SMART PARKING SYSTEM USING IOT

Team members

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Abstract :

➢ In the greater part of the advanced urban areas it is troublesome and costly to make additionally parking spots for vehicles since the quantities of vehicles that are running out and about are expanding step by step and the include of the free spaces in the urban communities are the equivalent. This issue prompts blockage for stopping searchers and drivers.

➢ To build upon IoT structure that objectives Parking Management which is greatest difficulties in current urban areas. Unavoidable presence of advanced cell urges clients to favor portable application-based arrangements.

➢ Development of IoT has cleared route for incorporation of cell phones, remote correspondence advances and portable Applications. This task is an IoT based Smart stopping framework for shrewd urban areas that coordinates with website page.

➢ This project deals with an effective way of finding empty spaces and managing the number of vehicles moving in and out in complex multi storeyed parking structures by detecting a vehicle using IR sensors.

INTRODUCTION :

❖ At Present, the IoT applications in our day by day life are sprouting, and there is likewise a developing pattern in the utilizations of brilliant urban areas which can help in improving to lessen savvy urban communities' issues.

❖ In Smart City we face numerous challenges while creating, to explain shrewd city issues we need to grow such framework which is mix of the new innovation additionally of minimal effort and dependent on the diverse organization blend of the Internet, for example, a media communication, communicated, remote and sensor networks where Internet of Things (IoT) is base innovation. One of the significant issues in a keen city is the Parking.

Problem definition :

➢ Smart parking is an IoT (Internet of Things) solution that uses sensors and/or cameras in combination with a software to inform users of vacant parking spaces in a certain area.

➢ Finding a parking space in most metropolitan areas, especially during the rush hours, is difficult for drivers. Difficulty arises from not knowing where the available spaces may be at that time traffic congestion may occur.

DESIGN THINKING

➢ In this system, sensors identify the free slots, a vehicle is identified using image processing, and the parking charge for each vehicle is detected on the basis of the time that the vehicle is in the parking area.

➢ When a vehicle enters the space, sensors detect its presence and calculate available parking slots.

Components :

A Smart Parking System consists of the following components:

1) **Sensors and Detectors:**
   Sensors are used to detect and track the location of vehicles in the parking lot.
2) **Analysis:**

This is where data from the sensors is analyzed to determine parking space availability.

3) Communication Systems

Sensors and Detectors :

1.ARDUINO UNO :

➤ Arduino Uno is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter. Arduino Uno has a number of facilities for communicating with a computer, another Arduino board, or other microcontrollers.
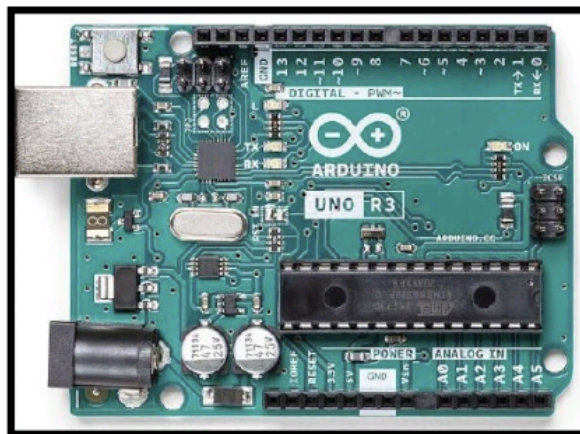

ARDUINO UNO

2.16X2 LCD :

➤ This is an LCD Display designed for E-blocks. It is a 16 character, 2-line alphanumeric LCD display connected to a single 9-way D-type connector. This allows the device to be connected to most E-Block I/O ports. The LCD display requires data in a serial format, which is detailed in the user guide below. The display also requires a 5V power supply. Please take care not to exceed 5V, as this will cause damage to the device. The 5V is best generated from the E-blocks Multiprogrammer or a 5V fixed regulated power supply. The 16 x 2 intelligent alphanumeric dot matrix displays is capable of displaying 224 different characters

