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WEB SERVER BASED EFFICIENT WATER MANAGEMENT

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Abstract— Water is one of the important factors of life. In industrial areas, co-operative society, office and likewise system require water supply every day. Such system management of water supply using dynamic IP based Embedded Web server (EWS) is presented in this paper. In current era of networking, to maintain EWS with static Internet Protocol (IP) is costly and difficult to manage. Novel approach of assign dynamic IP to board is developed and tested for different dynamic IPs. Dynamic IP is obtained for embedded board by enabling General Packet Radio Service (GPRS) of USB data card through point to point protocol daemon (PPPd). The embedded system consists of Advanced RISC Machine (ARM) processor running on Linux operating system, USB data card and a Very secure file transfer protocol (vsftp).Embedded board (EB) having dynamic IP contains in file transfer to vsftp dummy server through Bourne again shell (Bash) scripts and C language. EWS pages are designed in hyper text meta language (html) and JavaScript. The embedded system has tested for water management of different wings of society for dynamic IPs provided by USB data card and results are shown.

I. INTRODUCTION

Water supply, a routine daily service. Managing such supply makes efficient usage of natural resource of water and avoids wastage of it as well. Management system merges communication, network, internet and integrated technology together to bring development in field of supply-demand of available resource. Emerging updating in technology opens the world of novel ideas. It allows access of information via internet over network quickly and accurately at any time. Exchange of information can be analyzed and decisions are taken accordingly. Reliable water management by data acquisition is always needed of consumers. To understands the requirement of consumers and suppliers, data acquisition provide them better services, economic benefits, security, safety and convenience of accessing these services.

II. STUDY OBJECTIVE

The main objective of our study is to analyze the water utilization and identify the water consumption. This study will enable us to develop efficient water utilization to reduce the water consumption.

III. PROPOSED METHOD

In the proposed method we overcome the drawback present in existing system by monitoring the statue of water. Our approach is based on the development of low cost sensor nodes for real time. The main sensor node consists of level sensor is the biological indicator of water sophistication. And with the help of these parameters we can monitor the water consumption. From the sensor node we are sending monitored values to raspberry-pi board. The controller transmits the data to remote PC through internet by using FTP. FTP is a protocol through which users can upload files from their systems to server. Once data is placed at server we can view the data at remote PC (with internet) on web page with unique IP address. We can view continuously the sensor's data . With the help of sensor node, we can monitor the detecting the level of water with the help of water level sensor. If the level sensor values decreases beyond the range then motor will automatically start and if level sensor values increases beyond the range then motor will automatically become OFF. In some cases if we want to start the motor manually then also it is possible.

IV. DESIGN OF PROJECT

The design is about the efficient utilization of water for minimizing the water consumption in major areas like resorts,industrial areas and etc., by automating the whole design.We use level sensors for water level detection and through Wi-Fi we can view the water status.The time of water usage is stored in database(in quantity of litres) continuously.We use a dynamic IP for request processing through browser and we can view the current status as well as consumption of water(in quantity of litres). We use python code.

V. RESULTS

5.1 Working process and design flow:

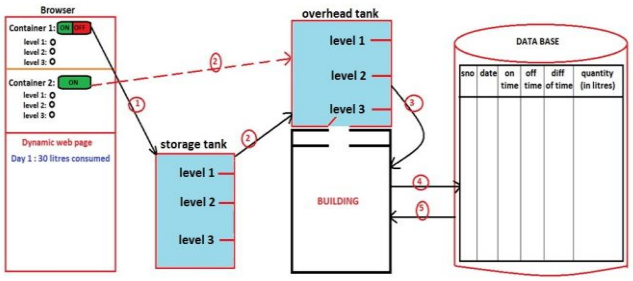

Fig 5.1: Working process

1. Above design represents the working of whole project in which we send request through browser to storage and overhead tanks.
2. Storage tank fills water into overhead tank and overhead tank supplies water to respective building.
3. The water usage throughout the building is been calculated and stored into permanent/temporary database (quantity in litres).
4. The status of water will be displayed on browser.
5. If overhead tank is emptied then the motor will turn on automatically and the water is filled into that tank through storage tank and if storage tank is emptied then automatically that tank is filled through underground water.

