EXPO CITY

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ABSTRACT

EXPO Cities focus on their most pressing needs and on the greatest opportunities to improve lives. They tap a range of approaches digital and information technologies, urban planning best practices, public private partnerships, and policy change to make a difference. They always put people first.
In the approach to the smart city mission, the objective is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a light house to other aspiring cities. The smart city project is meant to set examples that can be replicated both within and outside the Smart City, catalyzing the creation of similar Smart Cities in various regions and parts of the country.

Keywords:- *Micro Controller, Sensors, Diodes, Transistor, Solar Panel .*

1. INTRODUCTION

EXPO Cities focus on their most pressing needs and on the greatest opportunities to improve lives. They tap a range of approaches digital and information technologies, urban planning best practices, public private partnerships, and policy change to make a difference. They always put people first.
In the approach to the smart city mission, the objective is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a light house to other aspiring cities. The smart city project is meant to set examples that can be replicated both within and outside the Smart City, catalyzing the creation of similar Smart Cities in various regions and parts of the country.

2. CAR SPEED CONTROL

In this topic we show that how we control the speed of any can up to set value. Once the upper limit is set then it's not possible to increase the speed of vehicle. This set value is provided by Rf transmitter send a set value of code to car, as the car receive a code then car maximum speed limit is set. Now car driver cannot exceed the speed limit. As the car is out of range then car speed can be change

3. SMART TRAFFIC LIGH

In this topic we show the concept of adaptive logic in two side with the help of infra-red sensor. Adaptive logic is active in the green light. If no traffic on road side when green light is there then green light timing is to be 50 percent off. When traffic is normal then counter shows a normal light timing. When traffic is dense then counter show a double timing.

4. LOAD DISTRIBUTION

In this topic we show that how we provide a control distribution in different cities. We set the maximum limit for every city with priority. Now as per the input available distribution is set automatically. Assume that if input is 150 MW, then 100 is for its priority services (like railway, metro, hospital, aviation server etc.), 50 for second zone, no electricity for less prior area. If input is 180 then distribution according to 100, 50 ,30

5. SMART VEHICLE PARKIN

Now days in many multiplex systems there is a severe problem for car parking systems. There are many lanes for car parking, so to park a car one has to look for the all lanes. Moreover, there is a lot of men labor involved for this process for which there is lot of investment. So, the need is to develop a system which indicates directly which parking slot is vacant in any lane. The project involves a system including infrared transmitter and receiver in every lane and a LED & LCD display outside the car parking gate. So, the person entering parking area can view the LED display and can decide which lane to enter so as to park the car.

6. SAMRT STREET LIGHT

Automatic Street Light Control System is a simple yet powerful concept, which uses transistor as a switch. By using this system manual works are 100% removed. It automatically switches ON lights when the sunlight goes below the visible region of our eyes. This is done by a sensor called Light Dependent Resistor (LDR) which senses the light actually like our eyes. It automatically switches OFF lights whenever the sunlight comes, visible to our eyes. By using this system energy consumption is also reduced because nowadays the manually operated street lights are not switched off even the sunlight comes and also switched on earlier before sunset. In this project, no need of manual operation like ON time and OFF time setting. This project clearly demonstrates the working of transistor in saturation region and cut-off region. The working of relay is also known Ease of Use

7. PURPOSES

The purpose of the Smart Cities Mission is to drive economic growth and improve the quality of life of people by enabling local area development and harnessing technology, especially technology that leads to Smart outcomes.

8. INTEL-8051 MICROCONTROLLER

The first microprocessor 4004 was invented by IntelCorporation. 8085 and 8086 microprocessors were also invented by Intel. In 1981, Intel introduced an 8-bit microcontroller called the 8051. It was referred as system on a chip because it had 128 bytes of RAM, 4K byte of on-chip ROM, two timers, one serial port, and 4 ports (8-bit wide), all on a single chip. When it became widely popular, Intel allowed other manufacturers to make and market different flavors of 8051 with its code compatible with 8051. It means that if you write your program for one flavor of 8051, it will run on other flavors too, regardless of the manufacturer. This has led to several versions with different speeds and amounts of on-chip RAM

