CHAPTER1

INTRODUCTION

A **voting system** or **electoral system** is a method by which voters make a choice between options, often in an election or on a policy referendum.

A voting system enforces rules to ensure valid voting, and how votes are counted and aggregated to yield a final result. Common voting systems are majority rule, proportional representation or plurality voting with a number of variations and methods such as first-past-the-post or preferential voting. The study of formally defined voting systems is called social choice theory or ***voting theory***, a subfield of political science, economics, or mathematics.

With majority rule, those who are unfamiliar with voting theory are often surprised that another voting system exists, or that disagreements may exist over the definition of what it means to be supported by a majority[citation needed]. Depending on the meaning chosen, the common "majority rule" systems can produce results that the majority does not support. If every election had only two choices, the winner would be determined using majority rule alone. However, when there are three or more options, there may not be a single option that is most liked or most disliked by a majority. A simple choice does not allow voters to express the ordering or the intensity of their feeling. Different voting systems may give very different results, particularly in cases where there is no clear majority preference.

Electronic voting (also known as **e-voting**) is a term encompassing several different types of voting, embracing both electronic means of casting a vote and electronic means of counting votes.

Electronic voting technology can include punched cards, optical scan voting systems and specialized voting kiosks (including self-contained direct-recording electronic voting systems, or DRE). It can also involve transmission of ballots and votes via telephones, private computer networks, or the Internet.

In general, two main types of e-Voting can be identified:[1][2]

- e-voting which is physically supervised by representatives of governmental or independent electoral authorities (e.g. electronic voting machines located at polling stations);
- remote e-Voting where voting is performed within the voter's sole influence, and is not physically supervised by representatives of governmental authorities (e.g. voting from one's personal computer, mobile phone, television via the internet (also called i-voting)).

Electronic voting technology can speed the counting of ballots and can provide improved accessibility for disabled voters. However, there has been contention, especially in the United States, that electronic voting, especially DRE voting, could facilitate electoral fraud.

1.1 SYSTEM APPROACH

- In this project we are developing a convenient voting system based on P89V51RD2.
- First we study all previous voting system example paper ballots, electronic voting system etc, but we failed to get 100% voting in previous system and also security wise it is not good. So that we come up with this system approach.
- We also study after implementing these methodologies what changes we observe and how they are different from normal voting system without implementing this technology.

1.2SIGNIFICANCE OF PROJECT

- By using GSM, RFID Technology the probability of fake voting can be reduced.

1.3FEATURES

- **G**lobal **S**ystem for Mobile Communications is the most popular standard for mobile telephony systems in the world. GSM network operates in the 900 MHz or 1800 MHz bands.
- **R**adio**-F**requency**Id**entification is the used for the purpose of identification, which contains details of voters. 125kHz radio waves are used as the industry standard for RFID communication
- **U**niversal **A**synchronous **R**eceiver / **T**ransmitter is used in serial communication between two devices in conjunction with RS-232. Normally, we use 9600bps as the standard baud rate with 1 start bit and 1 stop bit in this communication.

1.4APPLICATIONS:

We can use this application in all type elections.

1.5ORGANIZATION:

The overall report is organized in a systematic manner so as to make it convenient for the reader in following the concepts.

- Chapter 2 provides the literature survey which is done regarding the project and the papers referred with respect to the project.
- Chapter 3 provides the introduction about the technology used in this project such as GSM and RFID.

- Chapter 4 shows the block diagram and detailed explanation of its.
- Chapter 5 explains the detailed explanation of hardware and software used in our project.
- Chapter 6 shows the results and analysis from Keil micro vision 6, Philips flash utility X- CTU of our project.
- Chapter 7 shows the advantages and disadvantages of using this particular system.
- In chapter 8 this project report is concluded with its applications and discussion for future work.
- As no work progresses without reference, conclusions are noted in chapter 9.

CHAPTER 2

LITERATURE SURVEY

2.1 HISTORY

Instant runoff voting was devised in 1871 by American architectWilliam Robert Ware,[12] although it is, in effect, a special case of the single transferable vote system, which emerged independently in the 1850s. Unlike the single transferable vote in multi-seat elections, however, the only ballot transfers are from backers of candidates who have been eliminated.

The first known use of an IRV-like system in a governmental election was in 1893 in an election for the colonial government of Queensland, in Australia.[19] The variant used for this election was a "contingent vote". IRV in its true form was first used in 1908 in a State election in Western Australia.

IRV was introduced nationally in Australia in 1918 after the Swan by-election, in response to the rise of the conservative Country Party, representing small farmers. The Country Party split the anti-Labor vote in conservative country areas, allowing Labor candidates to win on a minority vote. The conservative government of Billy Hughes introduced preferential voting as a means of allowing competition between the two conservative parties without putting seats at risk. It was first used at the Corangamite by-election on 14 December 1918.[11]Thomas Hare and Andrew Inglis Clark had previously introduced it in the Tasmanian House of Assembly.

2.2 BALLOTS VOTING

As seen above, voters in an IRV election rank candidates on a preferential ballot. IRV systems in use in different countries vary both as to ballot design and as to whether or not voters are obliged to provide a full list of preferences. In elections such as those for the President of Ireland and the New South Wales Legislative Assembly, voters are permitted to rank as many (or as few) candidates as they wish. This is known in Australia as optional preferential voting.

Under optional preferential voting, voters may make only a first choice, known as "bullet voting". Allowing voters to rank only as many candidates as they wish may better reflect their preferences, but may result in ballot exhaustion (where all the voters preferences are eliminated before a candidate is elected).

One IRV variant requires voters to express an order of preference for every candidate and thus they consider ballots that do not contain a complete ordering of all candidates to be spoilt. In Australia this variant is known as 'full preferential voting'.[11] This can become burdensome in elections with many candidates and can lead to 'donkey voting' in which the voter simply chooses candidates at random or in top-to-bottom order.

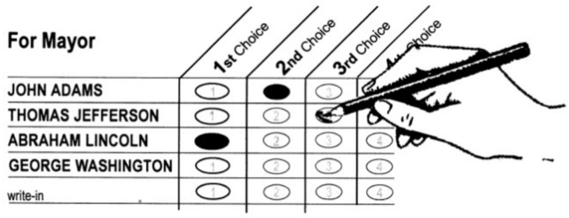


Fig 2.2 Paper Ballot

2.2.1 THE CANDIDATE ORDER ON BALLOT PAPER

The common way to list candidates on a ballot paper is alphabetically or by random lot. In some cases candidates may also be grouped by political party. Alternatively, Robson Rotation involves randomly changing candidate order for each print run.

2.2.2 PARTY STRATEGIES

Where preferential voting is used for the election of an assembly or council, parties and candidates often advise their supporters on their lower preferences, especially in Australia where a voter must rank all candidates to cast a valid ballot. This can lead to "preference deals", a form of pre-election bargaining, in which smaller parties agree to direct their voters in return for support from the winning party on issues critical to the small party.[citation needed] However, this relies on the assumption that supporters of a minor party will mark preferences for another party based on the advice that they have been given.

2.2.3 COUNTING LOGISTICS

Most IRV elections historically have been tallied by hand, including in elections to Australia's House of Representatives and most state governments. In the modern era, voting equipment can be used to administer the count either partially or fully.

In Australia, the returning officer now usually declares the two candidates that are most likely to win each seat. The votes are always counted by hand at the polling booth monitored by scrutinizers from each candidate. The first part of the count is to record the first choice for all candidates. Votes for candidates other than the two likely winners are then allocated to them in a second pass. The whole process of counting the votes by hand and allocating preferences is typically completed within a two hours on election night at a cost of $7.68 per elector in 2010 to run the entire election. Voting percentage in previous system was less.

Electronic Voting Machines("EVM") are being used in Indian General and State Elections to implement electronic voting in part from 1999 elections and in total since 2004 elections. The EVMs reduce the time in both casting a vote and declaring the results compared to the old paper ballot system. However, EVMs have been under a cloud of suspicion over their alleged tamparability and security problems[1][2] during elections (especially after the 2009 general elections).[3][4] After rulings of Delhi High Court,[5]Supreme Court[6] and demands from various political parties,[7]Election Commission decided to introduce EVMs with Voter-verified paper audit trail (VVPAT) system.[8]

The EVMs were devised and designed by Election Commission of India in collaboration with two Public Sector undertakings viz., Bharat Electronics Limited, Bangalore and Electronics Corporation of India Limited, Hyderabad. EVMs were first used in 1981 in the by-election to North Paravur Assembly Constituency of Kerala for a limited number of polling stations (50 polling stations).[9]

2.2.4 TECHNOLOGY

Indian voting machines use a two-piece system with a balloting unit presenting the voter with a button (momentary switch) for each choice connected by a cable to an electronic ballot box.

An EVM consists of two units:

- Control Unit
- Balloting Unit

The two units are joined by a five-meter cable. The Control Unit is with the Presiding Officer or a Polling Officer and the Balloting Unit is placed inside the voting compartment. Instead of issuing a ballot paper, the Polling Officer in-charge of the Control Unit will press the Ballot Button. This will enable the voter to cast his vote by pressing the blue button on the Balloting Unit against the candidate and symbol of his choice.

The controller used in EVMs has its operating program etched permanently in silicon at the time of manufacturing by the manufacturer. No one (including the manufacturer) can change the program once the controller is manufactured.

2.3 INTERNET VOTING

In April 2011 Gujarat became the first Indian state to experiment with Internet voting.

FEATURES

- EVMs are powered by an ordinary 6 volt alkaline battery manufactured by Bharat Electronics Ltd., Bangalore and Electronic Corporation of India Ltd., Hyderabad. This design enables the use of EVMs throughout the country without interruptions because several parts of India do not have power supply and/or erratic power supply.
- Currently, an EVM can record a maximum of 3840 votes, which is sufficient for a polling station as they typically have no more than 1400 voters assigned.
- Currently, an EVM can cater to a maximum of 64 candidates. There is provision for 16 candidates in a Balloting Unit. If the total number of candidates exceeds 16, a second Balloting Unit can be linked parallel to the

first Balloting Unit and so on till a maximum of 4 units and 64 candidates. The conventional ballot paper/box method of polling is used if the number of candidates exceeds 64.

- It is not possible to vote more than once by pressing the button again and again. As soon as a particular button on the Balloting Unit is pressed, the vote is recorded for that particular candidate and the machine gets locked. Even if one presses that button further or any other button, no further vote will be recorded. This way the EVMs ensure the principle of "one person, one vote".
- The EVMs cannot be pre-programmed to favour a party or a candidate because the order in which the name of a candidate/party appears on the balloting unit depends on the order of filing of nominations and validity of the candidature, this sequence cannot be predicted in advance. Further, the selection of EVMs for polling stations is randomized by computer selection preventing the advance knowledge of assignment of specific EVMs to polling stations.
- Since EVMs work on a 6-volt battery, there is absolutely no risk of any voter getting an electric shock.

Benefits

- The cost per EVM (One Control Unit, one Balloting Unit and one battery) was Rs.5,500/- at the time the machines were purchased in 1989–90. Even though the initial investment was somewhat heavy, it was more than neutralised by the savings in the matter of production and printing of ballot papers in lakhs, their transportation, storage etc., and the substantial reduction in the counting staff and the renumeration paid to them.
- It will be easier to transport the EVMs compared to ballot boxes as EVMs are lighter, portable and come with polypropylene carrying cases.
- The vote-counting is very fast and the result can be declared within 2 to 3 hours as compared to 30–40 hours, on an average, under the ballot-paper system.
- In countries like India, where illiteracy is still a factor, illiterate people find EVMs easier than ballot paper system, where one has to put the voting stamp on the symbol of the candidate of his/her choice, fold it first vertically and

then horizontally, and put it into the ballot box. In EVMs, the voter has to simply press the blue button against the candidate and symbol of his choice and the vote is recorded.