> ➤ and symbols. This booklet provides all the technical specifications for connecting the unit, which requires a single power supply (+5V).
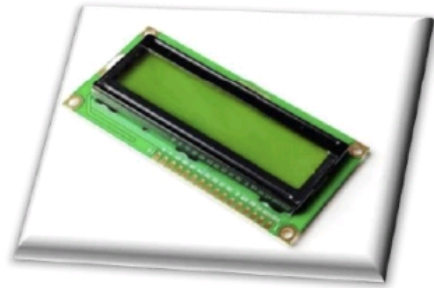

LCD display

3.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. 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.
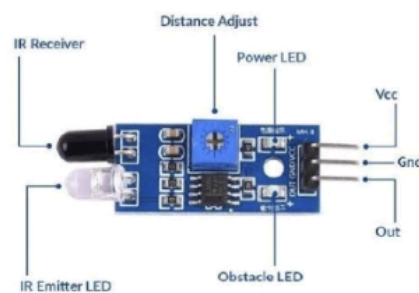
> ➤ The emitter is simply an IR LED (Light Emitting Diode) and the detector is simply an IR photodiode which is sensitive to IR light of the same wavelength as that emitted by the IR. When IR light falls on the photodiode, the resistances and these output voltages, change in proportion to the magnitude of the IR light received.

4.GSM VOICE MODEM :

➢ This GSM Modem can accept any GSM network act as SIM card and just like a mobile phone with its own unique phone number. Advantage of using this modem will be that you can use its RS232 port to communicate and develop embedded applications. The SIM800C is a complete Dual-band GSM/GPRS solution in a SMT module featuring an industry-standard interface, the SIM800CS is a quad-band GSM/GPRS module that works on frequencies GSM850MHz, delivers performance for voice, SMS, Data, and Fax in a small form factor and with low power consumption.
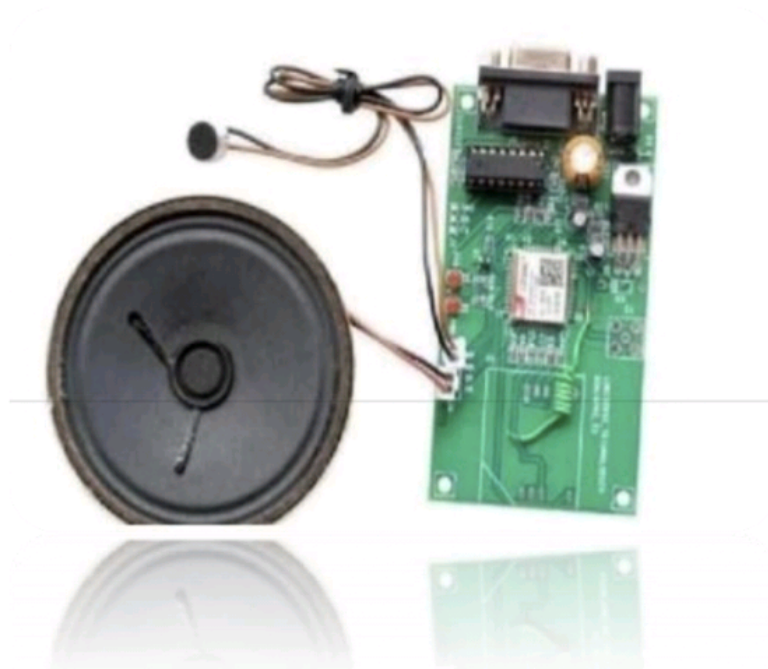
5.TRANSFORMER

➢ A transformer is an electrical device that transfers electrical energy between two or more circuits through electromagnetic induction. Electromagnetic induction produces an electromotive force within a conductor which is exposed to time varying magnetic fields. Transformers are used to increase or decrease the alternating voltages in electric power

applications. It is a step down transformer in which the secondary winding is more than primary winding.