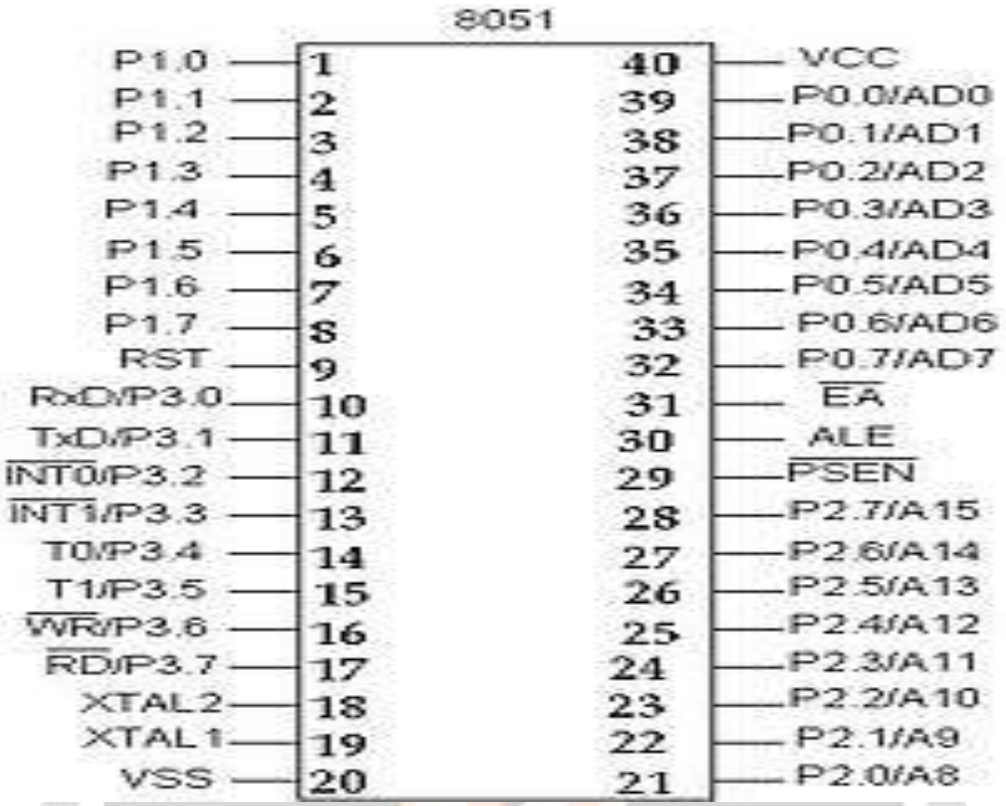

Fig-1: Micro controller

Architecture diagram-Architecture is must to learn because before learning new machine it is necessary to learn the capabilities of the machine. This is something like before learning about the car you cannot become a good driver. The architecture of the 8051 is given below.

