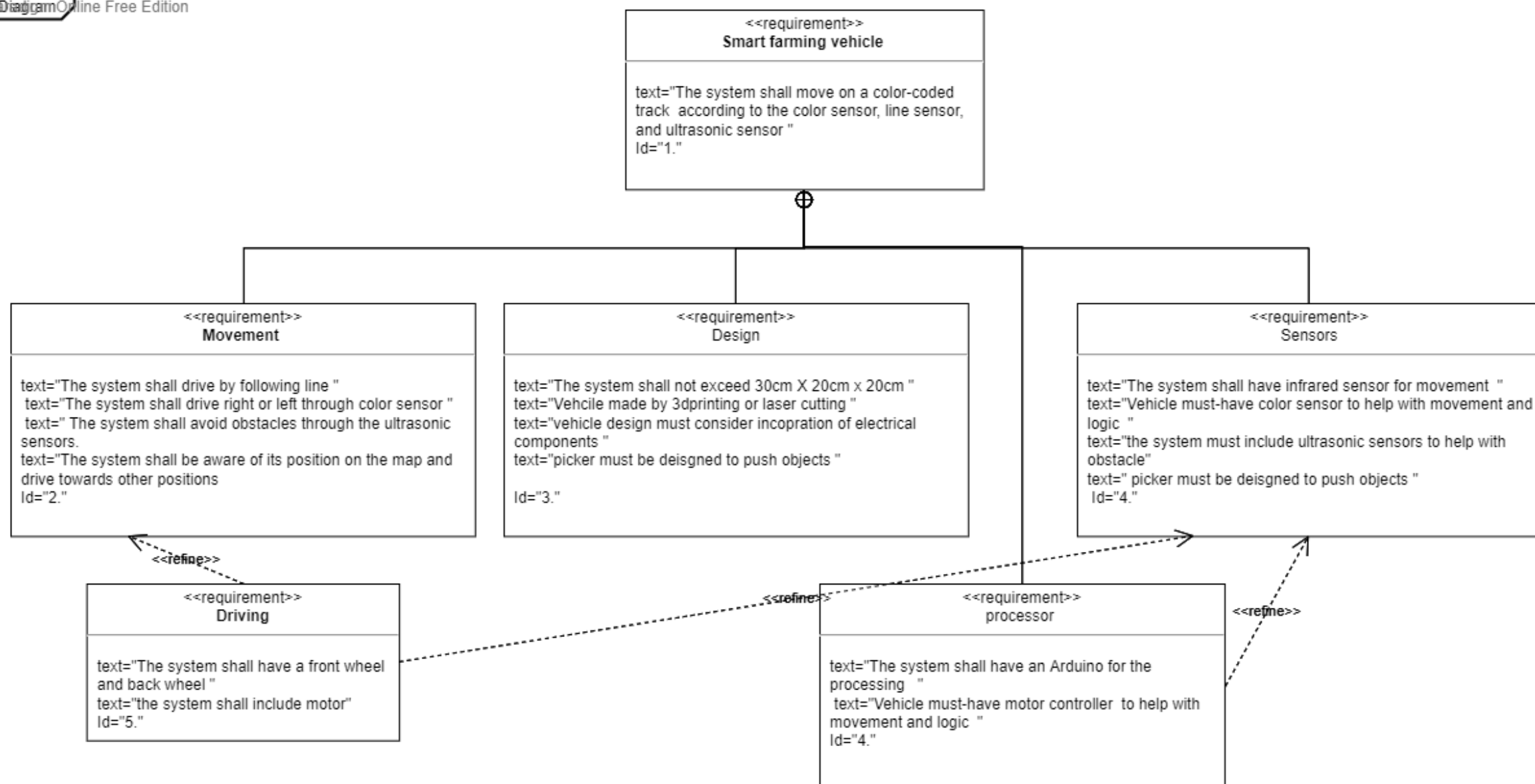

Prototyping

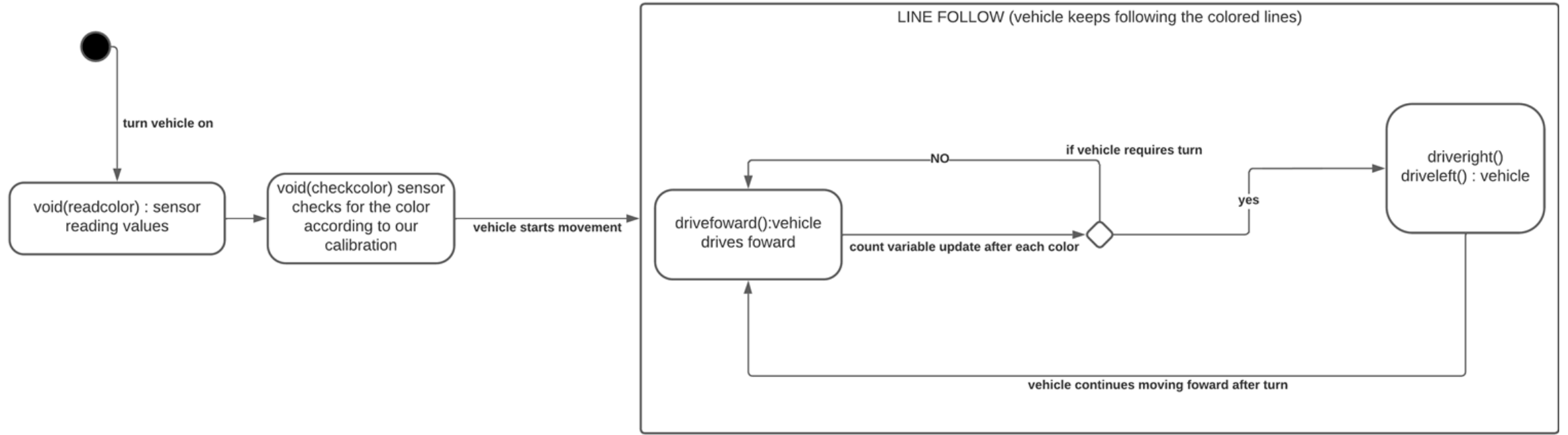
Kuye doluwamu Taiwo

Ashraffuzaman siddiqi mohammad

Yashodan

Systems Requirement

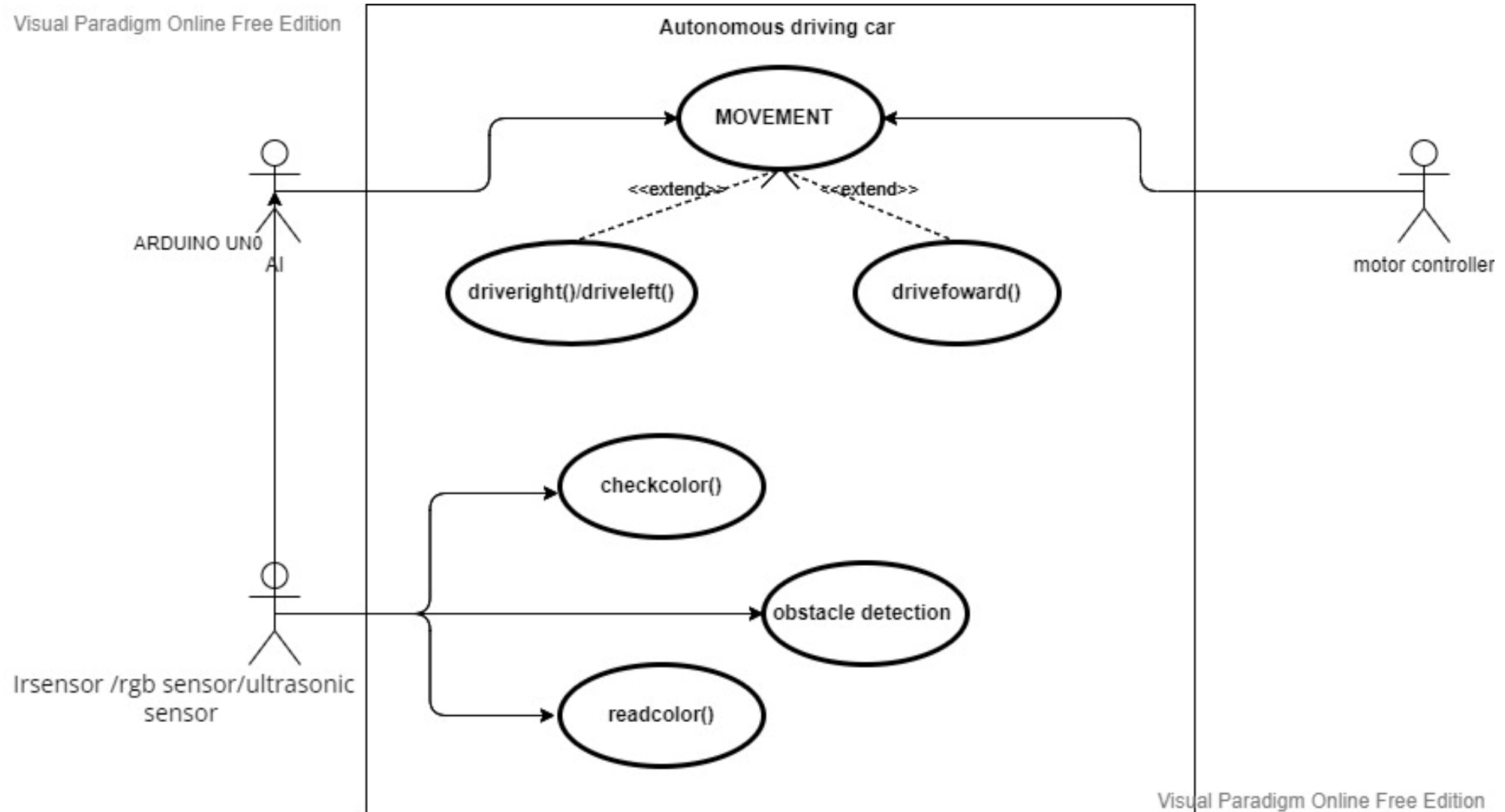




State machine

Use case

Visual Paradigm Online Free Edition

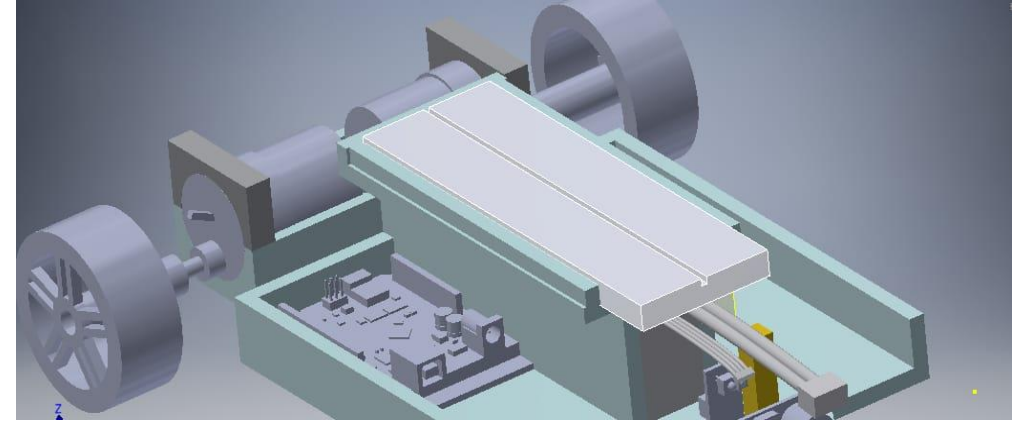
