```
#include <EEPROM.h>


#include <SoftwareSerial.h>
SoftwareSerial GSM(10, 11);


#define bt_theft  A0
#define pulse_in 2
//#define relay1  4
#define relay2  8
#define buzzer 7


char inchar;
int invar,unt_a = 0, unt_b = 0, unt_c = 5, unt_d = 0;
long total_unt = 7 , total_consumed=50 ,a,b;


int price = 100;
long price1 = 0;


unsigned int digit ;
```

```
long Set = 5.73;


int pulse = 0;


String phone_no1 = "+919766639909";


String menu = "Menu Commands : \n 1.Recharge - ATrech<1/2/3/4>\n 2.Turn
Off Appliances - R<1/2> \n 3.Estimated Monthly Units  - EF<Day_Of_Month>
\n 4.Data - Data";


int flag1 = 0, flag2 = 0, flag3 = 0;


void setup() {
  Serial.begin(9600);
  GSM.begin(9600);


  delay(1000);


//  pinMode(relay1, OUTPUT);
  pinMode(relay2, OUTPUT);
  pinMode(bt_theft,   INPUT_PULLUP);
  pinMode(pulse_in,   INPUT);
  attachInterrupt(0, ai0, RISING);
```

```
 initModule("AT", "OK", 1000);
 initModule("ATE1", "OK", 1000);
 GSM.print("AT+CBAND=GSM850_MODE");
 initModule("AT+CPIN?", "READY", 1000);
 initModule("AT+CMGF=1", "OK", 1000);
 initModule("AT+CNMI=2,2,0,0,0", "OK", 1000);
 GSM.print("AT+CBAND=GSM850_MODE");

 delay(1000);
 sendSMS(phone_no1, "Welcome To Energy Meter !");
delay(1000);
 sendSMS(phone_no1, "Type FUNCTIONS to see the available services.");
 delay(1000);

 if (EEPROM.read(50) == 0) {}
 else {
   Write();
 }

 EEPROM.write(50, 0);

 pulse = EEPROM.read(10);
```

```
  Read();
  if (total_unt > 0) {
   // digitalWrite(relay1, HIGH);
    digitalWrite(relay2, HIGH);
  }


  }



void loop()
{

  if(total_consumed>=0 && total_consumed<=100 ){
       Set = 5.73;
        }
  else if(total_consumed >= 101 && total_consumed <= 300){
       Set = 11.06;
        }
  else if(total_consumed >=301  && total_consumed<= 500  ){
         Set = 15.13;
        }
  else if(total_consumed>=501 && total_consumed<=1000){
```

```
        Set = 17.09;
      }
 else{
      Set = 17.09;
      }
if (GSM.available() > 0)
{
   if (inchar == 'D')
  {
    delay(10);
    inchar = GSM.read();
    if (inchar == 'a')
    {
      delay(10);
      inchar = GSM.read();
      if (inchar == 't')
      {
        delay(10);
        inchar = GSM.read();
        if (inchar == 'a')
        {
          Data();
        }
```

```
        }
      }
    }
    inchar = GSM.read();
    if(inchar=='E'){
      delay(10);
       inchar = GSM.read();
       if(inchar=='F'){
        delay(10);
        inchar = GSM.read();
        invar = int(inchar - '0');
        digit = invar*10;
      Serial.println(String(digit));
       delay(10);
      inchar = GSM.read();
      invar = int(inchar - '0');
      Serial.println(String(invar));
      digit = digit + invar;
      a = 30*total_consumed/digit;
      b=a*Set;
      sendSMS(phone_no1, "Your Estimated Monthly Bill : \n Total Units
:"+String(a)+" Units \n Total Cost : Rs "+String(b));
      delay(1000);
```

```
if(digit==30){
      total_consumed = 0;
       EEPROM.write(20,total_consumed);
    }
    }
 delay(10);




 }
 if(inchar=='F'){
   delay(10);
   inchar = GSM.read();
   if(inchar=='U'){
      delay(10);
      inchar = GSM.read();
      if(inchar=='N'){
         delay(10);
         inchar = GSM.read();
         if(inchar=='C'){
           delay(10);
           inchar = GSM.read();
          if(inchar=='T'){
```

```
            delay(10);
            inchar = GSM.read();
           if(inchar=='I'){
               delay(10);
               inchar = GSM.read();
               if(inchar=='O'){
                  delay(10);
                  inchar = GSM.read();
                  if(inchar=='N'){
                    delay(10);
                    inchar = GSM.read();
                    if(inchar=='S'){
                      delay(10);
                      sendSMS(phone_no1,menu);
                     }
                  }
               }
           }
        }
      }
   }
}
```

```
if (inchar == 'A')
{
  delay(10);
  inchar = GSM.read();
  if (inchar == 'T')
  {
    delay(10);
    inchar = GSM.read();
    if (inchar == 'r')
    {
      delay(10);
      inchar = GSM.read();
      if (inchar == 'e')
      {
        delay(10);
         inchar = GSM.read();
        if (inchar == 'c')
        {
          delay(10);
```

```
                inchar = GSM.read();
                if (inchar == 'h')
                {




                  delay(10);
                  inchar = GSM.read();
                  if (inchar == '1')
