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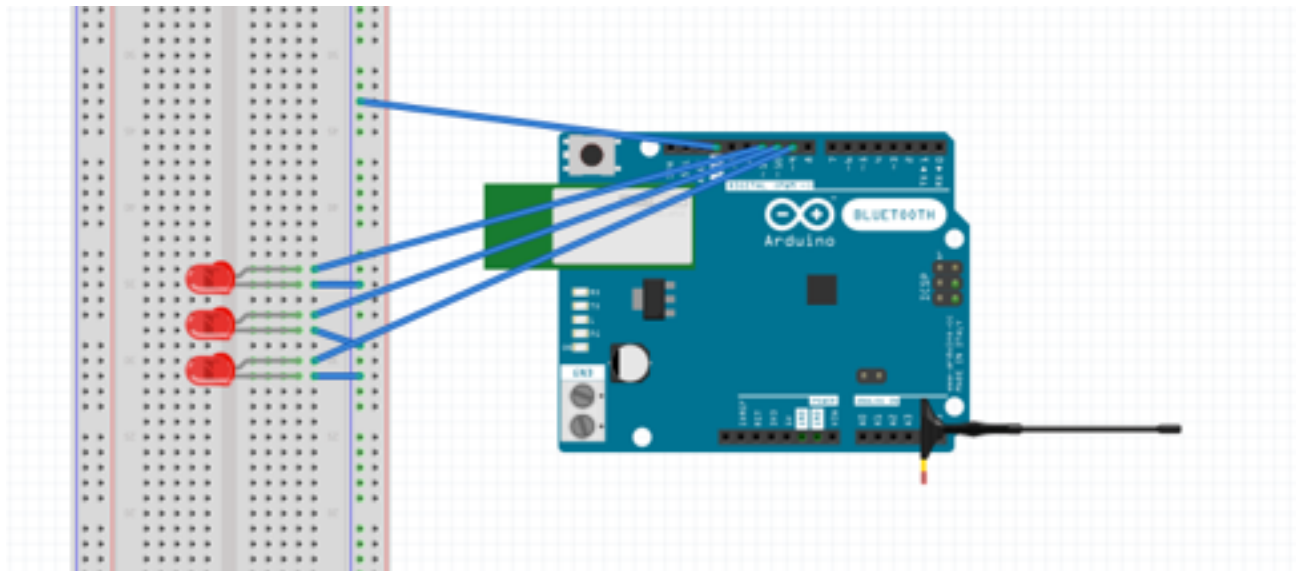
C Programming Project Report - 1st Semester 2015

Arduino EMF Detector

Project Overview:

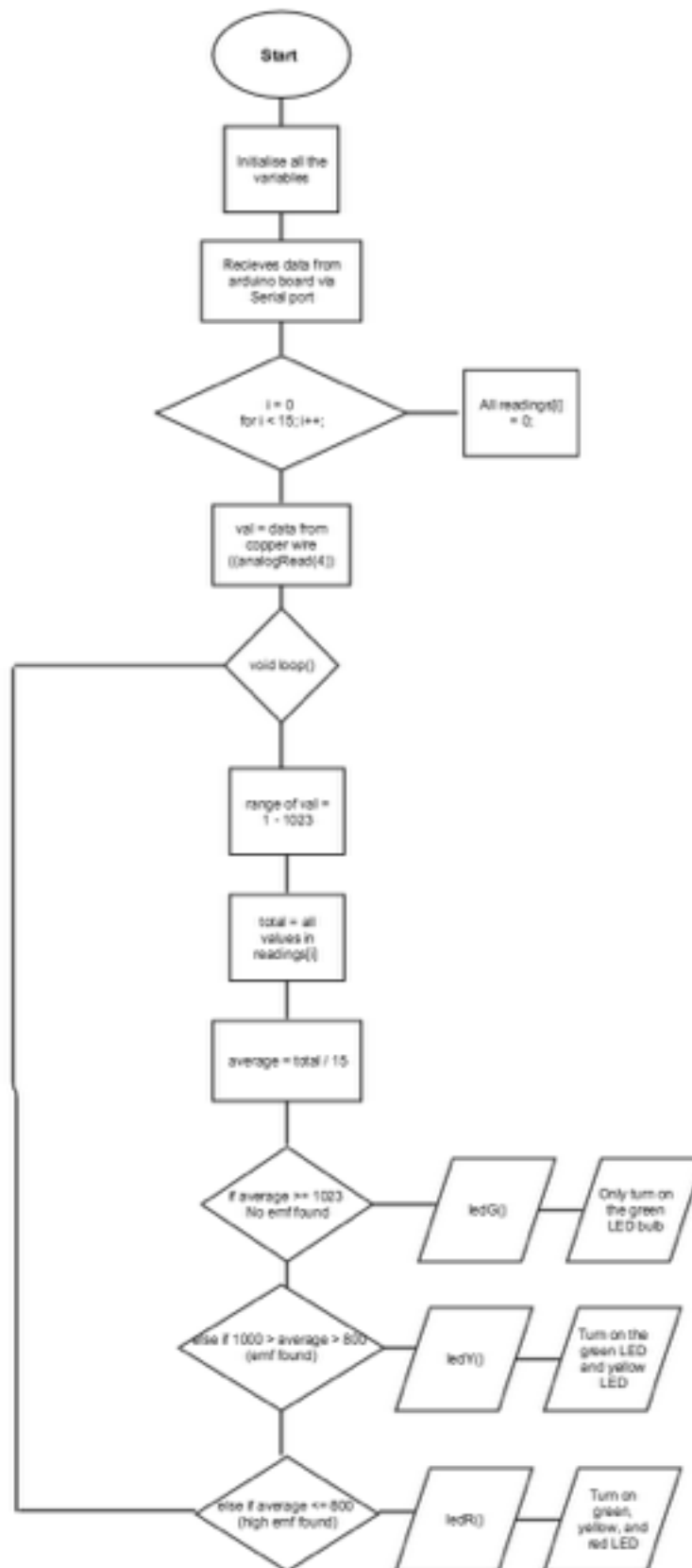
The aim of this project is to create a fully functional Electromagnetic field detector with the use of an Arduino micro controller. The parts used in this project are an Arduino UNO board, three different colored LED bulbs, and a solid core copper wire which is used as the antenna to detect the electromagnetic field. As already mentioned, the antenna is used for detecting the electromagnetic field, the three different colored LED bulbs are used to indicate the strength of the electromagnetic field (the closer the antenna gets, more LED bulbs will switch on). The final result of this project is to showcase a very simple but extremely efficient model of an EMF detector that is built on an Arduino micro controller.

The Schematic of the Board:



This is the schematic for the EMF detector. The antenna (solid copper wire) is connected to the A4 analog port on the Arduino, and the three LED bulbs are connected to the analog PWM ports of 9, 10, 11 respectively.

Flowchart:



Source Code:

```
#include <string.h>

int inPin = 4;
int val = 0;
int red = 11;
int yellow = 10;
int green = 9;
int brightness = 255;
int buzzer = 7;
int readings[15];
int limit = 15;
int index = 0;
int total = 0;
int average;

void setup() {
  Serial.begin(9600);
  for (int i = 0; i < 15; i++) {
    readings[i] = 0;
  }
}

void loop() {

  val = analogRead(inPin);

  if(val >= 1){

    val = constrain(val, 1, limit);
    val = map(val, 1, limit, 1, 1023);

    total += readings[index];
    readings[index] = val;
    total += readings[index];
    index = (index + 1);

    if (index >= 15){
      index = 0;
    }
    average = total / 15;

    if (average >= 1023){
      ledG();
      Serial.print("NO EMF IS FOUND");
    }

    else if (average > 800 && average < 1000){
      ledY();
      Serial.print("EMF IS FOUND IN THE NEARBY AREA");
    }

    else if ( average <= 800){
      ledR();
      Serial.print("HIGH EMF IS FOUND");
    }
    Serial.print("Voltage: ");
    Serial.println(abs((average*5/1023.0)-5));
```

```
    }  
}  
  
void ledG(){  
    analogWrite(green, 255);  
    analogWrite(yellow, 0);  
    analogWrite(red, 0);  
}  
  
void ledY(){  
    analogWrite(green, 255);  
    analogWrite(yellow, 255);  
    analogWrite(red, 0);  
}  
  
void ledR(){  
    analogWrite(green, 255);  
    analogWrite(yellow, 255);  
    analogWrite(red, 255);  
}
```