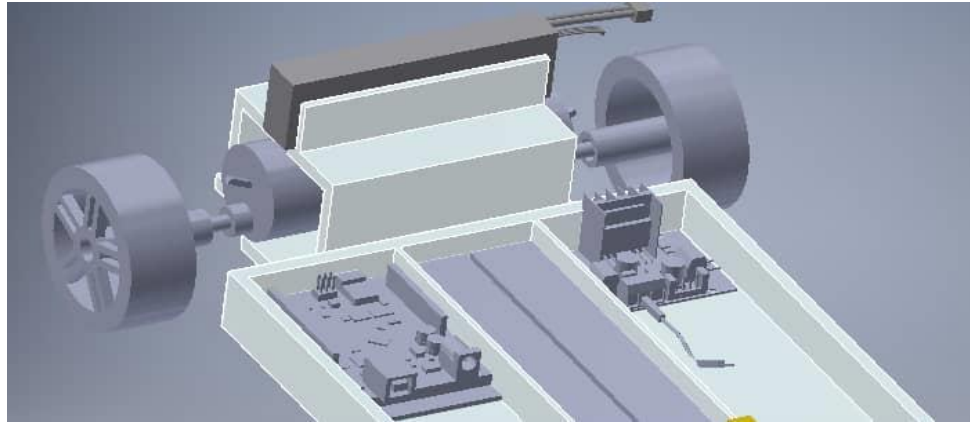


Visual Paradigm Online Free Edition

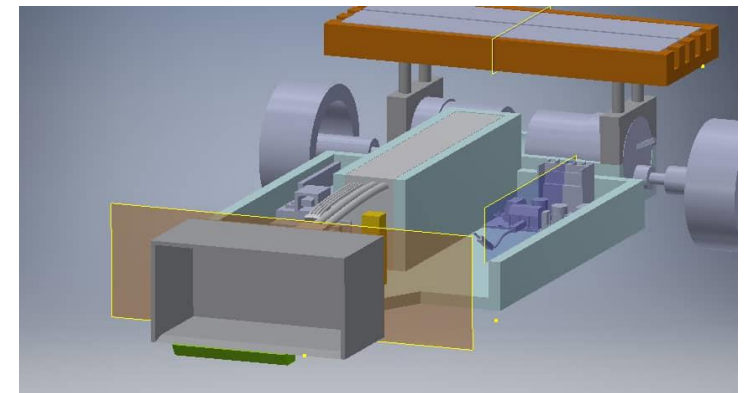
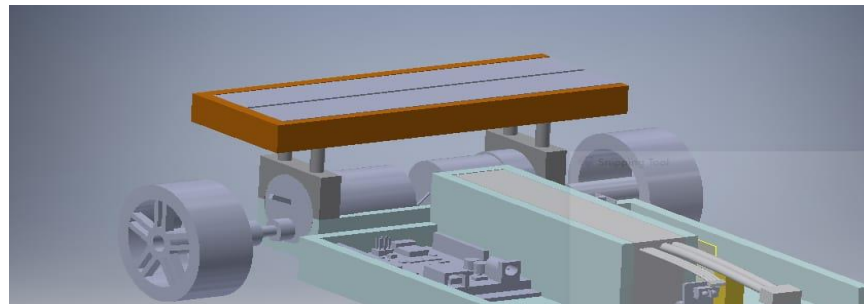


A 3D CAD model of a mechanical assembly. The assembly features a large, orange, rectangular frame at the top. Below this frame, there are several cylindrical components, including a large roller on the left and a smaller roller in the center. A green rectangular block is positioned in the foreground, and a grey cylindrical component is visible behind it. The entire assembly is supported by a base structure. The word "Design" is written in white text on the right side of the image.

