

ELECTRON 22



Vel Tech Multi Tech

Dr.Rangarajan Dr.Sakunthala Engineering College

An Autonomous Institution



DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

VOL. 06

MARCH 2022

Student Editors

1.Madhavan -IV Year / EEE

2.Mohan kanth - III Year / EEE

3.Ranjane- IV Year / EEE

4.Raguraman- III Year / EEE

Vision of the Institution

Elevating well being of humanity by augmenting human resource potential through quality technical education and training.

Mission of the Institution

- **To effectuate supremacy in technical education through articulation of research and industry practices for social relevance.**
- **To inculcate the habit of lifelong learning**
- **To exhibit professional ethics, commitment and leadership qualities**

Vision of the Department

To emerge as a centre of academic excellence in electrical and electronics engineering and related fields through knowledge acquisition and propagation meeting global practices.

Mission of the Department

- **To nurture the talent and to facilitate the students with research ambience in Electrical and Electronics Engineering.**
- **To propagate lifelong learning.**
- **To impart the right proportion of knowledge, attitudes and ethics in students, to enable them take up positions of responsibility**

Programme Educational Objectives

- **To prepare graduates to have successful and flourishing career in Electrical and Electronics Industry.**
- **To make students able to excel in their career with ethical values and managerial skills to solve real life technical problems.**
- **To make students capable of solving problems in Electrical and Electronics Engineering which are found in utilities and industries**
- **To help students to engage in quest for self-learning and life-long learning.**

QUIZ TIME!

1. The resistivity of the conductor depends on

- a. area of the conductor.
- b. length of the conductor.
- c. type of material.
- d. none of these.

2. The resistance of a conductor of diameter d and length l is $R \Omega$. If the diameter of the conductor is halved and its length is doubled, the resistance will be

- a. $R \Omega$
- b. $2R \Omega$
- c. $4R \Omega$
- d. $8R \Omega$

3. How many coulombs of charge flow through a circuit carrying a current of 10 A in 1 minute?

- a. 10
- b. 60
- c. 600
- d. 1200

4. A capacitor carries a charge of 0.1 C at 5 V. Its capacitance is

- a. 0.02F
- b. 0.5F
- c. 0.05F
- d. 0.2F

5. To obtain a high value of capacitance, the permittivity of dielectric medium should be

- a. low
- b. zero
- c. high
- d. unity

Dhuvarak , III-EEE

DRAWINGS



Raguraman , III-EEE



Dhana Sekar , III-EEE



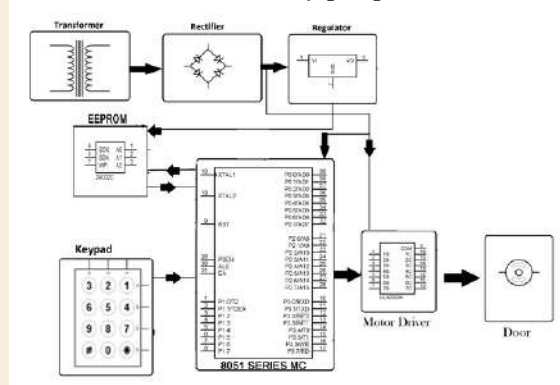
Shyamala , IV-EEE

WRITE UP

Over Voltage Under Voltage Load Protection With Gsm Alert

The project is a security system which allows only authorized access to users with a password. The system has a feature of changing the password anytime by the authorized user as required. The project comprises of a microcontroller of 8051 family that is interfaced to an EEPROM which stores the password.