- Bogus voting can be greatly reduced by the use of EVMs. In case of ballot paper system, a bogus voter can stuff thousands of bogus ballot papers inside the ballot box. But, an EVM is programmed to record only five votes in a minute. This will frustrate the bogus voters. Further, the maximum number of votes that can be cast in a single EVM is 3840.
- If an EVM goes out-of-order then, the Election Officer, in-charge of the polling booth, can replace the defunct EVM with a spare EVM. The votes recorded until the stage when the EVM went out of order remain safe in the memory of the Control Unit and it is not necessary to start the poll from the beginning.
- The Control Unit can store the result in its memory for 10 years and even more. The battery is required only to activate the EVMs at the time of polling and counting. As soon as the polling is over, the battery can be switched off and this will be required to be switched on only at the time of counting. The battery can be removed as soon as the result is taken and can be kept separately. Therefore, there is no question of battery leaking or otherwise damaging EVMs. Even when the battery is removed the memory in the microchip remains intact. If the Court orders a recount, the Control Unit can be reactivated by fixing the battery and it will display the result stored in the memory.
- Invalid votes can be reduced by use of EVMs. With EVMs, there are much less incidences of invalid votes, i. e. less than 0.02% (source: Tiwari and Herstatt, 2012, p. 17, Table 4). When ballot system was used in India, the number of invalid votes was allegedly more than the winning margin between the candidates in every general elections (source needed).
- Environmental effects of EVMs: For each national election alone it is estimated that about 10,000 tons of ballot paper (roughly 200,000 trees) would be saved. There are of course many more state and city/village level elections and the cost of printing those ballot papers would be also enormous

Fig 2.3 EVM

2.3.1 Direct-recording electronic (DRE) voting system

Fig 2.3.1 DRE

Electronic voting machine by Premier Election Solutions (formerly Diebold Election Systems) used in all Brazilian elections and plebiscites. Photo by AgênciaBrasil

A direct-recording electronic (DRE) voting machine records votes by means of a ballot display provided with mechanical or electro-optical components that can be activated by the voter (typically buttons or a touchscreen); that processes data with computer software; and that records voting data and ballot images in memory components. After the election it produces a tabulation of the voting data stored in a removable memory component and as printed copy. The system may also provide a means for transmitting individual ballots or vote totals to a central location for consolidating and reporting results from precincts at the central location. These systems use a precinct count method that tabulates ballots at the polling place. They typically tabulate ballots as they are cast and print the results after the close of polling.[6]

In 1996, after tests conducted on more than 50 municipalities, the Brazilian Electoral Justice has launched their "voting machine". Since 2000, all Brazilian voters are able to use the electronic ballot boxes to choose their candidates. In 2010 presidential election, which had more than 135 million voters, the result was defined 75 minutes after the end of voting. The electronic ballot box is made up of two micro -terminals (one located in the voting cabin and the other with the voting board representative) which are connected by a 5-meter cable. Externally, the micro-terminals have only a numerical keyboard, which does not accept any command executed by the simultaneous pressure of more than one key. In case of power failure, the internal battery provides the energy or it can be connected to an automotive battery. The Brazilian electronic ballot box serves today as a model for other countries.[7]

In 2002, in the United States, the Help America Vote Act mandated that one handicapped accessible voting system be provided per polling place, which most jurisdictions have chosen to satisfy with the use of DRE voting machines, some switching entirely over to DRE. In 2004, 28.9% of the registered voters in the United States used some type of direct recording electronic voting system,[8] up from 7.7% in 1996.[9]

In 2004, India had adopted Electronic Voting Machines (EVM) for its elections to the Parliament with 380 million voters had cast their ballots using more than a million voting machines.[citation needed] The Indian EVMs are designed and developed by two Government Owned Defense Equipment Manufacturing Units, Bharat Electronics Limited (BEL) and Electronics Corporation of India Limited (ECIL). Both systems are identical, and are developed to the specifications of Election Commission of India. The System is a set of two devices running on 6V batteries. One device, the Voting Unit is used by the Voter, and another device called the Control Unit is operated by the Electoral Officer. Both units are connected by a 5 meter cable. The Voting unit has a Blue Button for every candidate, the unit can hold 16 candidates, but up to 4 units can be chained, to accommodate 64 candidates. The Control Units has Three buttons on the surface, namely, one button to release a single vote, one button to see the total number of vote cast till now, and one button to close the election process. The result button is hidden and sealed, It cannot be pressed unless the

Close button is already pressed.

Public network DRE voting system

A public network DRE voting system is an election system that uses electronic ballots and transmits vote data from the polling place to another location over a public network. Vote data may be transmitted as individual ballots as they are cast, periodically as batches of ballots throughout the election day, or as one batch at the close of voting. This includes Internet voting as well as telephone voting.

Public network DRE voting system can utilize either precinct count or central count method. The central count method tabulates ballots from multiple precincts at a central location.

Internet voting can use remote locations (voting from any Internet capable computer) or can use traditional polling locations with voting booths consisting of Internet connected voting systems.

Corporations and organizations routinely use Internet voting to elect officers and Board members and for other proxy elections. Internet voting systems have been used privately in many modern nations and publicly in the United States, the UK, Switzerland and Estonia. In Switzerland, where it is already an established part of local referendums, voters get their passwords to access the ballot through the postal service. Most voters in Estonia can cast their vote in local and parliamentary elections, if they want to, via the Internet, as most of those on the electoral roll have access to an e-voting system, the largest run by any European Union country. It has been made possible because most Estonians carry a national identity card equipped with a computer-readable microchip and it is these cards which they use to get access to the online ballot. All a voter needs is a computer, an electronic card reader, their ID card and its PIN, and they can vote from anywhere in the world. Estonian e-votes can only be cast during the days of advance voting. On election day itself people have to go to polling stations and fill in a paper ballot.

CHAPTER 3

3.1 GLOBAL SYSTEM FOR MOBILE COMMUNICATION (GSM)

Architecture of the GSM network

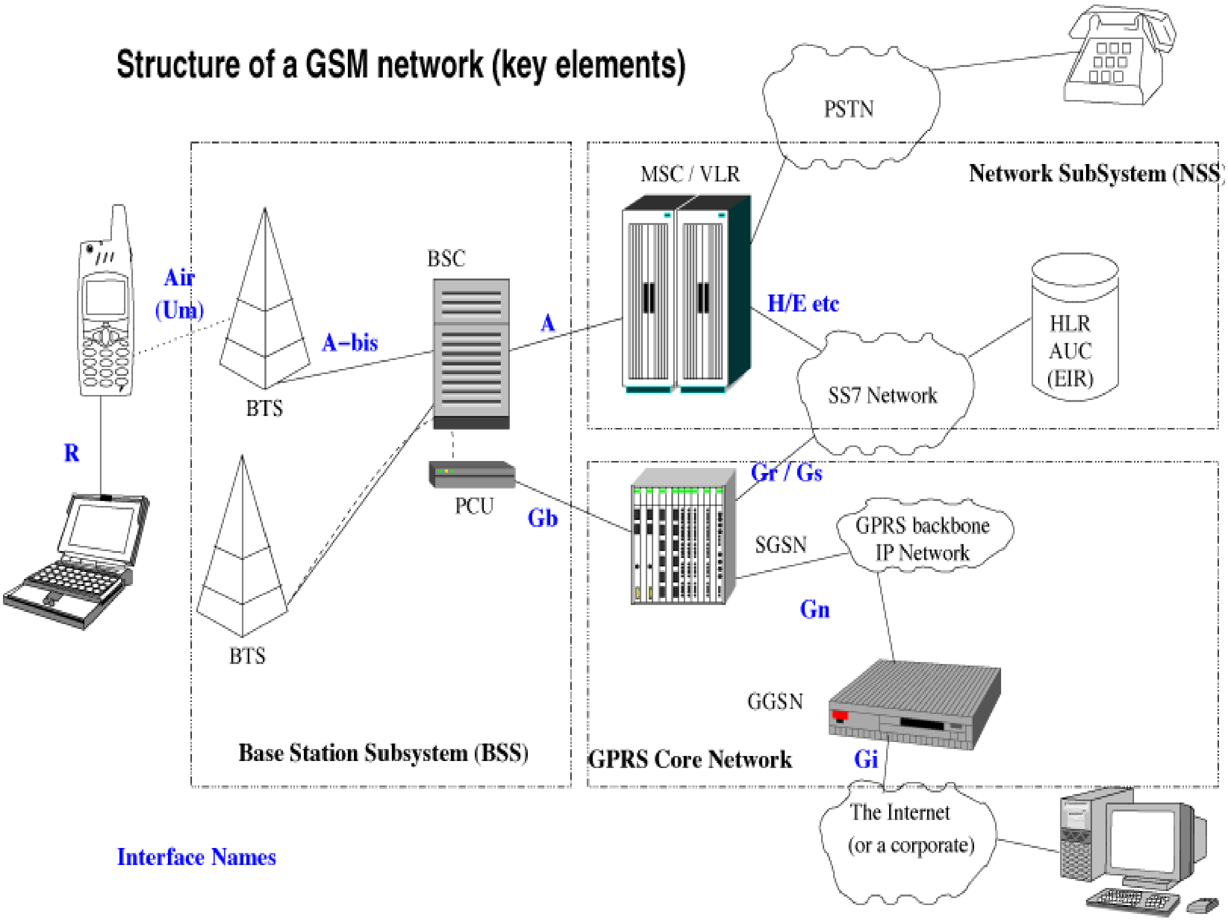


Fig:3.1 structure of GSM network

GSM is a cellular network, which means that mobile phones connect to it by searching for cells in the immediate vicinity. GSM networks operate in four different frequency ranges. Most GSM networks operate in the 900 MHz or 1800 MHz bands. Some countries in the Americas (including the United States and Canada) use the 850 MHz and 1900 MHz bands because the 900 and 1800 MHz frequency bands were already allocated. The transmission power in the handset is limited to a maximum of 2 watts in GSM850/900 and 1 watt in GSM1800/1900.

In the 900 MHz band the uplink frequency band is 890-915 MHz, and the downlink frequency band is 935-960 MHz. This 25 MHz bandwidth is subdivided into 124 carrier frequency channels, each spaced 200 kHz apart. Time division multiplexing is used to allow eight full-rate or sixteen half-rate speech channels per radio frequency channel.

A GSM network is composed of several functional entities, whose functions and interfaces are specified. Figure shows the layout of a generic GSM network. The GSM network can be divided into three broad parts. The Mobile Station is carried by the subscriber.

The Base Station Subsystem controls the radio link with the Mobile Station. The Network Subsystem, the main part of which is the Mobile services Switching Center (MSC), performs the switching of calls between the mobile users, and between mobile and fixed network users. The MSC also handles the mobility management operations.

Not shown is the Operations and Maintenance Center, which oversees the proper operation and setup of the network. The Mobile Station and the Base Station Subsystem communicate across the Um interface, also known as the air interface or radio link. The Base Station Subsystem communicates with the Mobile services Switching Center across the A interface.

3.2RF COMMUNICATION:

RF communication works by creating electromagnetic waves at a source and being able to pick up those electromagnetic waves at a particular destination. These electromagnetic waves travel through the air at near the speed of light. The wavelength of an electromagnetic signal is inversely proportional to the frequency; the higher the frequency, the shorter the wavelength.

Frequency is measured in Hertz (cycles per second) and radio frequencies are measured in kilohertz (KHz or thousands of cycles per second), megahertz (MHz or millions of cycles per second) and gigahertz (GHz or billions of cycles per second). Higher frequencies result in shorter wavelengths. The wavelength for a 900 MHz device is longer than that of a 2.4 GHz device. Figure 3.2 is the RFID READER.

Fig: 3.2 RFID READER

CHAPTER 4

4.1 HARDWARE DETAILS

4.1.1 P89V51RD2 Microcontroller

- 5v It has 1k bytes of RAM
- It has 64k of ROM
- Operating frequency up to 40M Hertz
- It has in system program(ISP)
- It has in application program(IAP)

The P89V51RD2 is an 80C51 microcontroller with 16/32/64 kB flash and 1024 B of data RAM. A key feature of the P89V51RB2/RC2/RD2 is its X2 mode option. The design engineer can choose to run the application with the conventional 80C51 clock rate (12 clocks per machine cycle) or select the X2 mode (six clocks per machine cycle) to achieve twice the throughput at the same clock frequency. Another way to benefit from this feature is to keep the same performance by reducing the clock frequency by half, thus dramatically reducing the EMI.

The flash program memory supports both parallel programming and in serial ISP. Parallel programming mode offers gang-programming at high speed, reducing programming costs and time to market. ISP allows a device to be reprogrammed in the end product under software control. The capability to field/update the application firmware makes a wide range of applications possible.The P89V51RD2 is also capable of IAP, allowing the flash program memory to be reconfigured even while the application is running. Figure 5.1 depicts the block diagram of microcontroller P89V51RD2.

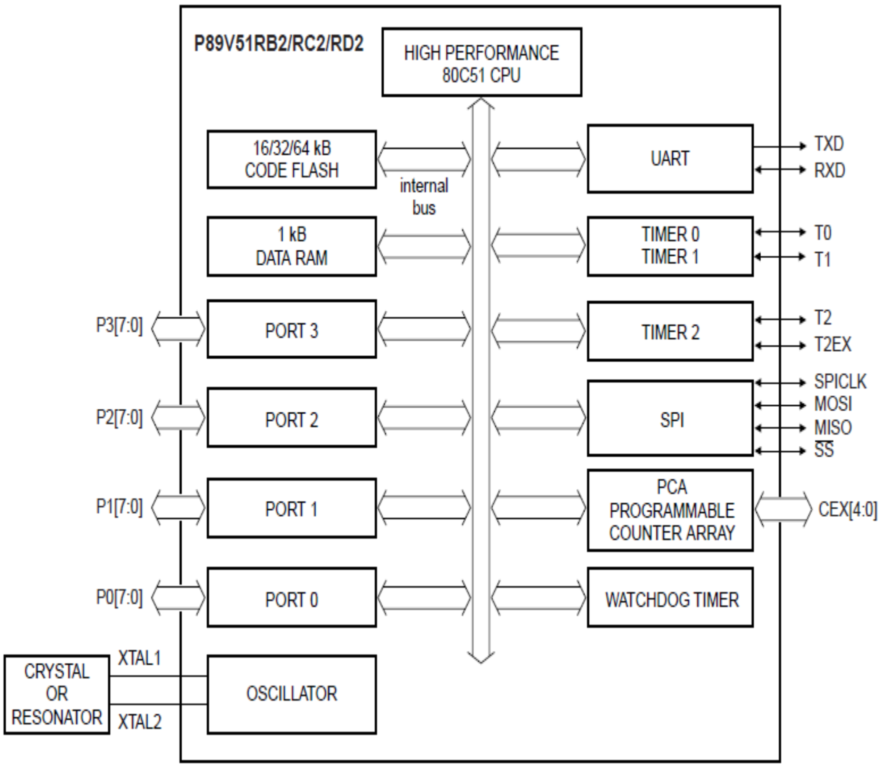


Fig 4.1: Block diagram of P89V51RD2

4.1.1.1 ISP

ISP is performed without removing the microcontroller from the system. The ISP facility consists of a series of internal hardware resources coupled with internal firmware to facilitate remote programming of the P89V51RB2/RC2/RD2 through the serial port. This firmware is provided by NXP and embedded within each P89V51RB2/RC2/RD2 device. The NXP ISP facility has made in-circuit programming in an embedded application possible with a minimum of additional expense in components and circuit board area. The ISP function uses five pins (VDD, VSS, TXD, RXD, and RST). Only a small connector needs to be available to interface your application to an external circuit in order to use this feature.