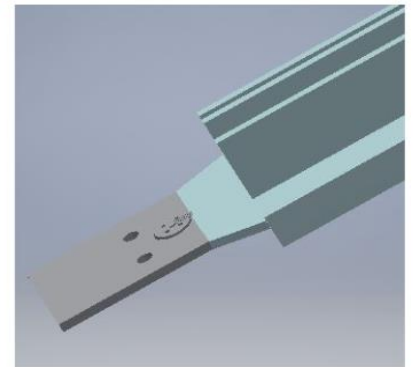
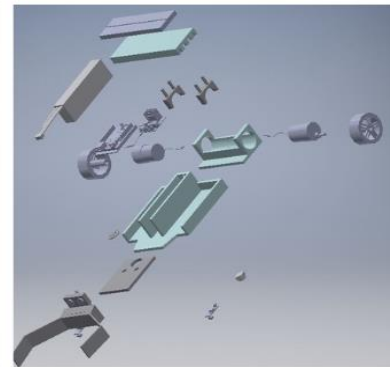
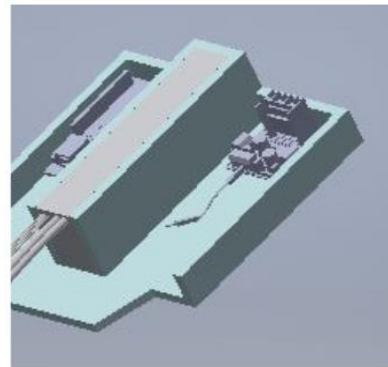
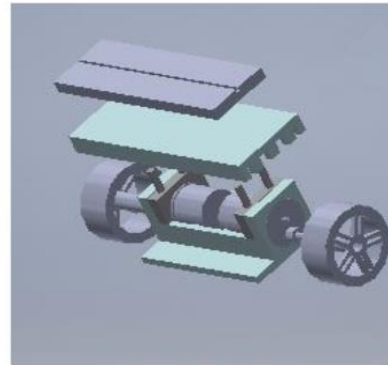
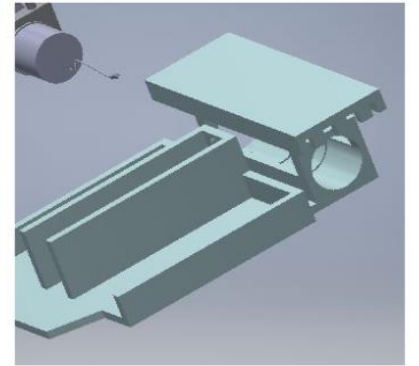
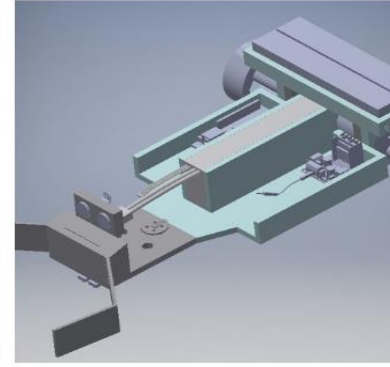
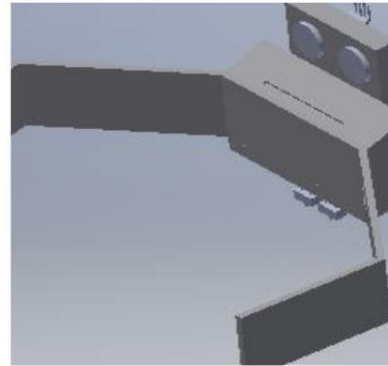
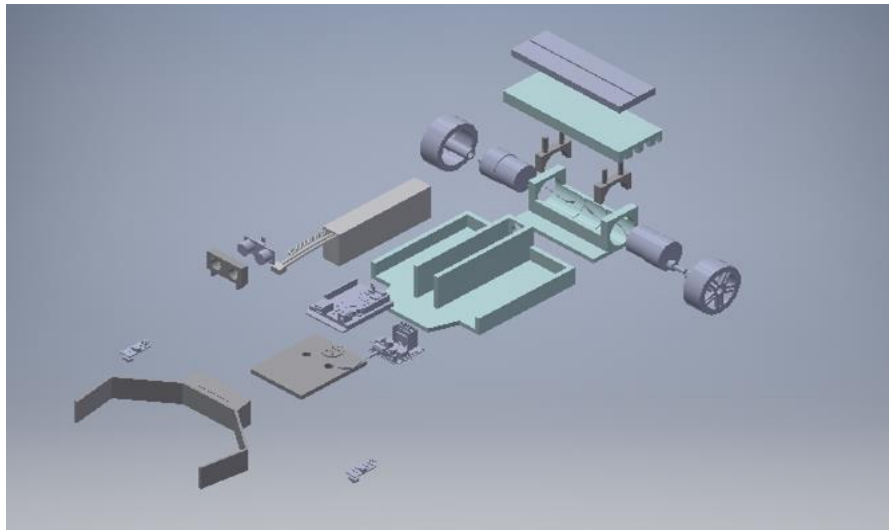
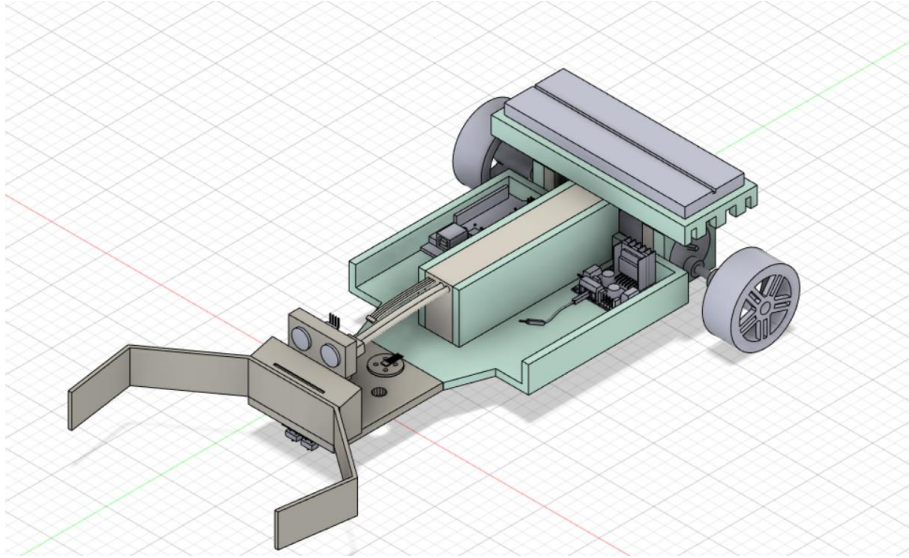
Design



