

PROJECT DESIGN PHASE II

Functional Requirements

Date	15 September 2022
Team ID	PNT2022TMID07810
Project Name	Project Design Phase -2 Functional Requirements
Maximum Marks	4 Marks

Sensors:

*Purpose:

*Capture Motion movement and relay the information to device B(Clip)

*Parts:

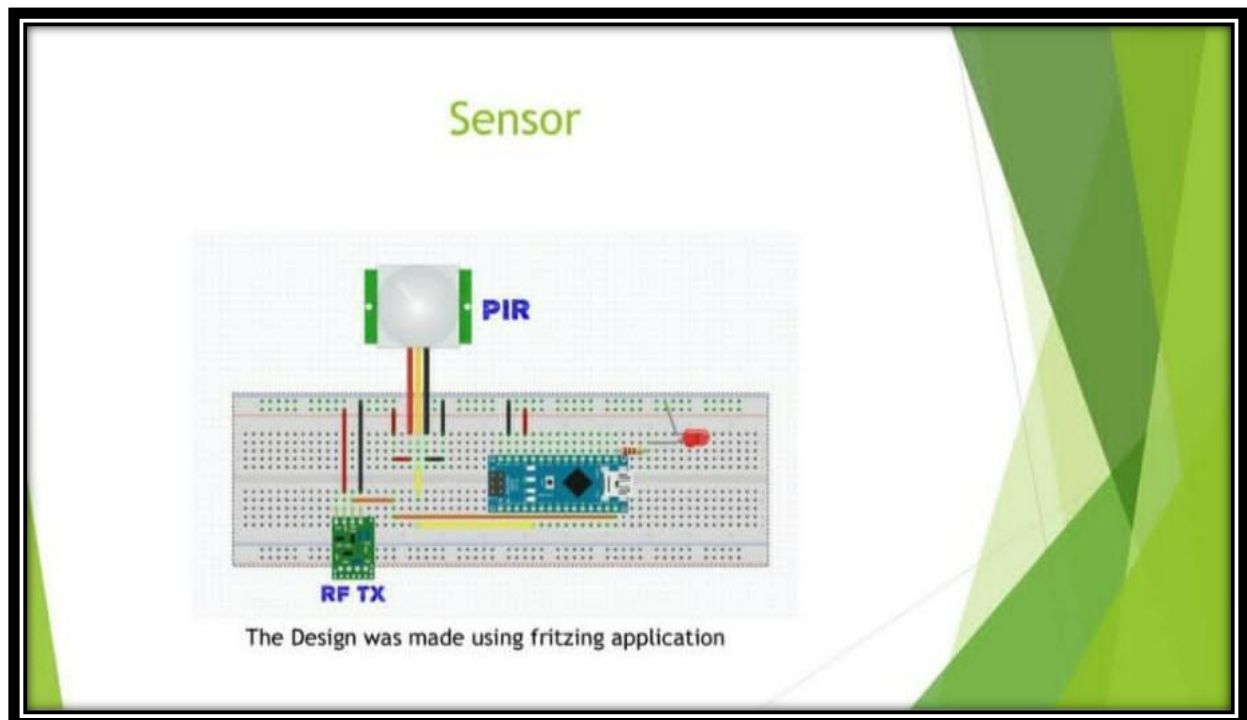
*Arduino Nano:

*We need the device to be light and convenient for use.

*PIR motion sensor (Passive Infrared):

*Detects the motions and send the signal to the RF transmitter.

*RF Transmitter:

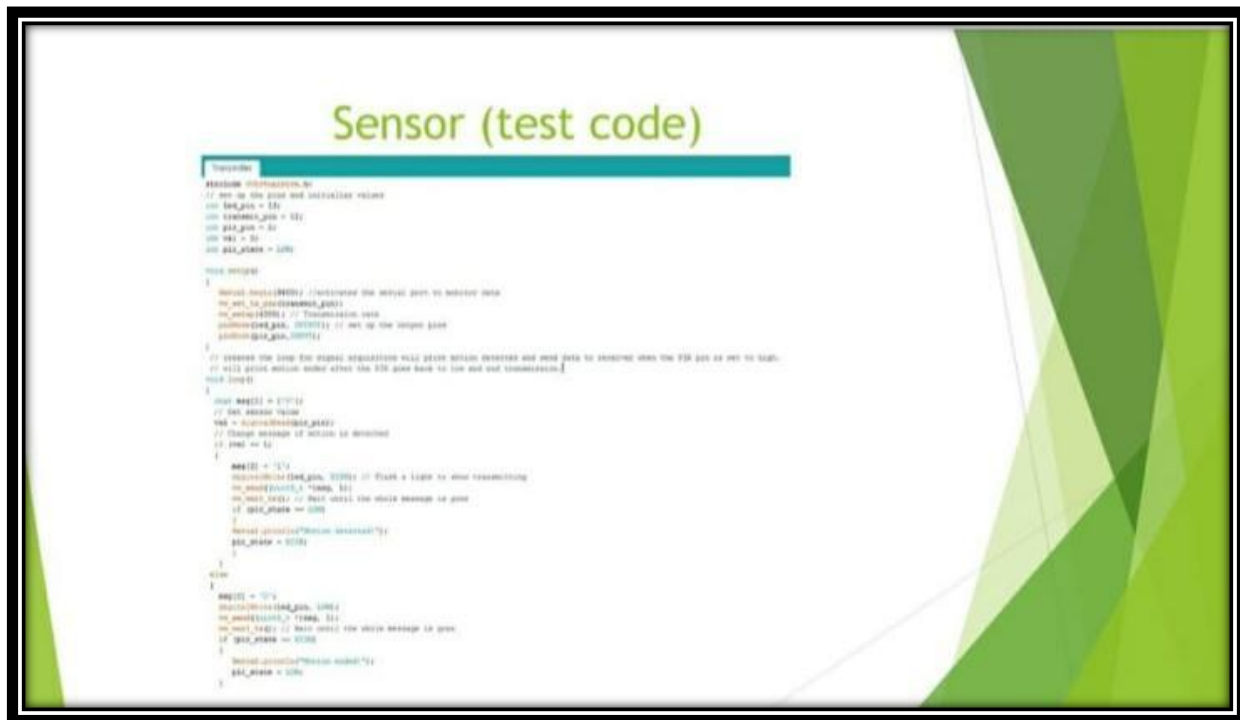


Receives the signal from the PIR Sensor and sends it to the clip device.

*Clip (Wearable Device)

*PURPOSE:

***RECEIVE THE MOTION SIGNAL**



***READ INPUT FROM ACCELEROMETER**

***RELAYS SOUND TO DEVICE C (ROUTER)**

***ARDUINO UNO:**

*** NEEDED TO USE THE ACCELEROMETER SHEILD**

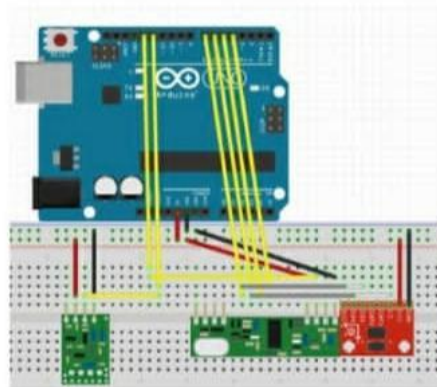
***RF RECEIVER:**

***RECEIVE THE SIGNAL FROM THE MOTION SENSOR**

***ACCELEROMETER:**

***CAPTURE SHACKING MOVEMENTS.**

Clip



Receiver (test code)

```
// Receiver
// Include the necessary libraries
#include <Arduino.h>

// Pin definitions
const int led_pin = 12;
const int rx_pin = 10;
const int tx_pin = 11;

void setup()
{
  Serial.begin(9600); // Initialize serial
  // Initialize the RX and TX pins
  pinMode(rx_pin, INPUT);
  pinMode(tx_pin, OUTPUT);
  // Start the serial TX
  digitalWrite(tx_pin, LOW);
  // Set LED pin and buzzer
  pinMode(led_pin, OUTPUT);
  pinMode(buzzer_pin, OUTPUT);
}

// This code is for testing purposes only. Instead of sending the data to the phone this code will
// receive the LED and buzzer when it receives a signal from the TX send through the transmitter.
void loop()
{
  bool _led = LOW;
  bool _buzzer = LOW;

  // Check if a message was received
  if (Serial.available() > 0)
  {
    int val = Serial.read();
    if (val == '1')
    {
      digitalWrite(led_pin, HIGH);
      digitalWrite(buzzer_pin, HIGH);
    }
    else if (val == '0')
    {
      digitalWrite(led_pin, LOW);
      digitalWrite(buzzer_pin, LOW);
    }
  }
}
```