4.1.1.2 Using ISP

The ISP feature allows for a wide range of baud rates to be used in your application, independent of the oscillator frequency. It is also adaptable to a wide range of oscillator frequencies. This is accomplished by measuring the bit-time of a single bit in a received character. This information is then used to program the baud rate in terms of timer counts based on the oscillator frequency. The ISP feature requires that an initial character (an uppercase U) be sent to the P89V51RB2/RC2/RD2 to establish the baud rate. The ISP firmware provides auto-echo of received characters. Once baud rate initialization has been performed, the ISP firmware will only accept Intel Hex-type records.

In the Intel Hex record, the ‘NN’ represents the number of data bytes in the record. The P89V51RB2/RC2/RD2 will accept up to 32 data bytes. The ‘AAAA’ string represents the address of the first byte in the record. If there are zero bytes in the record, this field is often set to 0000. The ‘RR’ string indicates the record type. A record type of ‘00’ is a data record. A record type of ‘01’ indicates the end-of-file mark. In this application, additional record types will be added to indicate either commands or data for the ISP facility. The maximum number of data bytes in a record is limited to 32 (decimal). As a record is received by the P89V51RB2/RC2/RD2, the information in the record is stored internally and a checksum calculation is performed. The operation indicated by the record type is not performed until the entire record has been received. Should an error occur in the checksum, the P89V51RB2/RC2/RD2 will send an ‘X’ out the serial port indicating a checksum error. If the checksum calculation is found to match the checksum in the record, then the command will be executed. In most cases, successful reception of the record will be indicated by transmitting a ‘.’ character out the serial port.Figure 4.1.1.2 shows the pin configuration of P89V51RD2.

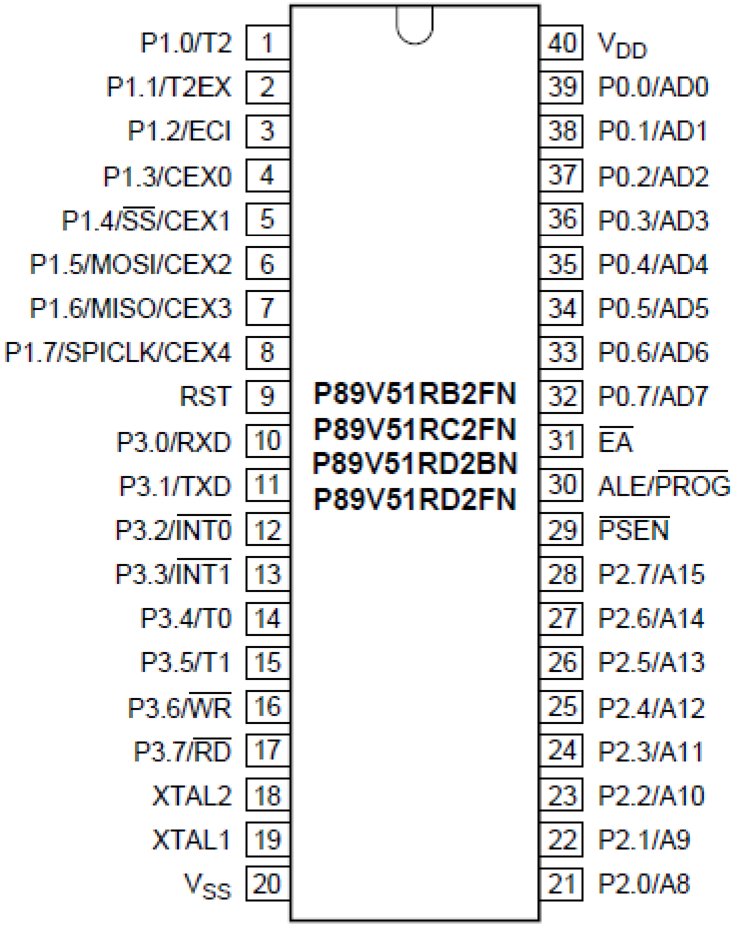


Fig 4.1.1.2: DIP40 pin configuration

4.1.2 16 x 2 Characters LCD

Fig 4.1.2: LCD display

LCD's can add a lot to our application in terms of providing an useful interface for the user, debugging an application or just giving it a "professional" look. The most common type of LCD controller is the Hitachi 44780 that provides a relatively simple interface between a processor and an LCD.

4.1.2.1 General Specifications

Operating Temperature	: Min. -20°C ~ Max. 70°C
Storage Temperature	: Min. -30°C ~ Max. 80°C
Display Format	: 16 characters x 2 lines
Display Fonts	: 5 x 7 dots + cursor (1 character)
Viewing Area	: 69.0 (W) x 16.4 (H) mm
Outline Dimensions	: 80.0(W) x 36.0 (H) x 9.5 max. (D) mm
Weight	: N/A
LCD Type	: STN / Positive, Yellow-Green mode / Reflective
Viewing Direction	: 6:00
Backlight	: None
LCD LSI	: SPLC780C

Inexperienced designers do often not attempt using this interface and programmers because it is difficult to find good documentation on the interface, initializing the interface can be a problem and the displays themselves are expensive.LCD has single line display, Two-line display, four line display. Every line has 16 characters.LCD is connected to microcontroller as 4 pins for data and a single pin for register select and enable The main application of LCD in this project is to display the status of MODEM, status of sensor etc.

4.1.2.2 Programming The LCD

We mainly call the following functions while using a LCD

1.lcd_clear(): This will clear the display and bring the cursor back to (0,0).

2. lcd_gotoxy(int,int) : This will take the cursor to the desired row and column.

For example the following will take the cursor to (11,1) i.e. 12th column of second line:

lcd_gotoxy(11,1)

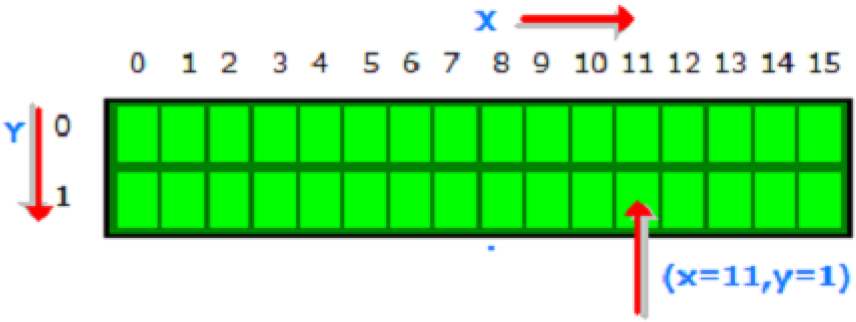


Fig 4.1.2.2: lcd_gotoxy(11,1)

Now anything you write to the LCD will be printed at (11,1).

3. lcd_putsf(String): To print the String at the current position of the cursor. Using this function, you can output a constant String as :

For example, *lcd_putsf*(“0003”); will yield

Fig 4.1.2.3: lcd_putsf(“0003”)

4. lcd_putchar(char) : To print a character at the current position of the cursor. We may also specify the ASCII value of the character.

A String in C is an array of characters. To declare a String, you will use

char[<max size of the string>] <name>;

For example, char[25] a;

Here, we have used 25 as a safe limit to our number of characters in the string.

String can be assigned as:

A = ”Hello”;

Or, when initializing, as:

char[] a = ”Hello World”;

5. lcd_puts(String): This is generally used to print a variable String. (Note: requires you to include the file “stdio.h” in your program).

This function is different from lcd_putsf();

Now suppose that you have to display a variable on the LCD screen, for example, a number.
What will you do?
Well, lcd_puts() comes to the rescue. What you will do is first convert the number into a string and then use it in the function lcd_puts()
You will have do the first part using a first defined in the file "stdio.h", so first include this file as follows:

```
#include <stdio.h>
```

Now declare a String variable in which you will hold the converted value. Now use the function:

```
voidsprintf(String1, String2, <list of variables>);
```

Where String1 is the String variable where you declared above. The String2 gives the format of the output String. The following example makes it clear:
If we wish to display:

```
"Seconds = i"
```

Where i is a variable (Note: we are printing the value of i), then the command would be

```
char[20] s;
sprintf(s,"seconds=%d",i);
lcd_puts(s);
```

"Seconds = " would be the constant part or the textual part and %d specifies that there has to be an integer at that place, which is i.

4.1.2.3 Sample Program:

```
#include  <lcd.h>
lcd_clear();
lcd_goto(3,0);
lcd_putsf("hello");
lcd_goto(8,1);
```

```
lcd_putsf("world");
```

OUTPUT:

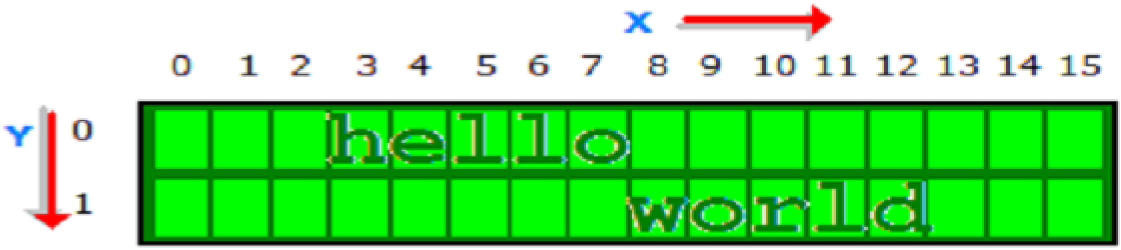


Fig 4.1.2.3: LCD Output

4.1.3 RELAY DRIVER (ULN2803):

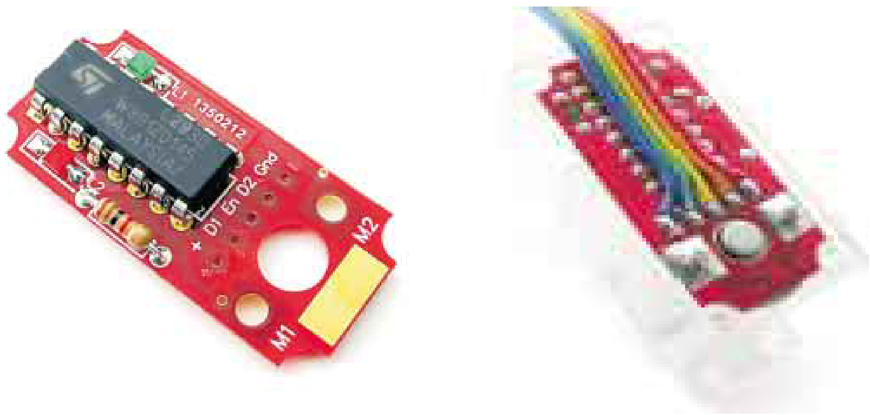


Fig 4.1.3: relay driver

FEATURES:

- A ULN2803 is an Integrated Circuit (IC) chip with a High Voltage/High Current Darlington Transistor Array.
- The ULN2803 comes in an 18-pin IC configuration and includes eight (8) transistors. Pins 1-8 receive the low level signals; pin 9 is grounded (for the low level signal reference).
- Pin 10 is the common on the high side and would generally be connected to

the positive of the voltage you are applying to the relay coil. Pins 11-18 are the outputs (Pin 1 drives Pin 18, Pin 2 drives 17, etc.).

- Output Voltage- 50 V,Input Voltage - 30 V
- Collector Current – Continuous IC- 500 mA
- Base Current – Continuous IB- 25 mA
- Operating Ambient Temperature Range TA 0 to +70 °C
- Storage Temperature Range Tstg –55 to +150 °C
- Junction Temperature T 125 °
- Typical uses are for micro-processor interfaces to relays, lamps, solenoids and small motors.
- A 2803 with a set of relays is a simple and effective way of switching mains voltages.

4.1.4 MAX232:

Fig 4.1.4: max232

The MAX232 is a dual driver/receiver that includes a capacitive voltage generator to supply TIA/EIA-232-F voltage levels from a single 5-V supply. Each receiver converts TIA/EIA-232-F inputs to 5-V TTL/CMOS levels. These receivers have a typical threshold of 1.3 V, a typical hysteresis of 0.5 V, and can accept 30-V inputs. Each driver converts TTL/CMOS input levels into TIA/EIA-232-F levels.

FEATURES:

- Meets or Exceeds TIA/EIA-232-F and ITU Recommendation V.28
- Operates From a Single 5-V Power Supply with 1.0-_F Charge-Pump Capacitors
- Operates Up To 120 kbit/s
- Two Drivers and Two Receivers
- ±30-V Input Levels
- Low Supply Current . . . 8 mA Typical

4.1.5 GSM MODULE:

GSM is a cellular network, which means that mobile phones connect to it by searching for cells in the immediate vicinity. GSM networks operate in four different frequency ranges. Most GSM networks operate in the 900 MHz or 1800 MHz bands. Some countries in the Americas (including the United States and Canada) use the 850 MHz and 1900 MHz bands because the 900 and 1800 MHz frequency bands were already allocated. The transmission power in the handset is limited to a maximum of 2 watts in GSM850/900 and 1 watt in GSM1800/1900.

