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Password based Circuit Breaker using GSM Module for Wireman Safety

Mr. Dilip D.Gaikawad[1], Mr. Akshay P. Awari[2], Mr. Yugal M. Mahajan[3], Mr.Yuvraj G.Kharde[4], Mr.Rushikesh R. Deshmukh[5]

[1]Assistant Professor,[2, 3, 4, 5] Student, Department of Electrical Engineering, Shree Saibaba Institute of Engineering Research and Allied Sciencec RAHATA.

Abstract: ***Nowadays the electrical system suffers a vast amount of failures like breaking of transmission line, collapse of electrical poles, fatigue in lines may occurred. So it is necessary to prevent any hazard for a livestock as well as assets like farms and farm workers, prevent elextroduction in urban areas For this a project is implemented for the security of the consumer and improve the reliability of transmission facility we have been designed a Password based circuit breaker using GSM MODULE that will help as quick as possible for better protection from any mishaps because of electricity failure. It uses a GSM module for communication between linemen and Electrical Substation by a password that will operate Circuit Breaker when correct password is typed.***

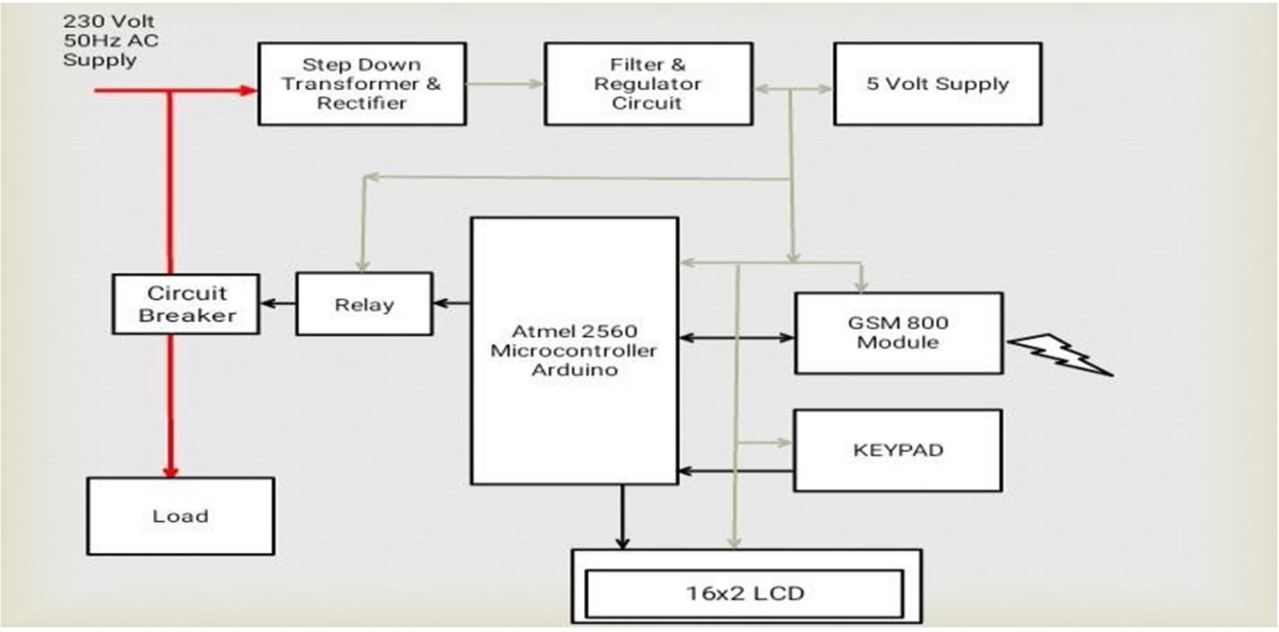
Keywords: Password, Electroduction, Security.

I. INTRODUCTION

The implemented design has its heart is microprocontroller Atmega2560 for controlling all the action like recognising the exact password entry and discrimination between wrong and correct password. The main concept of our project is to minimize the chances of any undesirable incidents. The relay will operate at the time of correct password is being typed so we added a 4×4 matrix keypad for password input and a 16×2 LCD display for observing the status of processes like correct PASSWORD MATCHED and false password is detected or PASSWORD INCORRECT on the screen

Our project is works on a power supply which is essential for performing the total work like tripping of Relay , working of keypad, operation of microcontroller Atmega238. So basically it is a relay operated password protected implementation that is work only when it has correct insertion of password for relay tripping signal is detected.

