Sudan University of Science and Technology

Collage of Engineering
Electrical Engineering Department

PASSWORD BASED CIRCUIT BREAKER WITH GSM MODULE

قاطع كهربائي مزود بكلمة مرور ونظام إتصال

A Project Submitted in Partial Fulfillment For the Requirements of the Degree of B.Tech (Honor) in Electrical Engineering

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الآية

قال تعالى :

بسم الله الرحمن الرحيم

﴿ وَقُل رَّبِّ زِدْنِي عِلْمًا﴾

صدق الله العظيم

سورة طه – الاية (114)

DEDICATION

I dedicate this project with much love and appreciation;

To the candles of my lives. My beloved mother who have always been there for me.

To my father who have always been the brick walls on whom me can learn and depend on forever.

To my brothers and sister who mean the world to me.

To my friends, family, colleagues and teachers in the Past and presents and to everyone that touch my heart.

ACKNOWLEDGEMENT

Firstly, thanks to Allah, our creator above for being everything and for giving us the ability and strength to do anything.

We wish to express our deepest gratitude and appreciation for our supervisor for this project UST.MAHA OSMAN for her patience and continuous guidance, advice and supervision through this work.

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Also thank and gratitude to all our teachers who contributed to our education and to everyone who helped me in this study.

ABSTRACT

A circuit breaker is an automatically operated electrical switch designed to protect an electrical circuit from damage caused by overload or short circuit. When operated manually we see fatal electrical accidents to the line man are increasing during the electric line repair due to the lack of communication and coordination between the maintenance staff and the electric substation staff.

In order to avoid such accidents ,this project designed to solve this problem by design breaker such that only authorized person can operate it with a password. The system is fully controlled by ATMEGA32 microcontroller. A keypad is used to enter the password to open or close the circuit breakers, which is indicated by a lamps.

The global system for mobile (GSM) circuit enables remote control of the system. This leads to address the problem of loss of time. The system also provided protection against over current using the sensors.

المستخلص

القاطع الكهربائي مفتاح يعمل اوتوماتيكيا، صُمِّمَ لحماية الدائرة من الحمل الزائد او قصر الدائرة. فعندما يعمل يدويا نجد ان هنالك حوادث كهربية قاتلة تحدث للعاملين اثناء صيانة الخطوط بسبب قلة الاتصال والتنسيق بين مهندسي الصيانة ومهندسين محطة التوزيع.

هذا المشروع صمم لحل هذه المشكلة عن طريق السماح للشخص المخول فقط بالتحكم في الخطوط عن طريق كلمة مرور، يعمل النظام تحت سيطرة ماكروكنترولر من النوع ATMEGA32،واستُخدِمَت لوحة المفاتيح لادخال كلمة المرور عندما يعمل النظام في الوضع اليدوي.

استُخدِمَت دائرة الGSM للتحكم في النظام عن بعد،عن طريق ارسال كلمة المرور الخاصة بالخط المعني في رسالة نصية،وذلك يعمل على تقليص الزمن الضائع في رجوع المهندس الى المحطة لتوصيل وفصل الخطوط. ايضاً ذُوِّد النظام بحماية ضد ارتفاع التيار عن طريق حساسات زيادة التيار.

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LIST OF ABBREVATIONS

CB	Circuit Breaker
LCD	Liquid Crystal Display
GSM	Global System for Mobile
SF6	Silver Hexafloride
GIS	Gas Insulation Switchgear
CT	Current Transformer
PT	Potential Transformer
CEPT	Conference Europe Eenneds Postes Telecommunication
OTP ROM	One Time Programmable Read Only Memory
RC	Resistor, Capacitor
DC	Direct Current
ICs	Integrated Circuits
AC	Alternated Current
IDE	Integrated Development Environment
BASSCOM	Basic compiler
SMS	Short Message Service
SD	Secure Digital
SCADA	Supervision Control And Data Acquisition
DCS	Digital Control System

CHAPTER ONE

INTRODUCTION

1.1 Background

Safety of human life is of a paramount importance. In high current switching system, switch gear protects electrical circuit. ‘’Security is the prime concern in our day to day life. Everyone needs to be securing as much as possible. The electric line man safety system is designed to control a switch gear by using a password for the safety of electric man. Critical electrical accidents to line men are on the rise during electric line repair due to lack of communication and co-ordination between the maintenance staff and electric substation staff. This project offers a resolution that safeguards safety of maintenance line men. The control to turn on or off the line will be maintained by the line man only because this system has an arrangement such that a password is required to operate the circuit breaker on/off [1].

The password can be entered manually by a keypad matrix, or automatically by a sending a message to the GSM circuit include the password. The GSM circuit enables remote control of the system. This leads to address the problem of loss of time. Between the two circuits there is a key to switch from manual mode to automatic mode and vice versa. The system also provided protection against over current using the sensors.

1.2 Problem Statement

Nowadays, electrical accidents to the line are increasing, while repairing the electrical lines due to the lack of communication between the electrical substation and maintenance staff.

This project gives a solution to this problem to ensure line man safety. This project is arranged in such a way that maintenance staff or line man has to enter the password to ON/OFF the electrical line. The problem of loss of

time has also been addressed. So that the line man can be connect or disconnected without coming back to the station.

1.3 Objectives

The main objectives of this study are to

- Design of password based circuit breaker circuit.
- Make connection between the main circuit and GSM circuit.
- Make connection between the main circuit and the over current protection circuit.
- Simulate of controlling password based circuit breaker circuit

1.4 Methodology

- See the scientific journals and studies which related to the project topic.
- Drawing the block diagram of the system.
- Search about a different type of controlling circuit and circuit breakers .
- Search about the model of circuit component.
- Test the system using proteus program.
- The Design of real circuit of the system will be proposed.

1.5 Project layout

This project contain of five chapters

- Chapter one gives background about the general concept of the project, problem statement, objectives and methodology.
- Chapter two discusses some topics like protecting, controlling, and circuit breakers.
- Chapter three describe the practical circuit devices of project.

- Chapter four shows the System block diagram , simulation and real circuit model .
- Chapter five provides the conclusion and recommendations.

CHAPTER TWO

CIRCUIT BREAKERS AND CONTROL SYSTEMS

2.1 Introduction

The history of electrical-power technology throughout the world is one of steady and, in recent years, rapid progress, which has made it possible to design and construct economic and reliable power systems capable of satisfying the continuing growth in the demand for electrical energy, In this power system protection and control play a significant part, and progress in design and development in these fields has necessarily had to keep pace with advances in the design of primary plant,such as generators, transformers, switchgear, overhead lines and underground cables,indeed, progress in the fields of protection and control is a vital prerequisite for the efficient operation and continuing development of power supply systems as a whole.

The word 'protection' is used here to describe the whole concept of protecting a power system. The term 'protective gear' or 'protective equipment' is widely used in that sense [2]. The purpose of an electrical power system is to generate and supply electrical energy to consumers. The system should be designed and managed to deliver this energy to the utilization points with both reliability and economy. Severe disruption to the normal routine of modern society is likely if power outages are frequent or prolonged, placing an increasing emphasis on reliability and security of supply. As the requirements of reliability and economy are largely opposed, power system designs inevitably a compromise.

Many items of equipment are very expensive, and so the complete power system represents a very large capital investment. To maximize the return on this outlay, the system must be utilized as much as possible within the applicable constraints of security and reliability of supply. More

fundamental, however, is that the power system should operate in a safe manner at all times, no matter how well designed, faults will always occur on a power system, and these faults may represent a risk to life and/or property. Figure 2.1 shows the onset of a fault on an overhead line. The destructive power of a fault arc carrying a high current is very great; it can burn through copper conductors or weld together core laminations in a transformer or machine in a very short time – some tens or hundreds of milliseconds. Even away from the fault arc itself, heavy fault currents can cause damage to plant if they continue for more than a few seconds. The provision of adequate protection to detect and disconnect elements of the power system in the event of fault is therefore an integral part of power system design. Only by so doing can the objectives of the power system be met and the investment protected. Figure 2.2provides an illustration of the consequences of failure to provide appropriate protection [3].

