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Designing of Smart City By Data Acquisition Method Based on Internet of Things

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Abstract:-Internet of things deals with intricate system that integrates multiple disperses components towards their synergetic use. In this project a system of interconnected smart modules is developed where each and every parameter necessary for a city based monitor and updated to the cloud emphasis is given on how sensing and communication technologies of internet of things can effectively be used in smart city monitoring. This project also includes smart waste management and controlling of some parameters like water and light.

Keywords:- Arduino, 2-channel Relay board, LD, IR, Float switch, Blynk App.

I. INTRODUCTION

The (IOT) Internet of Things is the new technology which envisions future easiness of people in everyday life with micro-controllers, transceivers and also protocols which enables the communication and making the difficult tasks to be done easily. Hence the internet is becoming the more immersive and pervasive on making use of IOT. And that in turn enables the easy access of gadgets such as home appliances such as smart kitchen, smart cooking and further surveillance cameras in providing security, monitoring sensors for smart parking and also for smart street light management, actuators, displays and also vehicles. In orderto provide new services to the citizens, companies and administrators the IOT foster the number of different applications which makes use of the enormous amount andvariety of data. The IOT also finds applications in many fields such as home automation, medical field, health care through smart phones using internet, energy management by intelligent process, smart grids, automotive fields and also such many other fields.

The IOT prototype such as rules and regulations has been applied on the smart and also to the self configuring objects which have been configured before in order to react to the any particular action which in turn controls the behavior of the particular system.

As IOT has been called as broadband network which has been using the standard communication protocols where the main aspect of this idea is the internet.

Due to recent development in the digital technologies the smart cities are becoming smarter than before and that's leading to the improvement in the lifestyle of people. Whereas the smart city includes many different fields such as smart street light management, smart garbage collection, smart water management and thus by conserving the electricity and water. The aim of the development of smart city by IOT is to make use of resources available in public, and that increases the quality of the services offered to the citizens while it reduces the operational cost of the public administrators.

II. LITERATURE REVIEW ON SMARTCITY BY DATA ACQUISITION ON IOT.

- "Internet of things (IOT): A vision, architectural elements, and future directions," Future Generation Computer Systems This paper presents a Cloud centric vision for worldwide implementation of Internet of Things. The key enabling technologies and application domains that are likely to drive IoT research in the near future are discussed. A Cloud implementation using Aneka, which is based on interaction of private and public Cloud, is presented. We conclude our IoT vision by expanding on the need for convergence of WSN.

"Smart cities concept and challenges bases for the assessment of ASCIMER (Assessing Smart Cities in the Mediterranean Region) is a project developed by the Universidad Politecnica of Madrid (UPM) for the EIBURS call on "Smart City Development: Applying European and International Experience to the Mediterranean Region". Nowadays, many initiatives aimed at analyzing the conception process, deployment methods or outcomes of the - referred as - Smart City projects are being developed in multiple fields. Since its conception, the Smart City notion has evolved from the execution of specific projects to the implementation of global strategies to tackle wider city challenges. ASCIMER's project takes as a departure point that any kind of Smart City assessment should give response to the real challenges that cities of the 21st century are facing. It provides a comprehensive overview of the available possibilities and relates them to the specific city challenges. A selection of Smart City initiatives will be presented in order to establish relations between the identified city challenges and real Smart Projects designed to solve them. As a result of the project, a Projects Guide has been developed as a tool for the implementation of Smart City projects that efficiently respond to complex and diverse urban challenges without compromising their sustainable development and while improving the quality of life of their citizens smart city projects."

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III. EXISTING SYSTEM

In the current scenario we have seen number of times the dustbins are getting overflow and concern person don't get the information within a time and due to which unsanitary condition formed in the surroundings, at the same time bad smell spread out due to waste, bad look of the city which paves the way for air pollution and to some harmful diseases around the locality which is easily spreadable in case of dustbin and such waste management.

When it comes to street light, a concerned person should turn ON and OFF the street light during day and night time. And the concerned person may forget to do his work and that leads to loss of electricity.

When the water is stored in the tanks no one can identify the level of water and also, no one can know when the water tank will fill and only when the tank is full and overflow the person will get to know about this and until then it leads to wastage of water.