                  {


                    price = 100 / Set;  total_unt = total_unt + price;
                    sendSMS(phone_no1, "Your Recharge is Done: 100 \nTotal
Units Available :"+String(total_unt)+" Units");
                    load_on();


                  }
                  else if (inchar == '2')
                  {
                    price = 200 / Set;  total_unt = total_unt + price;
                    sendSMS(phone_no1, "Your Recharge is Done: 200 \nTotal
Units Available :"+String(total_unt)+" Units");
                    load_on();
```

```
                }
                else if (inchar == '3')
                {
                  price = 300 / Set;  total_unt = total_unt + price;
                 sendSMS(phone_no1, "Your Recharge is Done: 300 \nTotal
Units Available :"+String(total_unt)+" Units");
                  load_on();

                }
                else if (inchar == '4')
                {
                  price = 400 / Set;  total_unt = total_unt + price;
                  sendSMS(phone_no1, "Your Recharge is Done: 400 \nTotal
Units Available :"+String(total_unt)+" Units");
                  load_on();

                }
                delay(10);
              }
            }
          }
        }
      }
```

```
  }



}


if(inchar=='R'){
    delay(10);
    inchar = GSM.read();
    if(inchar=='1'){
       // digitalWrite(relay1, LOW);
        sendSMS(phone_no1,"Appliance 1 switched off");
    }
    else if(inchar=='2'){
      digitalWrite(relay2, LOW);
      sendSMS(phone_no1,"Appliance 2 switched off");
    }
  }


if (total_unt == 5)
{
  if (flag1 == 0)
  {
    flag1 = 1;
```

```
      digitalWrite(buzzer, HIGH);
      sendSMS(phone_no1, "Your Balance is Low Please Recharge");
      digitalWrite(buzzer, LOW);
    }
  }

  if (total_unt == 0)
  {
    //digitalWrite(relay1, LOW);
    digitalWrite(relay2, LOW);
    if (flag2 == 0)
    {
      flag2 = 1;
      digitalWrite(buzzer, HIGH);
      sendSMS(phone_no1, "Your Balance is Finish Please Recharge");
      digitalWrite(buzzer, LOW);
    }
  }
 if (digitalRead (bt_theft) == 0)
  {
    if (flag3 == 0)
    {
      flag3 = 1;
```

```
      digitalWrite(buzzer, HIGH);
      sendSMS(phone_no1, "Theft Alarm");
      digitalWrite(buzzer, LOW);
    }
  }
  else
  {
    flag3 = 0;
  }

  delay(5);
}

void load_on()
{
  Write();
  Read();
 // digitalWrite(relay1, HIGH);
  digitalWrite(relay2, HIGH);
  flag1 = 0, flag2 = 0;
}
```

```
void sendSMS(String number, String msg)
{

  GSM.println("AT+CMGF=1\r");
  delay(2000);
  Serial.println("Sending SMS");
  GSM.println("AT+CMGS=\"+918263025250\"\r");
   delay(2000);
  GSM.println(msg);
  Serial.println(msg);
delay(200);
  GSM.write(byte(26));
delay(200);
}

void Data()
{

   sendSMS(phone_no1," Total Units Consumed
:"+String(total_consumed)+"Units");

  sendSMS(phone_no1," Available Units:"+String(total_unt)+"Units");

  sendSMS(phone_no1,"Price of Available Units:"+String(price1));
```

```
   sendSMS(phone_no1,"Price Per Unit"+String(Set));

}

void Read()
{
  unt_a = EEPROM.read(1);
  unt_b = EEPROM.read(2);
  unt_c = EEPROM.read(3);
  unt_d = EEPROM.read(4);
  total_unt = unt_d * 1000 + unt_c * 100 + unt_b * 10 + unt_a;
  price1 = total_unt * Set;
}

void Write()
{
  unt_d = total_unt / 1000;
  total_unt = total_unt - (unt_d * 1000);
  unt_c = total_unt / 100;
  total_unt = total_unt - (unt_c * 100);
  unt_b = total_unt / 10;
  unt_a = total_unt - (unt_b * 10);
```

```
  EEPROM.write(1, unt_a);
  EEPROM.write(2, unt_b);
  EEPROM.write(3, unt_c);
  EEPROM.write(4, unt_d);
  EEPROM.write(20,total_consumed);
}


void initModule(String cmd, char *res, int t)
{
  while (1)
  {
    Serial.println(cmd);
    GSM.println(cmd);
    delay(100);
    while (GSM.available() > 0)
    {
      if (GSM.find(res))
      {
        Serial.println(res);
        delay(t);
        return;
```

```
      }
      else
      {
        Serial.println("Error");
      }
    }
    delay(t);
  }
}
void ai0()
{
  if (digitalRead(pulse_in) == 1)
  {
    pulse = pulse + 1;
    if (pulse > 9)
    {
      pulse = 0;
      if (total_unt > 0)
      {
        total_unt = total_unt - 1;
        total_consumed = total_consumed + 1;
        EEPROM.write(20,total_consumed);
      }
```

```
      Write();

      Read();

    }

    EEPROM.write(10, pulse);

  }

}
```

ReplyReply allForward

mini project. Press tab to insert.