Figure 2.1: Onset of an overhead line fault

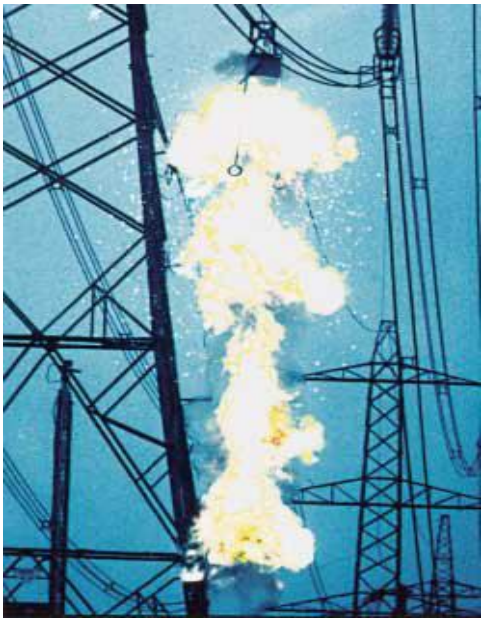

Figure 2.2: Possible consequence of inadequate protection

2.2 Types of Circuit Breakers

The types of breakers basically refer to the medium in which the breaker opens and closes. The medium could be oil, air, vacuum or SF6.

2.2.1 Air circuit breaker

Interrupting contacts situated in air instead of any other artificial medium. Arc is chopped into a number of small arcs by the Arc-Shute as it rises due to heat and magnetic forces, Figure 2.3. The air circuit breakers are normally employed for 380~480V distribution. Figure 2.4 shows the external form of air circuit breaker

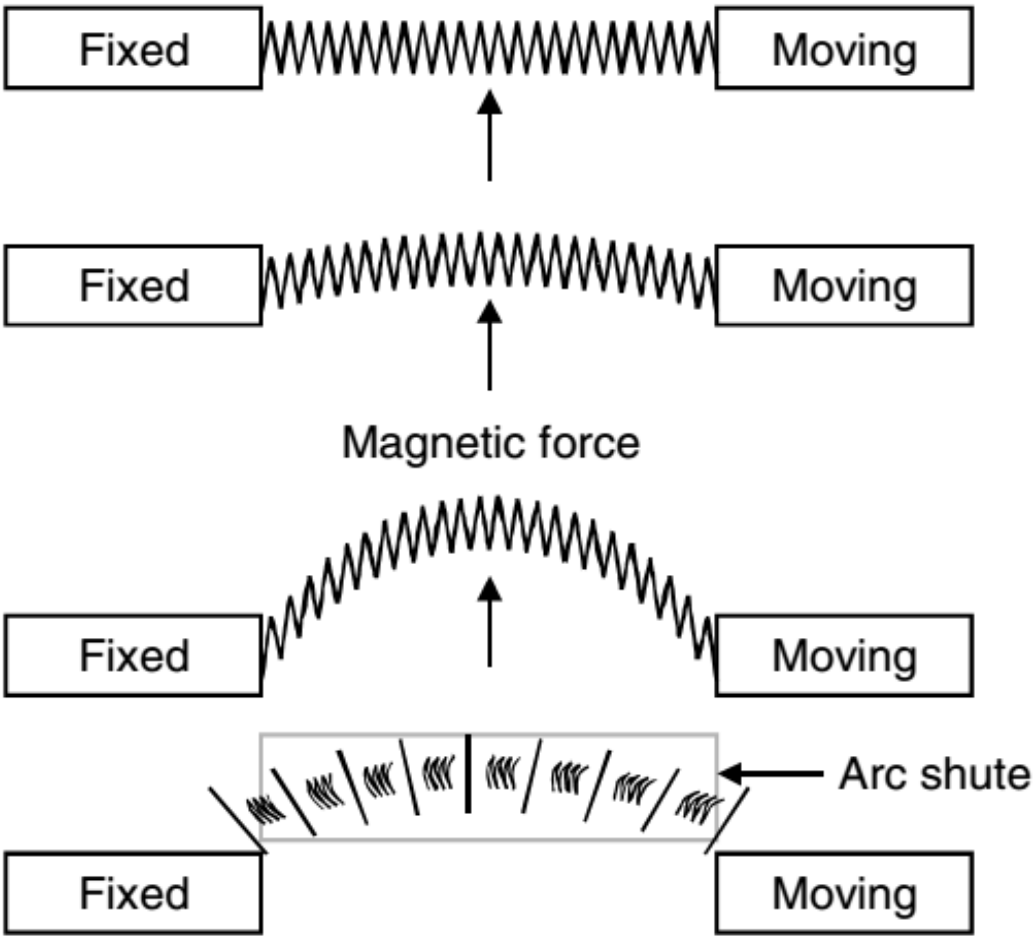

Figure 2.3: Air break switchgear

Figure 2.4: external form of Air circuit breaker

2.2.2 SF6 and vacuum circuit breakers

Sulphur-hexaflouride SF6 is an inert insulating gas, which is becoming increasingly popular in modern switchgear designs both as an insulating as well as an arc-quenching
medium. Gas insulated switchgear GIS is a combination of breaker, isolator, CT, PT, etc., and are used to replace outdoor substations operating at the higher voltage levels, namely
66 kV and above For medium- and low-voltage installations, the SF6 circuit breaker remains constructionally the same as that for oil and air circuit breakers mentioned above, except for the arc interrupting chamber which is of a special design, filled with SF6.To interrupt an arc drawn when contacts of the circuit breaker separate, a gas flow is required to cool the arcing zone at current interruption i.e. current zero.This can be achieved by a gas flow generated with a piston known as the ‘puffer’ principle, or by heating the gas of constant volume with the arc’s energy. The resulting gas expansion is directed through nozzles to provide the required gas flow.

The pressure of the SF6 gas is generally maintained above atmospheric; so good sealing of the gas chambers is vitally important. Leaks will cause loss of insulating medium and clearances are not designed for use in air.

Figure 2.5: SF6 circuit breaker

Vacuum circuit breakers

Vacuum circuit breakers and contactors were introduced in the late 1960s. A circuit breaker is designed for high through-fault and interrupting capacity and as a result has a low mechanical life. On the other hand, a contactor is designed to provide large number of operations at typical rated loads of 200/400/600A at voltages of 1500/3300/6600/11 000 V. Vacuum breakers are also similar in construction like the other types of breakers, except that

the breaking medium is vacuum and the medium sealed to ensure vacuum[4]. Table 2.1 shows the comparative between types of circuit breakers .

Figure 2.6: Vacuum circuit breaker

Table 2.1 the features for different types of circuit breakers

Factor	Oil Breakers	Air Breakers	Vacuum/SF6
Safety	Risk of explosion and fire due to increase in pressure during multiple operations	Emission of hot air and ionized gas to the surroundings	No risk of explosion
Size	Quite large	Medium	Smaller
Maintenance	Regular oil replacement	Replacement of arcing contacts	Minimum lubrication for control devices
Environmental factors	Humidity and dust in the atmosphere can change the internal properties and affect the dielectric		Since sealed, no effect due to environment
Endurance	Below average	Average	Excellent

2.3 Control Systems

Control systems are an integral part of modern society. Numerous applications are all around us The rockets fire, and the space shuttle lifts off to earth orbit; in splashing cooling water, a metallic part is automatically machined; a self-guided vehicle delivering material to workstations in an aerospace assembly plant glides along the floor seeking its destination. These are just a few examples of the automatically controlled systems that we can create. We are not the only creators of automatically controlled systems; these systems also exist in nature. Within our own bodies are numerous control systems, such as the pancreas, which regulates our blood sugar. In time of ‘‘fight or flight,’’ our adrenaline increases along with our heart rate, causing more oxygen to be delivered to our cells. Our eyes follow a moving object to keep it in view; our hands grasp the object and place it precisely at a predetermined location.

2.3.1 Control system definition

A control system consists of subsystems and processes or plants assembled for obtaining a desired output with desired performance, given a specified input.

2.3.2 Advantages of control systems

With control systems, we can move large equipment with precision that would otherwise be impossible. We can point huge antennas toward the farthest reaches of the universe to pick up faint radio signals;controlling these antennas by hand would be impossible. Because of control systems, elevators carry us quickly to our destination, automatically stopping at the right floor. We alone could not provide the power required for the load and the speed; motors provide the power, and control systems regulate the position and speed.

