IOSR Journal of Electrical and Electronics Engineering (IOSR-JEEE)
e-ISSN: 2278-1676,p-ISSN: 2320-3331, Volume 13, Issue 3 Ver. I (May. – June. 2018), PP 01-011
www.iosrjournals.org

Real Time E-Calendar for People

K.Krishnaveni Muthusamy[1], R. Ida Malarselvi[2]
Research Scholar, Department of Physics, Government Arts College For Men, Kumbakonam, Bharathidasan University, India
Assistant Professor, Department of Physics, Dharumapuram Gnanambigai Government Arts College (Women), Bharathidasan University, India
Corresponding Author: K.Krishnaveni Muthusamy[1]

Abstract: *Persons with disability around the world reported as current census in China 85,020,000, Japan 5,111,600, Russia 12,660,000, American Samoa 3,608, Australia 4,234,200, Malaysia 359,203, Thailand 1,478,662, India 26,814,994 and Pakistan 3,286.To support the disable a device is designed by using as "Day/Night Detection Sensor", It contains ARM Microcontroller LPC 2148 this controller is supplied by RTC this clock is received by Controller and hour, day, month and year calculations starts and a voice sensor announces the every hour of the day and week as well as month starts from January and ends December this output is also connected to LCD unit and displayed the Hour, Minute, Second from day starts from Monday and ends to Sunday and the date is also displayed. Whenever the person is out of station they carry it easily or they went away from the house to some places they reset the device and after entry to house once again they starts it easily that time the day, month, hour display starts continuously where it switched off, A normal man use the device as E-Calendar a normal calendar have only display the date but here date, Day, Hour, Month all displayed and announces through voice which make our attention we are doing some job in house, So we simply know the calendar where ever in house automatically. This device is utilized by the Visually impaired, Leg impaired, Polio attacked and old aged persons as a special case.*

Keywords:*ARMMicrocontroller LPC 2148, LCD,PIC Microcontroller PIC16F877A,RTC,Speaker, Voice board.*

Date of Submission: 20-04-2018 Date of acceptance: 07-05-2018

I. Introduction

The device "Real Time E-Calendarfor Persons" is designed by using the hardware's LCD, voice sensor, RTC to render support to the normal /disable who may wish to know the time, date and day during their busiest schedule automatically. Microcontroller unit PIC16F877A or an ARM Microcontroller LPC2148 is fixed into this calendar to control the voice board every hour and alert the person with duration, This project is specially designed to support the disable person without the other person support they can easily visually or hearing by knowing the time period. This device is more compact to portable so they can easily carry when they went away if they stable inside a house the device fixed in table top. Nowadays people were enjoying the development of electronics by different electronic gadgets but disable are not, so make comfort and enjoyable with real time the device is designed.

II. Material And Methods

Fig.1 Day/Night Detection Sensor (From Literature review)

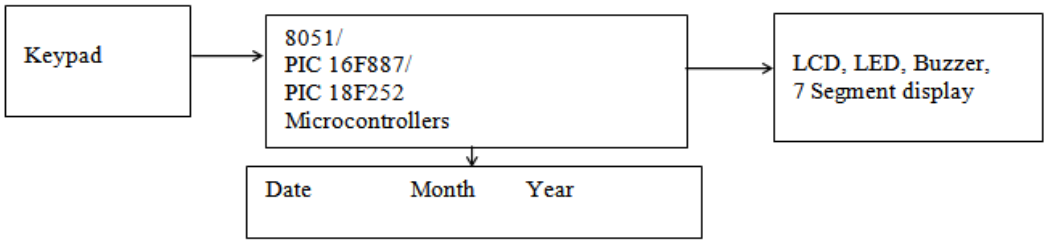
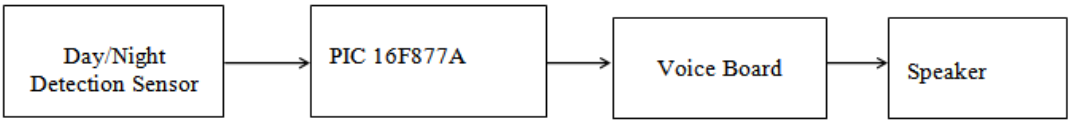


