data of a real client. A bi direct cryptography-based is produced

between the client and the gadget for further secure correspondences inside a session. The proposed plan is efficient as far as both, correspondence and calculation overheads in examination with the current plans, and can crush some notable outcast assaults and insider assaults.

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