The control systems building for four primary reasons

- Power amplification
- Remote control
- Convenience of input form
- Compensation for disturbances

For example, a radar antenna, positioned by the low-power rotation of a knob at the input, requires a large amount of power for its output rotation. A control system can produce the needed power amplification, or power gain. Robots designed by control system principles can compensate for human disabilities. Control systems are also useful in remote or dangerous locations. For example, a remote-controlled robot arm can be used to pick up material in a radioactive environment. Figure 1.4shows a robot arm designed to work in contaminated environments.

Control systems can also be used to provide convenience by changing the form of the input. For example, in a temperature control system, the input is a position on a thermostat. The output is heat. Thus, a convenient position input yields a desired thermal output. Another advantage of a control system is the ability to compensate for disturbances. Typically, we control such variables as temperature in thermal systems, position and velocity in mechanical systems, and voltage, current, or frequency in electrical systems. The system must be able to yield the correct output even with a disturbance [5].

2.4 System Configurations

There are two types of control systems

2.4.1 Open-loop systems

A generic open-loop system is shown in Figure2.7. It starts with a sub system called an input transducer, which converts the form of the input to that used by the controller. The controller drives a process or a plant. The input is sometimes called the reference, while the output can be called the controlled variable. Other signals, such as disturbances, are shown added to the controller and process outputs via summing junctions, which yield the algebraic sum of their input signals using associated signs. For example, the plant can be a furnace or air conditioning system, where the output variable is temperature. The controller in a heating system consists of fuel valves and the electrical system that operates the valves.

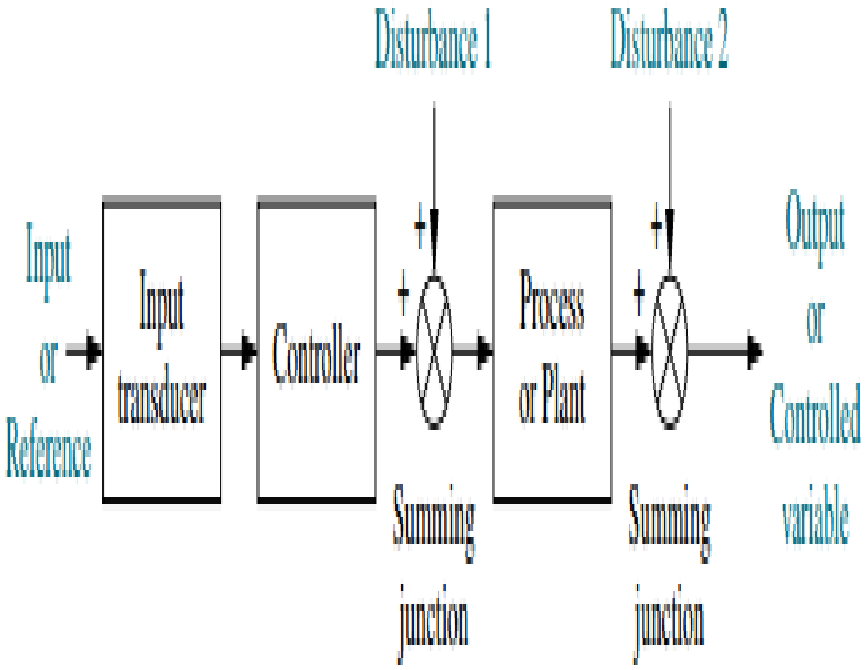

Figure 2.7: illustrates open loop system

2.3.2 Closed-loop feedback Control systems

The disadvantages of open-loop systems, namely sensitivity to disturbances and inability to correct for these disturbances, may be overcome in closed-loop systems. The generic architecture of a closed-loop system is shown in Figure 2.8.

The input transducer converts the form of the input to the form used by the controller. An output transducer, or sensor, measures the output response and converts it into the form used by the controller. For example, if the controller uses electrical signals to operate the valves of a temperature control system, the input position and the output temperature are converted to electrical signals. The input position can be converted to a voltage by a potentiometer, a variable resistor, and the output temperature can be converted to a voltage by a thermistor, a device whose electrical resistance changes with temperature.

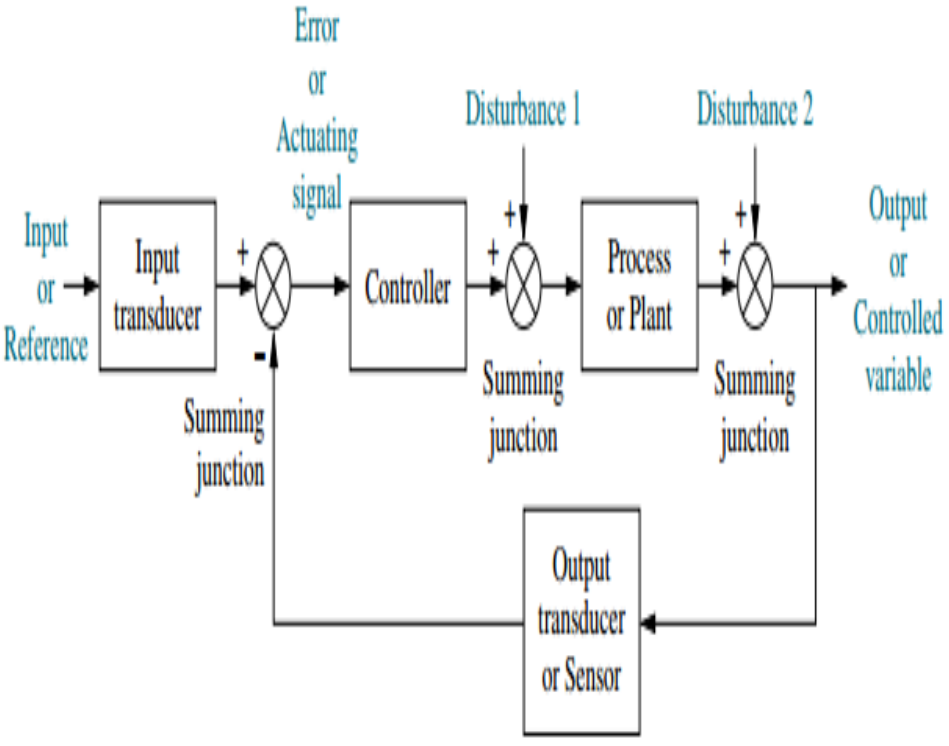

Figure 2.8: illustrates close loop system

CHAPTER THREE

SYSTEM COMPONENT

3.1 Microcontroller

Microcontroller is small computer on a single integrated circuit containing a processor, memory, and programmable input/output peripherals. Neither program memory in the form of NOR flash or OTP ROM is also often included on chip, Figure3.1, as well as a typically small amount of RAM. Microcontrollers are designed for embedded applications, in contrast to the microprocessors used in personal computers or other general purpose applications [1]. Figure 3.2: shows the Microcontroller pins.

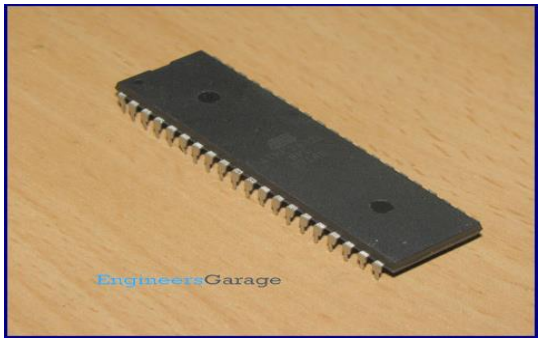

Figure 3.1: The external form of microcontroller

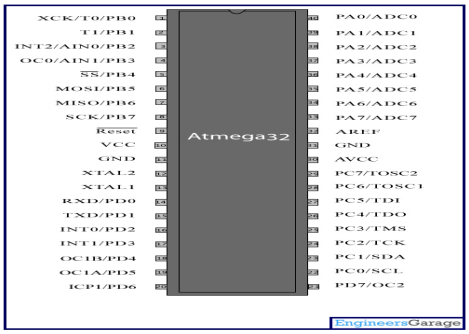

Figure 3.2: Microcontroller pins

3.1.1The features of atmega32 microcontroller

- High-performance.
- Low-power Consumption.
- Fully Static Operation.
- 32Kbytes of In-System Self-programmable Flash program memory.
- Internal Calibrated RC Oscillator.
- 32 Programmable input and output Lines.
- Operating Voltages 4.5V – 5.5V DC.
- Speed Grades 0 – 16MHz [4].