5.2 Client Side and Server Side:

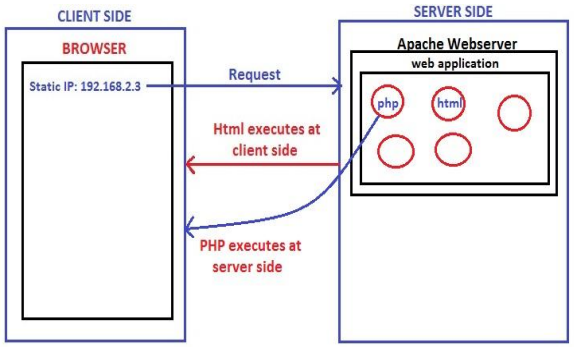

Fig 5.1:Client side and server side

1. Html is a client side web component that comes to browser(client) from webserver for execution when requested.
2. Decide whether webcomp is client side based on place where it executes; don't decide based on place where it resides.
3. Generally all server side web components are dynamic web components generating dynamic webpages like php component,jsp component or asp.net etc,.
4. Generally all client side web components are static web components generating static webpages like html files,java script files etc,.

5.3 Storing into Database:

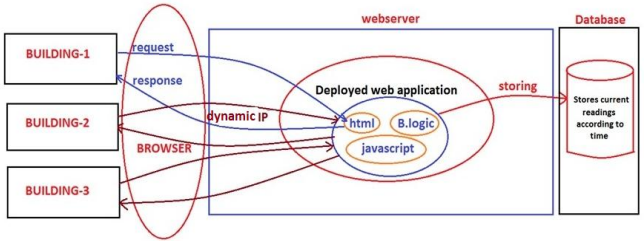

Fig 5.3: Storing into Database

1. Request comes from browser and goes to webserver.
2. In webserver we have deployed web application in which html, B.logic and php scripting resides.
3. Depending on the request mainly request webserver and this server will send request to html component which will be executed at client side.
4. We can view the display screen of water management on browser.
5. And at background python code is been executed and the status of water will be stored into database (permanent/temporary).
6. Finally we can retrieve the consumed water onto the browser (quantity in liters).

5.4 Project Architecture:

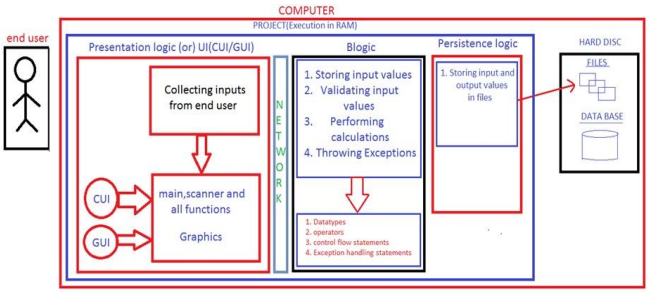

Fig 5.4: Architecture

1. In this design we can observe the whole project working process section by section.
2. Mainly the end user will open the client browser and gives the request to deployed application.
3. We are collecting the inputs which is called presentation logic/UI(user interface). In CUI main, scanner and all functions are developed and in GUI we develop graphics related data.
4. In Business logic we are storing input values validating input values, performing calculations and throwing exceptions.
5. Also data types, operators, control flow statements are also developed.

6. In Presentation logic we are storing input and output values in database software (permanent/temporary).

VI. CONCLUSION

The project "WEB SERVER BASED WATER MANAGEMENT" has been successfully designed and tested. Integrating features of all the hardware components used have developed it. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. Secondly, using highly advanced IC's and with the help of growing technology the project has been successfully implemented.

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