In the 900 MHz band the uplink frequency band is 890-915 MHz, and the downlink frequency band is 935-960 MHz. This 25 MHz bandwidth is subdivided into 124 carrier frequency channels, each spaced 200 kHz apart. Time division multiplexing is used to allow eight full-rate or sixteen half-rate speech channels per radio frequency channel.

4.1.5.1 AT Commands According to GSM07.05

AT commands are instructions used to control a modem. AT is the abbreviation of Attention. Every command line starts with "AT" or "at". That's why modem commands are called AT commands. Many of the commands that are used to control wired dial-up modems, such as ATD (Dial), ATA (Answer), ATH (Hook control) and ATO (Return to online data state), are also supported by GSM/GPRS modems and mobile phones.

Besides this common AT command set, GSM/GPRS modems and mobile phones support an AT command set that is specific to the GSM technology, which includes SMS-related commands like AT+CMGS (Send SMS message), AT+CMSS (Send SMS message from storage), AT+CMGL (List SMS messages) and AT+CMGR (Read SMS messages).

The GSM 07.05 commands are for performing SMS and CBS related operations. SIM300 II supports both Text and PDU modes.

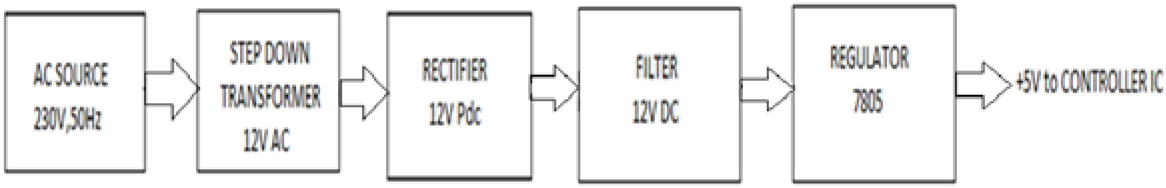
Table 4.1.5.1 Detailed Descriptions of AT Commands According to GSM07.05

Command	Description
AT+CMGF	SELECT SMS MESSAGE FORMAT
AT+CMGL	LIST SMS MESSAGES FROM PREFERRED STORE
AT+CMGR	READ SMS MESSAGE
AT+CMGS	SEND SMS MESSAGE
AT+CMSS	SEND SMS MESSAGE FROM STORAGE
AT+CMGC	SEND SMS COMMAND
AT+CNMI	NEW SMS MESSAGE INDICATIONS
AT+CPMS	PREFERRED SMS MESSAGE STORAGE
AT+CRES	RESTORE SMS SETTINGS

AT+CSAS	SAVE SMS SETTINGS
AT+CSCA	SMS SERVICE CENTER ADDRESS
AT+CSCB	SELECT CELL BROADCAST SMS MESSAGES
AT+CSDH	SHOW SMS TEXT MODE PARAMETERS
AT+CSMP	SET SMS TEXT MODE PARAMETERS
AT+CSMS	SELECT MESSAGE SERVICE

Read Command **AT+CNMI?**	Response **+CNMI:** <mode>,<mt>,<bm>,<ds>,<bfr> **OK**
	Parameters see write command
Write Command **AT+CNMI=**[<mode>[,<mt>[,<bm> [,<ds>[,<bfr>]]]]]	Response TA selects the procedure for how the receiving of new messages from the network is indicated to the TE when TE is active, e.g. DTR signal is ON. If TE is inactive (e.g. DTR signal is OFF), message receiving should be done as specified in GSM 03.38. **OK** If error is related to ME functionality: **+CMS ERROR: <err>**

4.1.6 Power supply



4.1.6 POWER SUPPLY

Diode Bridge

A **diode bridge** is an arrangement of four (or more) diodes in a bridgecircuit configuration that provides the same polarity of output for eitherpolarity of input. When used in its most common application, forconversion of an alternating current (AC) input into direct current a(DC) output, it is known as a **bridge rectifier**. A bridge rectifierprovides full-wave rectification from a two-wire AC input, resulting inlower cost and weight as compared to a rectifier with a 3-wire inputfrom a transformer with a center-tapped secondary winding. The essential feature of a diode bridge is that the polarity of the outputis the same regardless of the polarity at the input. The diode bridgecircuit is also known as the Graetz circuitafter its inventor, physicistLeo Graetz.

Basic operation

According to the conventional model of current flow originallyestablished by Benjamin Franklin and still followed by most engineerstoday, current is assumedto flow through electrical conductors fromthe **positive** to the **negative** pole. In actuality, free electrons in aconductor nearly always flow from the **negative** to the **positive** pole.In the vast majority of applications, however, the actualdirection ofcurrent flow

is irrelevant. Therefore, in the discussion below the
Conventional model is retained.In the diagrams below, when the input connected to the **left** corner ofthe diamond is **positive**, and the input connected to the **right** corner is**negative**, current flows from the **upper** supply terminal to the rightalong the **red** (positive) path to the output, and returns to the **lower**supply terminal via the **blue** (negative) path.

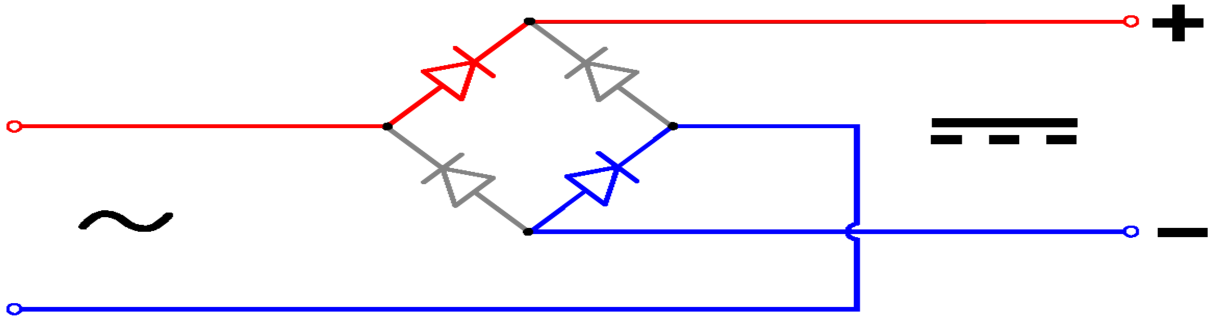


Fig 4.1.6.2: Input connected to left corner is positive

When the input connected to the **left** corner is **negative**, and the inputconnected to the **right** corner is **positive**, current flows from the **upper**supply terminal to the right along the **red** (positive) path to the output,and returns to the **lower** supply terminal via the **blue** (negative) path.

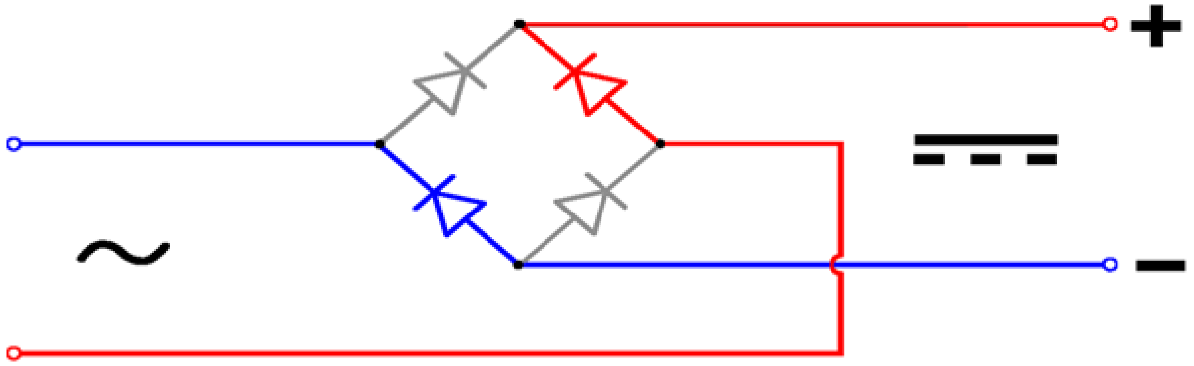


Fig 4.1.6.3: Input connected to right corner is negative

In each case, the upper right output remains positive and lower rightoutput negative. Since this is true whether the input is AC or DC, thiscircuit not only produces a DC output from an AC input, it can alsoprovide what is sometimes called "reverse polarity protection". That is,it permits normal functioning of DC-powered equipment whenbatteries have been installed backwards, or when the leads (wires) froma DC power source have been reversed, and protects the equipmentfrom potential damage caused by reverse polarity.

Prior to the availability of integrated circuits, a bridgerectifier was constructed from "discrete components",i.e., separate diodes. Since about 1950, a singlefour-terminal component containing the four diodesconnected in a bridge configuration became a standardcommercial component and is now available withvarious voltage and current ratings.

Output smoothing

For many applications, especially with single phase ACwhere the full-wave bridge serves to convert an ACinput into a DC output, the addition of a capacitor maybe desired because the bridge alone supplies an output of pulsed DC.

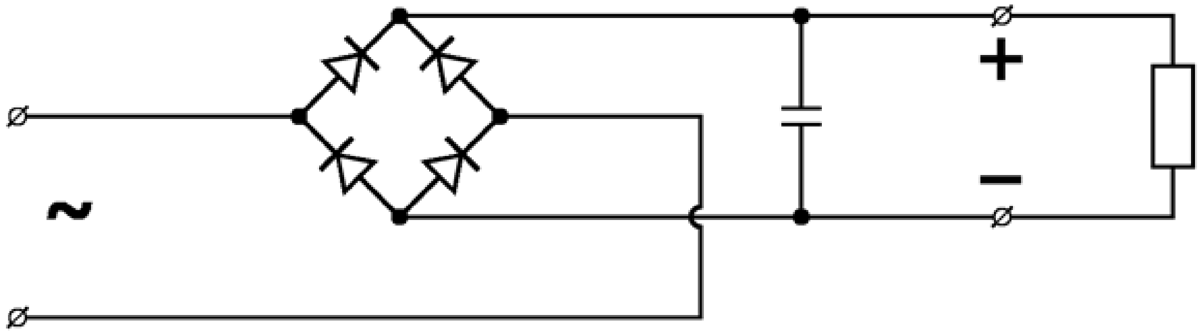


Figure 4.1.6.4: Output smoothing

The function of this capacitor, known as a reservoir capacitor (or smoothing capacitor) is to lessen the variation in(or 'smooth') the rectified AC output voltage waveform from the bridge. There is still some variation, known as"ripple". One explanation of 'smoothing' is that the capacitor provides a low impedance path to the AC component of the output, reducing the AC voltage across, and AC current through, the resistive load. In less technical terms, anydrop in the output voltage and current of the bridge tends to be canceled by loss of charge in the capacitor. Thischarge flows out as additional current through the load. Thus the change of load current and voltage is reducedrelative to what would occur without the capacitor. Increases of voltage correspondingly store excess charge in thecapacitor, thus moderating the change in output voltage / current.The simplified circuit shown has a well-deserved reputation for being dangerous, because, in some applications, thecapacitor can retain a *lethal* charge after the AC power source is removed. If supplying a dangerous voltage, apractical circuit should include a reliable way to discharge the capacitor safely. If the normal load cannot be guaranteed to perform this function, perhaps because it can be disconnected, the circuit should include a bleederresistor connected as close as practical across the capacitor. This resistor should consume a current large enough todischarge the capacitor in a reasonable time, but small enough to minimize unnecessary power waste.The capacitor and the load resistance have a typical time constant $\tau = RC$ where C and R are the capacitance andload resistance respectively. As long as the load resistor is large enough so that this time constant is much longerthan the time of one ripple cycle, the above configuration will produce a smoothed DC voltage across the load.When the capacitor is connected directly to the bridge, as shown, current flows in only a small portion of each cycle,which may be undesirable. The transformer and bridge diodes must be sized to withstand the current surge thatoccurs when the power is turned on at the peak of the AC voltage and the capacitor is fully discharged. Sometimes asmall series resistor is included before the capacitor to limit this current, though in most applications the powersupply transformer's resistance is already sufficient. Adding a resistor, or better yet, an inductor, between the bridgeand capacitor can ensure that current is drawn over a large portion of each cycle and a large current surge does notoccur.

In older times, this crude power supply was often followed by passive filters (capacitors plus resistors and inductors)to reduce the ripple further. When an inductor is used this way it is often called a choke. The choke tends to keep thecurrent (rather than the voltage) more constant. Although the inductor gives the best performance, usually theresistor is chosen for cost reasons.Nowadays with the wide availability of voltage-regulator chips, passive filters are less commonly used. The chipscan compensate for changes in input voltage and load current, which the passive filter does not, and pretty mucheliminate ripple. Some of these chips have fairly impressive power handling; in case this is not sufficient, they can becombined with a power transistor.The idealized waveforms shown above are seen for both voltage and current when the load on the bridge is resistive.When the load includes a smoothing capacitor, both the voltage and the current waveforms will be greatly changed.While the voltage is smoothed, as described above, current will flow through the bridge only during the time whenthe input voltage is greater than the capacitor voltage. For example, if the load draws an average current of n Amps,and the diodes conduct for 10% of the time, the average diode current during conduction must be 10n Amps. Thisnon-sinusoidal current leads to harmonic distortion and a poor power factor in the AC supply.Some early console radios created the speaker's constant field with the current from the high voltage ("B +") powersupply, which was then routed to the consuming circuits, (permanent magnets were then too weak for goodperformance) to create the speaker's constant magnetic field. The speaker field coil thus performed 2 jobs in one: itacted as a choke, filtering the power supply, and it produced the magnetic field to operate the speaker.