3.2 Global System for Mobile Communications

At the beginning of the 1980s it was realized that the European countries were using many different, incompatible mobile phone systems. At the same time, the needs for telecommunication services were remarkably increased. Due to this, founded a group to specify a common mobile system for Western Europe. This group was named “Groupe Special Mobile” and the system name GSM arose.

This abbreviation has since been interpreted in other ways, but the most common expression nowadays is Global System for Mobile communications at the beginning of the 1990s, the lack of a common mobile system was seen to be a general, world -wide problem. For this reason the GSM system has now spread also to the Eastern European countries, Africa, Asia and Australia [6].Figure 3.3 and 3.4 shows the SIM900 and GSM SIM800L .

Figure 3.3 illustrate GSM SIM800L Figure 3.4 illustrate GSM SIM900

3.2.1 Advantages of GSM

Due to the requirements set for the GSM system, many advantages will be achieved. These advantages can be summarized as follows

- GSM uses radio frequencies efficiently, and due to the digital radio path, the system tolerates more inter cell disturbances.
- The average quality of speech achieved is better than in analogue systems.
- Data transmission is supported throughout the GSM system.
- Speech is encrypted and subscriber information security is guaranteed.
- International roaming is technically possible within all countries using the GSM system.
- The large market increases competition and lowers the prices both for investments and usage [6].

3.3 Liquid Crystal Display

For ease of interaction with the user, this system uses an electronic display module. Here, Figure 3.5, a 16x2 LCD is used. This means in two lines it is possible to display 16 characters per line. Two registers are associated with an LCD, such as data and command. These modules are preferred since it is easily programmable. For providing visual assistance to the lineman this module is unavoidable [1].

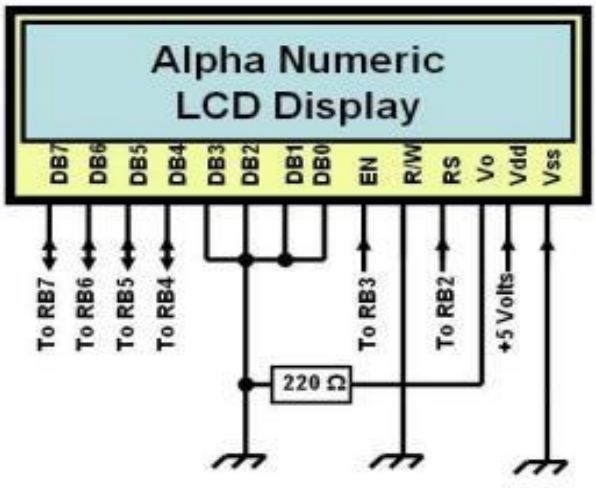

Figure 3.5: illustrates Liquid Crystal Display

3.4 Relay

A relay an electromagnetic device which is used to isolate two circuits electrically and connect them magnetically. They are very usefully device and allow one circuit to switch another one while they are completed separated. The required current to run the relay coil is more than can be supplied by various integrated circuits like operation amplifier, etc. [7].Figure 3.5illustrates relay device and Figure 3.7 Internal Circuit of Relay.

Figure 3.6: External Form of Relay

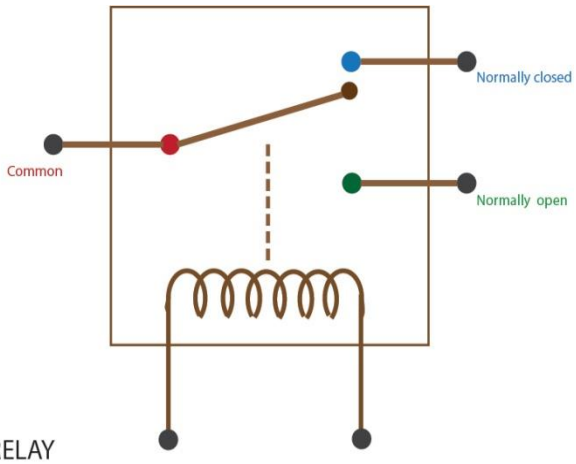

Figure 3.7: Internal Circuit of Relay

3.5 Relay driver

ULN2003 is a high voltage and high current Darlington array integrated circuit. It contains seven open collector Darlington pairs with common emitters. A Darlington pair is an arrangement of two bipolar transistors.

ULN2003 belongs to the family of ULN200X series of ICs. These ICs are used when driving a wide range of loads and are used as relay drivers, display drivers, line drivers etc. Each channel or Darlington pair in ULN2003 is rated at 500mA and can withstand peak current of 600mA. The inputs and outputs are provided opposite to each other in the pin

layout. Each driver also contains a suppression diode to dissipate voltage spikes while driving inductive loads [8]. Figure 3.8 shows ULN2003 device and Figure 3.9 illustrate Internal form of ULN2003.

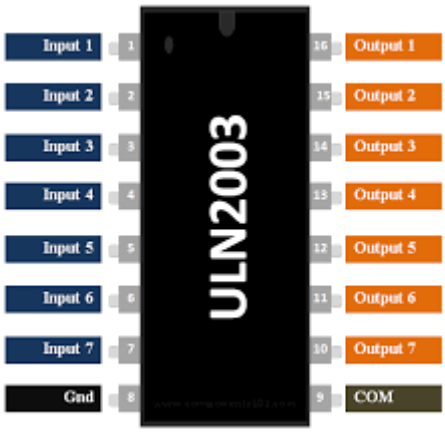

Figure 3.8: illustrate External form of ULN2003

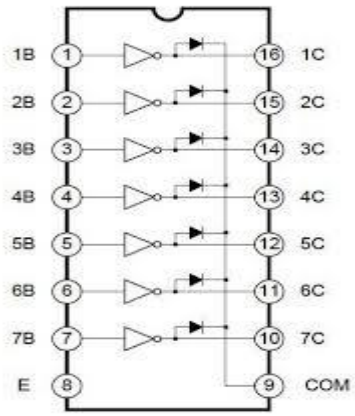

Figure 3.9: illustrate Internal form of ULN2003

3.6 Keypad

4*4 keypad Used to enter password when we want to operate the system at manual mode. It is matrix contain rows and columns of switches. Figure 3.10 shows 4*4 keypad and Figure 3.11: Internal structure and pin notation.

Figure 3.10: 4×4 keypad

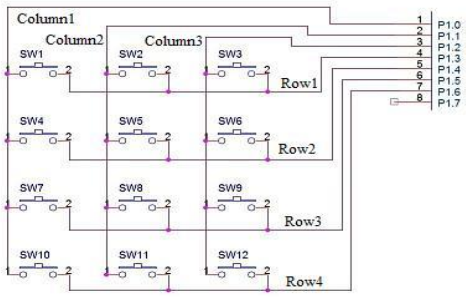

Figure 3.11: Internal structure and pin notation

3.7 Current Sensors

Current sensors used to protect circuit against over current. Figure 3.12 shows current sensor device.

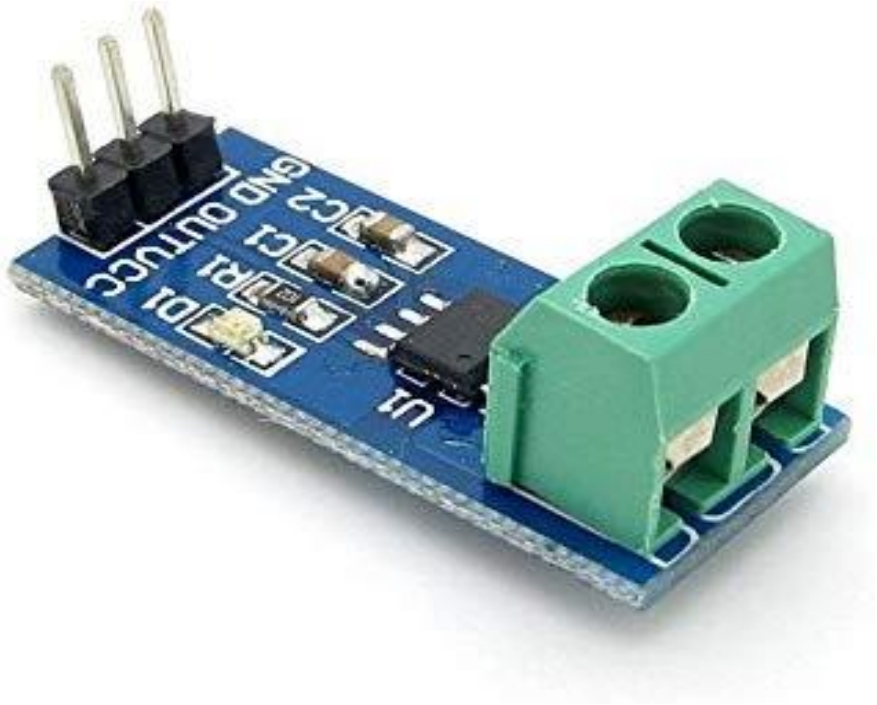

Figure 3.12: current Sensor

3.8 Power Supply

A transformer is an electrical device that changes voltage from level to another level. Basically, a transformer changes electricity from high to low voltage or low to a high voltage using two properties of electricity. For the working of the system a power supply needed. The microcontroller needs only 5 volt DC for its working [7]. AC/DC adaptor used in the circuit as a power supply.

