IOT PHASE- 3

PROJECT TITLE: Noise pollution Monitoring

PHASE 3 : Development part-1

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Introduction:

Noise pollution is a growing problem in modern cities, thanks to rapid population growth, urbanisation and new technologies. Moreover, at times, a noisy neighbour or co-worker can drive you crazy and affect your well-being.

Talking loudly is an annoying habit in an office environment. Having a loud co-worker can distract us from our work and harm our productivity. To help solve this problem, we bring to you today a noise detector with automatic recording system. This device notifies users whenever it detects loud noise (when the sound crosses certain limits), as well as it automatically records the sound and saves this recorded sound in a file.

Components required:

. To build this device, we need to first collect a few components.

Components Required

- Vibration motor/ Buzzer

- Bluetooth HC 05
- Sound sensor module
- Wires
- Arduino Nano

Coding

First, we will initialise the different variables in our code to store values and pin numbers and then include the Software Serial library. After this, we will set the Pin modes for the Arduino pins and the baud rate for Bluetooth. Following this, we will set a loop function where we will create an ‘if condition’ that checks the incoming number from Bluetooth. This number is used for setting the threshold level for noise sensor. Then the loop function jumps to other function (i.e. sensor) that collects the average sensor data

Now we write a code for a arduino set up:

Fig 2. Arduino code for reading strings from Bluetooth.

```
int senpin=A7;
int buzzer=12;
long val=0;
long average = 0;
int threshold=66;

String answ;
#include <SoftwareSerial.h>

SoftwareSerial mySerial(3, 4);


void setup() {
  pinMode(senpin,INPUT);
  pinMode(buzzer,OUTPUT);
  Serial.begin(9600);
  mySerial.begin(9600);

}
```

```
void loop() {

if(mySerial.available()!=0){
answ=Serial.readStringUntil('\n');
threshold=answ.toInt();
}

sensor();

}
```

In sensor function, we will create a ‘for loop’ that collects the sensor data until the for loop ends (up to 160 times) and calculates the average of the collected data. After that an ‘if condition’ checks the average, if the average value is greater that

the threshold value then it sends the value to an app that we are

```
void sensor(){
   for (int i=0; i < 160; i++) {
 average = average + analogRead(senpin);
 }
 val = average/160;
 average=0;
 delay (10);

 Serial.print(val);
Serial.println(threshold);

 if (val>= threshold){
   mySerial.println(val);
  digitalWrite(buzzer,HIGH);
  delay (150);
   digitalWrite(buzzer,LOW);
    delay (150);
     digitalWrite(buzzer,HIGH);
  delay (200);
   digitalWrite(buzzer,LOW);
     delay (900);
}}
```

go

-

App Making

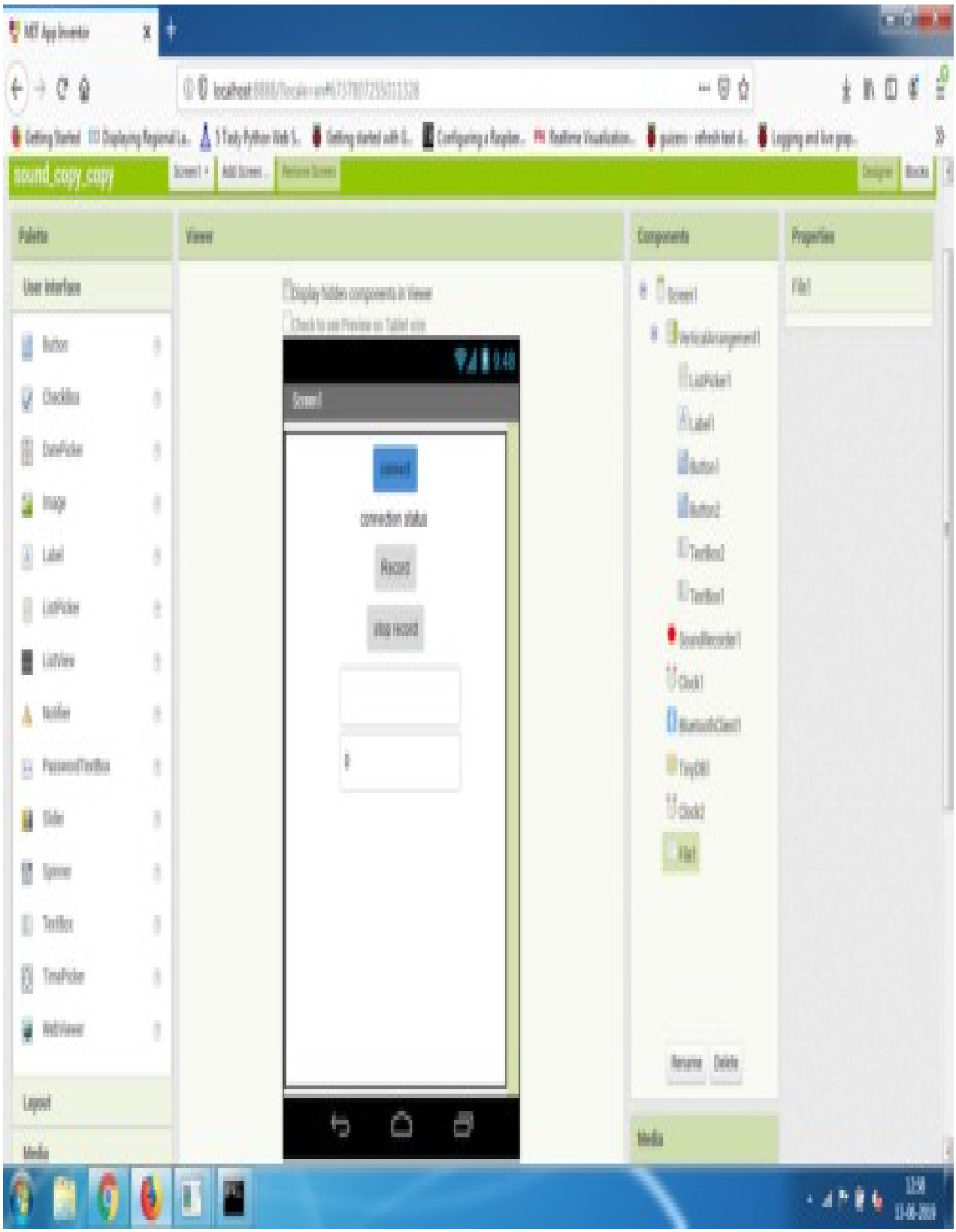
We are going to use the [MIT app inventor] for creating our app. In the first part, we need to create a layout and add the following components