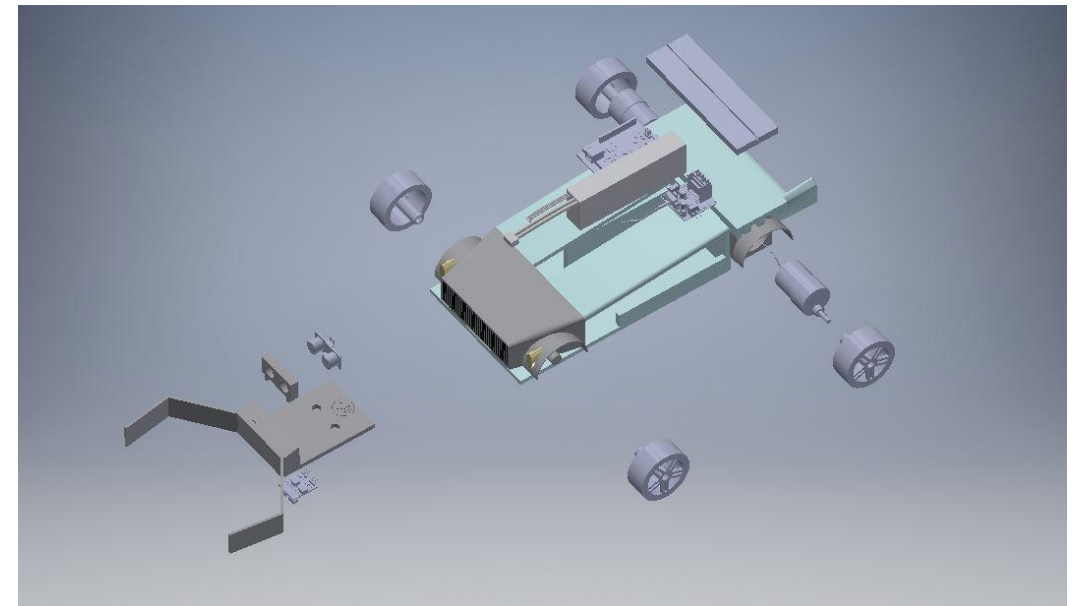
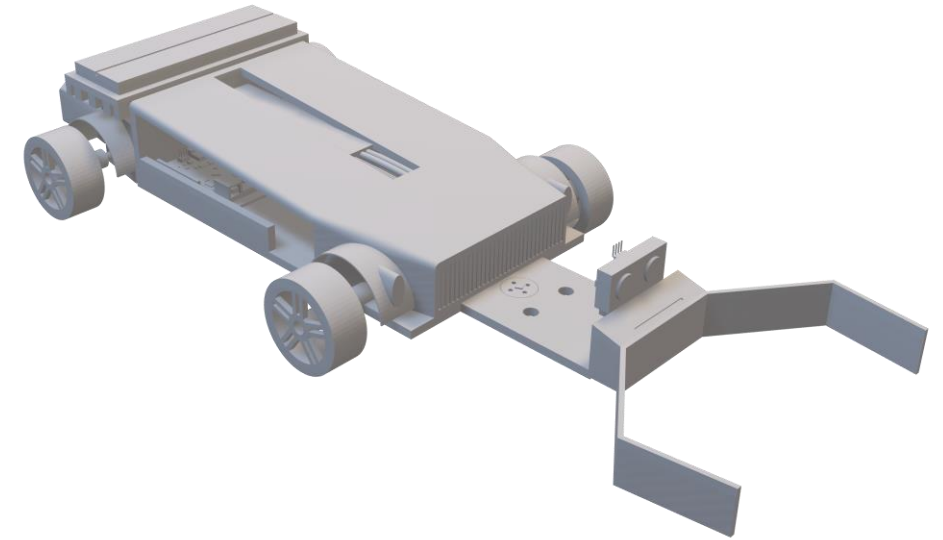
Initial design



FINAL DESIGN(FUNCTIONAL)



FINAL DESIGN (RETRO)