3.9 Push Button Switch

Used to switch from manual mode to automatic mode, and vice versa. Figure 3.13 shows Push button switch.

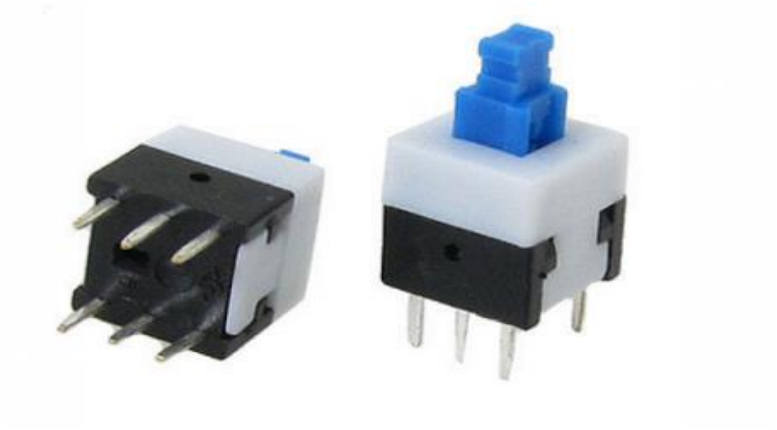

Figure 3.13: push Button Switch

3.10 Capacitor

A capacitor is an electrical device that can store energy in the electric field between a pair of closely-spaced conductors called 'plates'. Capacitors are used in electrical circuits as energy storage devices. They can also be used to differentiate between high-frequency and low-frequency signals and this makes them useful in electronic filters [1]. Figure 3.14 shows the capacitor.

Figure 3.14: Capacitor

3.11 Resistor

The resistors act to reduce current flow, and, at the same time, act to lower voltage levels within circuits. Resistors may have fixed resistances or variable resistances, such as those found in thermistors trimmers, photo

resistors and potentiometers. The current through a resistor is in direct proportion the voltage across the resistor's terminals [1]. The resistors are used in the circuit to protect circuit devices against high current. Figure 3.15 shows the resister.

Figure 3.15: Resister

CHAPTER FOUR

IMPLEMENTATION AND RESULT

4.1 Simulation

The simulator is an ideal tool for testing small parts of a program to see if you achieved what you wanted to. The circuit was simulated by using Proteus v7.7 to verify the software made by Bascom 1.11.9.5 . The simulation allows to make any modification in the circuit before test the embedded system in real life.

4.1.1 BASCOM – AVR

BASCOM-AVR is not only a BASIC Compiler, but also a comfortable Integrated Development Environment IDE. Such a development environment supports the whole process from Coding and testing a program to programming the used microcontroller.

The Start of Bascom-AVR code

```
$ regfile = "m32def.dat" ‘Bascom needs to know the-micro Atmega32
$  crystal = 8000000  ‘Bascom needs to know how fast it is going
‘Frequency
Config Portd.x = Output        ‘make this micro pin output
Config Pind.x = Input          ‘make this micro pin input
```

The microcontroller code is written by BASCOM–AVR program, For more details see appendix.

4.1.2 proteus Introduction

With the development of science and technology, the computer simulation technology has become an important sector of many design

method of early. It is designed to be flexible, results, the process of unity. It can make the design time is shortened, cost reduction, also can reduce the risk of engineering. Believe in microcontroller application of Proteus can also have extensive application [9]. Figure 4.1 shows the circuit designed by proteus software.

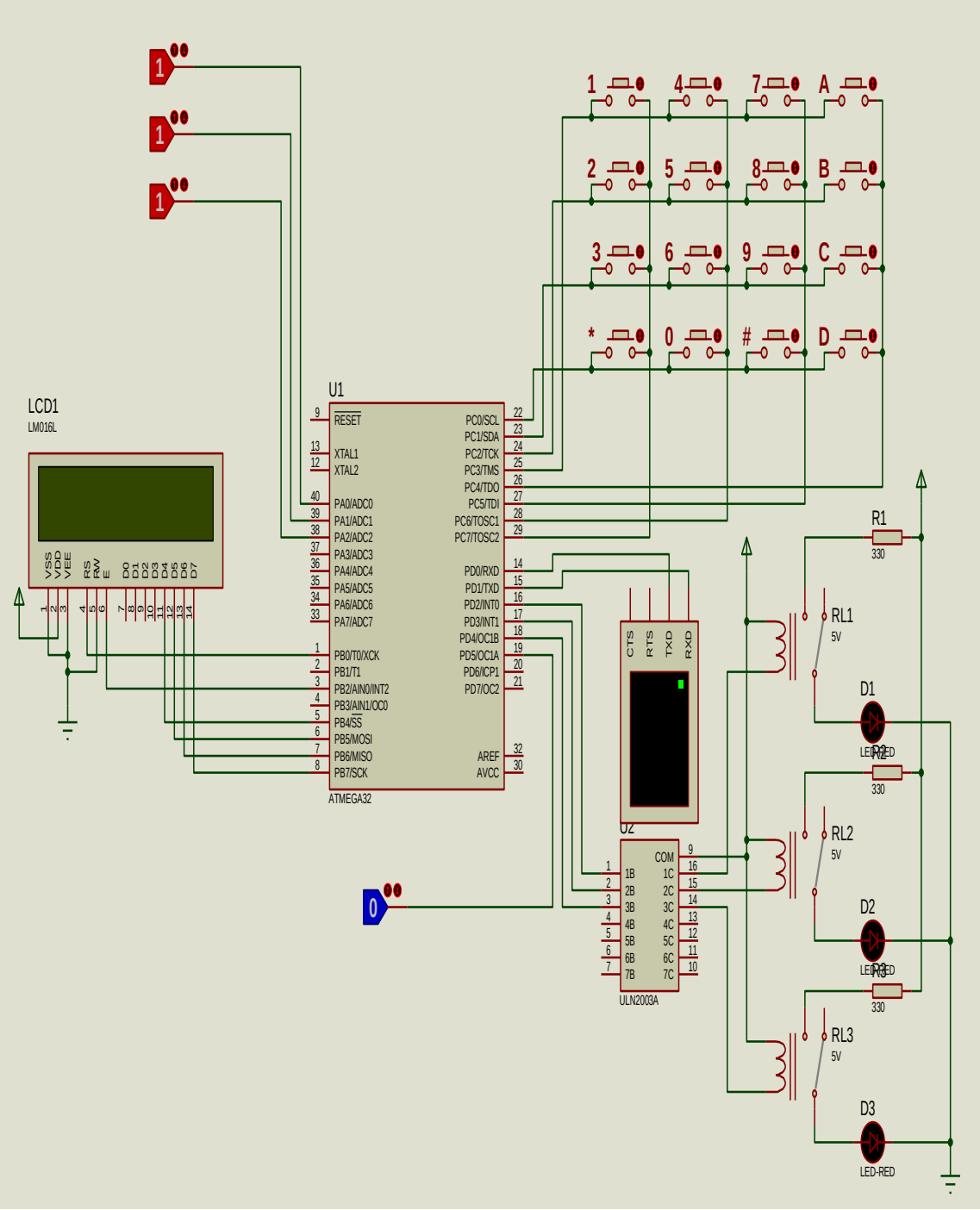

Figure 4.1: The circuit design

4.2 Result

Now we see how the project works. First, when the power is turned on, the LCD displays a welcome screen, Figure 4.2.