Fig.2 Day/Night Detection Sensor Proposed Model



Prior literatures are studied by different publications and articles we have developed our own model using RTC, voice sensor based Real time clock. The motto of the project is to support the disable but the hardware is utilized by anybody anywhere example temple, Apartments, Shopping Malls, Theatres, MNC's, School and Hospitals social areas to know the time. In Fig.1 and Fig.2 the existing device designed and proposed model designed by ourselves as a comparison is drawn in the above block diagram.

Hardware Details

PIC16F877A

General Description

The microcontroller is a device that can perform a specific function according to the coding/program burnt into its program memory. The microcontrollers are special purpose devices used in many application like automobile, medical, instrumentation, battery management, smart phones accessories, motor and control drives, USB and wireless technology etc. One of the most reputed manufacturers of Micro-Controller is MICROCHIP. They have the vast series of Micro-Controllers from 8bit, 16, 32 bit both in SMD and through whole package.

Product Description

The input supply to the board can be fed from both AC and DC. It uses a crystal oscillator for generating frequency. A serial communication is achieved by an UART protocol. This board is specially designed for connecting digital and analog sensors which has input voltage range 5 or 12VDC as well as it can be interfaced with serial communication devices, relay boards etc. The output can be monitored in LCD as well as PC. Data EEPROM is used to store data defined by the user. When a variable is defined it is stored in program memory and the value of the variable is stored in data EEPROM Synchronous serial ports are used to communicate with other peripheral devices like serial EEPROMS, A/D converters and shift registers.They have two modes. 1- SPI Serial Peripheral Interface 2- I^2C Inter Integrated Circuit as shown in Fig.3 and Pin out diagram of PIC shown in Fig.4

Fig.3 PIC Microcontroller Board

Applications

- Real time applications
- Academic applications

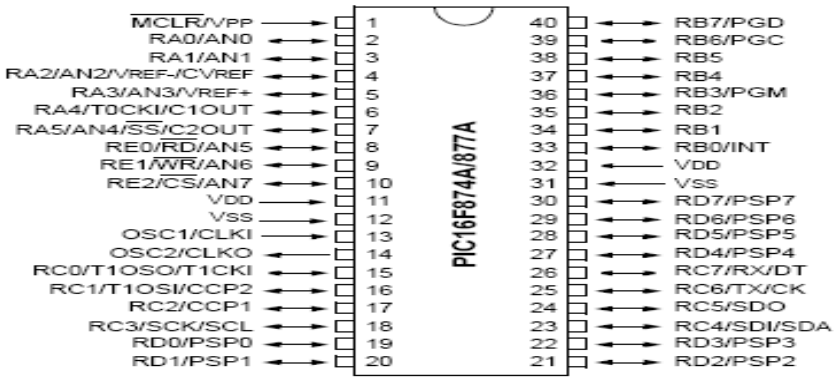


Fig.4 Pin out of PIC

Power Supply:

Power supply is a reference to a source of electrical power. A device or system that supplies electrical or other types of energy to an output load or group of loads is called a power supply unit or PSU. The term is most commonly applied to electrical energy supplies, less often to mechanical ones, and rarely to others. A 230v, 50Hz Single phase AC power supply is given to a step down transformer to get 12v supply. This voltage is converted to DC voltage using a Bridge Rectifier. The converted pulsating DC voltage is filtered by a 2200uf capacitor and then given to 7805 voltage regulator to obtain constant 5v supply.