PROGRAMMING

CALIBRATION

```
int S0 = 6;
int S1 = 7;
int S2 = 8;
int S3 = 9;
int outPin = 11;

int rColourStrength;
int gColourStrength;
int bColourStrength;

unsigned int pulseWidth;

void setup() {
    // put your setup code here, to run once:

    Serial.begin(9600);
    pinMode(S0,OUTPUT);
    pinMode(S1,OUTPUT);
    pinMode(S2,OUTPUT);
    pinMode(S3,OUTPUT);
    pinMode(outPin,INPUT);
    digitalWrite(S0,HIGH);
    digitalWrite(S1,LOW);
}
```

```
void loop() {
    // put your main code here, to run repeatedly:

    //Reading RED components,s2 and s3 are LOW
    digitalWrite(S2,LOW);
    digitalWrite(S3,LOW);

    pulseWidth = pulseIn(outPin,LOW);
    rColourStrength = pulseWidth;

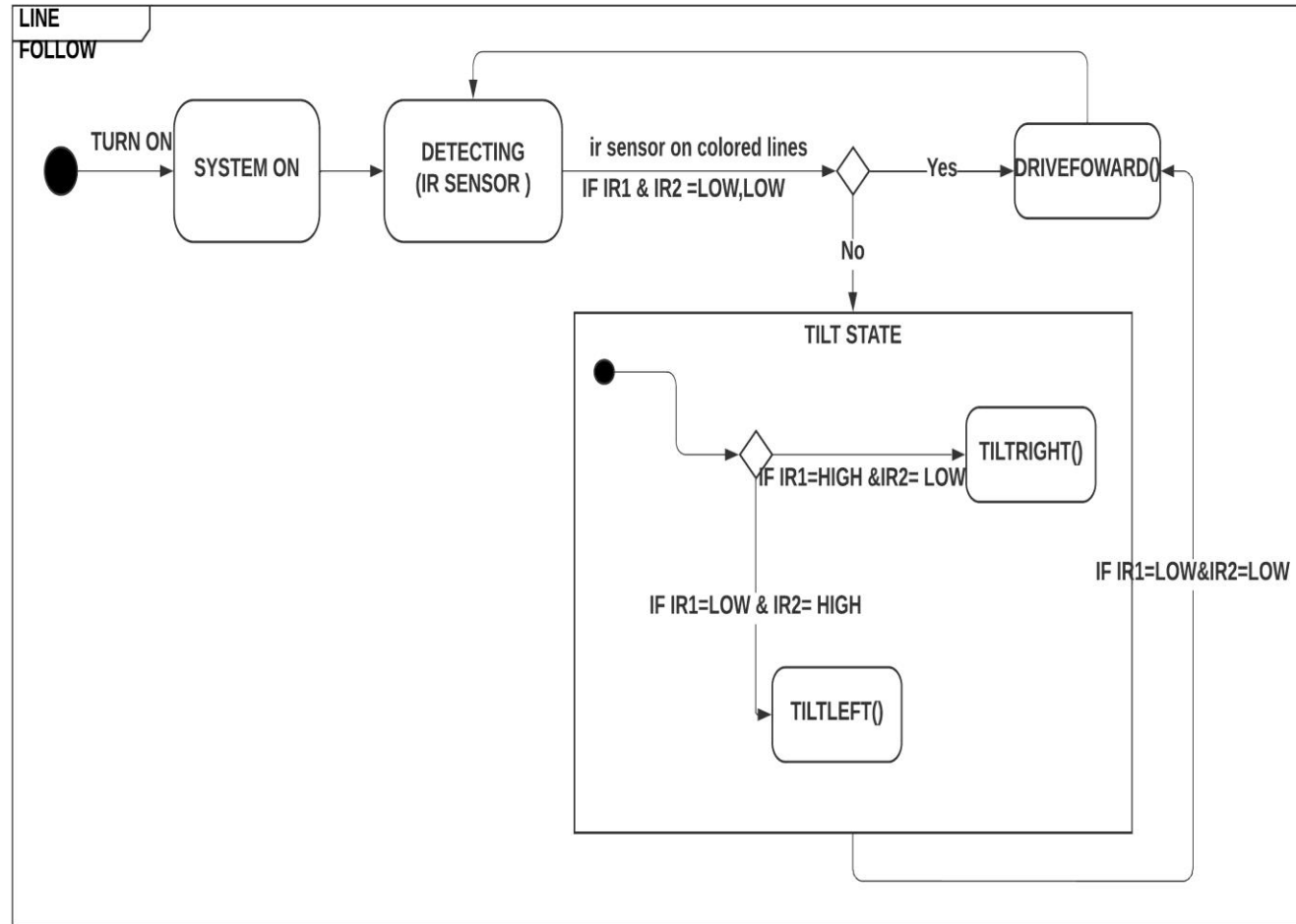
    digitalWrite(S2,HIGH);
    digitalWrite(S3,HIGH);
    pulseWidth = pulseIn(outPin,LOW);
    gColourStrength = pulseWidth;

    //////////////////////////////////////

    //Reading BLUE components,s2 is LOW and S3 is HIGH
    //////////////////////////////////////
    digitalWrite(S2,LOW);
    digitalWrite(S3,HIGH);
    pulseWidth = pulseIn(outPin,LOW);
    bColourStrength = pulseWidth;

    //////////////////////////////////////
}
```

