**Code Description**

In programming part of this project, first of all in programming we include library for liquid crystal display and then we defines data and control pins for LCD and home appliances.

#include<LiquidCrystal.h>

LiquidCrystal lcd(6,7,8,9,10,11);

#define Fan 3

#define Light 4

#define TV 5

int temp=0,i=0;

int led=13;

After this serial communication is initialized at 9600 bps and gives direction to used pin.

void setup()

{

lcd.begin(16,2);

Serial.begin(9600);

pinMode(led, OUTPUT);

pinMode(Fan, OUTPUT);

pinMode(Light, OUTPUT);

pinMode(TV, OUTPUT);

For receiving data serially we have used two functions one is **Serial.available** which checks whether any serial data is coming and other one is **Serial.read** which reads the data that comes serially.

while (Serial.available())

{

char inChar=Serial.read();

After receiving data serially we have stored it in a string and then waiting for Enter.

void serialEvent()

{

while(Serial.available())

{

if(Serial.find("#A."))

{

digitalWrite(led, HIGH);

delay(1000);

digitalWrite(led, LOW);

while (Serial.available())

{

char inChar=Serial.read();

str[i++]=inChar;

if(inChar=='\*')

{

temp=1;

return;

}

When Enter comes program start to compare received string with already defined string and if string matched then a relative operation is performed by using appropriate command that are given in code.

void check()

{

if(!(strncmp(str,"tv on",5)))

{

digitalWrite(TV, HIGH);

lcd.setCursor(13,1);

lcd.print("ON ");

delay(200);

}

else if(!(strncmp(str,"tv off",6)))

{

digitalWrite(TV, LOW);

lcd.setCursor(13,1);

lcd.print("OFF ");

delay(200);

}

**2.2.6 Main Code**

#include<LiquidCrystal.h>  
LiquidCrystal lcd(6,7,8,9,10,11);

#define Fan 3  
#define Light 4  
#define TV 5

int temp=0,i=0;  
int led=13;

char str[15];  
void setup()  
{  
  lcd.begin(16,2);  
  Serial.begin(9600);  
  pinMode(led, OUTPUT);  
   pinMode(Fan, OUTPUT);  
    pinMode(Light, OUTPUT);  
     pinMode(TV, OUTPUT);  
    
  lcd.setCursor(0,0);  
  lcd.print("GSM Control Home");  
  lcd.setCursor(0,1);  
  lcd.print("   Automaton    ");  
  delay(2000);  
  lcd.clear();  
  lcd.print("Circuit Digest");  
  delay(1000);  
  lcd.setCursor(0,1);  
  lcd.print("System Ready");  
  Serial.println("AT+CNMI=2,2,0,0,0");  
  delay(500);  
  Serial.println("AT+CMGF=1");  
  delay(1000);  
  lcd.clear();  
  lcd.setCursor(0,0);  
  lcd.print("Fan   Light  TV ");  
  lcd.setCursor(0,1);  
  lcd.print("OFF    OFF   OFF ");   
}

void loop()  
{  
  lcd.setCursor(0,0);  
  lcd.print("Fan   Light  TV");  
  if(temp==1)  
  {  
    check();  
    temp=0;  
    i=0;  
    delay(1000);  
  }  
}

 void serialEvent()   
 {  
  while(Serial.available())   
  {  
    if(Serial.find("#A."))  
    {  
      digitalWrite(led, HIGH);  
      delay(1000);  
      digitalWrite(led, LOW);  
      while (Serial.available())   
      {  
      char inChar=Serial.read();  
      str[i++]=inChar;  
      if(inChar=='\*')  
      {  
        temp=1;  
        return;  
      }   
      }   
    }  
   }  
 }

void check()  
{  
   if(!(strncmp(str,"tv on",5)))  
    {  
      digitalWrite(TV, HIGH);  
      lcd.setCursor(13,1);   
      lcd.print("ON    ");  
      delay(200);  
    }    
     
   else if(!(strncmp(str,"tv off",6)))  
    {  
      digitalWrite(TV, LOW);  
      lcd.setCursor(13,1);   
      lcd.print("OFF    ");  
      delay(200);  
    }  
    
    else if(!(strncmp(str,"fan on",5)))  
    {  
      digitalWrite(Fan, HIGH);  
      lcd.setCursor(0,1);   
      lcd.print("ON   ");  
      delay(200);  
    }  
   
    else if(!(strncmp(str,"fan off",7)))  
    {  
      digitalWrite(Fan, LOW);  
      lcd.setCursor(0,1);   
      lcd.print("OFF    ");  
      delay(200);  
    }  
   
    else if(!(strncmp(str,"light on",8)))  
    {  
      digitalWrite(Light, HIGH);  
      lcd.setCursor(7,1);   
      lcd.print("ON    ");  
      delay(200);  
    }  
   
    else if(!(strncmp(str,"light off",9)))  
    {  
      digitalWrite(Light, LOW);  
      lcd.setCursor(7,1);   
      lcd.print("OFF    ");  
      delay(200);  
    }   
      
    else if(!(strncmp(str,"all on",6)))  
    {  
      digitalWrite(Light, HIGH);  
      digitalWrite(Fan, HIGH);  
      digitalWrite(TV, HIGH);  
      lcd.setCursor(0,1);   
      lcd.print("ON     ON    ON  ");  
      delay(200);  
    }  
   
    else if(!(strncmp(str,"all off",7)))  
    {  
      digitalWrite(Light, LOW);  
      digitalWrite(Fan, LOW);  
      digitalWrite(TV, LOW);  
      lcd.setCursor(0,1);   
      lcd.print("OFF   OFF    OFF  ");  
      delay(200);  
    }       
}