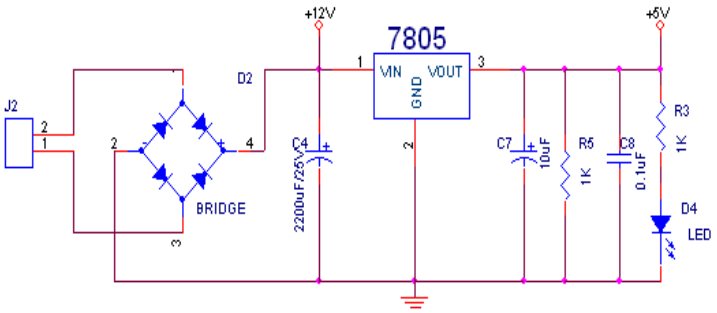


Fig.5 Regulated power supply

This 5v supply is given to all the components in the circuit. A RC time constant circuit is added to discharge all the capacitors quickly. To ensure the power supply a LED is connected for indication purpose. Fig.5 shows the regulated power supply operational diagram

LCD (16×2):

Description:

LCD stands for liquid crystal display. They come in many sizes 8x1 , 8x2 , 10x2 , 16x1 , 16x2 , 16x4 , 20x2 , 20x4 ,24x2 , 30x2 , 32x2 , 40x2 etc . Many multinational companies like Philips Hitachi Panasonic make their own special kind of LCD'S to be used in their products.

All the LCD'S performs the same functions (display characters numbers special characters ASCII characters etc).Their programming is also same and they all have same 14 pins (0-13) or 16 pins (0 to 15).

Alphanumeric displays are used in a wide range of applications, including palmtop computers, word processors, photocopiers, point of sale terminals, medical instruments, cellular phones, etc.

Product Description*:*

Fig.6 is an LCD Display designed for E-blocks. It is a 16 character, 2-line alphanumeric LCD display connected to a single 9-way D-type connector. This allows the device to be connected to most E-Block I/O ports.

The LCD display requires data in a serial format, which is detailed in the user guide we can follow it.

The display also requires a 5V power supply. Please take care not to exceed 5V, as this will cause damage to the device. The 5V is best generated from the E-blocks Multi programmer or a 5V fixed regulated power supply.The

16 x 2 intelligent alphanumeric dot matrix displays is capable of displaying 224 different characters and symbols.

A full list of the characters and symbols is printed on pages 7/8 (note these symbols can vary between brand of LCD used)This booklet provides all the technical specifications for connecting the unit, which requires a single power supply (+5V).

Fig.6 LCD

Features:

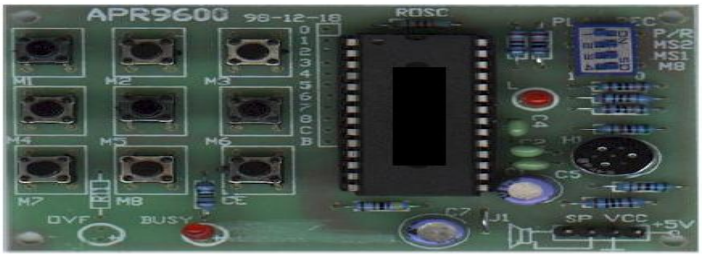
- Input voltage: 5v
- E-blocks compatible
- Low cost
- Compatible with most I/O ports in the E-Block range
- Ease to develop programming code using Flow code icons.

Application:

- Monitoring

Voice Board:

The APR9600 experimental board is an assembled PCB board consisting of an APR9600 IC, show in Fig.7 and its pin out shown in Fig.8, an electret microphone, support components and necessary switches to allow users to explore all functions of the APR9600 chip. The oscillation resistor is chosen so that the total recording period is 60 seconds with a sampling rate of 4.2 kHz.