4.2 PROTOCOLS

4.2.1RS232 (serial communication)

The Serial Port is harder to interface than the Parallel Port. In most cases, any device you connect to the serial port will need the serial transmission converted back to parallel so that it can be used. This can be done using a UART. On the software side of things, there are many more registers that you have to attend to than on a Standard Parallel Port. (SPP)

The advantages of using serial data transfer rather than parallel.

1. Serial Cables can be longer than Parallel cables. The serial port transmits a '1' as -3 to -25 volts and a '0' as +3 to +25 volts where as a parallel port transmits a '0' as 0v and a '1' as 5v. Therefore the serial port can have a maximum swing of 50V compared to the parallel port which has a maximum swing of 5 Volts. Therefore cable loss is not going to be as much of a problem for serial cables than they are for parallel.

2. You don't need as many wires than parallel transmission. If your device needs to be mounted a far distance away from the computer then 3 core cable (Null Modem

Configuration) is going to be a lot cheaper that running 19 or 25 core cable. However you must take into account the cost of the interfacing at each end.

3. Infra Red devices have proven quite popular recently. You may of seen many electronic diaries and palmtop computers which have infra red capabilities build in. However could you imagine transmitting 8 bits of data at the one time across the room and being able to (from the devices point of view) decipher which bits are which? Therefore serial transmission is used where one bit is sent at a time. IrDA-1 (The first infra red specifications) was capable of 115.2k baud and was interfaced into a UART. The pulse length however was cut down to 3/16th of a RS232 bit length to conserve power considering these devices are mainly used on diaries, laptops and palmtops.

4. Microcontroller's have also proven to be quite popular recently. Many of these have in built SCI (Serial Communications Interfaces) which can be used to talk to the outside world. Serial Communication reduces the pin count of these MPU's. Only two pins are commonly used, Transmit Data (TXD) and Receive Data (RXD) compared with at least 8 pins if you use a 8 bit Parallel method.

Pin functions:

Abbreviation	Full Name	Function
TD	Transmit Data	Serial Data Output (TXD)
RD	Receive Data	Serial Data Input (RXD)
CTS	Clear to Send	This line indicates that the Modem is ready to exchange data.
DCD	Data Carrier Detect	When the modem detects a "Carrier" from the modem at the other end of the phone line, this Line becomes active.
DSR	Data Set Ready	This tells the UART that the modem is ready to establish a link.
DTR	Data Terminal Ready	This is the opposite to DSR. This tells the Modem that the UART is ready to link.
RTS	Request To Send	This line informs the Modem that the UART is ready to exchange data.
RI	Ring Indicator	Goes active when modem detects a ringing signal from the PSTN.

Table 4.2.1 Pin Functions

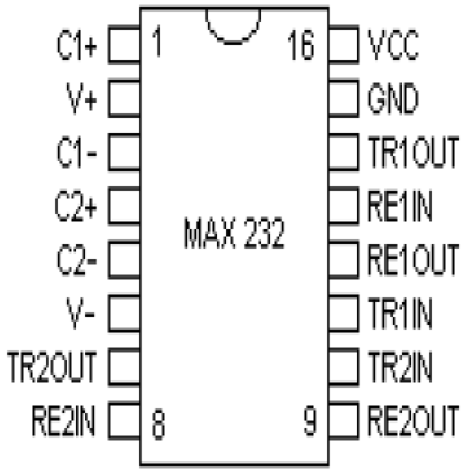
RS-232 Level Converters

Almost all digital devices which we use require either TTL or CMOS logic levels. Therefore the first step to connecting a device to the RS-232 port is to transform the RS-232 levels back into 0 and 5 Volts. As we have already covered, this is done by RS-232 Level Converters. Two common RS-232 Level Converters are the 1488 RS-232 Driver and the 1489 RS-232 Receiver. Each package contains 4 inverters of the one type, either Drivers or Receivers.

The driver requires two supply rails, +7.5 to +15v and -7.5 to -15v. As you could imagine this may pose a problem in many instances where only a single supply of +5V is present. However the advantages of these I.C's are they are cheap.

Another device is the MAX-232. It includes a Charge Pump, which generates +10V and -10V from a single 5v supply. This I.C. also includes two receivers and two transmitters in the same package. This is handy in many cases when you only want to use the Transmit and Receive data Lines.

You don't need to use two chips, one for the receive line and one for the transmit. However all this convenience comes at a price, but compared with the price of designing a new power supply it is very cheap. There are also many variations of these devices. The large value of capacitors are not only bulky, but also expensive. Therefore other devices are available which use smaller capacitors and even some with inbuilt capacitors. *(Note : Some MAX-232's can use 1 micro farad Capacitors).*



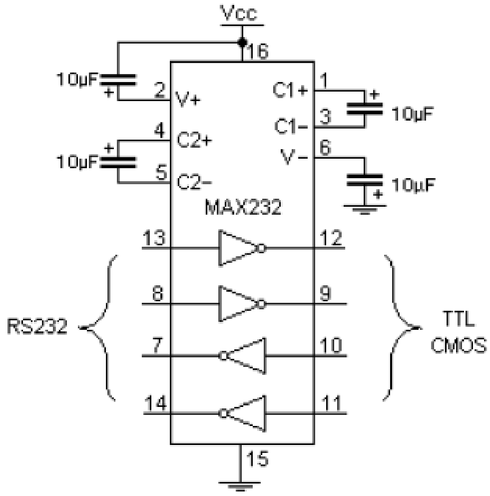


Fig 4.2.1.1Pin outs for the MAX-232 Fig 4.2.1.2 Typical MAX 232 circuit

4.3 SOFTWARE DESCRIPTION:

4.3.1 WINDOWS XP:

This is the Operating System (OS) on which all the software applications required for our project are going to be cleared. By installing this OS into our computer and following the below software instructions, we can reach our software requirements.

4.3.2 KEIL MICROVISION VERSION-3:

This software is used to write the ALP or Embedded 'C' program for the any type of micro controller and to generate the 'HEX file' to make the written code to compatible with the desired micro controller as follows:

- Install the keilmicrovision version-3 software in to the computer,
- After successful installation open that,
- Create the New Project for your program/project as follows
- Open 'Project' in the menu bar
- Select 'New Project' in the list of 'Project'
- Then give the name to your project as you wish and in your required location
- Then you have to select the company/manufacturer of controller whatever you want to use
- Then you are required to select the particular controller which is suitable for your project
- At the time of selecting the controller, keilmicrovision gives you the brief description about that controller
- Then it suggests you to copy the start up code and add the required files to your project, accept that by selecting 'Yes'
- Open 'New File' from the 'file' menu in the menu bar
- Then start writhing the code/program using embedded 'C'/in ALP as per the requirements of your project [better to choose Embedded 'C', following steps are only for Embedded 'C' programming]

- ‘Save’ that file with your desired name but that should be extended with ‘.c’
- Now have a look on ‘Project Workspace’ window (generally it will be there on your left side of the your code)
- You can find the ‘Target’ on that window, open that you will find ‘Source Group 1’
- Add your project file saved with ‘.c’ to that ‘Source Group 1’ either by double clicking on that or by right click on that and select ‘**Add files to Group ‘Source Group 1’’**
- Then you can find your added file under the ‘Source Group 1’ along with the start up code ‘startup’s’
- Now you need to ‘translate’ your code/program and need to ‘Build target’ for your project and then again have to “Rebuild the target’
- You can find all these options side by side at one place on above or below to the menu bar **or** in the menu of the ‘Project’ in the menu bar.
- If there is any **errors** in your code u can find out them during the ‘Translation’ itself in the ‘Output Window’
- You can rectify those errors occurred and save the file, then go back to ‘Translation’ and continue from there.
- If find ‘0’ Errors and ‘0’ warnings in the ‘output window’, then your code is ready for simulation or you can use that directly in to your project.
- To make your code compatible with hardware you are required to create ‘Hex’ file of your code. You can get that as follows
- Right click on the ‘Target’ in the ‘Project Workspace’ window. Then go for the ‘options of target ‘Target 1’’
- Select the ‘output’ among the options of ‘Target 1’
- You can give ‘Hex file’ name as you want at ‘Name of Executable’
- Now select the option ‘Create Hex file’
- Then press ‘ok’ to Generate the ‘HEX file’
- Now you go for the three steps from ‘Translation’ to ‘Rebuilding the Target’
- After all these three you can find the path where the ‘Hex file’ is stored in the ‘Output window’
- Now you are ready with code [Hex file] to satisfy your requirements in your Project.
- Dump this HEX file onto your controller whatever you chosen at the time of

creating 'your Project'.

4.3.2.1 HYPER TERMINAL:

Hyper terminal is available in computer under the Windows XP, it can be used for the serial communication applications in your projects. One can access this Hyper terminal in any computer under Windows XP-Operating System as follows.

- Move to 'Start' button on the task bar of the Windows XP system
- Select 'All Programs' and then 'Accessories'
- Among different 'accessories' select the 'communications'
- Among different communication facilities of the system select 'Hyper Terminal'
- It will ask the connection name, give any name as you wish
- Next it will give all the com-ports available at your system, choose any one
- Now you are required to adjust the setting of the port connection such as 'Baud rate', 'data bits', 'parity', 'stop bits', and 'flow control'. Set all as per your code dumped into controller. You see the default values of these by selecting 'Restore the Defaults'.
- Now the Hyper terminal is ready for your project under your settings.
- You can change further more setting of the Hyper terminal through the properties of hyper terminal, such as 'Echo typed characters locally' to see the keys which were pressed on Hyper terminal
- You can save the connection in your desired location.
- Better to disconnect the hyper terminal whenever it is not using, that release the com port that can be used for some other application.

PROCEDURE:

Create a Project

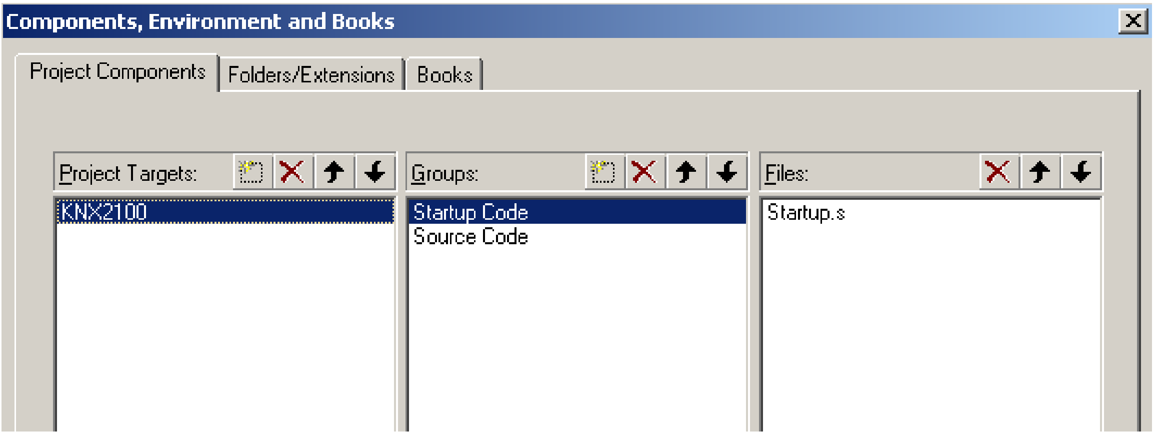
Follow the steps below to create a new project file and to specify and organize your source (and debug) files that will be a part of this project.

1. **Create a new Project File** with the µVision menu command **Project — New Project**. Select a micro controller from the Device Database The KNX-ARM7 Board may be used to develop code for many of the LPC21xx's family of devices.
2. **Add and configure Startup Code**. For GNU tools, the file **Startup.s** in the folder **..\Keil\ARM\GNU\Boards\Keil** provides pre-configured startup code for the KNX-ARM7board. You should copy this file to your project folder and add it to your project.
3. **Add Linker Control Script** that controls the link process of the GNU tools. They are located in the same folder: **..\Keil\ARM\GNU\Boards\Keil**. Two pre-configured linker control script files are available:

- **Flash.ld** configures the linker for program code in Flash ROM (typical configuration).
- **RAM.ld** configures the linker for program code in RAM (used for more extensive debugging).

Copy the linker control script file of your choice to your project folder. We'll refer to this file in Step 8 when we set up the linker controls.