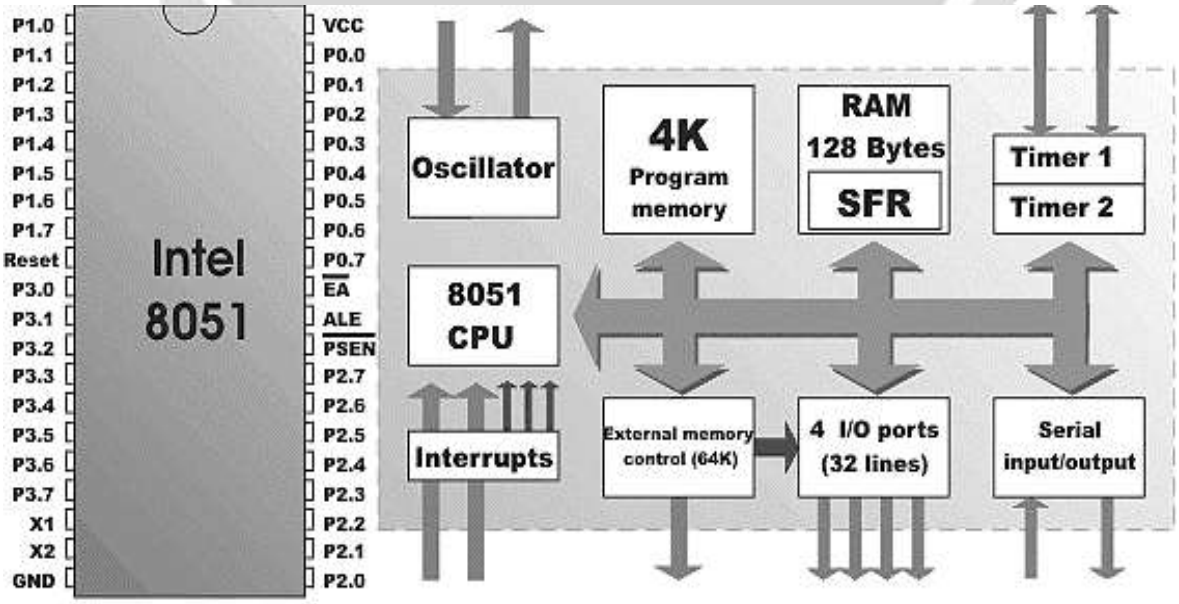

Fig-2: Architecture Diagram

The 8051 doesn't have any special feature than other microcontroller. The only feature is that it is easy to learn. Architecture makes us to know about the hardware features of the microcontroller. The features of the 8051 are

- 4K Bytes of Flash Memory
- 128 x 8-Bit Internal RAM
- Fully Static Operation: 1 MHz to 24 MHz
- 32 Programmable I/O Lines
- Two 16-Bit Timer/Counters
- Six Interrupt Sources (5 Vectored)
- Programmable Serial Channel
- Low Power Idle and Power Down Modes

9. DIODES

In this project we use IN 4007 diode as a rectifier. IN 4007 is special diode to convert the AC into DC.
In this project we use two diodes as a rectifier. Here we use full wave rectifier. Output of rectifier is pulsating DC. To convert the pulsating dc into smooth dc we use Electrolytic capacitor as a main filter. Capacitor converts the pulsating dc into smooth dc and this DC is connected to the Regulator circuit for Regulated 5-volt DC.

10. STEP DOWN TRANSFORMER

Step down transformer from 220-volt Ac to 9-0-9 ac. We use step down transformer to step down the voltage from 220 to 9-volt ac. This AC is further connected to the rectifier circuit for AC to DC conversion. Transformer current rating is 750 ma.

A simple solar cell is a pn junction diode. The schematic of the device is shown in figure 4. The n region is heavily doped and thin so that the light can penetrate through it easily. The p region is lightly doped so that most of the depletion region lies in the p side. The penetration depends on the wavelength and the absorption coefficient increases as the wavelength decreases. Electron hole pairs (EHPs) are mainly created in the depletion region and due to the built-in potential and electric field, electrons move to the n region and the holes to the p region. When an external load is applied, the excess electrons travel through the load to recombine with the excess holes. Electrons and holes are also generated with the p and n regions, as seen from figure 4. The shorter wavelengths (higher absorption coefficient) are absorbed in the n region and the longer wavelengths are absorbed in the bulk of the p region. Some of the EHPs generated in these regions can also contribute to the current.

11. LDR SENSOR

A Light Dependent Resistor (LDR) is also called a photo resistor or a cadmium sulfide (CdS) cell. It is also called a photoconductor. It is basically a photocell that works on the principle of photoconductivity. The passive component is basically a resistor whose resistance value decreases when the intensity of light decreases. This optoelectronic device is mostly used in light varying sensor circuit, and light and dark activated switching circuits. Some of its applications include camera light meters, street

12. IR SENSOR

An infrared sensor is an electronic device that emits in order to sense some aspects of the surroundings. An IR sensor can measure the heat of an object as well as detects the motion. These types of sensors measures only infrared radiation, rather than emitting it that is called as a passive IR sensor. Usually in the infrared spectrum, all the objects radiate some form of thermal radiations. These types of radiations are invisible to our eyes that can be detected by an

infrared sensor. The emitter is simply an IR LED (Light Emitting Diode) and the detector is simply an IR photodiode which is sensitive to IR light of the same wavelength as that emitted by the IR LED. When IR light falls on the photodiode, the resistances and these output voltages, change in proportion to the magnitude of the IR light received.