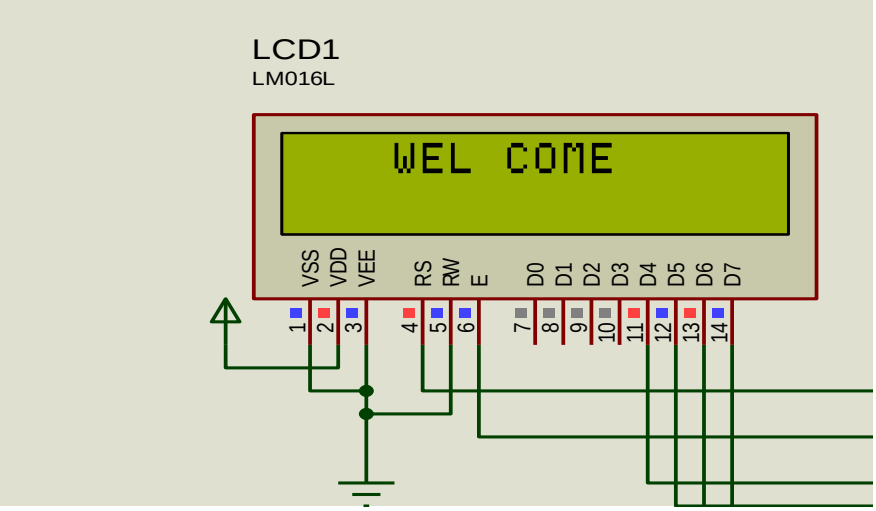

Figure 4.2: operation begin

Then asks you to enter the password to unlock it as shown in Figure 4.3 bellow.

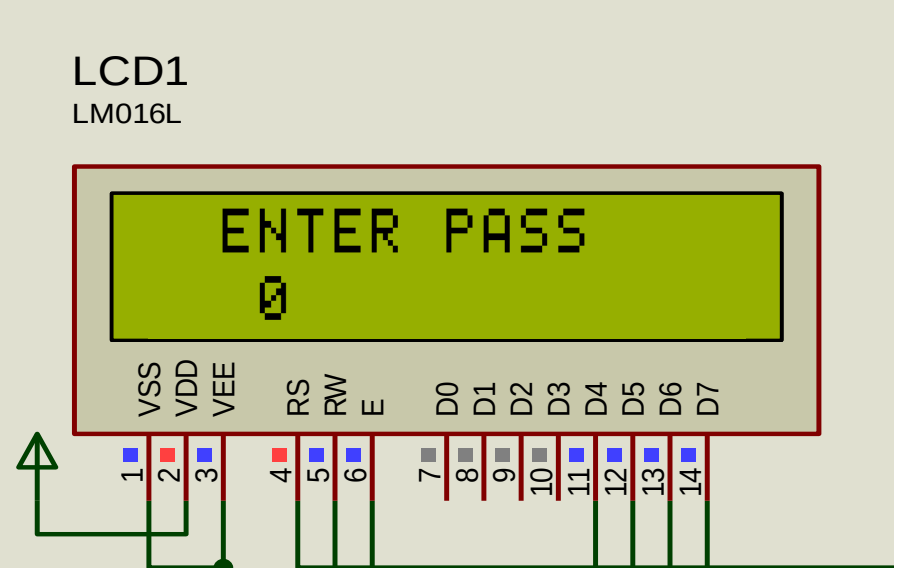

Figure 4.3: Desiring of password

In our case, the password is fixed111 for the first relay. By using the Keypad, the password is input and it is seen on the LCD as a shown in Figure 4.4

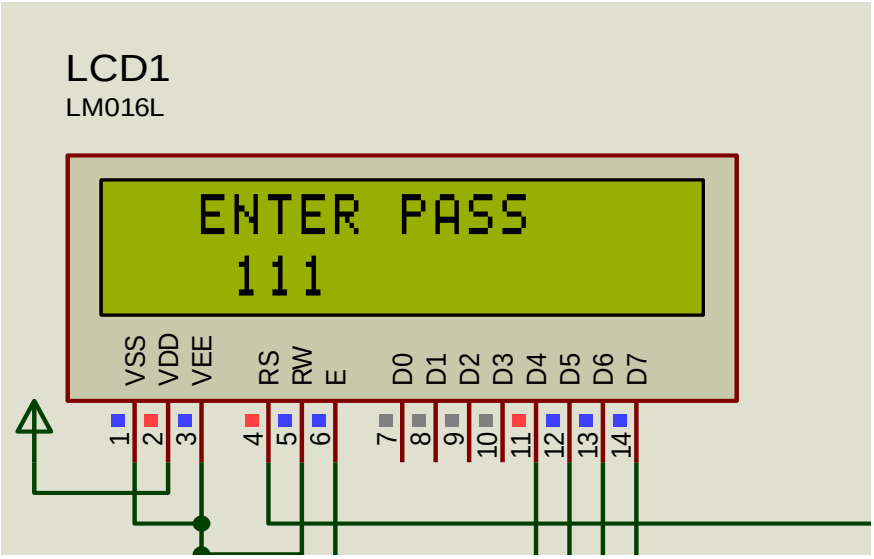

Figure 4.4: illustrate interring of password

When the correct password is entered, the contacts of first relay is changes as a shown in Figure 4.5.

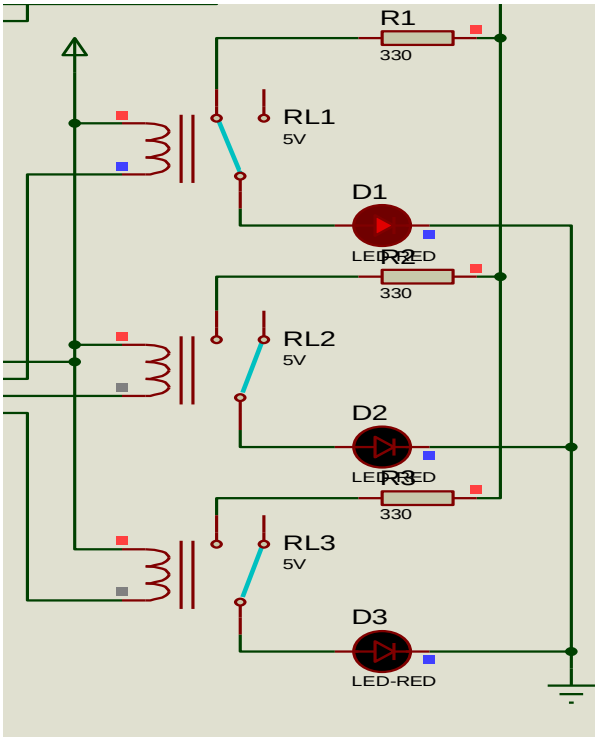

Figure 4.5: illustrates operating of line one

By applying the same steps above for the second and third relay, we get same results.

In case of transferring from manual mode to GSM mode by push button switch, the system shows "connecting" on LCD. As shown in Figure 4.6.

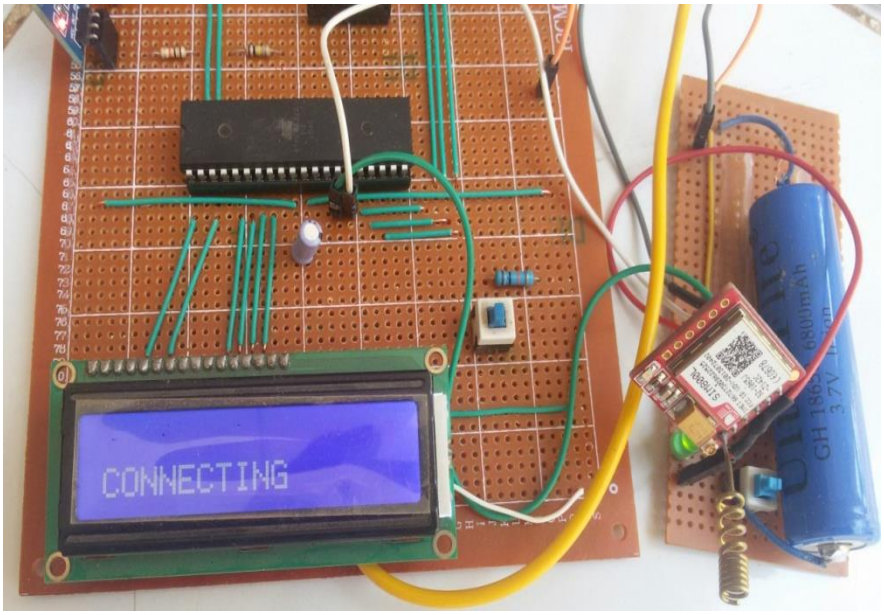

Figure 4.6: connecting of GSM circuit.