- A list picker
- A text level

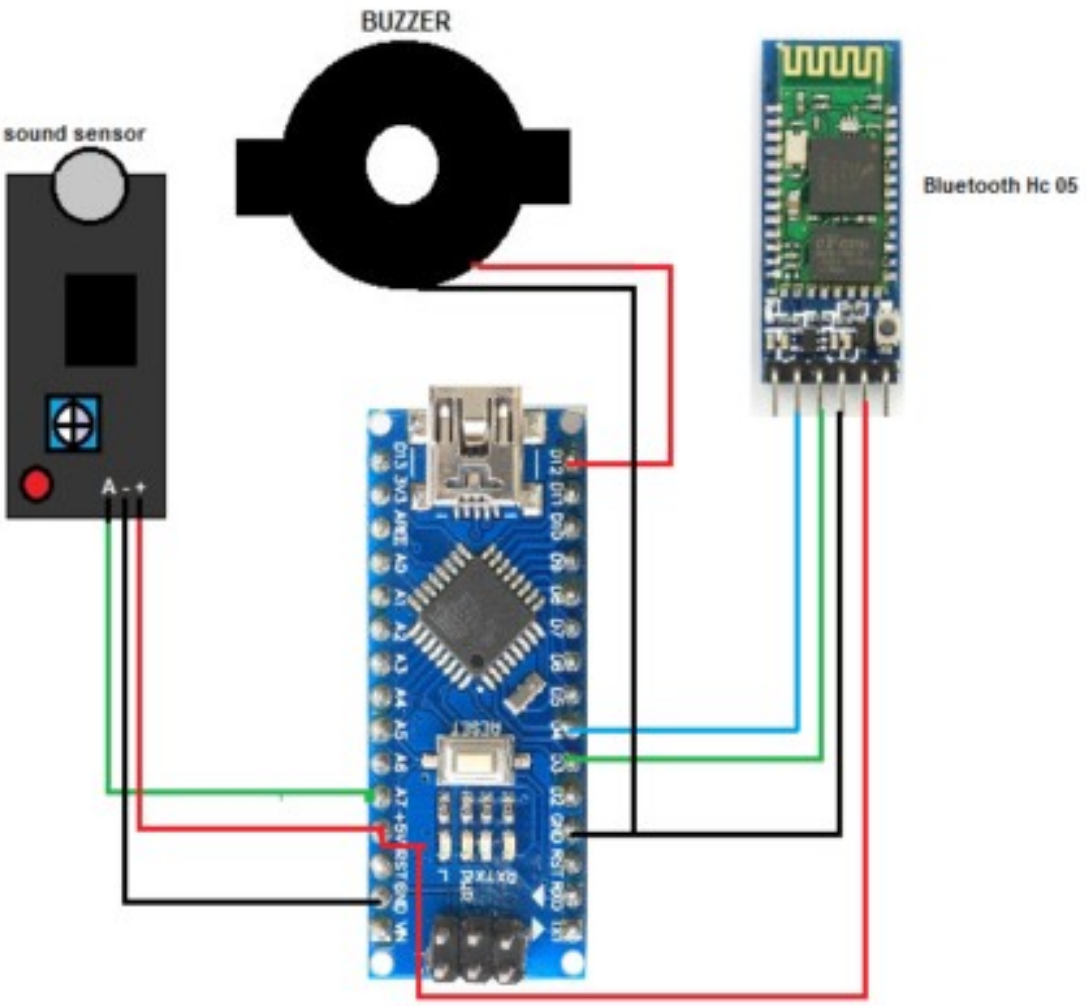
- 2 buttons
- 1 text view
- Sound recorder
- Tiny DB
- Bluetooth client

After that join the code blocks according to the fig

fter that join the code blocks according to fig 4 .

- 
sound_copy_copy
Palette
Viewer
Components
Properties
User Interface
Screen1
connect
connection status
Record
stop record
Media
F

arduino Nano	Components
Pin A7	Sound Sensor Out
5v	VCC Bluetooth & Sound sensor
GND	GND Bluetooth & Sound senor
rduino Nano	Components
Pin A8	Sound Sensor Out
5v	VCC Bluetooth & Sound sensor
GND	GND Bluetooth & Sound senor


BUZZER
sound sensor
A - +
Bluetooth Hc 05

Testing:

Now, power the Arduino and connect the Bluetooth with your app. After successful connection, you can test it by making loud noises. When your sound level crosses the threshold value, the Noise Detector device will buzz to notify about it and at the same time the app will start recording the sound and it will go on recording until the noise level comes down below the threshold level. (Refer Fig 7).