Tasks 1



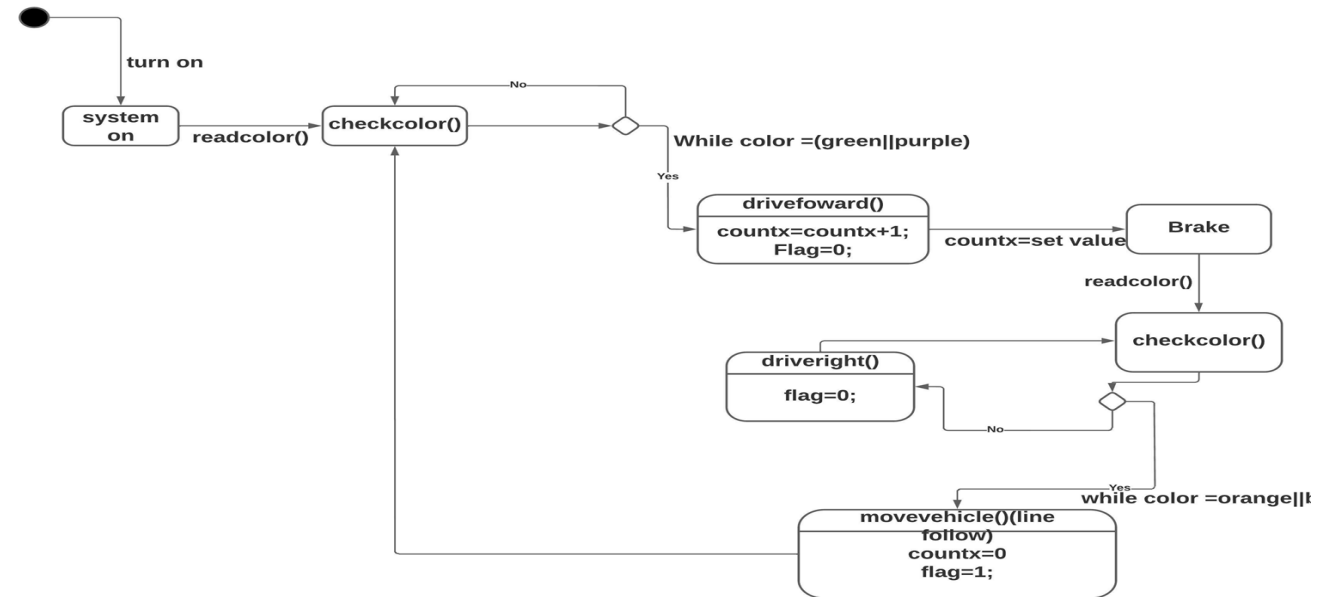
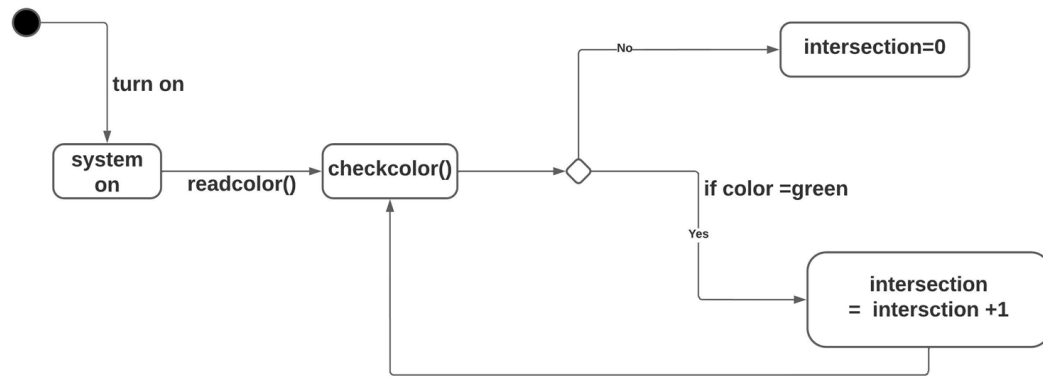
```
void line sensor()
{
    if(digitalRead(IR1)==HIGH && digitalRead(IR2)==HIGH) //IR will not glow on black line
    {
        //Stop both Motors
        analogWrite(In1,0);
        analogWrite(In2,0);
        analogWrite(In3,0);
        analogWrite(In4,0);
    }

    else if(digitalRead(IR1)==LOW && digitalRead(IR2)==LOW) //IR not on black line
    {
        //Move both the Motors
        analogWrite(In1,255);
        analogWrite(In2,0);
        analogWrite(In3,255);
        analogWrite(In4,0);
    }

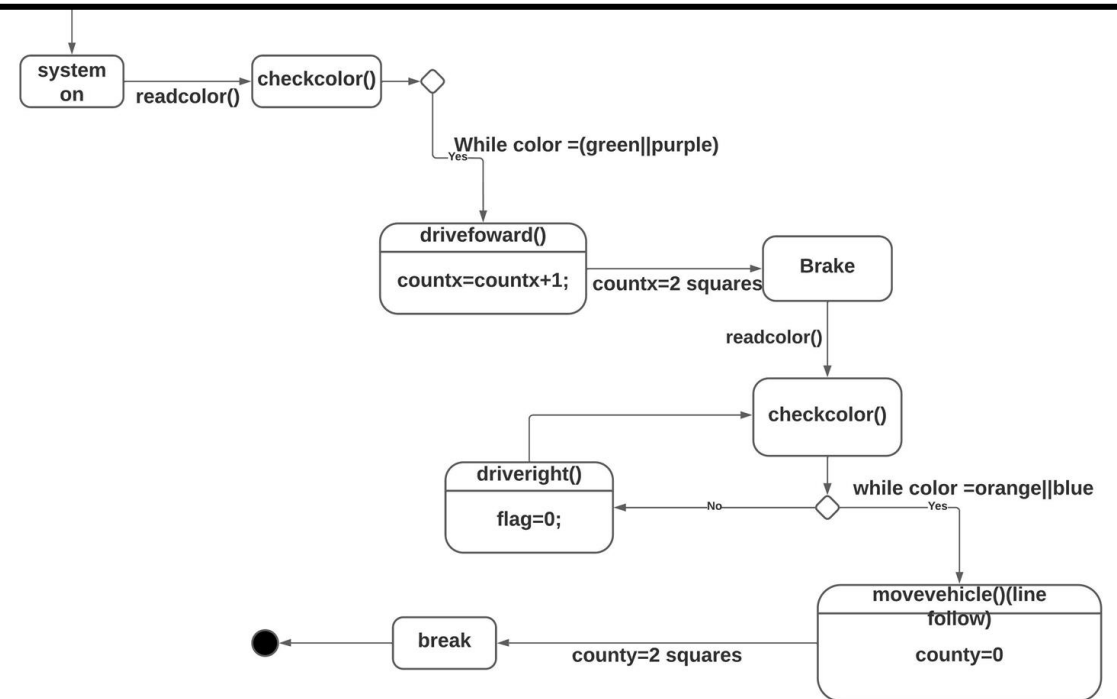