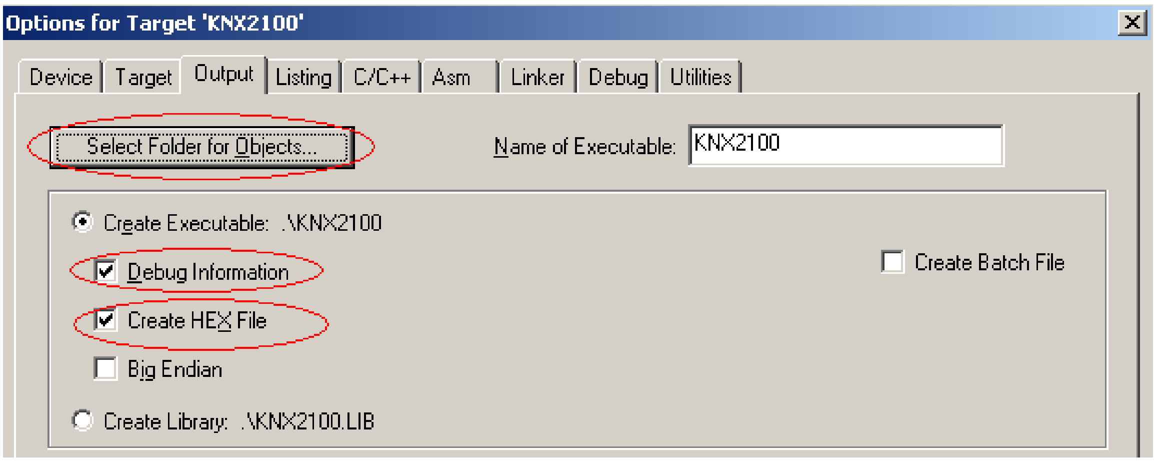
4. **Add your own Source Code** to the project using the µVision editor (or any other editor of your choice). You may right-click a group in the **Project Window**, and select **Add Files to Group** from the context menu, or Use the **Components, Environment and Books** toolbar button to display the dialog below. Within this dialog you may create and organize files into groups or create new project targets that have different tool configurations.



Configure Output Files

Using the Project — Options for Target — Output dialog:

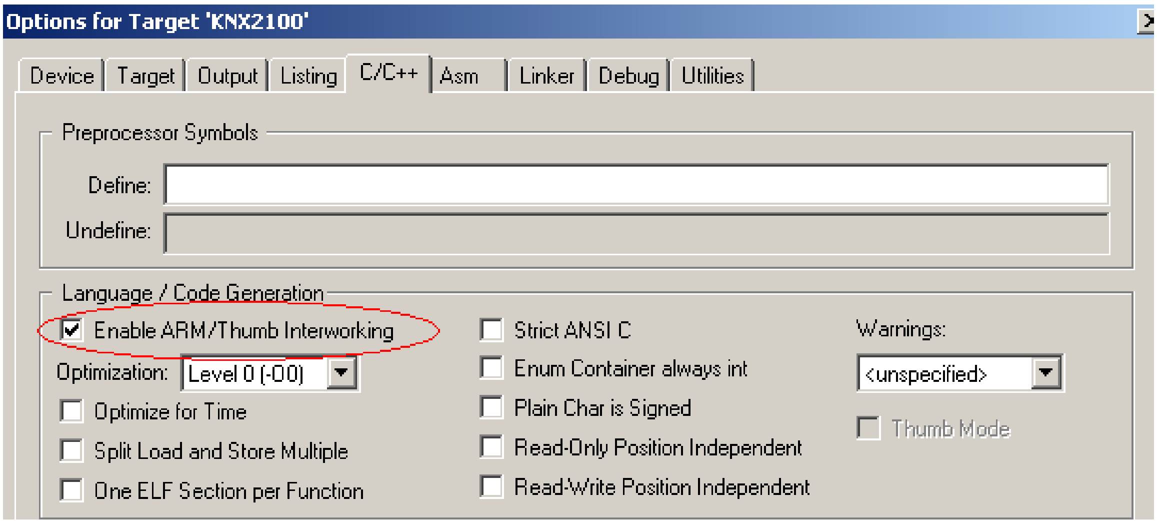
- Select Folder for Objects... to specify sub-folders for the output files.
- Enable Debug Information to store symbolic debug information within the executable file for source level program testing with the µVision debugger.
- Enable Create HEX File to generate an Intel HEX file for Flash programming with the Philips LPC2000 Flash Utility.



Configure Compiler Options

Configure the C Compiler Options in the **Project — Options for Target — C** dialog:

- **Compile Thumb Code** directs the compiler to generate code ARM Thumb instruction set code for this project.
- **Support Calls between ARM and Thumb Instruction Set** allows you to intermix Thumb and native ARM code within the same project.
- **Enable APCS (ARM Procedure Call Standard)** creates an application with standard parameter passing conventions.

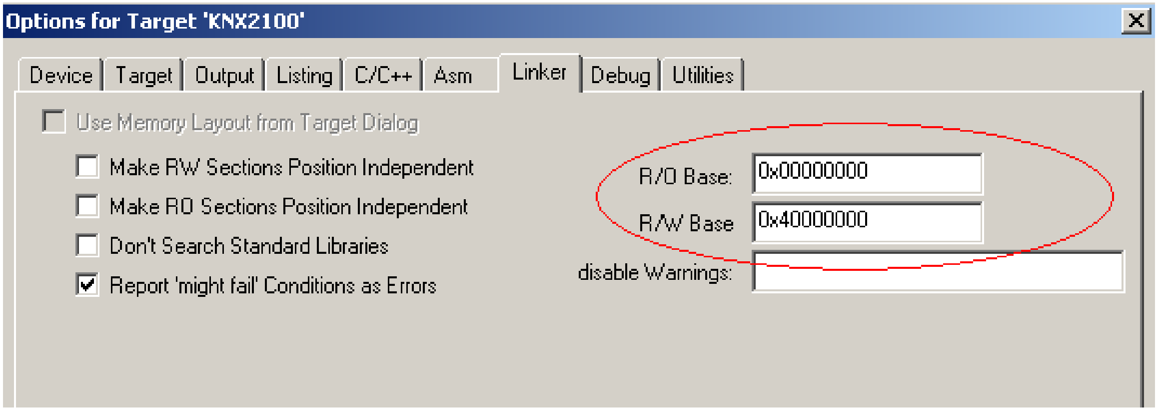


Configure Linker Options

Configure Linker Options in the Project — Options for Target — Linker **dialog:**

- **Text Start: 0x00000000** is the starting location in on-chip Flash ROM for code and constants in your program.
- **Data Start: 0x40000000** is the starting location in on-chip RAM for variables in your program.

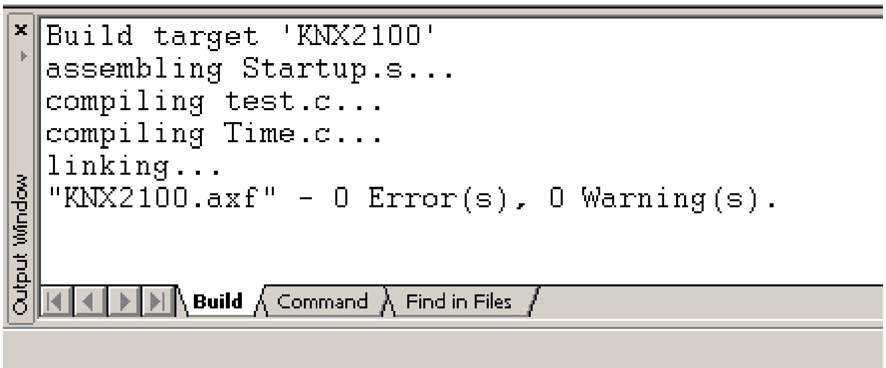
- **Linker Script File: .\flash.ld** specifies the linker script file you selected in Create A Project. Clicking the **Edit** button allows you to configure the linker options contained in that file.



Build Program

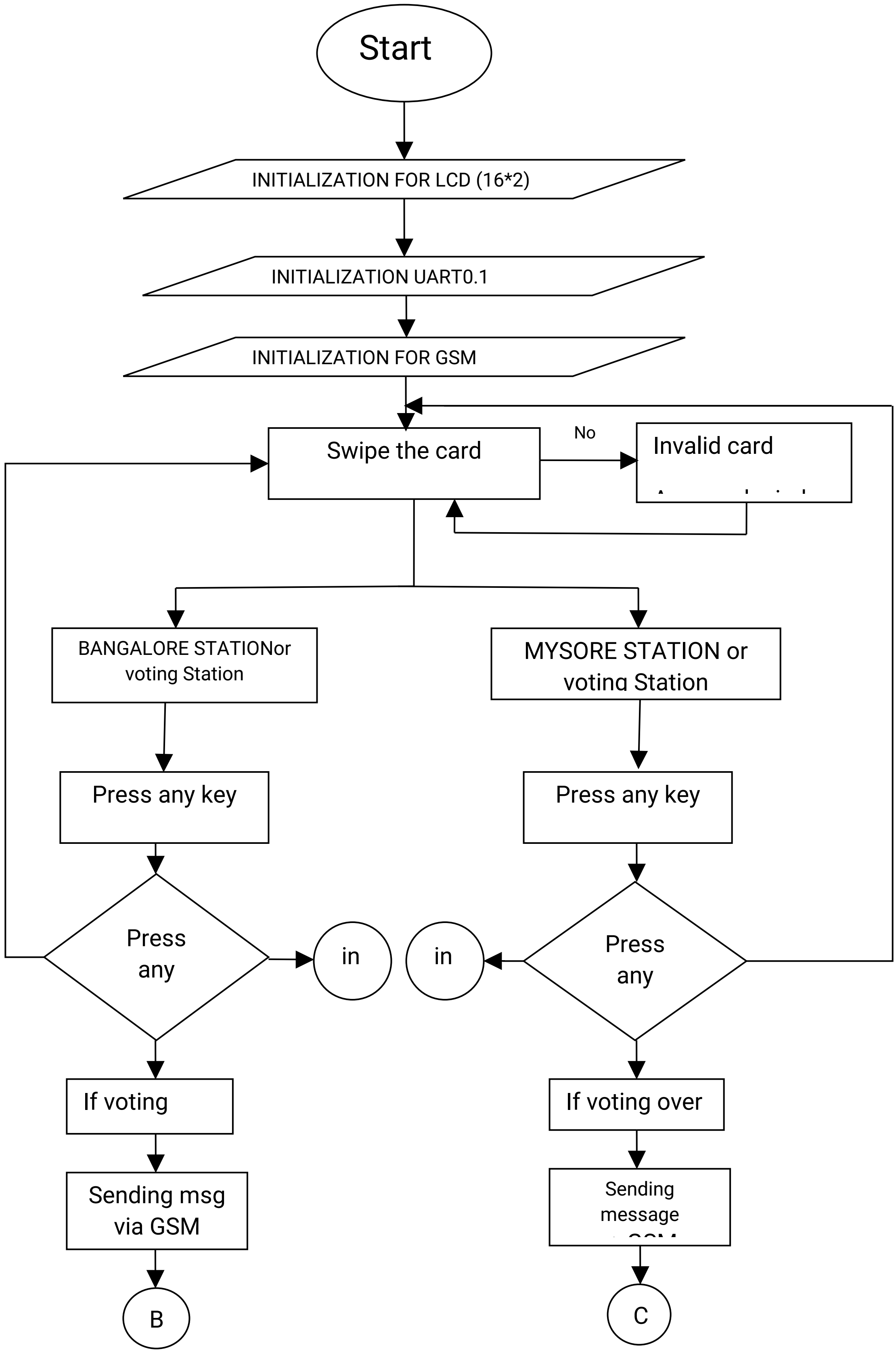
Use the **Build** toolbar button to generate your application program. µVision translates all your source files and links the project.

- The build progress (assembling, compiling, and linking) displays in the Output Window. Errors and warnings detected are output here as well.



- The linker creates an **Executable File** in ELF Format in the output folder designated earlier. This file is required for debugging with the ULINK USB-JTAG adapter or other emulators.

5.3.3FLOWCHART


Start
INITIALIZATION FOR LCD (16*2)
INITIALIZATION UART0.1
INITIALIZATION FOR GSM
Swipe the card
No
Invalid card
BANGALORE STATIONor voting Station
MYSORE STATION or voting Station
Press any key
Press any key
Press any
in
in
Press any
If voting
If voting over
Sending msg via GSM
Sending message
B
C