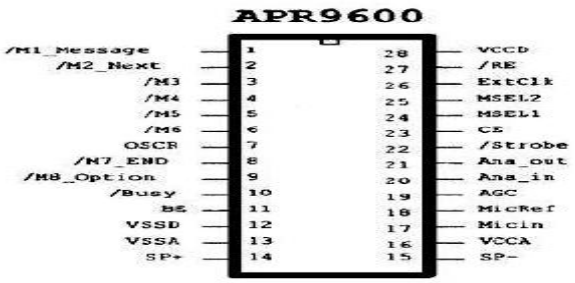
APR9600 Experimental board

Fig.7 APR9600 Board

Features

• Single-chip, high-quality voice recording & playback solution
- No external ICs required
- Minimum external components
• Non-volatile Flash memory technology
- No battery backup required
• User-Selectable messaging options
- Random access of multiple fixed-duration messages
- Sequential access of multiple variable-duration messages
• User-friendly, easy-to-use operation
- Programming & development systems not required
- Level-activated recording & edge-activated play back switches
• Low power consumption
- Operating current: 25 mA typical
- Standby current: 1 uA typical
- Automatic power-down
• Chip Enable pin for simple message expansion

Fig.8 Pin functions of the IC:



During sound recording, sound is picked up by the microphone. A microphone pre-amplifier amplifies the voltage signal from the microphone. An AGC circuit is included in the pre-amplifier, the extent of which is controlled by an external capacitor and resistor. If the voltage level of a sound signal is around 100 mV peak to-peak, the signal can be fed directly into the IC through ANA IN pin (pin 20). The sound signal passes through a filter and a sampling and hold circuit. The analogue voltage is then written into non-volatile flash analogue RAMs. It has a 28 pin DIP package. Supply voltage is between 4.5V to 6.5V. During recording and replaying, current consumption is 25 mA. In idle mode, the current drops to 1μA. The APR9600 device offers true single-chip voice recording, non- volatile storage, and playback capability for 40 to 60 seconds. The device supports both random and sequential access of multiple messages. Sample rates are user-selectable, allowing designers to customize their design for unique quality and storage time needs. Integrated output amplifier, microphone amplifier, and AGC circuits greatly simplify system design. The device is ideal for use in portable voice recorders, toys, and many other consumer and industrial applications.APLUS integrated achieves these high levels of storage capability by using its proprietary analog/multilevel storage technology implemented in an advanced Flash non-volatile memory process, where each memory cell can store 256 voltage levels. This technology enables the APR9600 device to reproduce voice signals in their natural form. It eliminates the need for encoding and compression, which often introduce distortion.

Circuit Diagram

Fig.9 shows the circuit diagram of E-Calendar which contains two voice board circuits that is for day, month and year announcement one voice board may not sufficient so we use two boards, next LCD for displaying the date, hour, day, month and year, A PIC Microcontroller is used to control the operations of all hardwares. A RTC is designed and through IC 555 Timer the trigger pulse applied to the controller unit to calculate the seconds of 60,minutes of 60,and 24 hours in a day , 12 months and next 365 days in a year,

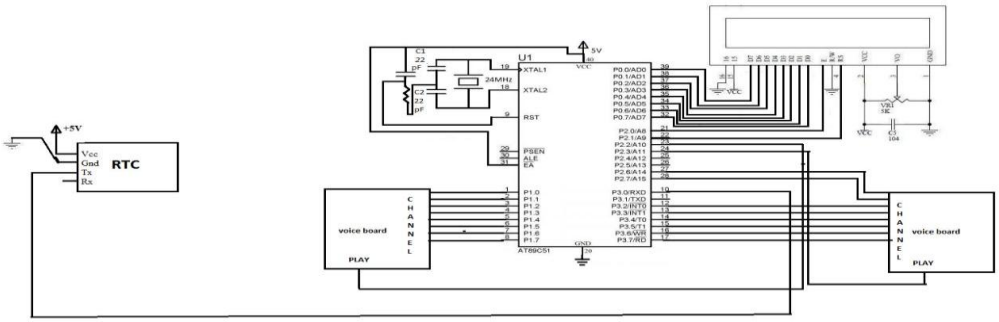


Fig.9 Circuit of E-Calendar

III. Result And Discussion

If an disabled (Mentally affected, Leg/hand impaired, Paralysis attacked) is staying in a house or a normal man stay in a house, they can easily know the time in the place where they stay the designed device easily announces the time, day, month. The circuit heart is PIC Microcontroller unit which can easily control the two voice boards the thirty day,thirty one day, leap year not leap or programmed in memory of microcontroller to easily announce the current day and time with the support of the real time clock circuit so the person may know in and around the house the time without any difficult by this E-Calendar. The same also displayed in the LCD that is like 17-03-18 (Date) SAT (Day), 05-20-10 (hour-minute-second). This is the importance of our circuit performance. It is highly reliable and more compatible hence we can carry easy to