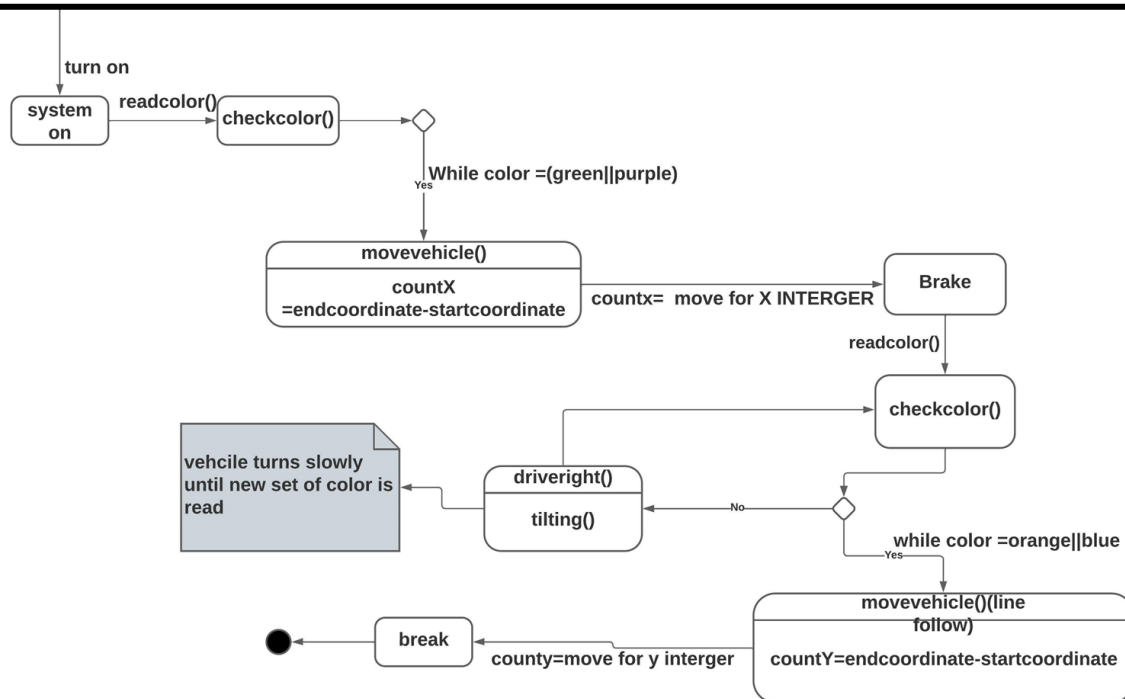
    else if(digitalRead(IR1)==LOW && digitalRead(IR2)==HIGH)
    {
        //Tilt robot towards left by stopping the left wheel and moving the right one
        analogWrite(In1,255);
        analogWrite(In2,0);
        analogWrite(In3,0);
        analogWrite(In4,255);
        delay(100);
    }

    else if(digitalRead(IR1)==HIGH && digitalRead(IR2)==LOW)
    {
        //Tilt robot towards right by stopping the right wheel and moving the left one
        analogWrite(In1,0);
        analogWrite(In2,255);
        analogWrite(In3,255);
        analogWrite(In4,0);
        delay(100);
    }
}
```

Task 3 and 4



Task 5 and 6



Thanks

