```cpp
#define USE_ARDUINO_INTERRUPTS true
#include <PulseSensorPlayground.h>
#include <SoftwareSerial.h>

SoftwareSerial mySerial(10, 11); // RX, TX
const int PulseWire = 0;
int tempPin = 1;
int ECGPin = 2;
String incomingByte;
int value;
int myBPM =0;
int finalBPM ;
float volts=0.0;
float cel =0;
String stringTemp;
String stringBPM;
bool is_data_send=false;
bool ISBP=false;
bool ISECG=false;
bool ISHR=false;
bool IStemp=false;
const int LED13 = 13;
int Threshold = 550;
String data="";


PulseSensorPlayground pulseSensor;


void setup() {

Serial.begin(38400);
Serial.println("Enter AT commands:");
mySerial.begin(38400);

  pulseSensor.analogInput(PulseWire);
  pulseSensor.blinkOnPulse(LED13);
```

```arduino
  pulseSensor.setThreshold(Threshold);


  if (pulseSensor.begin()) {
   Serial.println("We created a pulseSensor Object !");
  }
}



void loop() {

if (mySerial.available()) {

   incomingByte = mySerial.read();
   Serial.println(incomingByte);

   if(incomingByte=="49")

{ISECG=false;ISBP=false;ISHR=false;IStemp=true;is_data_send=true;}
   else if(incomingByte=="50")

{ISECG=false;ISBP=false;ISHR=true;IStemp=false;is_data_send=true;}
   else if(incomingByte=="51")

{ISECG=false;ISBP=false;ISHR=true;IStemp=true;is_data_send=true;}
   else if(incomingByte=="52")

{ISECG=false;ISBP=true;ISHR=false;IStemp=false;is_data_send=true;}
   else if(incomingByte=="53")

{ISECG=false;ISBP=true;ISHR=false;IStemp=true;is_data_send=true;}
```

```
      else if(incomingByte=="54")

{ISECG=false;ISBP=true;ISHR=true;IStemp=false;is_data_send=tr
ue;}
      else if(incomingByte=="55")

{ISECG=false;ISBP=true;ISHR=true;IStemp=true;is_data_send=tr
ue;}
      else if(incomingByte=="56")

{ISECG=true;ISBP=false;ISHR=false;IStemp=false;is_data_send=t
rue;}
      else if(incomingByte=="57")

{ISECG=true;ISBP=false;ISHR=false;IStemp=true;is_data_send=tr
ue;}
      else if(incomingByte=="65")

{ISECG=true;ISBP=false;ISHR=true;IStemp=false;is_data_send=tr
ue;}
      else if(incomingByte=="66")

{ISECG=true;ISBP=false;ISHR=true;IStemp=true;is_data_send=tr
ue;}
      else if(incomingByte=="67")

{ISECG=true;ISBP=true;ISHR=false;IStemp=false;is_data_send=tr
ue;}
      else if(incomingByte=="68")

{ISECG=true;ISBP=true;ISHR=false;IStemp=true;is_data_send=tr
ue;}
       else if(incomingByte=="69")

{ISECG=true;ISBP=true;ISHR=true;IStemp=false;is_data_send=tr
ue;}
      else if(incomingByte=="70")
```

```
{ISECG=true;ISBP=true;ISHR=true;IStemp=true;is_data_send=true;}

}
//Getting Values from Sensors
if(is_data_send)
{
  int counter=0;
  if(IStemp||ISHR){
  while(counter<10){
  if(IStemp){
    value=analogRead(tempPin);
    volts=(value/1024.0)*5.0;     //conversion to volts
    cel = cel+(volts*100.0);
  }
  if(ISHR){
    if (pulseSensor.sawStartOfBeat()) {
    myBPM = myBPM+pulseSensor.getBeatsPerMinute();
}
      }

    counter=counter+1;
    }}
  if(ISBP){
    }
  int counter2=0;
  if(ISECG){
  while(counter2<500){
  if((digitalRead(2)==1)||(digitalRead(3)==1)){}
  else{
    String abc=String(analogRead(ECGPin));
    Serial.println(abc);
      data+=abc+"|";
  }
  counter2=counter2+1;
  }
```

```
  }
}
//Sending Data
  if(is_data_send){
    if(ISBP){
    }
    if(ISHR){
    float final_bpm=myBPM/10;
    stringBPM = String(final_bpm);
    data+=stringBPM+"|";
    }
     if(IStemp){
      float final_temp=cel/10;
      stringTemp = String(final_temp);
      data+=stringTemp+"|";
     }


    Serial.print("Data sending");
    Serial.print(data);
    //Serial.print(stringTemp+"|"+stringBPM);
    mySerial.print(data);
    mySerial.println();
    is_data_send=false;
  }
delay(20);                  // considered best practice in a simple
sketch.

}
```

```
#include "ThingSpeak.h"
#include <ESP8266WiFi.h>


//------- WI-FI details ----------//
char ssid[] = "XXXXXXXXXX"; // SSID here
char pass[] = "YYYYYYYYYY"; // Passowrd here
//------------------------------//


//---------- Channel details --------------//
unsigned long Channel_ID = 123456; // Channel ID
```

```cpp
const char * myWriteAPIKey = "ABCDEFG1234"; //Your write API key
//----------------------------------------//

const int Field_Number_1 = 1;
const int Field_Number_2 = 2;
String value = "";
int value_1 = 0, value_2 = 0;
int x, y;
WiFiClient  client;

void setup()
{
  Serial.begin(115200);
  WiFi.mode(WIFI_STA);
  ThingSpeak.begin(client);
  internet();
}

void loop()
{
  internet();
  if (Serial.available() > 0)
  {
    delay(100);
    while (Serial.available() > 0)
    {
      value = Serial.readString();
      if (value[0] == '*')
      {
        if (value[5] == '#')
        {
          value_1 = ((value[1] - 0x30) * 10 + (value[2] - 0x30));
          value_2 = ((value[3] - 0x30) * 10 + (value[4] - 0x30));
        }
        else if (value[6] == '#')
        {
          value_1 = ((value[1] - 0x30) * 100 + (value[2] - 0x30) * 10 +
(value[3] - 0x30));
          value_2 = ((value[4] - 0x30) * 10 + (value[5] - 0x30));
        }
      }
    }
  }
  upload();
}

void internet()
{
  if (WiFi.status() != WL_CONNECTED)
```

```
    {
      while (WiFi.status() != WL_CONNECTED)
      {
        WiFi.begin(ssid, pass);
        delay(5000);
      }
    }
}

void upload()
{
  ThingSpeak.writeField(Channel_ID, Field_Number_1, value_1,
myWriteAPIKey);
  delay(15000);
  ThingSpeak.writeField(Channel_ID, Field_Number_2, value_2,
myWriteAPIKey);
  delay(15000);
  value = "";
}
// ----------(c) Electronics-project-hub-------- //
```

```
//------- WI-FI details ----------//
char ssid[] = "XXXXXXXXXX"; //SSID here
char pass[] = "YYYYYYYYYY"; // Passowrd here
//-------------------------------//
```

```
//---------- Channel details ---------------//
unsigned long Channel_ID = 123456; // Channel ID
const char * myWriteAPIKey = "ABCDEF1234"; //Your write API key
//------------------------------------------//
```