outdoor where people wish to go, that time the calculation run perfect if we sometimes switched off after restarts it starts from beginning is the advantage of the device, but one disadvantage after the life of ceramic battery we used inside the RTC replaced by a twice the year. The following photo show the result displayed in hardware after a prototype model is designed Fig.10

IV. Conclusion

We wish to design a new device for public we studied the literature review of calendar but our proposed model is simple and have a compatibility the controller unit is PIC unit this can be replaced by ARM Microcontroller a program of the coding may change to ARM all the same hardware work is the compatibility of our work, running hardware in dual IC's is a new implementation, The calendar announces the day, month, hour if we may busy we may not notice every time for hour it automatically announces the same a disable person due to disability they can't able to walk of vision failure persons make use of the E-Calendar when they may in indoor or outdoor, it is flexible to carry, for save battery we went away we turn OFF the device and reentry we restart the device it continued from the point where it switched off. Here we group the leap and non-leap year, then thirty days of a month and thirty one days of a month in order to bring more efficient performance we tried it in our program by different looping and the performance of the device verified and show in the figure given below.

Fig.10 hardware of the designed device

Software codings*:*

Program for the Day/Night Calendar

```
#include<reg51.h>
        sbitRegSel      =       P3^2;
        sbitReadWr      =       P3^3;
        sbit Enable     =       P3^4;
        sbit SDA        =       P3^6;
        sbit SCL=       P3^7;
        sbitDigiPlay = P1^0;    /* from PORT_1.0 Pin */
        sbit Channel1 = P1^1;   /* from PORT_1.1 Pin */
        sbit Channel2 = P1^2;   /* from PORT_1.2 Pin */
        sbit Channel3 = P1^3;   /* from PORT_1.3 Pin */
        sbit Channel4 = P1^4;   /* from PORT_1.4 Pin */
        sbit Channel5 = P1^5;   /* from PORT_1.5 Pin */
sbitVoPlay              =       P0^0;
        sbit VoAddr0    =       P0^1;
        sbit VoAddr1    =       P0^2;
        sbit VoAddr2    =       P0^3;
        sbit VoAddr3    =       P0^4;
        sbit VoAddr4    =       P0^5;
bitFirstFlag=0x00;
        charack;
        char array[7];
        static char CurHours,CurDay,CurDate,CurMonth;
        static char PreHours,PreDay,PreDate,PreMonth;
```

```
        void I2CStart(){SDA=1;SCL=1,SDA=0,SCL=0;}
        void I2CStop(){SDA=0,SCL=1,SDA=1;}
        unsigned char I2CSend(unsigned char Data)

{
                char i;
                static bit ack_bit;
                for(i=0;i<8;i++)
                {
if(Data & 0x80) SDA=1;
                else SDA=0;
                SCL=1;
                Data<<=1;
                SCL=0;
                }
SDA=1,SCL=1;
                ack_bit=SDA;
                SCL=0;
                returnack_bit;
        }
unsigned char I2CRead(char ack)
        {
unsigned char i, Data=0;SDA=1;
for(i=0;i<8;i++)
                {
                        Data<<=1;
                        do{SCL=1;}
                        while(SCL==0);
                        if(SDA) Data|=1;
                        SCL=0;
                }
if(ack)SDA=0; else SDA=1;
                SCL=1;
                SCL=0;
                SDA=1;
                return Data;
        }
void delay(int time)
        {
                unsignedinti,j;
                for(i=0;i<time;i++)
for(j=0;j<113;j++);
        }
voidLCD_command(unsigned char cmd)
        {
                P2=cmd;
 Read Wr=0, RegSel=0, Enable=1;
                Delay (5), Enable=0;
        }
voidLCD_senddata(unsigned char item)
        {
                P2=item;
                ReadWr=0,RegSel=1,Enable=1;
                delay(5),Enable=0;
        }
        voidLCD_init()
        {
                LCD_command(0x38);
                LCD_command(0x06);
```

```
                LCD_command(0x0c);
        }
voidLCD_sendnum(unsigned char Digit)
