# Description:

Write a program to control 3 relays on DTMF tones.

# Source Code:

#include <LiquidCrystal.h> // include the library code:

LiquidCrystal lcd(11,12,14,15,16,17); // initialize the library with the numbers of the interface pins

int current\_status;

int DTMF\_Code;

char c;

void setup()

{

pinMode(8,OUTPUT); //Set pin number 4 as digital out where relay 1 is connected

pinMode(9,OUTPUT); //Set pin number 5 as digital out where relay 2 is connected

pinMode(10,OUTPUT); //Set pin number 6 as digital out where relay 3 is connected

pinMode(13,OUTPUT); //SIM808 wakeup connected on pin 13 in IomaTic board

digitalWrite(13, HIGH); //Initialize the SIM808 Module

delay(1000);

digitalWrite(13, LOW); //Sending wake up signal to SIM808 Module

delay(1000);

digitalWrite(13, HIGH); //Keeping SIM808 in active/wakeup state

delay(5000);

lcd.begin(16, 2); //Initialize the LCD in 16x2 mode

delay(1000);

lcd.setCursor(0,0); //Set cursor at first character/coloumn of first line/row

lcd.print(" IomaTic "); //Print the message as metioned cursor location

lcd.setCursor(0,1); //Set cursor at first character/coloumn of first line/row

lcd.print("GSM DTMF Test...."); //Print the message as metioned cursor location

Serial.begin(9600); //Initialize a serial communication with baud rate 9600

delay(10);

Serial.println("AT"); //Automatically answer call after 1 ring

delay(300);

Serial.println("ATS0=1"); //Automatically answer call after 1 ring

delay(300);

Serial.println("AT+DDET=1,1000,0,0"); //Activate DMTF decoding

delay(300);

}

void loop()

{

Serial.println("AT+CPAS"); //Phone activity status: 0= ready, 2= unknown, 3= ringing, 4= in call

delay(100);

if (Serial.find("+CPAS: ")) //Decode reply

{

char c = Serial.read(); // gives ascii code for status number

current\_status = c - 48; // return integer value of ascii code

if (current\_status == 0)

{

lcd.setCursor(0,1); //Set cursor at first character/coloumn of first line/row

lcd.print("Waiting For Call..."); //Print the message as metioned cursor location

}

if (current\_status == 3)

{

lcd.setCursor(0,1); //Set cursor at first character/coloumn of first line/row

lcd.print("Ringing............"); //Print the message as metioned cursor location

delay(3000);

}

if (current\_status == 4)

{

lcd.setCursor(0,1); //Set cursor at first character/coloumn of first line/row

lcd.print("Call Received......."); //Print the message as metioned cursor location

if (Serial.find("+DTMF:"))

{

DTMF\_Code= Serial.parseInt();

switch (DTMF\_Code)

{

case 1:

digitalWrite(8, HIGH);

lcd.setCursor(0,1);

lcd.print("DTMF:1 R1:ON ");

break;

case 2:

digitalWrite(8, LOW);

lcd.setCursor(0,1);

lcd.print("DTMF:2 R1:OFF ");

break;

case 3:

digitalWrite(9, HIGH);

lcd.setCursor(0,1);

lcd.print("DTMF:3 R2:ON ");

break;

case 4:

digitalWrite(9, LOW);

lcd.setCursor(0,1);

lcd.print("DTMF:4 R2:OFF ");

break;

case 5:

digitalWrite(10, HIGH);

lcd.setCursor(0,1);

lcd.print("DTMF:5 R3:ON ");

break;

case 6:

digitalWrite(10, LOW);

lcd.setCursor(0,1);

lcd.print("DTMF:6 R1:OFF ");

break;

}

}

delay(100);

}

}

delay(500);

}

# Libraries:

No additional libraries required.

# Functions:

*AT Commands:*

AT Commands are commands which are used to control the modems where AT stands for Attention.