Smart city using IOT

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***Abstract*- Smart city is modern urban concept that is essential for people to have convenient life. This paper presents the purpose of smart city using IoT. The internets of things application are enabling smart city initiatives worldwide. It provides ability to monitor, control and manage devices and quick response to user. Moreover this paper also presents a comprehensive study on the smart city concept in the view of its applications in cities such as smart parking, smart streetlights, smart garbage monitoring system, Water overflow system and many more. The goal of these applications is to bring about a sustainable and pleasant living environment for people in city utilizing IOT technologies in a smart city. Here, IOT plays a key role in making cities smarter.**

***Index terms*- IoT, Sensor and Microcontroller**

I.INTRODUCTION

IoT is defined to as 'a collection of wireless and wired Internet networking technologies for accessing data collected by various devices. The word 'smart city' refers to emerging technologies using information and communication technology (ICT) along with the role of urban environments. Smart city can also be defined as the convergence of ICT, the climate, energy technologies and facilities in urban and residential settings. Definitions of IoT is a common explanation is the ability to provide valuable and beneficial information by various user devices through wireless and wired Internet network, according to industry experts, by 2020, 10 billion+ new devices and connections will be added to the internet. The concept of smart city is emerged for good reason. For example majority of new jobs are being created in urban areas, the expansion of such areas is accelerating, the educational opportunities for their children, a large number of families are moving rural to urban areas.

We present an overview of IoT in smart cities, and explore how IoT can improve the smartness of a city. To prepare the basic infrastructure of a smart city, various sensors, support technologies, and background environment are essential and are being employed in urban areas. IoT is a set of technologies for accessing the data collected by various devices through wired Internet networks or wireless.

II. LITREATURE SURVEY:

In this paper we discussing about the development of the smart city project and its initiatives all over the world by using IoT. Smart cities are an emerging market and a major part of potential infrastructure. Smart city aims to utilize energy and electricity in an efficiency manner and hence providing convenient and economical infrastructure for well develop society there are so many applications can crated by using this technique.

The emergence of various types of network, IoT has become one of most important types of infrastructure in smart cities. For instance, to provide user-customized services, the data collected by electronic home applications, including refrigerators, are shared and stored in smart home environment; this means that different resources that use IoT technologies in a smart city will create a safe and pleasant living atmosphere for its people. Therefore, several notable companies are in partnership to create a sustainable urban environment and are contemplating the technical and social problems inherent in future projects incorporated in a smart city.

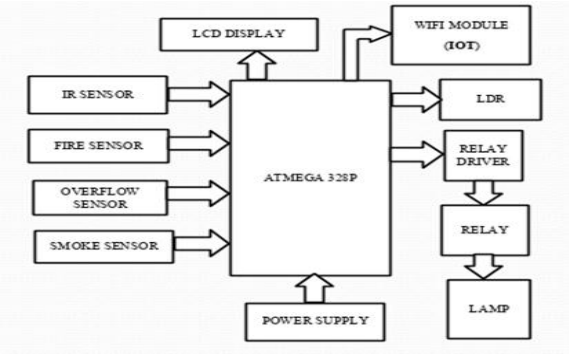

FIG.1 Block diagram

III.OVERVIEW OF INTERNET OF THINGS

Embedded device, actuators and sensors are the physical components in the IoT architecture which communicate directly with some of the users. The users manipulate the data through these components. ICT, ubiquitous computing, Internet protocols used to create communication among the devices and manage high end user interactions. It including smart devices including cell phones and other objects such as household appliances, landmarks, monuments and work of art, it can work together for common goals. Things influence of Internet users live in can be seen as a key function some things related to technology will be discussed below,

A. Radio Frequency Identification (RFID): RFID devices are wireless. It consists of reading device called a reader, tags used for tagging and tracking. The one of the advantage of RFID is, we can scan more than one object at a time. Which can be help to save time and energy. the data which is stored in an RFID tag can be updated in real time. RFID technology includes inventory management, manufacturing, healthcare, shipping, retail sales and home use.

B. Wireless Sensor Network (WSN): Wireless sensor networks can provide specific and usable data, and in many instances, such as hospitals, government and environmental services, and seismic sensors. However, wireless sensor networks can be combined with an RFID device to achieve the objective, such as collecting location, movement, temperature, and additional information.

C. Addressing: The trend in traditional things, and to create a smart environment can also provide an interconnection between the user and the system. For this purpose it is important of items to be able to uniquely define the target of a favorable outcome. It is because the only solution for merging large objects is the ability to manipulating them over the Internet..

D. Middleware: Middleware is about spreading information, some of the complexity issues of limited storage and process capacity, as well as the vast difference in the application; subject to network middleware plays a vital role in the layer of applications. The middleware's main objective is therefore a succinct integration and communication feature of all applicable equipment.

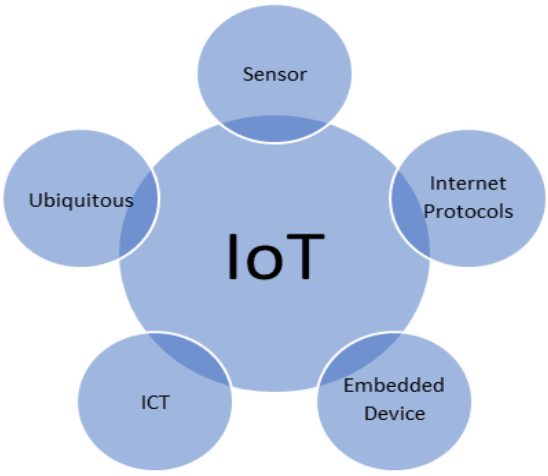

Fig 2. Architecture of IoT

IV.APPLICATIONS

There are various sensors that can be introduced to collect and analyze data at different locations in order to maximize the use of the essential applications the smart cities of the Internet. Some of the applications used in smart city with the help of IoT are given below,

A. Smart street lights: By using LDR (Light dependent Resistor) sensor the light will be made to switch on in the evening and switched off in the morning, since there is less wastage of power and thus there is saving of money. The relays and lamps are also used for controlling the lights.

B. Smart Parking: For a smart parking, IR Sensor is used. The output of IR Sensor is in Digital form. LCD is used for displaying the number of vacant space. We are using a mobile application named as ‘Things speak” is allows an user to check the availability of parking spaces and book a parking slot according to that.

C. Smart garbage monitoring systems: IR (Infrared) sensor is used for detection of garbage overflow. The output is in the form of digital. The smart garbage monitoring system which will help to keep the cities more clean and healthy.

D. Traffic Management system (TMS): Traffic management is one of the major problematic issue in India. TMS appliances to control over traffic in the particular area as per population of vehicles ID. So IR sensor used to monitor and capture data of vehicles count. This system consist of more number of IR Sensor, Microcontroller, Bluetooth controller, Android mobiles and PC-server. With the help of this application we get real time traffic updates in a particular area.

V. CONCLUSION

Smart City has improved the quality of urban life by using data and IoT technology to build efficiencies, increase sustainability, create economic growth and improve the quality of life and living and working factors for people in the city. It defined how to create, strengthen and enhance daily activities by employing them. In addition, the challenges which emerge when implementing the IoT framework have been thoroughly explained in this work. In this regard, the integration of the IoT applications is one of the most affecting future trends presented. IoT technologies which plays a major role in providing various services. Internet of Things (IoT) is a collection of interrelated computing devices, mechanical and digital machines that offers unique identifiers (UIDs) and the ability to move data through a network without requiring human-to-human or computer-to-computer interaction.. By using this IoT Technology various applications in the implementation of smart city has been discussed in this paper.

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