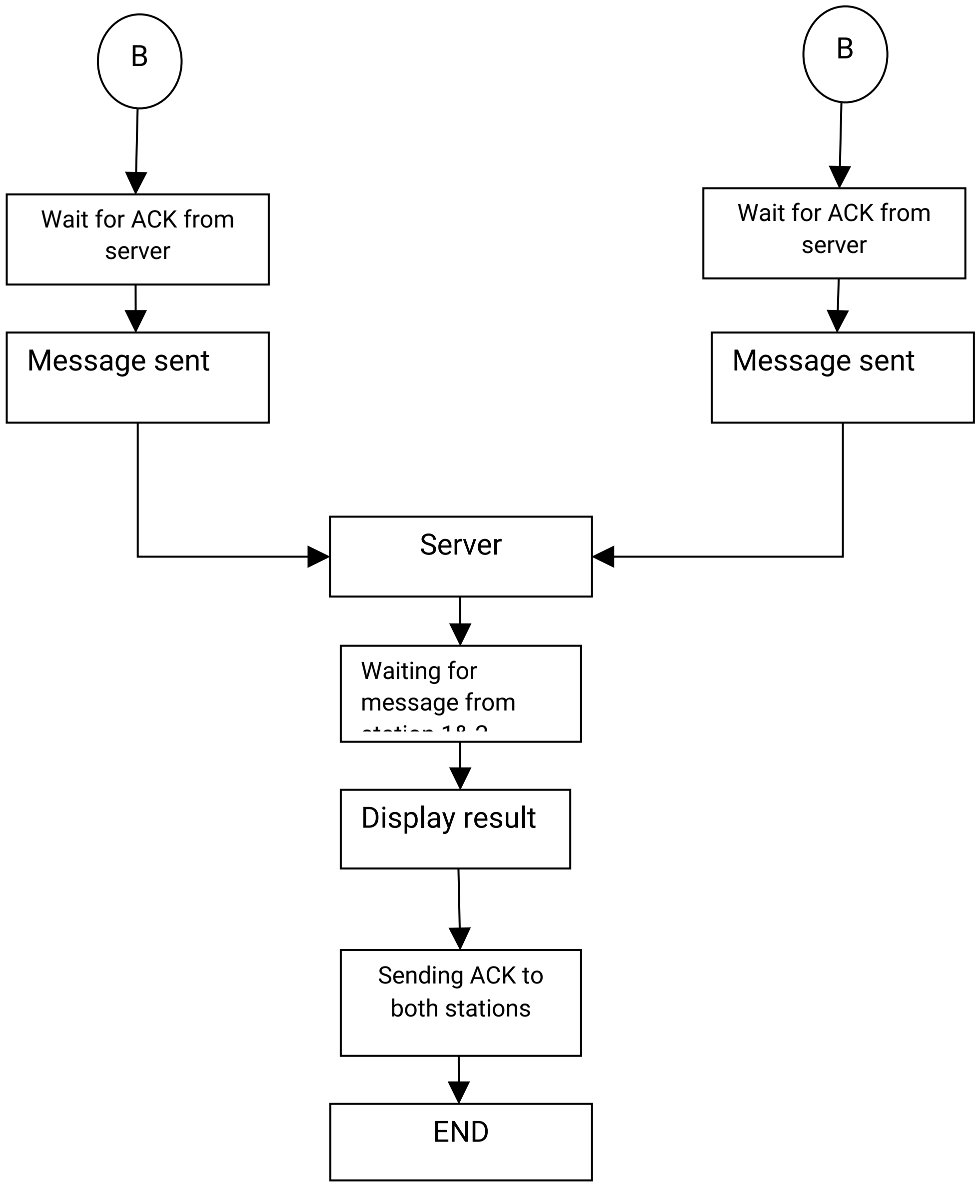


Fig 4.3.3: flow chart

CHAPTER 5

5. 1 BLOCK DIAGRAMS:

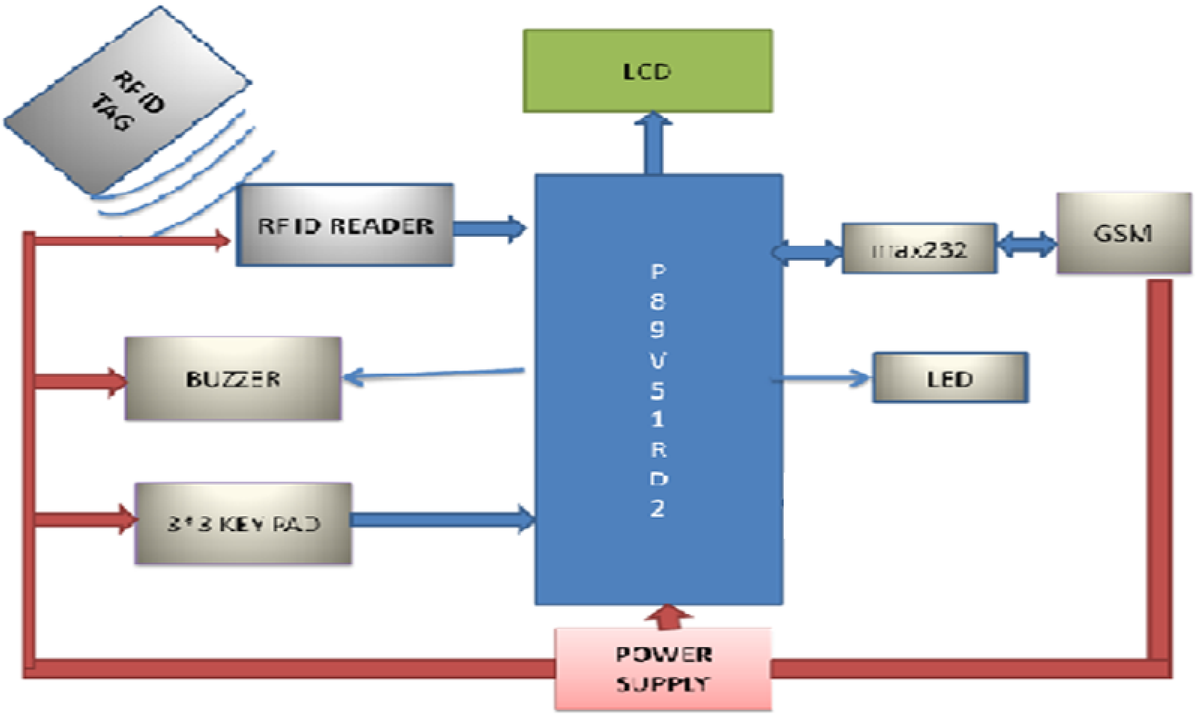


Fig 5.1: Block Diagram of station 1

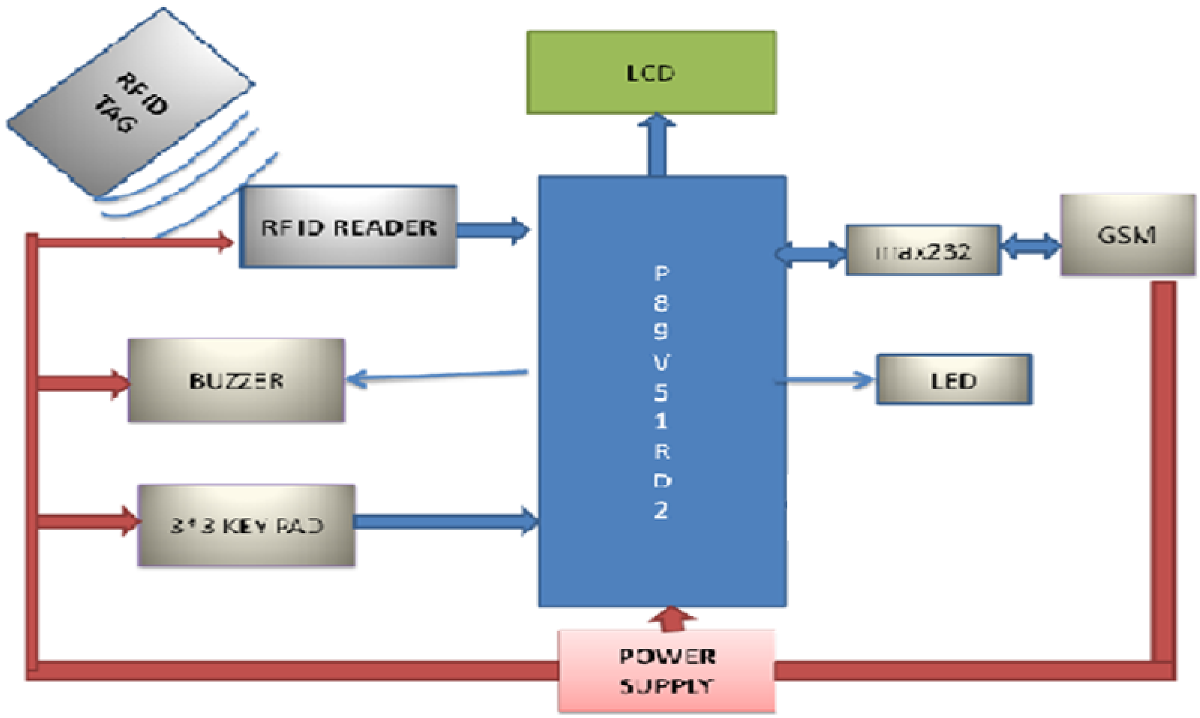


Fig 4.2: Block Diagram of station 2

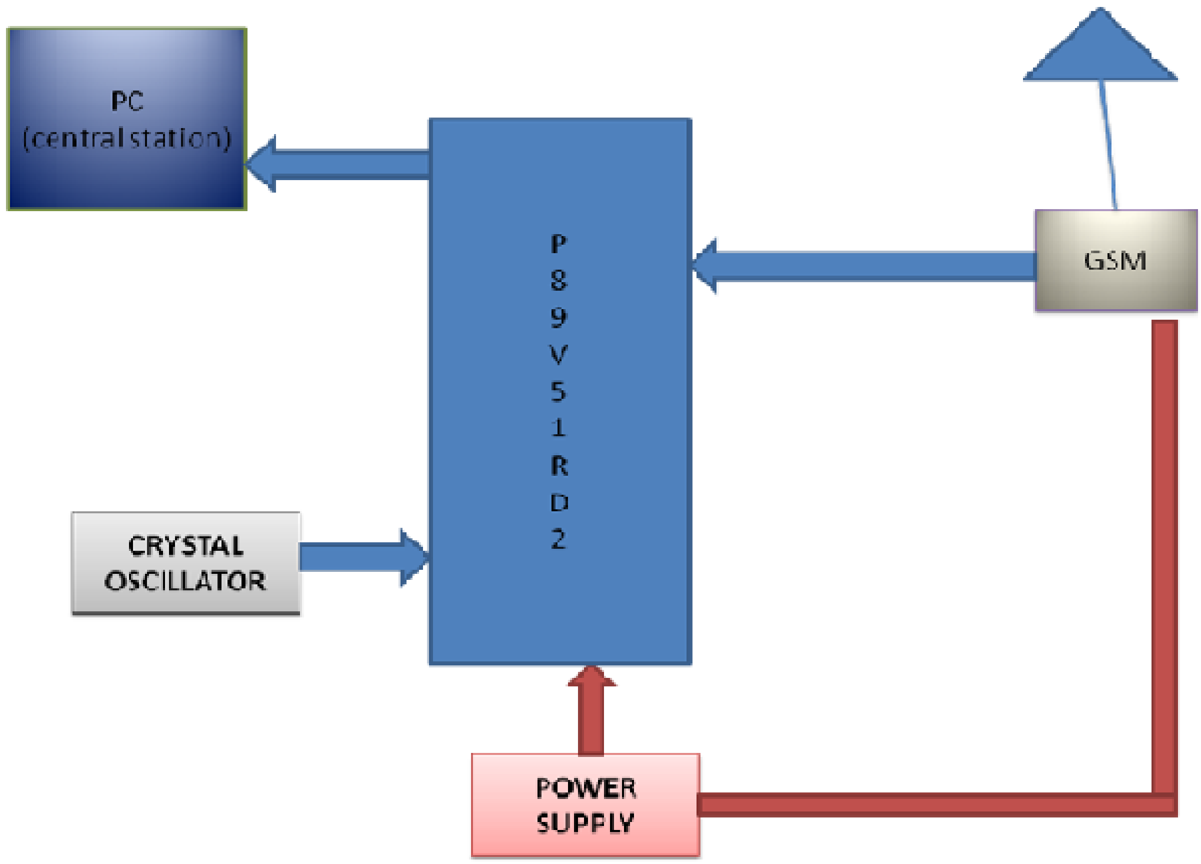


Fig 5.3: Block Diagram of central office

5.2 WORKING METHODLOGY:

- In this project, Bright 16*2 LCD is interface with a microcontroller.
- When a person wants to vote he/she has to place the RFID tag which is assign to a person.
- The reader will read ID and sends the details to the controller.
- The controller will recover this data and check for authorization and allow this person to vote.
- If not permitted, it will display “ACCESS DENIED”.
- The person can vote from any voting station.
- At the end of the day the controller program will calculate the total voting.
- After that by using GSM technology it sends the total voting information to Taluk office data base.
- It will help to avoid fake voting and chance of reelection.
- It will help the people to vote from any voting station.so that it will be more convenient.