➢ Due tot his windings it can able to step down the voltage.
➢ A Transformer changes electricity from high to low voltage or low to high voltage using two properties of electricity.
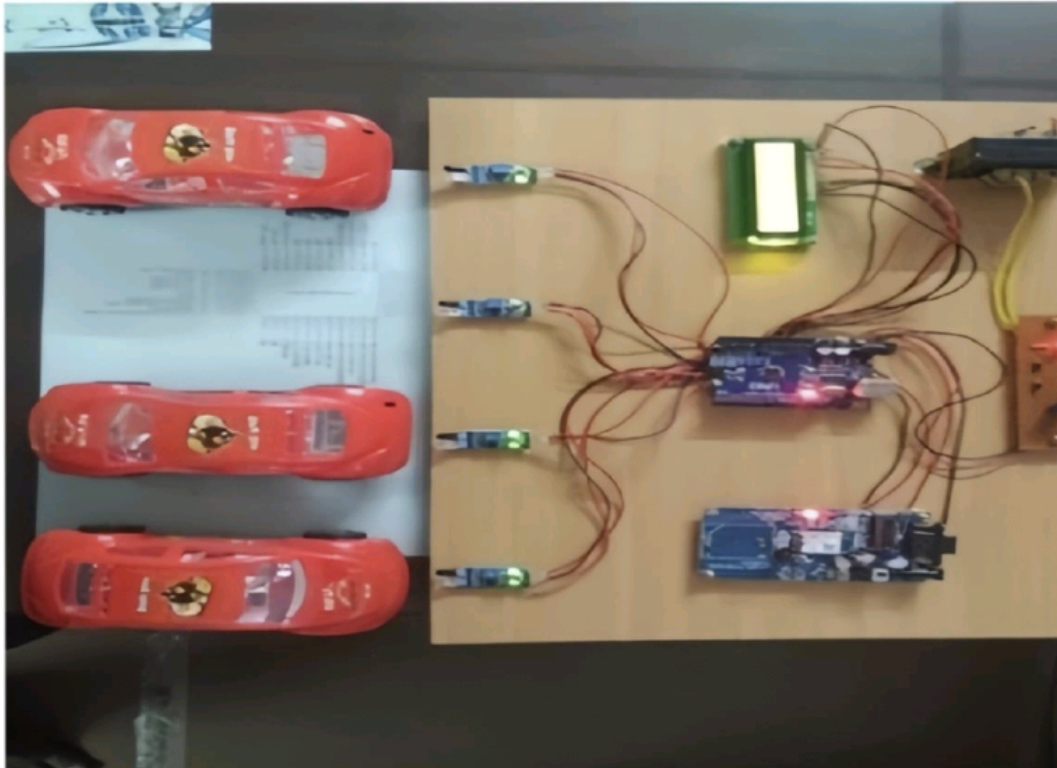

Transformer

IMPLEMENTATION

Block diagram

➤ The servo motors, LCD display, and IR sensor are all connected to an Arduino Uno microcontroller unit. The LCD shows how much space is available, and the IR sensors keep track of how many automobiles enter and exit the parking place. The IR sensors identify whether or not a parking place is available.

Final output

CONCLUSION :

❖ In the smart cities, mainly people face problems like parking issue, traffic congestion, time delays etc. which is nullified by this System which helps in improvising the management of parking system by following rules of the government, for example Handling different parking spaces in the city.

❖ Using internet of things in a smart parking system it helps in reduction in Consumption of fuel, it reduces traffic congestion in cities and cloud used for storing the information which is collected from The sensors. The system benefits of smart parking go well beyond avoiding time wasting and Developing a smart parking Solutions with in a city solves the pollution problem. It also establishes the direct mode of connection between the service Provider and the receiver. This also minimizes the chances of human errors and provides better efficiency.

Thankyou