```cpp
#include <Stepper.h>

#define convIR 1
#define s0 3
#define s1 4
#define s2 5
#define s3 6
#define colorSensorOut 2
#define limitSwitch 7
#define motor1 8
#define motor2 9
#define redFlap1 10
#define redFlap2 11
#define redFlap3 12
#define redFlap4 13
#define jaw1 A0
#define jaw2 A1
#define jaw3 A2
#define jaw4 A3

// Variables to store the pulse width of red and blue colors
int redPW = 0;
int bluePW = 0;
int greenPW = 0;
// Highest and lowest PULSEWIDTHS obtained from the calliberation
int redMin = 50;
int redMax = 351;
int greenMin = 48;
int greenMax = 360;
int blueMin = 45;
int blueMax = 290;
// Variables to store frequency of colors
```

```cpp
int redValue, greenValue, blueValue;
// Steps per revolution of stepper motor 28byj-48
const int stepsPerRevolution = 2048;
// Create an object of Stepper
Stepper redStepper = Stepper(stepsPerRevolution, redFlap1, redFlap2,
redFlap3, redFlap4);
Stepper jawStepper = Stepper(stepsPerRevolution, jaw1, jaw2, jaw3,
jaw4);
// Variables to store color and weight
int color, weight;


void toggleConveyor(int i1, int i2){
  digitalWrite(motor1, i1);
  digitalWrite(motor2, i2);
  Serial.println("Conveyor toggled");
}


int measurePW(int s2Val, int s3Val){
  digitalWrite(s2, s2Val);
  digitalWrite(s3, s3Val);
  int pw;
  pw = pulseIn(colorSensorOut, LOW);
  return pw;
}


void setup() {
  // put your setup code here, to run once:
  Serial.begin(9600);
  pinMode(convIR, INPUT);
  pinMode(s0, OUTPUT);
  pinMode(s1, OUTPUT);
  pinMode(s2, OUTPUT);
  pinMode(s3, OUTPUT);
```

```
  pinMode(colorSensorOut, INPUT);

  pinMode(limitSwitch, INPUT);

  pinMode(motor1, OUTPUT);

  pinMode(motor2, OUTPUT);

  pinMode(redFlap1, OUTPUT);

  pinMode(redFlap2, OUTPUT);

  pinMode(redFlap3, OUTPUT);

  pinMode(redFlap4, OUTPUT);

  pinMode(jaw1, OUTPUT);

  pinMode(jaw2, OUTPUT);

  pinMode(jaw3, OUTPUT);

  pinMode(jaw4, OUTPUT);

  // frequency scaling of color sensor to 20%

  digitalWrite(s0, HIGH);

  digitalWrite(s1, LOW);

// setting speed in rpm of stepper motors

  redStepper.setSpeed(12);

  jawStepper.setSpeed(12);

}


int getColor(){

  redPW = measurePW(0,0); // measure red col pulsewidth

  delay(200);

  greenPW = measurePW(1,1); // measure green col pulsewidth

  delay(200);

  bluePW = measurePW(0,1); // measure blue col pulsewidth

  delay(200);

  // Get color hex value:

  redValue = map(redPW, redMin, redMax, 255, 0);

  greenValue = map(greenPW, greenMin, greenMax, 255, 0);

  blueValue = map(bluePW, blueMin, blueMax, 255, 0);

  if(redValue > blueValue){
```

```
      Serial.println("Red color detected");

      return 1;

    }

    else if (blueValue > redValue){

      Serial.println("Blue color detected");

      return 2;

    }

    return 0;

}


int getWeight(){

    int switchState = digitalRead(limitSwitch);

    if(switchState == 0){

      Serial.println("Object is light");

      return 1;

    }

    else if(switchState == 1){

      Serial.println("Object is heavy");

      return 2;

    }

    return 0;

}


void sortLightObject(int col){

    if(col == 1){

      redStepper.step(2048/8);  // 2048 => 360, 2048/8 => 45

      toggleConveyor(1,0);

      delay(3500);

      toggleConveyor(0,0);

      redStepper.step(-2048/8);

      Serial.println("Light, Red Object Sorted");

    }
```

```
    if(col == 2){

      // Same steps with other stepper and adjust the delay

      Serial.println("Light, Blue Object Sorted");

    }

}


void sortHeavyObject(int col){

  if(col == 1){

    toggleConveyor(1,0);

    delay(5000);

    jawStepper.step(2048/3);   // 2048 => 360, 2048/3 => 120

    toggleConveyor(0,0);

    Serial.println("Heavy, Red Object Sorted");

  }

  if(col == 2){

    toggleConveyor(1,0);

    delay(5000);

    jawStepper.step(-2048/3);   // 2048 => 360, 2048/3 => 120

    toggleConveyor(0,0);

    Serial.println("Heavy, Blue Object Sorted");

  }

}


void sortObject(int c, int w){

  if(c == 1 && w == 1)

    sortLightObject(c);

  else if(c == 1 && w == 2)

    sortHeavyObject(c);

  else if(c == 2 && w == 1)

    sortLightObject(c);

  else if(c == 2 && w == 2)

    sortHeavyObject(c);
```

```
}

void loop() {
  // put your main code here, to run repeatedly:
  while(convIR == 0){
    toggleConveyor(1,0);
  }
  toggleConveyor(0,0);
  color = getColor();
  weight = getWeight();
  sortObject(color, weight);
}
```