        {               LCD_senddata(Digit/16+48);
                LCD_senddata(Digit%16+48);
        }
        void print(char *str)
        {
        while(*str!='\0')
         {
        LCD_senddata(*str);
                str++;
         }
        }
        void day(char d)
        {
                if(d==01)
print("SUN");
                if(d==02)
print("MON");
                if(d==03)
print("TUE");
                if(d==04)
print("WED");
                if(d==05)
print("THU");
if(d==06)
print("FRI");
                if(d==07)
print("SAT");
         }
void main()
        {
        int Index;
        LCD_init();
        LCD_command(0x80);
        print("DS1307 RTC I2C");
        delay(1000);
        LCD_command(0x01);
        FirstFlag=0x00;
/* I2CStart();
        I2CSend(0xD0);
        I2CSend(0x00);    //
        I2CSend(0x01);  // Second
        I2CSend(0x47);  // Minutes
I2CSend(0x21);     //          Hours
        I2CSend(0x04);    // Day
        I2CSend(0x23);  // Date
        I2CSend(0x08);  // Month
        I2CSend(0x17);  //            year
        I2CSend(0x80);
        I2CStop();
*/while(1)
         {
                 /* Collect RTC Data`s */
                I2CStart();
                I2CSend(0xD0);
                I2CSend(0x00);
                I2CStart();
```

```
                    I2CSend(0xD1);
                    for(Index=0;Index<7;Index++)
                    {array[Index]=I2CRead(1);}
                    I2CStop();
                    CurDate = array[4];
                    LCD_command(0x80);
                    LCD_sendnum(array[4]);
                    print("-");
                    CurMonth = array[5];
                    LCD_sendnum(array[5]);
                    print("-20");
                    LCD_sendnum(array[6]);
                    LCD_command(0x8c);
                    CurDay = array[3];
                    day(array[3]);


LCD_command(0xc0);
CurHours = array[2];
                    LCD_sendnum(array[2]);
print(":");
                    LCD_sendnum(array[1]);
print(":");
                    LCD_sendnum(array[0]);
                    LCD_command(0xc9);
if(FirstFlag==0x00)
        {
PreHours = CurHours;
PreDay = CurDay;
                                PreDate = CurDate;
                                PreMonth = CurMonth;
                                FirstFlag=0x01;
}
/* Alaram  Condition Checking */
if(PreHours != CurHours)
{
LCD_command(0xCA);
print("Hours");
delay(300);
VoAddr0 = 0;
VoAddr1 = 0;
VoAddr2 = 0;
VoAddr3 = 0;
VoAddr4 = 0;
VoPlay = 1;
delay(10);
VoPlay = 0;
delay(1000);
VoPlay = 1;
delay(10);
Channel1 = CurHours& 0x01;
Channel2 = CurHours& 0x02;
Channel3 = CurHours& 0x04;
Channel4 = CurHours& 0x08;
Channel5 = CurHours& 0x10;
DigiPlay = 1;
delay(10);
DigiPlay = 0;
delay(1000);
```

```
DigiPlay = 1;
delay(10);
}
if(PreDay != CurDay)
{
LCD_command(0xCA);
print("Days ");
delay(300);
VoAddr0 = 0;
VoAddr1 = 0;
VoAddr2 = 0;
VoAddr3 = 0;
VoAddr4 = 1;
VoPlay = 1;
delay(10);
VoPlay = 0;
delay(1000);
VoPlay = 1;
delay(10);
Channel1 = CurDay& 0x01;
Channel2 = CurDay& 0x02;
Channel3 = CurDay& 0x04;
Channel4 = CurDay& 0x08;
Channel5 = CurDay& 0x10;
DigiPlay = 1;
delay(10);
DigiPlay = 0;
delay(1000);
DigiPlay = 1;
delay(10);
}
if(PreDate != CurDate)
{
LCD_command(0xCA);
print("Dates");
delay(300);
VoAddr0 = 0;
VoAddr1 = 0;
VoAddr2 = 0;
VoAddr3 = 1;
VoAddr4 = 0;
VoPlay = 1;
delay(10);
VoPlay = 0;
delay(1000);
VoPlay = 1;
delay(10);
Channel1 = CurDate& 0x01;
Channel2 = CurDate& 0x02;
Channel3 = CurDate& 0x04;
Channel4 = CurDate& 0x08;
Channel5 = CurDate& 0x10;
DigiPlay = 1;
delay(10);
DigiPlay = 0;
delay(1000);
DigiPlay = 1;
delay(10);
        }
```

```
if(PreMonth != CurMonth)
{
LCD_command(0xCA);
print("Month");
delay(300);
VoAddr0 = 0;
VoAddr1 = 0;
VoAddr2 = 0;
VoAddr3 = 1;
VoAddr4 = 1;
VoPlay = 1;
delay(10);
VoPlay = 0;
delay(1000);
VoPlay = 1;
delay(10);
Channel1 = CurMonth& 0x01;
Channel2 = CurMonth& 0x02;
Channel3 = CurMonth& 0x04;
Channel4 = CurMonth& 0x08;
Channel5 = CurMonth& 0x10;
DigiPlay = 1;
delay(10);
DigiPlay = 0;
delay(1000);
DigiPlay = 1;
delay(10);
        }
         }
        }
```