***ROUTER:**

***PURPOSE:**

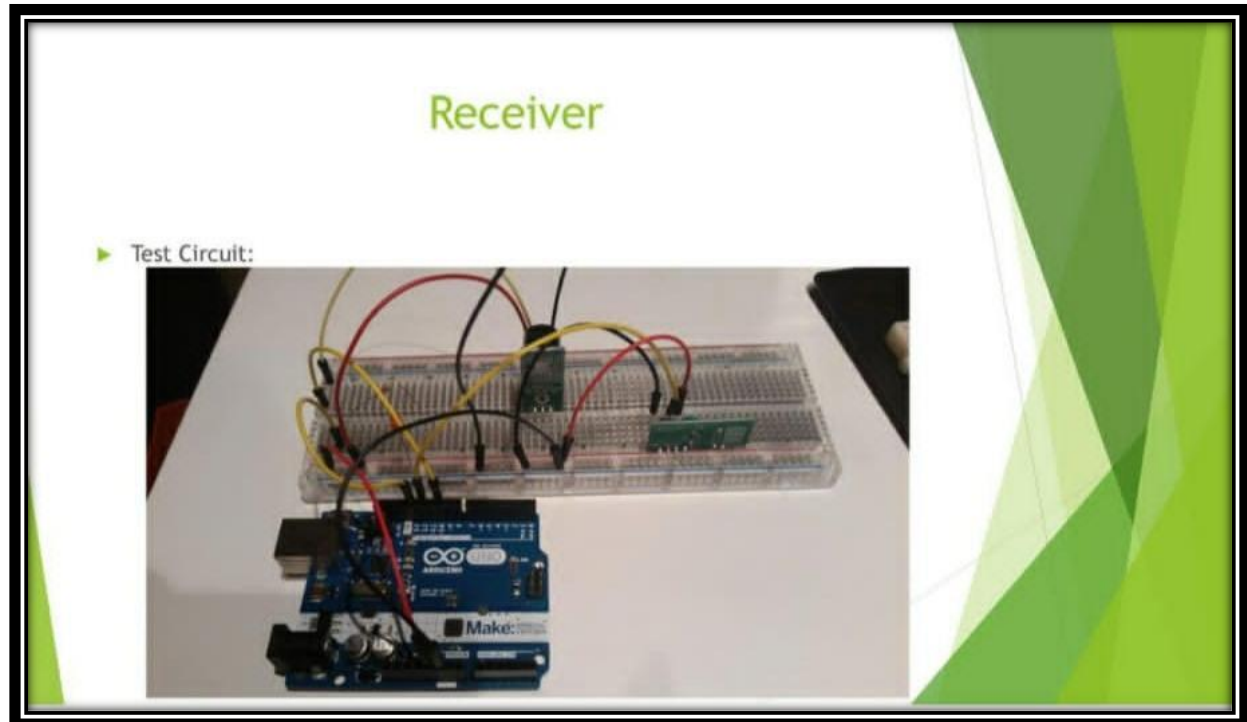
*** RELAY INFORMATION BETWEEN THE PHONE SOFTWARE AND THE CLIP DEVICE.WE WAS NEEDED BECAUSE THE WIFI SHIELD.**

***ARDUINO UNO+WI-FI SHEILD:**

***TO ESTABLISH WIRELESS CONNECTION WITH THE PAIRED PHONE DEVICE.**

*** RF TRANSMITTER:**

*** TRANSMIT SIGNALS FROM AND TO THE CLIP DEVICE.**



Progress Planning

Progress report	
Week of	Planned
31 Aug	Tried RF tags with card reader
7 Sept	Scrapped Idea
14 Sept	Came up with new design and added more functions
21 Sept	Complete Accelerometer and sound detector
28 Sept	Test wireless transceiver and decide if we want to use the Wi-Fi shield
5 October	Design the phone application
12 October	Test individual parts and them paired together
19 October	Assemble device for final packaging
26 October	Design the cases
2 November	Final packaging complete
9 November	Work on the video