Project code

Below is the code that I used for the project. It controls the stepper motor and every 25 milliseconds it scans and if it detects something it launches. I tried my best to get it to do about every 5 degrees.

```
#include<Servo.h> //includes servo library
int trig = 37; // sends out trig for the serial monitor from sensor trig is also attached to pin 37
int echo = 35; //this is the revciving from the sensor echo is attached to 35
int cat = 15;//sets a delay of 15 milliseconds between each step
int i = 0;//this is for the for loops
float distance = 0; //this is to store the distance
long t = 0; //long for the stepper motor
Servo bat;  //alows for servo to have a deignation
void setup() {

  pinMode(10, OUTPUT);    //analog pin 10 for motor
  pinMode(36, OUTPUT);    //output  for wire for dc motor
  pinMode(38, OUTPUT);    //output for wire of dc motor
  pinMode(11, OUTPUT);    //analog pin 11 for motor
  pinMode(40, OUTPUT);    //output  for wire for dc motor
  pinMode(42, OUTPUT);    //output  for wire for dc motor
  pinMode(trig, OUTPUT);  //putting power to pin 37 that trig is attached to
  pinMode(echo, INPUT);   //taking info from pin
  bat.attach(5); //attachs the servo to pin 5
  bat.write(90); //has the servo start at 90 so that the balls dont immiadiatly fall
  DDRA = B0111111;//this activates all  ports 22-27
  Serial.begin(9600);//display serial montiro
  digitalWrite(36, 1); //sets pin 36 to on
  digitalWrite(38, 0); // seting pin 38 to off
  analogWrite(10, 255); // Full duty cycle
  digitalWrite(40, 1); //set pin 40 to on
  digitalWrite(42, 0); // sets pin 42 to off
  analogWrite(11, 255); // Full duty cycle
}
```

```
void clockwise(int t, int s){//main loop code to make the motor go
clockwise
 for(i=0;i<s;i++){//this is what controls the speed of the motor and how
many steps
  PORTA = B0000001; //pin 23 are turned on
  delay(t);//delays the steps
  PORTA = B0000010; //pin 24 set to on
  delay(t);//delays the steps
  PORTA = B0000100; //pin 25 set to on
  delay(t);//delays the steps
  PORTA = B0011000; // pin 24 set to on
  delay(t);//delays the steps
}
}

void counterclockwise(int t, int s){
  for(i=0;i<s;i++){
  PORTA = B0000001;//pin 23 are turned on
  delay(t);//delays the steps
  PORTA = B0001000;//pin 24 set to on
  delay(t);//delays the steps
  PORTA = B0000100;//pin 25 set to on
  delay(t);//delays the steps
  PORTA = B0000010;//pin 26 set to on
  delay(t);//delays the steps
  }
}
void loop() {
clockwise(cat, 25);//cat = 50 milliseconds
PORTA = B00000000;   //setting all ports in A to off
delay(2000);   //delay of 2seconds
  digitalWrite(trig, 0);     //resets the sensor
  delayMicroseconds(2);       //delays 2 milliseconds
  digitalWrite(trig, 1);     //sends a pulse ro gather data
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  t = pulseIn(echo, 1);      //assigning the pulseIn to a variable (t)
  distance = t * 0.034 / 2;  //converting to cm
  Serial.print(distance);    // telling the serial monitor to print the
distance
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  Serial.println(" cm "); //displays "cm" after distance
  delay(100);                  //delays the monitor by 100 micro seconds

if (distance <= 250) { // if distance is less that 250 fire
  bat.write(180);  //Servo rotates to the 90 degree postion
  delay(400);    //delays servo speed by 350 microseconds
  bat.write(90);  //Servo rotates back to the 90 oringal state

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