CHAPTER 6

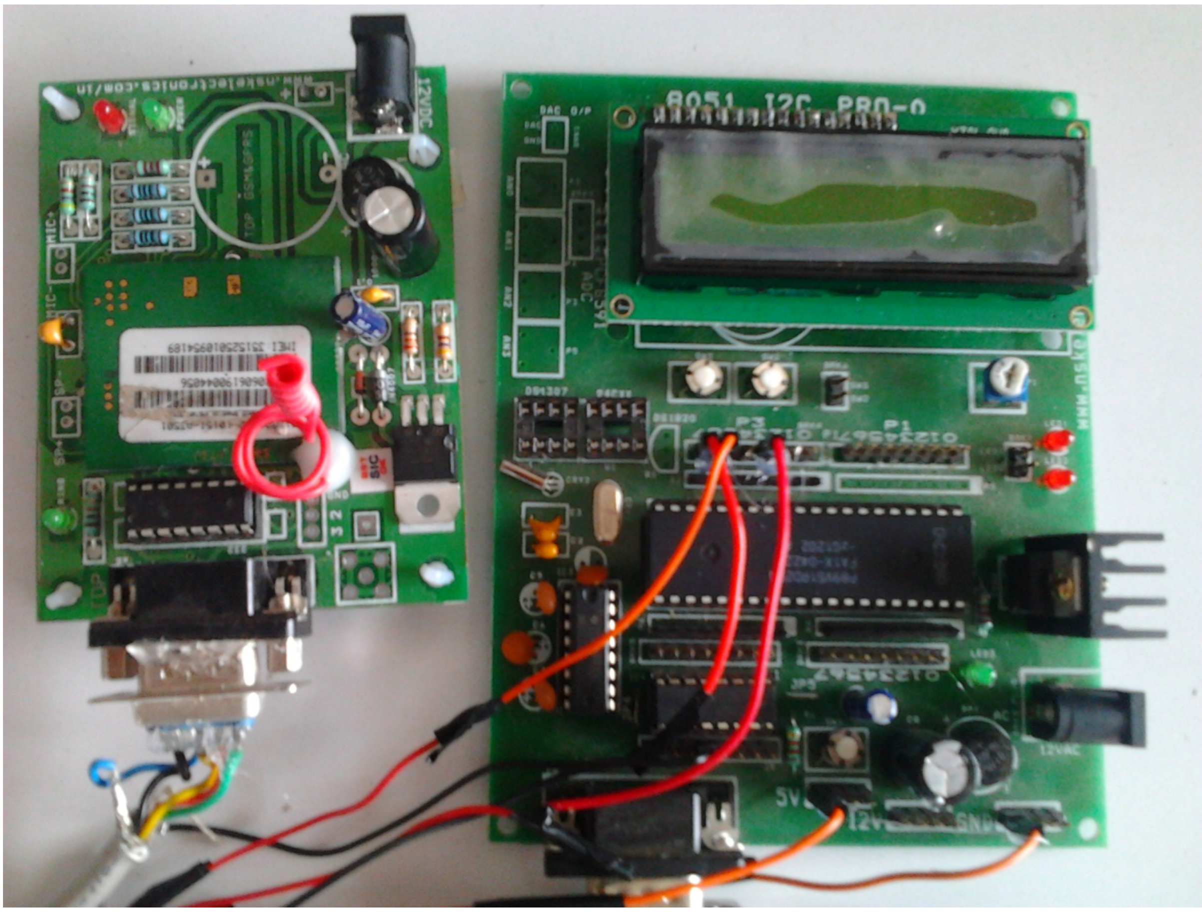


Fig. 6.1.VOTING SYSTEM OR STATION 1

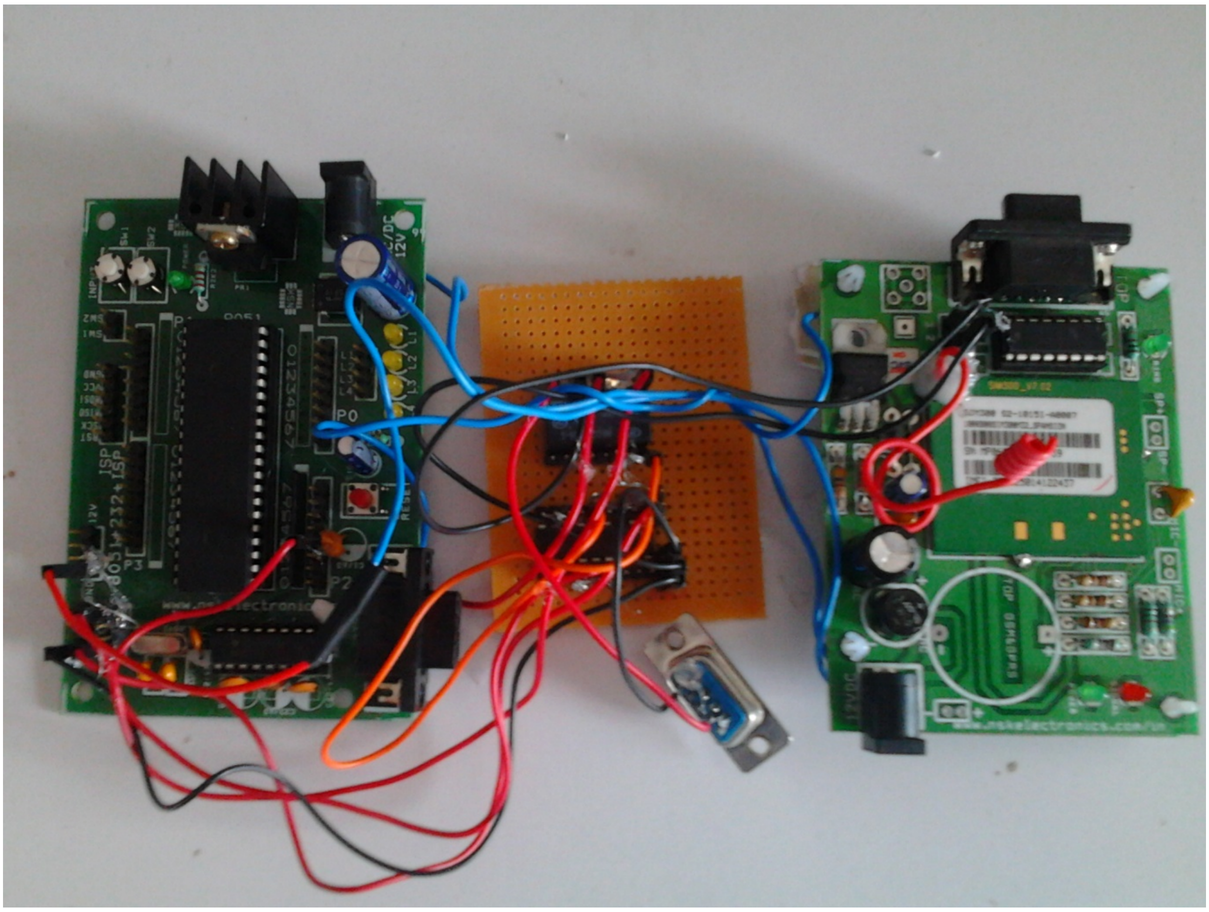


Fig 6.2 CENTRAL OFFICE OR SERVER

PART IDENTIFICATION

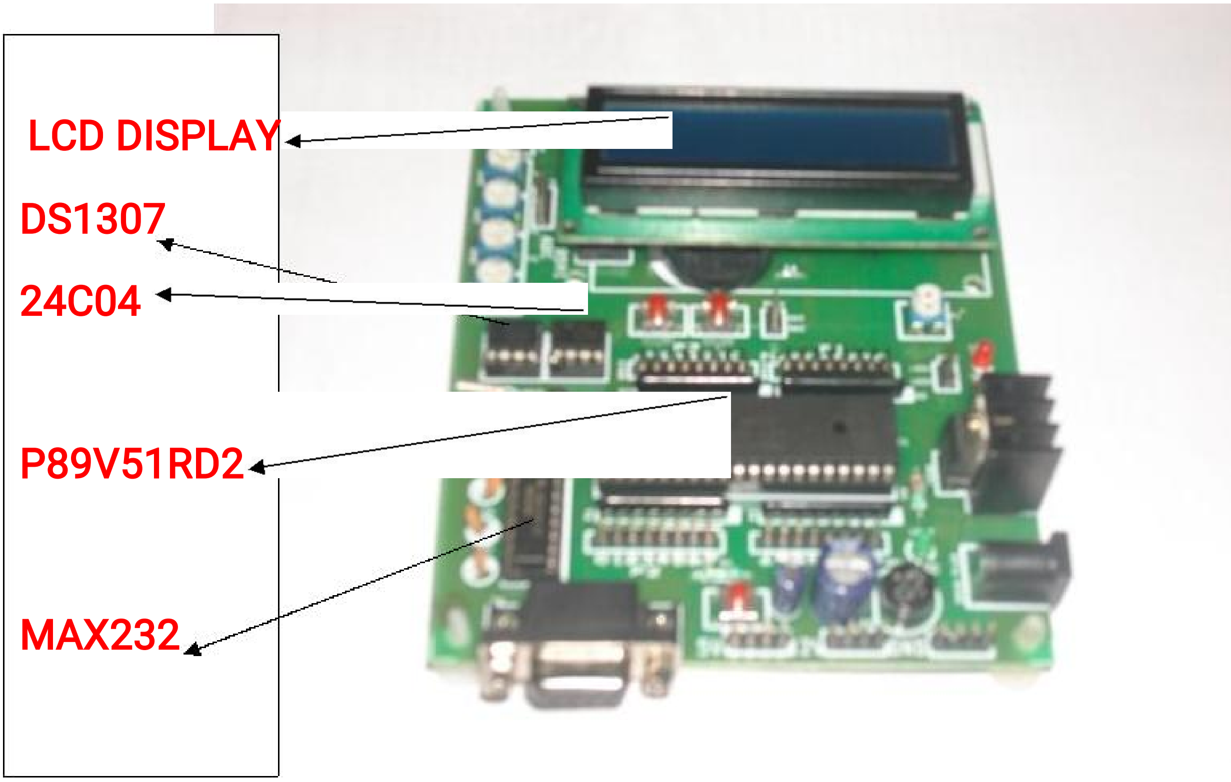
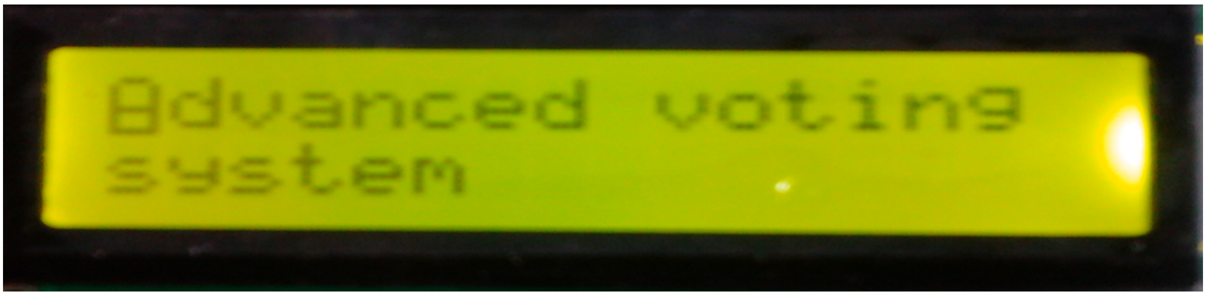


Fig 6.3: part identification

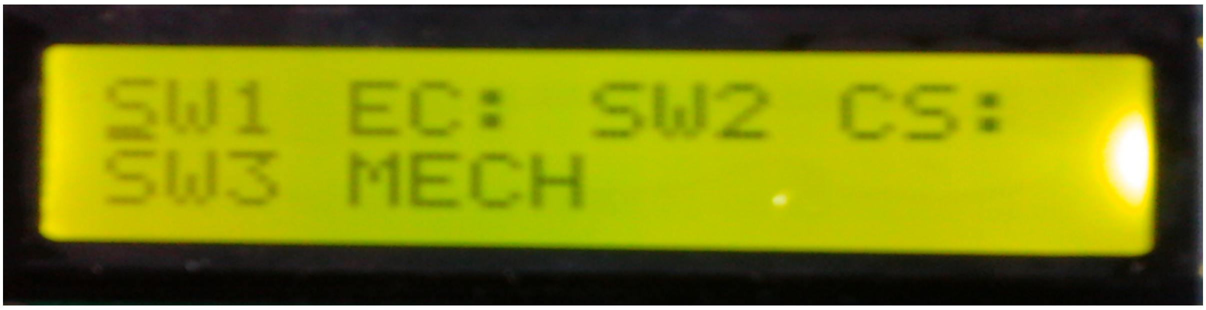
STATUS WHEN POWER SWITCH IS ON

INITIALIZATION



WHEN CARD SWIPPED

IT DISPLAYS LIST



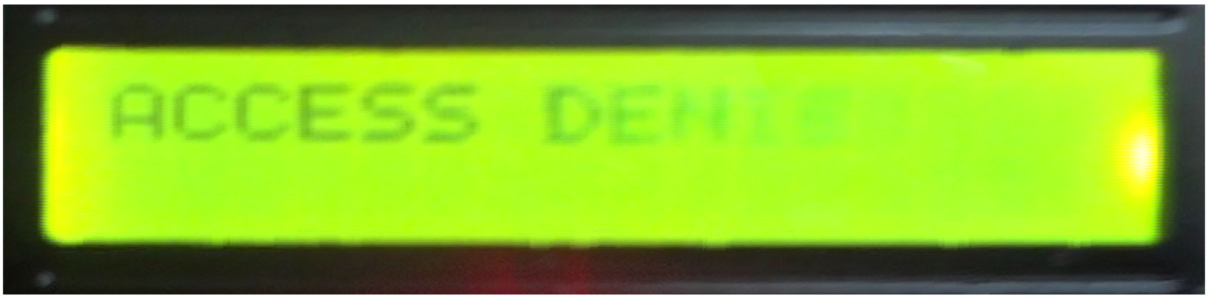
VOTING STATUS

FOR SENDING TO SERVER

STATUS OF TRANSMITING

CHECKING FAKE VOTING

IF CARD SWIPPED TWISE ORUNAUTHORIZED CARD



CHAPTER 7

7.1. ADVANTAGES

1. Avoid fake voting.
2. Avoid human interference.
3. secured voting
4. Expect 100% voting.
5. Distant voting is possible

7.2. APPLICATION

We can use this application in all type elections.

CHAPTER 8

8.1. CONCLUSION:

The system shows promising results, since active RFID technology used for the purpose of identification, it contains voter's details. We used P89V51RD2 microcontroller contains special features like ISP & IAP. In our project we implemented convenient voting system with some advantages, we can vote from any station to respective constituency. So that we can secure 100% voting, human interference is less and also chance of reelection is less. In our project data centralization is used ie after voting we send all the voting details to respective server. So it avoids human interference. We used GSM technology for transmitting the details of voting. By this system we can avoid fake voting, and we can achieve good security. We can easily identify that who are all voted by this system and also not voted.

8.2. FUTURE ENHANCEMENT

- We can use battery instead of AC supply, battery is a good option in case of power failure occurs while voting.
- Thump can be used instead of RFID technology.
- If voters not voted for any election for 5 years, govt can take action against them by not providing LPG, BPL, APL, and DRIVING LICENCE CARDS etc.

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