Then the system shows "STAND BY" to indicate GSM readiness for use as shown in Figure 4.6

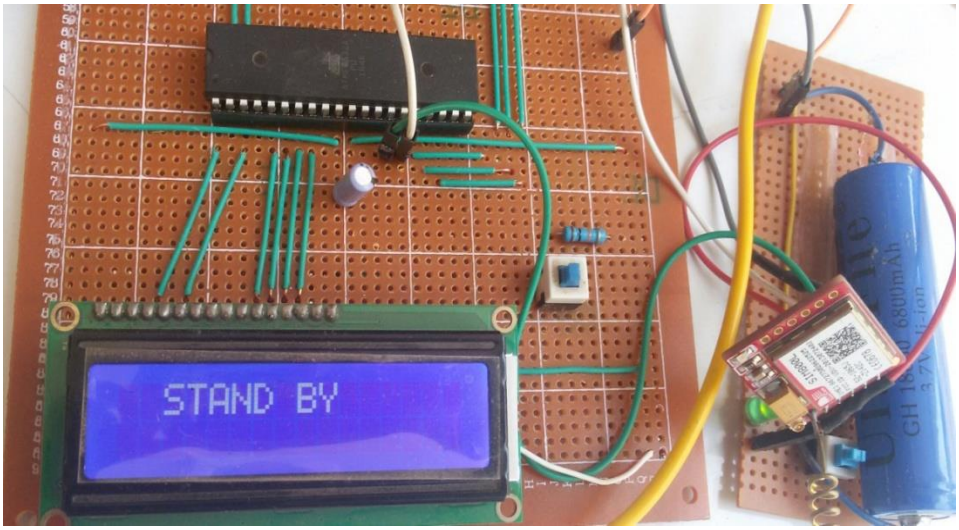

Figure 4.7: GSM ready

When we send the write password on SMS message to the number of SD card that used, the system displays phone number of sender as a shown in Figure 4.8.

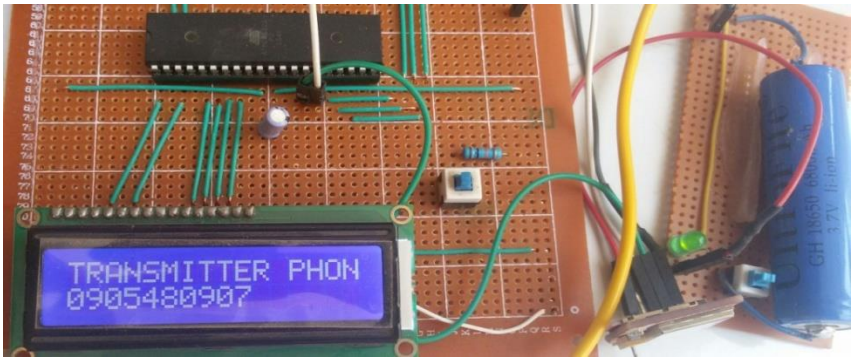

Figure 4.8: shows phone number of sender

Then the system displays password which sent as a shown in Figure 4.9

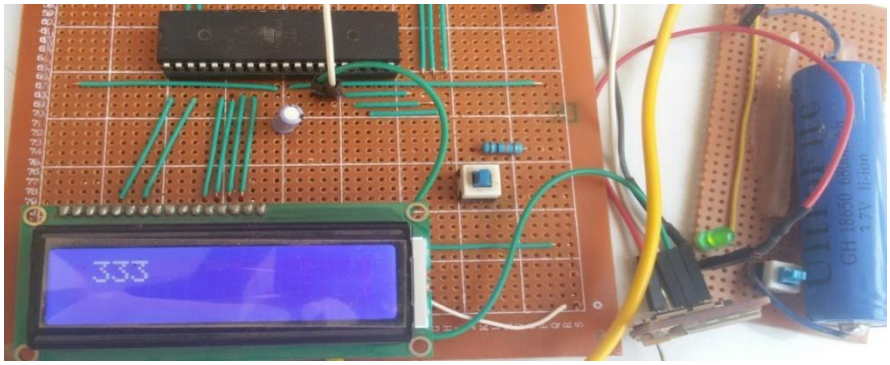

Figure 4.9: password which interred

If the password is correct, then contacts of relay third relay is changes as a shown in Figure 4.9.

Figure 4.10: illustrates operating of line three

By applying the same steps above for the first and second relays, we get same results.

Figure 4.11shows final form of the project circuit, which designed in away that allows control of three different lines, in addition to the protection against over current for each line.

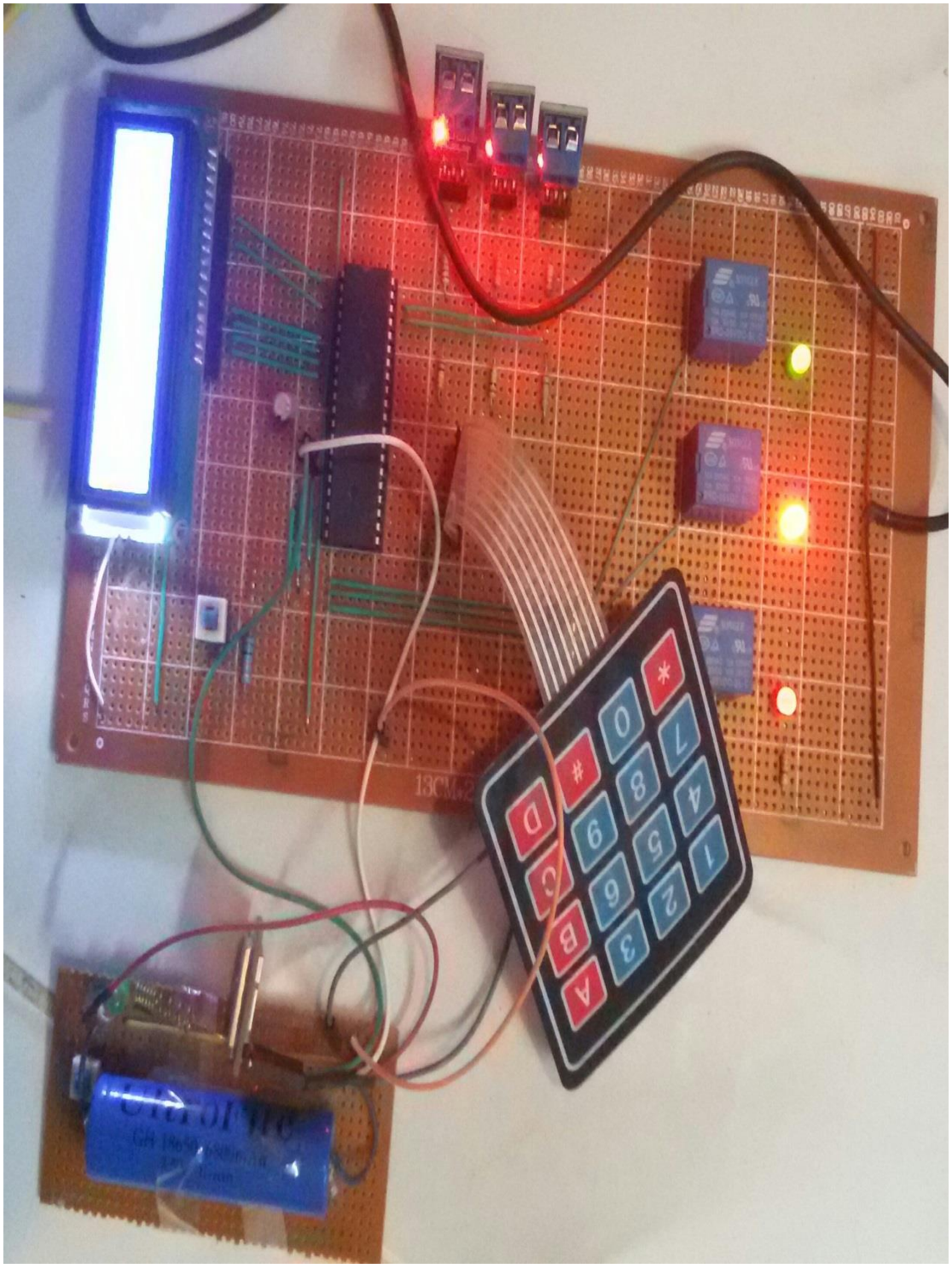

Figure 4.11: illustrates the project circuit

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The project titled “PASSWORD BASED CIRCUIT BREAKER WITH GSM MODULE” is a model for reducing fatal accidents with the help of microcontroller and GSM modem.