IV. PROPOSED ARCHITECTURE

FIG 1 shows the architecture of our proposed system of smart city implementation based on internet of things. The module is composed of multiple components LD, IR sensors, Float switch, and Humidity sensor, Arduino, PC with Wi-Fi, 2-channel relay board and Blynk application.

The Arduino is the interface used to connect multiple components such as LD where it is the light detector used in the street light interface. The dustbin is connected with the 2 sensors IR1 and IR2 which specifies whether the dustbin is half filled or full. 2 channel relay board is used to employ the switches to turn ON or OFF. The interface message will be directly uploaded to the PC which is connected to the internet, and through cloud computing the respective message will be sent to the Blynk app of the particular user.

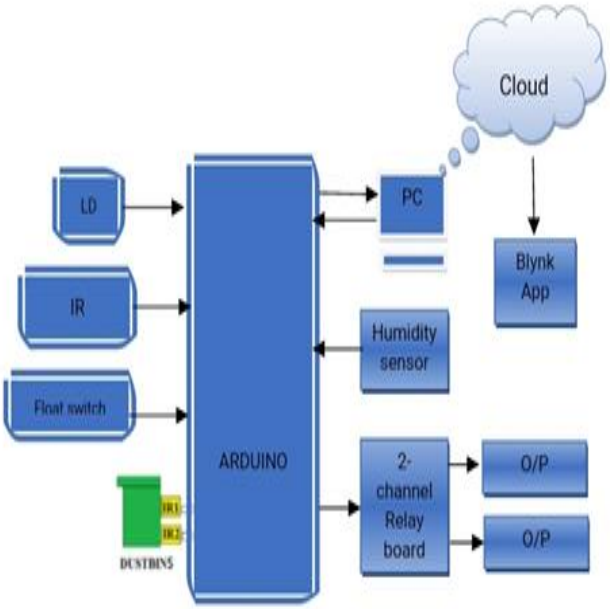

Fig. 1:- Proposed System Architecture

Fig. 2:-Android Phone with BlynkApp

We propose a method using IOT where the LDR,IR, Float and Humidity sensor values are fed to the microcontroller by means serial communication using UART protocol which is Asynchronous means that data is transferred without support from an external clock signal. This transmission method is perfect for minimizing the required wires and i/o pins, but it does mean we need to put some extra effort into reliably transferring and receiving data. These sensors values are then uploaded on the cloud which are accessed by the concerned person through android application i.e. BLYNK application which is designed for the internet of things. It can control hardware remotely, it can display sensor data, it can store data, visualize it and do many other cool things anywhere in the world.

V. METHODOLOGY

In this project we are UART (Universal Asynchronous Receiver and Transmitter) Protocol

- UART is a simple half-duplex, asynchronous, serial protocol.
- Simple communication between two equivalent nodes.
- Any node can initiate communication.
- Since connection is half-duplex, the two lanes of communication are completely independent.

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the Internet of Things. It can control hardware remotely, it can display sensor data, it can store data, visualize it and do many other cool things anywhere in the world.

There are three major components in the platform

- Blynk App - allows to you create amazing interfaces for your projects using various widgets we provide.
- Blynk Server - responsible for all the communications between the Smartphone and hardware. You can use our Blynk Cloud or run your private Blynk server locally
- Blynk Libraries - for all the popular hardware platforms – enable communication with the server and process all the incoming and out coming commands.

The controlling is also done through the applications which in turn initiates the respective relays using BLYNK applications.

VI. CONCLUSION

IOT is setting off an upsurge of information industry. IOT is still in its initial stage. The hardware of a low-cost module used in IOT enabled systems has been designed and the concept for the use of this module for Smart City Monitoring and controlling has been proposed.

VII. FUTURE ENHANCEMENT

Controlling the Traffic Signal lights be another feature that we could look in future . Depending on the amount of traffic in a particular direction, necessary controlling actions could be taken. Also emergency vehicles and VIP convoys can be passed efficiently. Moreover, attempts can be made to ensure that the complete system is self-sufficient on nonconventional energy resources like solar power, windmills, Piezo-electric crystals, etc. We hope that these advancements can make this system completely robust and totally reliable in all aspects.

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