References

[1]. www.elctronic tutorial.com
[2]. www.lumisence.com
[3]. Speech recognition based computer key board replacement for the quadriplegics,paraplegics, paralytics and amputees C. Chandra mouli, Vivekagarwal International workshop on medical measurement and applications May 30,2009
[4]. Voice control wheel chair Mohdarmankhan, Kashishagarwal, Mukeshsaini,Ajayprakash, Mansivashist International Journal of Scientific Research and Management Studies,Vol.3,issue 1, Pg:49-54,ISSN:2349-3771
[5]. Speech and flex sensor controlled wheel chair for physically disabled people Shrutiwarad, Vijayalaxmihiremath, Preethidhandargi, Vishwanathbharath,P.B.Bhagavathi,
[6]. Voice controlled wheel chair using Arduino Apsana.S, Renjitha.G,Nair International Advanced Research Journal in Science Engineering and Technology, vol.3,issue 3, August 2016
[7]. A Voice controlled wheel chair prototype for a medically challenged Rahul agarwal, Akramsiddiqui, Kuvendrasingh, Arjunsolanki, Lavitgautam International Journal of Engineering trends and technology,vol.34N2,April 2016
[8]. Voice and gesture based electric powered wheel chair using ARM K. Sudheer, T. V. Janardhanarao, C. H. Sridevi, M. S. Madhanmohan, International Journal of research in computer and communication technology, ISSN-2278-5841,vol.1,issue 6 Nov'12
[9]. Speech recognition based wheel chair using device switching Atulkumar, Prashantsingh, Amitkumar, S.K.Pawar, International Journal of Emerging Technology and Advanced Engineering,ISSN 2250-2459,vol.4,issue 2, Feb'2014
[10]. Voice Operated Wheel Chair , Jayesh K. Kokate, A. M. Agarkar Maharashtra, IJRET: International Journal of Research in Engineering and Technology eISSN: 2319-1163 | pISSN: 2321-7308

IOSR Journal of Electrical and Electronics Engineering (IOSR-JEEE) is UGC approved Journal with Sl. No. 4198, Journal no. 45125.

K.Krishnaveni Muthusamy1 "Real Time E-Calendar for People."IOSR Journal of Electrical and Electronics Engineering (IOSR-JEEE) 13.3 (2018): 01-11.