```
#include <Servo.h>
#include <IRremote.h>

int a = 13, b = 12, c = 7, d = 8, e = 9, f = 10, g = 11;
int greenLed = A4;
int redLed = A5;
int completeBtn = 2;
int buzzer = 6;

Servo myServo;

#define IR_RECEIVE_PIN 5
#define REMOTE_CODE 0x5A
IRrecv irrecv(IR_RECEIVE_PIN);
decode_results results;

void setup() {
  myServo.attach(3);
  myServo.write(90);

pinMode(a, OUTPUT);
pinMode(b, OUTPUT);
pinMode(c, OUTPUT);
pinMode(d, OUTPUT);
pinMode(e, OUTPUT);
pinMode(f, OUTPUT);
pinMode(g, OUTPUT);
pinMode(greenLed, OUTPUT);
pinMode(redLed, OUTPUT);
pinMode(buzzer, OUTPUT);
pinMode(completeBtn, INPUT);

  digitalWrite(greenLed, LOW);
  digitalWrite(redLed, LOW);
  digitalWrite(buzzer, LOW);

  Serial.begin(9600);
  irrecv.enableIRIn();
  randomSeed(analogRead(0));
}

void zero()  {
digitalWrite(a, LOW);
digitalWrite(b, LOW);
```

```
digitalWrite(c, LOW);
digitalWrite(d, LOW);
digitalWrite(e, LOW);
digitalWrite(f, LOW);
digitalWrite(g, HIGH); }

void one()  {
digitalWrite(a, HIGH);
digitalWrite(b, LOW);
digitalWrite(c, LOW);
digitalWrite(d, HIGH);
digitalWrite(e, HIGH);
digitalWrite(f, HIGH);
digitalWrite(g, HIGH); }

void two()  {
digitalWrite(a, LOW);
digitalWrite(b, LOW);
digitalWrite(c, HIGH);
digitalWrite(d, LOW);
digitalWrite(e, LOW);
digitalWrite(f, HIGH);
digitalWrite(g, LOW); }

void three() {
digitalWrite(a, LOW);
digitalWrite(b, LOW);
digitalWrite(c, LOW);
digitalWrite(d, LOW);
digitalWrite(e, HIGH);
digitalWrite(f, HIGH);
digitalWrite(g, LOW); }

void four()  {
digitalWrite(a, HIGH);
digitalWrite(b, LOW);
digitalWrite(c, LOW);
digitalWrite(d, HIGH);
digitalWrite(e, HIGH);
digitalWrite(f, LOW);
digitalWrite(g, LOW); }

void five()  {
digitalWrite(a, LOW);
```

```
digitalWrite(b, HIGH);
digitalWrite(c, LOW);
digitalWrite(d, LOW);
digitalWrite(e, HIGH);
digitalWrite(f, LOW);
digitalWrite(g, LOW); }

void six()   {
digitalWrite(a, LOW);
digitalWrite(b, HIGH);
digitalWrite(c, LOW);
digitalWrite(d, LOW);
digitalWrite(e, LOW);
digitalWrite(f, LOW);
digitalWrite(g, LOW); }

void seven() {
digitalWrite(a, LOW);
digitalWrite(b, LOW);
digitalWrite(c, LOW);
digitalWrite(d, HIGH);
digitalWrite(e, HIGH);
digitalWrite(f, HIGH);
digitalWrite(g, HIGH); }

void eight() {
digitalWrite(a, LOW);
digitalWrite(b, LOW);
digitalWrite(c, LOW);
digitalWrite(d, LOW);
digitalWrite(e, LOW);
digitalWrite(f, LOW);
digitalWrite(g, LOW); }

void nine()  {
digitalWrite(a, LOW);
digitalWrite(b, LOW);
digitalWrite(c, LOW);
digitalWrite(d, HIGH);
digitalWrite(e, HIGH);
digitalWrite(f, LOW);
digitalWrite(g, LOW); }

void showDigit(int i) {
```

```
  switch(i) {
    case 0: zero(); break;
    case 1: one(); break;
    case 2: two(); break;
    case 3: three(); break;
    case 4: four(); break;
    case 5: five(); break;
    case 6: six(); break;
    case 7: seven(); break;
    case 8: eight(); break;
    case 9: nine(); break;
    default: break;
  }
}

void clearDisplay() {
  digitalWrite(a, HIGH); digitalWrite(b, HIGH); digitalWrite(c, HIGH);
  digitalWrite(d, HIGH); digitalWrite(e, HIGH); digitalWrite(f, HIGH); digitalWrite(g, HIGH);
}

void buzz(int time) {
  digitalWrite(buzzer, HIGH);
  delay(time);
  digitalWrite(buzzer, LOW);
  delay(100);
}

void spinServo() {
  myServo.write(90);
  delay(500);

  buzz(200);

  int loops = random(2, 4);

  for (int i = 0; i < loops; i++) {
    for (int angle = 0; angle <= 180; angle++) {
      myServo.write(angle);
      delay(3);
    }
    for (int angle = 180; angle >= 0; angle--) {
      myServo.write(angle);
      delay(3);
    }
```

```
  }

  int finalAngle = random(0, 181);
  for (int angle = 0; angle <= finalAngle; angle++) {
    myServo.write(angle);
    delay(5);
  }

  myServo.write(finalAngle);
}

void startCountdown() {
  bool success = false;

  for (int i = 9; i >= 0; i--) {
    showDigit(i);
    unsigned long start = millis();
    while (millis() - start < 1000) {
      if (digitalRead(completeBtn) == HIGH) {
        success = true;
        break;
      }
    }
    if (success) break;
  }

  if (success) {
    digitalWrite(greenLed, HIGH);
    digitalWrite(redLed, LOW);
    buzz(150); buzz(150);
  } else {
    digitalWrite(redLed, HIGH);
    digitalWrite(greenLed, LOW);
    buzz(500);
  }

  delay(2000);
  digitalWrite(greenLed, LOW);
  digitalWrite(redLed, LOW);
  clearDisplay();

  int currentAngle = myServo.read();
  if (currentAngle > 90) {
    for (int i = currentAngle; i >= 90; i--) {
```

```
      myServo.write(i);
      delay(5);
    }
  } else {
    for (int i = currentAngle; i <= 90; i++) {
      myServo.write(i);
      delay(5);
    }
  }

  while (digitalRead(completeBtn) == HIGH) delay(10);
}

void loop() {
  if (irrecv.decode(&results)) {
    unsigned long code = results.value;
    Serial.print("IR Code: "); Serial.println(code, HEX);

    if (code == REMOTE_CODE) {
      spinServo();
      startCountdown();
    }

    irrecv.resume();
  }
}
```