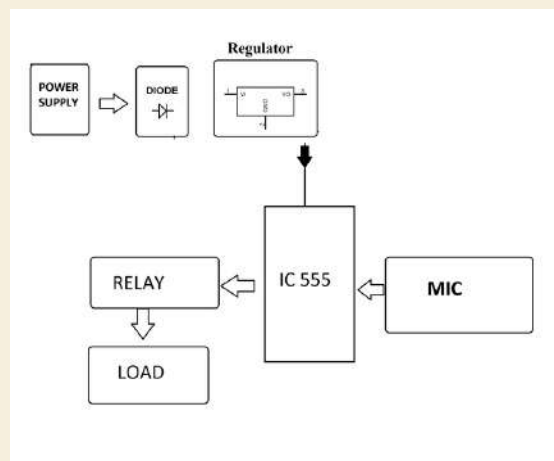
The project requires a keypad to enter password, and a Motor Driver that is interfaced to microcontroller for locking or unlocking a door or any security system. An alert would be produced if there is any wrong attempt and a door open if the attempt is right. The project can be used for security purposes in home, offices, organizations etc.



Rabiya Banu, II-EEE

Sound Operated Timer Project

Sound Operated Timer Project is a multipurpose project. With the help of this project we can automate the task of turning ON a device and turning it back OFF. All this happens just with the sound of a clap in this project. The set up consists of a Mic that receives the sound of its surrounding to give it to the system for processing. With an impulsive sound such as a clap, the timer circuit gets triggered to turn on a relay. Turning on the relay results in turning ON of the load that is connected to the relay.



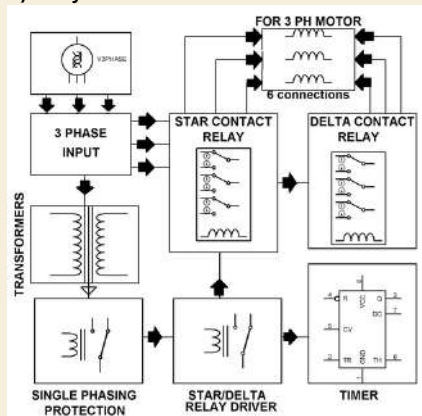
Aruna T, II-EEE

WRITE UP

Induction Motor Timer Using Auto Delta Star Starter

The proposed project aims at providing low voltage to induction motors through star to delta conversion. Star Delta is basically used to lower the current rate applied to motor at start and after that full load current is applied.

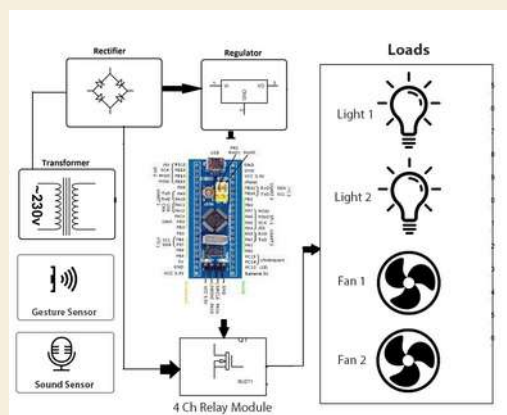
The project uses a set of relays that helps in shifting the motor connections from star to delta along with a time delay and six lamps in place of 3 phase motors where a single phase motor is represented by two lamps. In star mode, a system is used that starts a 3 phase motor at 440V AC mains supply 50Hz with a set of 12V DC relays and in delta mode, this is electronically adjusted with a timer.



Jaykeerthan,II-EEE

Contactless Switch For 4 Load Switching

The system is made using a STM32 controller that is used to operate an gesture based switch. It is also integrated with a sound sensor for even faster operation speed and ease of use. The system is used to operate 4 loads at a time using single switch. The controller constantly monitors the gesture sensor for any human gestures. Hand gestures made within 5 - 10 centimeters proximity of the sensor are sensed by the system. As soon as a gesture is sensed the controller operates the relay board to switch On or OFF the respective load as per gesture. Also the user may just clap anywhere near the switch in order to switch ON or OFF all loads at a clap.



Manikandakrishna,II-EEE

PASSWORD HACKING ATTACKS AND HOW TO AVOID THEM



Brute force password hacks

A password attack is essentially a guessing game where the hacker tries different password combinations using hacking software until they're able to crack the code. These instances can be avoided by creating a unique password for every online account.