13. APPLICATION

1-Smart Street Lighting – this has always been the leading smart city application cited by analysts due to its impressive early growth and clear business case. Smart street lighting is increasing its importance by reusing the lighting column as a communications hub.

2-Smart Parking – the initial focus of parking was on reducing congestion but this only had a clear business case in a limited number of cities. New advances are emerging that save costs whilst encouraging citizens to change behavior in order to make city centers an enjoyable place to visit.

3-Environmental Monitoring – a typical city has a handful of expensive monitoring stations for pollution or weather conditions, most of which cannot be monitored in real time. New systems are emerging that allow cities to monitor the environment with many more sampling points and in real time. This will help pinpoint the source of potential problems that can then be quickly and efficiently dealt with, as well as providing invaluable data for planning.

4-Information Beacons – enabled by Apple's iBeacon and Google's Eddy stone, many city assets are now becoming location-aware information portals. New services are emerging that enable consumers to receive real time transport information or special offers from local businesses.

5-Active Safety – city centerscanoften be intimidating places especially late at night. New systems are emerging that will react to individuals by increasing light levels or simply to let them know that their presence at a bus stop has been noted

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6-Smart Journey Planning – we are seeing a growing number of systems that utilize open city data in order to suggest how individuals can best get from A to B. The systems are now becoming more sophisticated, taking into account personal preferences such as cost, safety concerns and CO2 footprint.

7-Transport Sharing – city bike schemes, whilst great for flat city centers, don't really work over large areas or in hilly communities. We are seeing the emergence of new bike sharing schemes that allow people to share access to better bikes that are not tied to a few expensive bike stations. 2016 will be a key year for electric cars and we predict that this will be a key enabler for wider adoption of city Centre car sharing.

8-Smart Bin Collection – this application points to a wider set of opportunities in which smart sensing enables cities to analyses and optimize how they deploy services. The sensing side of these applications is often trivial but the real winners are those companies that can provide proven analysis tools to help cities plan individual truck rolls or collection routes.

9-Social and Health Care Cost Reduction – all of the top 10 applications here enable some element of cost reduction. However, it is in wellbeing that the biggest cost challenges are being met. 2016 will see more joined up thinking between social care and health care providers often being backed up by remote sensing to make sure that the correct interventions are achieved at the optimal time without the expensive costs associated with acute care.

10-Smart Social Housing – along with healthcare, social housing is one of the largest areas of public sector spending. By bringing low cost monitoring to social housing it is possible to increase the satisfaction that tenants get from their home whilst reducing costs for landlords

14. FUTURE WORK

Smart Cities India is all set to become the most-populous country in the world by 2030, making it the home to the biggest and the most under-penetrated market for global manufacturers and service providers. Unlike its preceding generations, this growing population is also shifting to top tier cities of the country giving rise to new megacities estimated to generate 80% of economic growth, with potential to apply modern technologies and infrastructure, promoting better use of scarce resources.

15. CONCLUSION

In the approach of the Smart Cities Mission, the objective is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions. The focus is on sustainable and inclusive development and the idea is to look at compact areas, create a replicable model which will act like a light house to other aspiring cities. The Smart Cities Mission of the Government is a bold, new initiative. It is meant to set examples that can be replicated both within and outside the Smart City, catalyzing the creation of similar Smart Cities in various regions and parts of the country.

Accordingly, the purpose of the Smart Cities Mission is to drive economic growth and improve the quality of life of people by enabling local area development and harnessing technology, especially technology that leads to Smart outcomes. Area based development will transform existing areas (retrofit and redevelop); including slums, into better planned ones, thereby improving livability of the whole City. New areas (Greenfield) will be developed around cities in order to accommodate the expanding population in urban areas. Application of Smart Solutions will enable cities to use technology, information and data to improve infrastructure and services. Comprehensive development in this way will improve quality of life, create employment and enhance incomes for all, especially the poor and the disadvantaged, leading to inclusive Cities.

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