The password is saved in EEPROM memory of microcontroller that can be reset easily if any malfunction is occurred during the normal practice.



Block Diagram of password based circuit breaker using GSM MODULE

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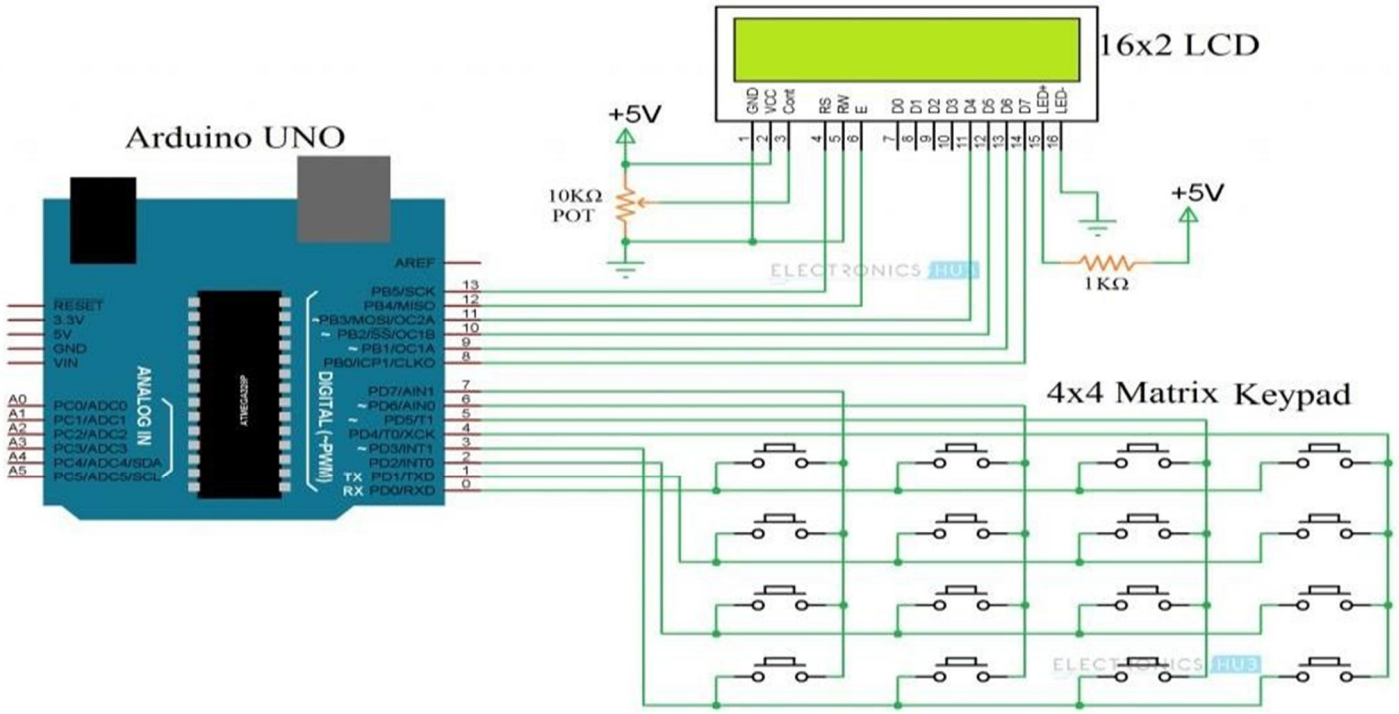
II. IMPLEMENTATION

The implementation of our project is likely to be this.