Credential stuffing password hacks

This is a brute force attack that uses stolen credentials to break into your online accounts and profiles. Aside from using spyware and other kinds of malware to get the credentials they want; the dark web often has lists of compromised passwords for cybercriminals to use for their devious plans. Hackers may use these lists to carry out their credential stuffing schemes and exploit data. You can enable two-factor authentication for online accounts to avoid any suspicious login attempts.

Social engineering password hacks

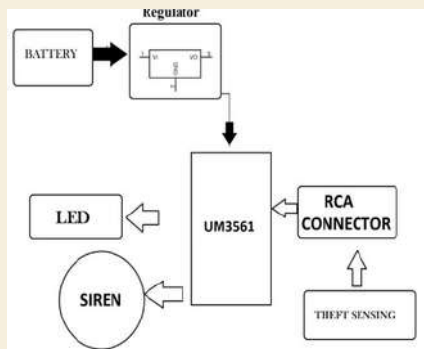
Password hackers create what people know as social engineering websites that they design to seem like legitimate login pages. These cybercriminals send you to a fake login field that won't give you access to your account. It only records the information you type in, giving the cybercriminal exactly what they want. Avoid clicking on suspicious links or attachments and always look for legitimate pages.

AYSHA, III Year - EEE

WRITE UP

E Bicycle Locking System

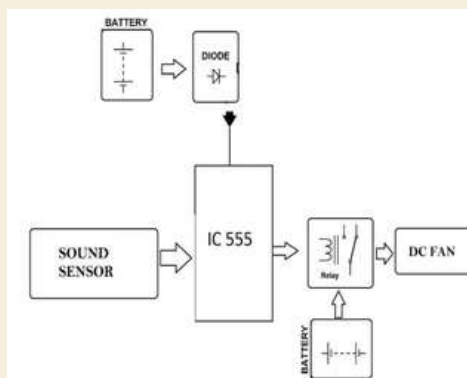
Owning a bicycle comes with a risk of it getting stolen away. Thus a system which can help prevent the theft is required for theft avoidance. This project does this task with very few components and a smart strategy that helps expose the burglary at the time it is happening through the help of a siren. E-Bicycle locking project works with the help of an electronic circuit having a switch which acts as the key to the bicycle lock. A metal wire is connected to the system in such a way that the wire goes from in between the tyre spikes and into the system. So if someone wants to steal the bicycle, the wire has to be broken first then only the bicycle will move. And if the wire lock is broken it is sensed by the system to raise a siren alert. Hearing the siren the owner can get alert and try to avoid theft from happening.



Dinesh Kumar.B , III-EEE

Clap Based Fan Switching System

Automatic switching systems are nowadays very popular in domestic as well as industrial scenarios. In this project, we have a DC fan connected to the system. The system is configured in such a way that by a particular action of the user 'Clapping' can cause the fan to start and remain ON for a limited period of time. We have a mic that acts as a transducer. This transducer converts the sound energy in its vicinity to electrical pulses. These pulses are amplified and given to a 555 timer controller. If someone claps near the mic of the system, the above-stated series of events gets triggered. This leads to turning ON of the fan. Due to the timing configuration set in the 555 timer, the fan remains ON for a stipulated period of time. After that period, the fan turns OFF and waits for the next clap from the user. The mic is biased in the circuit in such a way that it doesn't pick up noise signals from the ambience. These electrical converted audio samples are amplified from an amplifier stage.

