

The screenshot displays the Arduino IDE interface. On the left, a circuit diagram shows an Arduino Uno R3 connected to a breadboard. A knock sensor module is connected to the breadboard, which also contains a servo motor. Wires connect the sensor to the Arduino's digital pins and the servo to its power and signal pins. On the right, the 'Code' tab shows the following C++ code:

```
56 if(numberOfKnocks >= 3)
57 {
58   locked = false;
59   digitalWrite(greenPin, HIGH);
60   digitalWrite(redPin, LOW);
61   numberOfKnocks = 0;
62   myServo.write(0);
63   delay(1000);
64 }
65 }
66 }
67
68 boolean checkKnocks(int value)
69 {
70   if(value >= quietKnock && value <= loudKnock)
71   {
72     digitalWrite(yellowPin, HIGH);
73     delay(50);
74     digitalWrite(yellowPin, LOW);
75     delay(50);
76     return true;
77   }
78   else
79   {
80     return false;
81   }
82 }
83
```

Below the code editor is the 'Serial Monitor' tab, which is currently empty.

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

```
Servo myServo;
```

```
const int piezoPin = A0;
```

```
const int switchPin = 2;
```

```
const int servoPin = 9;
```

```
const int yellowPin = 3;
```

```
const int greenPin = 4;
```

```
const int redPin = 5;
```

```
int piezoVal;
```

```
int switchVal;
```

```
const int quietKnock = 10;
```

```
const int loudKnock = 100;
```

```
int numberOfKnocks = 0;
```

```
boolean locked = false;
```

```
void setup()
```

```
{
```

```
  pinMode(switchPin, INPUT);
```

```
  pinMode(yellowPin, OUTPUT);
```

```
  pinMode(greenPin, OUTPUT);
```

```
  pinMode(redPin, OUTPUT);
```

```
  myServo.attach(servoPin);
```

```
  digitalWrite(greenPin, HIGH);
```

```
  myServo.write(0);
```

```
  delay(1000);
```

```
}
```

```
void loop()
{
  if(locked == false)
  {
    switchVal = digitalRead(switchPin);
    if(switchVal == HIGH)
    {
      locked = true;
      digitalWrite(greenPin, LOW);
      digitalWrite(redPin, HIGH);
      myServo.write(90);
      delay(1000);
    }
  }
  if(locked == true)
  {
    piezoVal = analogRead(piezoPin);
    if(piezoVal > 0 && numberOfKnocks < 3)
    {
      if(checkKnocks(piezoVal) == true)
      {
        numberOfKnocks++;
      }
    }
    if(numberOfKnocks >= 3)
    {
      locked = false;
      digitalWrite(greenPin, HIGH);
      digitalWrite(redPin, LOW);
      numberOfKnocks = 0;
      myServo.write(0);
    }
  }
}
```

```
    delay(1000);  
  }  
}  
  
boolean checkKnocks(int value)  
{  
  if(value >= quietKnock && value <= loudKnock)  
  {  
    digitalWrite(yellowPin, HIGH);  
    delay(50);  
    digitalWrite(yellowPin, LOW);  
    delay(50);  
    return true;  
  }  
  else  
  {  
    return false;  
  }  
}
```