A. *Components Used*

1) *ATMEL 2560 Microcontroller:* The microcontroller used is advance technology so it can have larger programme storage facility . Also a number of interrupt handling capacity is increases that means within a smaller time one can control all controlling action as in quick manner. It's 8Kb boot loader can be used for reset or retained the original system configuration stored. It can have programming language like basic C which is easy to programme it and can be stored in its 4 Kb EEPROM also it offers us 256Kb flash memory. Works on 5 volt dc source. 54 I/O pins in digital (out of 15 pins can be used for PWM output). Also it can be used of ADC by its 16 analog input pins

2) *16×2 LCD Display:* It gives us the output process status such as password matched or incorrect password . If we enters proper password them it will shows PASSWORD MATCHED and if entered incorrect password then we can see INCORRECT PASSWORD. It's main role is to show actual status of hardware system.



Interfacing of 4×4 Matrix keypad,16×2 LCD display and Audrino microcontroller ATMEL 2560

3) *4×4 Matrix Keypad:* It is a alphanumeric keypad which consists digits from 0 -9 and alphabets from A-Z we can enter password bypressing proper keys for operations of our project.

B. *GSM Module 800*

It is a communication device which work at 800MHz band . The main purpose of this model is that to receive the correct password from user over a long distance . It is connected with Port A of microcontroller. It's main role is to generate OTP which is stored in its 32Kb on chip programmable flash memory.

C. *Relay*

The relay is used for the purposes of switching Action when it will sence the driving signal from microcontroller. It is a basically DPDT switch it has point such that NO(Normally Open) , NC (Normally Closed) and Common.

D. *Loads*

The load is mainly transmission line which is to be controlled by our project module. When any disturbance will occurred then we can trip regarding circuit breaker for regarding transmission line.

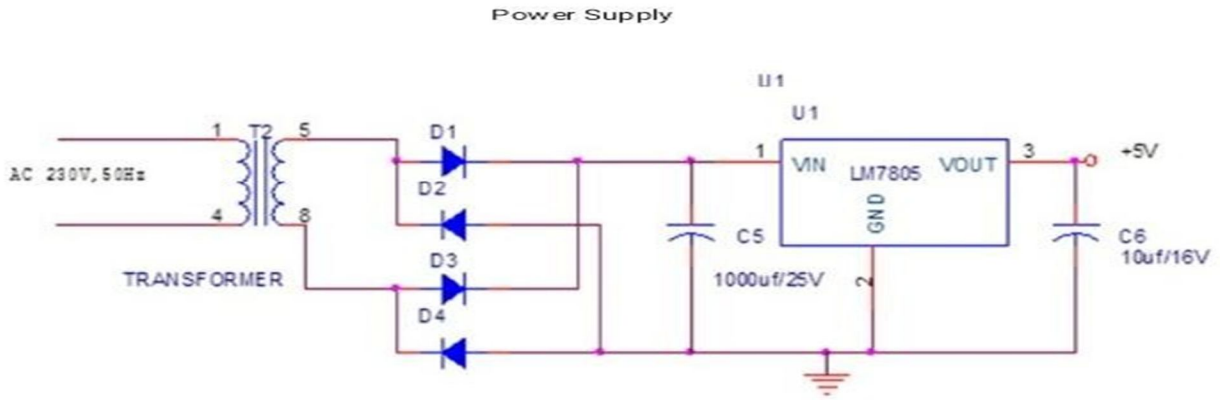
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III. POWER SUPPLY

It has main purpose that to generate required Dc power source for operations of our project. It has following components

A. Power Supply



1) *Step Down Transformer:* It used for stepped down voltage level . If we directly applies this voltage to our project then it will damage the whole system. So to limit it we have to stepped down it properly for our project use.

2) *Bridge Rectifier:* It is a Diode circuit implemented with 4 diode in Bridge Rectifier formation. It used for convert AC Voltage Source into its equivalent DC source. Each diodewill conduct in two cycles of conduction for continuous DC voltage source.

3) *Capacitor:* The purpose of using capacitor is to remove harmonics, ac components, ripples in rectified DC source . It also acts like a SMOOTHING REACTOR in power supply.

4) *Voltage Regulator:* It is used for maintaining required DC voltage level so it can be used for our project. It is basically 78XX series.

B. Advantage

1) Simple to operate and easy programming languages like Basic C.

2) Fast response.

IV. CONCLUSION

By using this implementation we can says that improvement in advance technology we can clear the fault easily and it is safer to use for quick response. Also it is easy to utilise and simple in programming that will enables us to control various system easily.