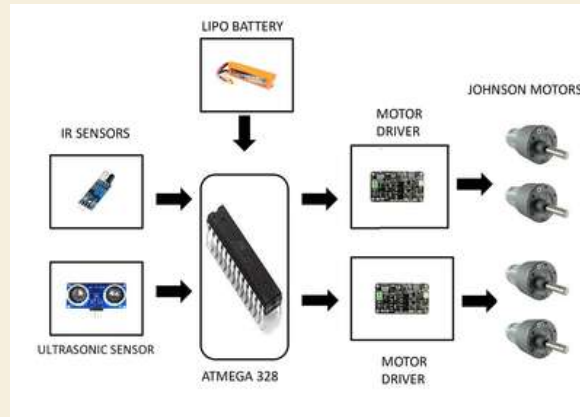


Ram Balram , III-EEE

WRITE UP

Smart Shopping Trolley that Follows Customer

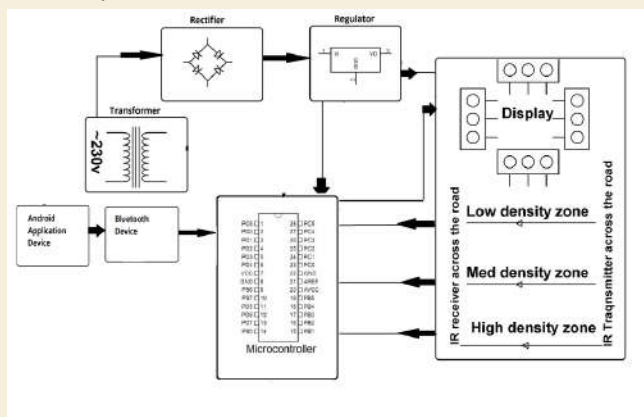
Shopping malls are one of the most popular places for leisure activities, shopping, and entertainment, which attract a large number of people every day. With the increasing popularity of online shopping, brick-and-mortar stores have faced challenges to retain customers. As a result, shopping malls have been looking for innovative ways to provide a more personalized shopping experience to attract and retain customers. One such solution is smart human following shopping trolleys.



Raguraman , III -EEE

Traffic Density Control With Android Override Using Avr

The main goal of this project is to provide efficient solution for traffic signal system to overcome the problems that occurs with normal signal timings during emergency automatically. The emergency situations are like ambulance, fire brigade gets stuck in traffic .This vehicle needs priority to go first as well as the requirement occurs when there is high density at a particular direction. The system work with AVR family Microcontroller that is interfaced with the IR sensors and photodiodes aligned in line of sight configuration across the load for detecting the density.

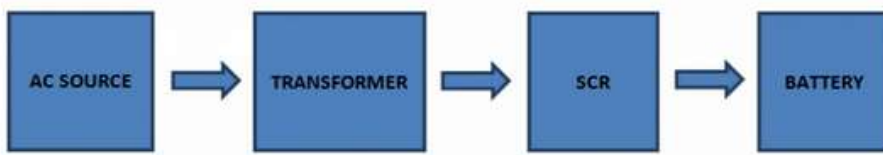


Vinodhini,III - EEE

WRITE UP

Battery Charger Using SCR

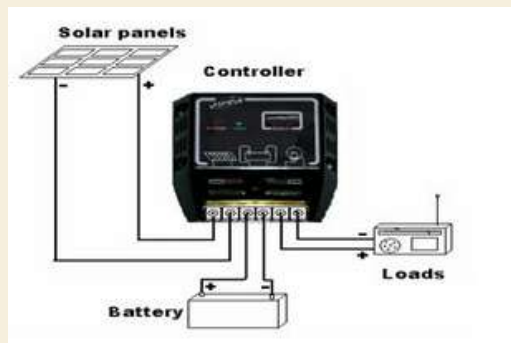
The battery is charged with small amount of AC voltage or DC voltage. So if you want to charge your battery with AC source then should follow these steps, we need first limit the large AC voltage, need to filter the AC voltage to remove the noise, regulate and get the constant voltage and then give the resulting voltage to the battery for charging. Once charging is completed the circuit should automatically turned off.



Shiyamala S A , IV-EEE

Automatic solar charge controller

A solar charge controller is fundamentally a voltage or current controller to charge the battery and keep electric cells from overcharging. It directs the voltage and current hailing from the solar panels setting off to the electric cell. Generally, 12V boards/panels put out in the ballpark of 16 to 20V, so if there is no regulation the electric cells will damage from overcharging. Generally, electric storage devices require around 14 to 14.5V to get completely charged. The solar charge controllers are available in all features, costs, and sizes. The range of charge controllers is from 4.5A and up to 60 to 80A.



Harikrishnan S , IV-EEE