For repairing the electric lines the lineman and his safety plays a major role. Human safety is the most important factor.

The project is designed in away that allows control of three different lines, in addition to the protection against over current for each line . The project completed as per the requirement .

Finally the aim of the project i.e. to avoid the fatal accidents for line man.

5.2 Recommendations

We recommend developing this project so as to make it possible to be connected to SCADA supervision control and data acquisition system, or digital control system DCS to monitor incoming messages in switching case. Besides recording the history of operational time ON/OFF for maintenance purposes.

Develop the system to be able to send message to denotes the CB status as opened, closed, or tripped.

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APPENDIX

Microcontroller code

```
"regfile = "m32def.dat$

crystal = 8000000$

baud = 9600$

Config Lcd = 16 * 2

Config Lcdpin = Pin , Db4 = Portb.4 , Db5 = Portb.5 , Db6 = Portb.6 , Db7 = Portb.7 , E = Portb.2 , Rs = Portb.0

Cls

Cursor Off

Config Kbd = Portc

Config Portd.2 = Output

Config Portd.3 = Output

Config Portd.4 = Output

Config Pind.5 = Input

Config Pina.0 = Input

Config Pina.1 = Input

Config Pina.2 = Input

Dim C As Word

Dim D As Byte

Dim P As Byte

Dim S5 As Byte

Dim M As Byte

Dim H As Byte
```

```
Dim H1 As Byte
Dim H2 As Byte
H = 0
H1 = 0
H2 = 0
varibles'
Dim I As Byte
Dim B As Byte
Dim Sret As String * 200'
Dim Phone As String * 15
Dim W As Word
Dim S1 As String * 200
Dim S2 As String * 400
Dim Res As Long
Dim S As String * 200
Dim J As Byte
Dim Yy As Byte
Yy = 0
Dim Bbb As String * 5
Dim X As Byte
Dim Y As Byte
Dim T As Byte
T = 0
Dim F As Word
```

```
Dim Z As Byte
Dim P1 As Word
P1 = 111
Dim P2 As Word
P2 = 222
Dim P3 As Word
P3 = 333
Locate 1 , 4
"Lcd "WEL COME
Wait 2
Cls
Man
Cls
Do
If Pina.0 = 0 Then
Portd.2 = 0
End If
If Pina.1 = 0 Then
Portd.3 = 0
End If
If Pina.2 = 0 Then
Portd.4 = 0
End If
Locate 1 , 3
```

```
"Lcd "ENTER PASS
If Pind.5 = 1 Then
Goto Aut
Else
M = Getkbd
If M <> 16 Then Gosub Calculation
Waitms 20
Locate 2 , 4
Lcd C
Wait 1
If D = 3 Then
If C = P1 And H = 0 Then
H = 1
Portd.2 = 1
Waitms 200
D = 0
C = 0
Goto Man
Elseif C = P1 And H = 1 Then
H = 0
Portd.2 = 0
Waitms 200
D = 0
C = 0
```

```
Goto Man
Elseif C = P2 And H1 = 0 Then
H1 = 1
Portd.3 = 1
Waitms 200
D = 0
C = 0
Goto Man
Elseif C = P2 And H1 = 1 Then
H1 = 0
Portd.3 = 0
Waitms 200
D = 0
C = 0
Goto Man
Elseif C = P3 And H2 = 0 Then
H2 = 1
Portd.4 = 1
Waitms 200
D = 0
C = 0
Goto Man
Elseif C = P3 And H2 = 1 Then
H2 = 0
```

```
Portd.4 = 0
Waitms 200
D = 0
C = 0
Goto Man
Else
D = 0
C = 0
Goto Man
End If
End If
End If

Loop
Aut
If Pind.5 = 0 Then
Goto Man
End If
Cls
Waitms 100
Locate 2 , 1
" Lcd "CONNECTING
Wait 10
Cls
```

```
"Print "AT
Waitms 500
"Print "AT
Waitms 500
"Print "ATE0
Gosub Ss
Waitms 500
Cls
"Print "AT+CSMP=17,167,0,0
Gosub Ss
Waitms 500
"Print "AT+CNMI=0,1,2,0,0
Gosub Ss
Waitms 500
"Print "AT+CMGF=1
Gosub Ss
Waitms 500
"Print "AT+CMGD=1
Wait 2

CALL SUB'
Declare Sub Flushbuf
Declare Sub Showsmss As String
Cls'
```

```
MAIN LOOP'
Main
Do
Locate 1 , 1
"Lcd "  STAND BY
Wait 1
Cls
Waitms 200
Print "AT+CMGR=1" ; Chr13
Gosub Ss
Wait 1
"" , I = Instrs
If I > 0 Then
Phone = Lefts , I
Select Case Phone
Case "+CMGR"  Showsms S
End Select
End If
Loop
SUB 1 SHOW SMS'
Sub Showsmss As String
Portc.0 = 0
Cls  Home
"," , I = Instrs
```

```
I = I + 6
Phone = Mids , I , 9
Locate 1 , 1
"Lcd "TRANSMITTER PHONE
Locate 2 , 1
Lcd Chr48 ; Phone
Wait 6
Cls
I = 0
I = I + 67
Print "AT+CMGR=1" ; Chr13
Gosub Sss
S2 = Mids , 67 , 3
Cls
Locate 1 , 2
Lcd S2
Wait 1
Goto M1
M1
Do
If S2 = "111" And H = 0 Then
Waitms 200
"Print "AT+CMGD=1
Cls
```

```
H = 1
Portd.2 = 1
Wait 1
Elseif S2 = "111" And H = 1 Then
Waitms 200
"Print "AT+CMGD=1
Cls
H = 0
Portd.2 = 0
Wait 1
Elseif S2 = "222" And H1 = 0 Then
Waitms 200
"Print "AT+CMGD=1
Cls
H1 = 1
Portd.3 = 1
Wait 1
Elseif S2 = "222" And H1 = 1 Then
Waitms 200
"Print "AT+CMGD=1
Cls
H1 = 0
Portd.3 = 0
Wait 1
```

```
Elseif S2 = "333" And H2 = 0 Then
Waitms 200
"Print "AT+CMGD=1
Cls
H2 = 1
Portd.4 = 1
Wait 1
Elseif S2 = "333" And H2 = 1 Then
Waitms 200
"Print "AT+CMGD=1
Cls
H2 = 0
Portd.4 = 0
Wait 1
Else
Waitms 200
Cls
Flushbuf
"" = S
I = 0
B = 0
'                                    "" = Sret'
"" = Phone
W = 0
```

```
"" = S1
"" = S2
"Print "AT+CMGD=1
Gosub Ss
Wait 1
Cls
End If
End Sub
Goto Main
Loop
SUB 2 GET RECEIVED SMS'
Sss
"" = S
Do
B = Inkey
S = S + Chrb
S1 = Chrb
If S1 = "K" Then Exit Do
Loop
Return
Ss
'
"" = S
Do
```

```
B = Inkey
Select Case B
Case 0
Case 13  If S <> "" Then Exit Do
Case 10  If S <> "" Then Exit Do
Case Else
S = S + Chrb
End Select
Loop
Cls
Return
SUB 3 CLEAR'
Sub Flushbuf
Waitms 100
Do
B = Inkey
Loop Until B = 0
End Sub
Calculation
S5 = Lookupm , Dta
Incr D
P = D + 6
C = C * 10
C = C + S5
```

Waitms 200

Return

Dta

Data 15 , 14 , 0 , 13 , 12 , 9 , 8 , 7 , 11 , 6 , 5 , 4 , 10 , 3 , 2 , 1