V. FUTURE SCOPE

By implementation of PLC and SCADA technology one can easily monitor all the location of healthy and faulty zones and keep it isolated until it repaired. Can be implemented at remote location for proper control.

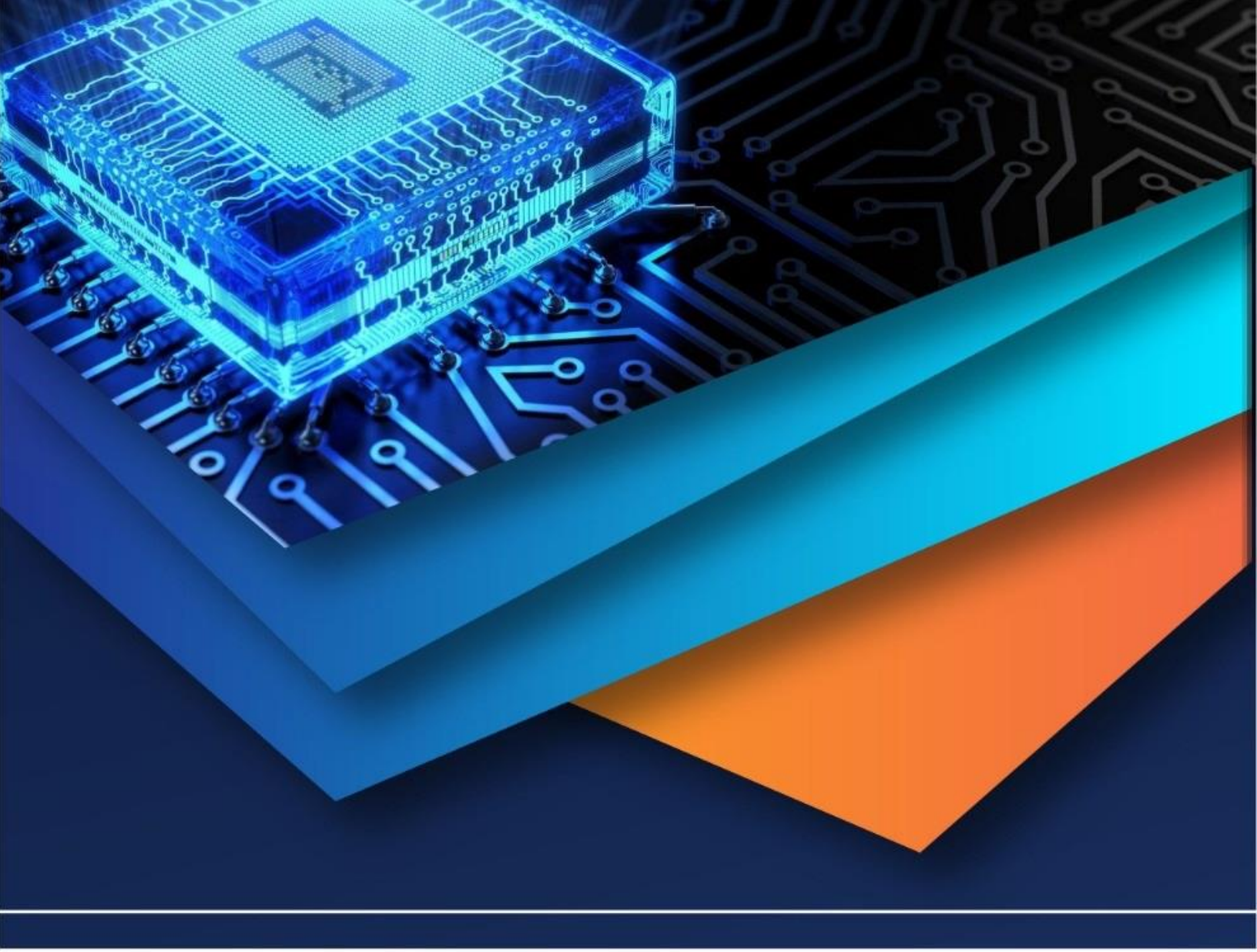
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