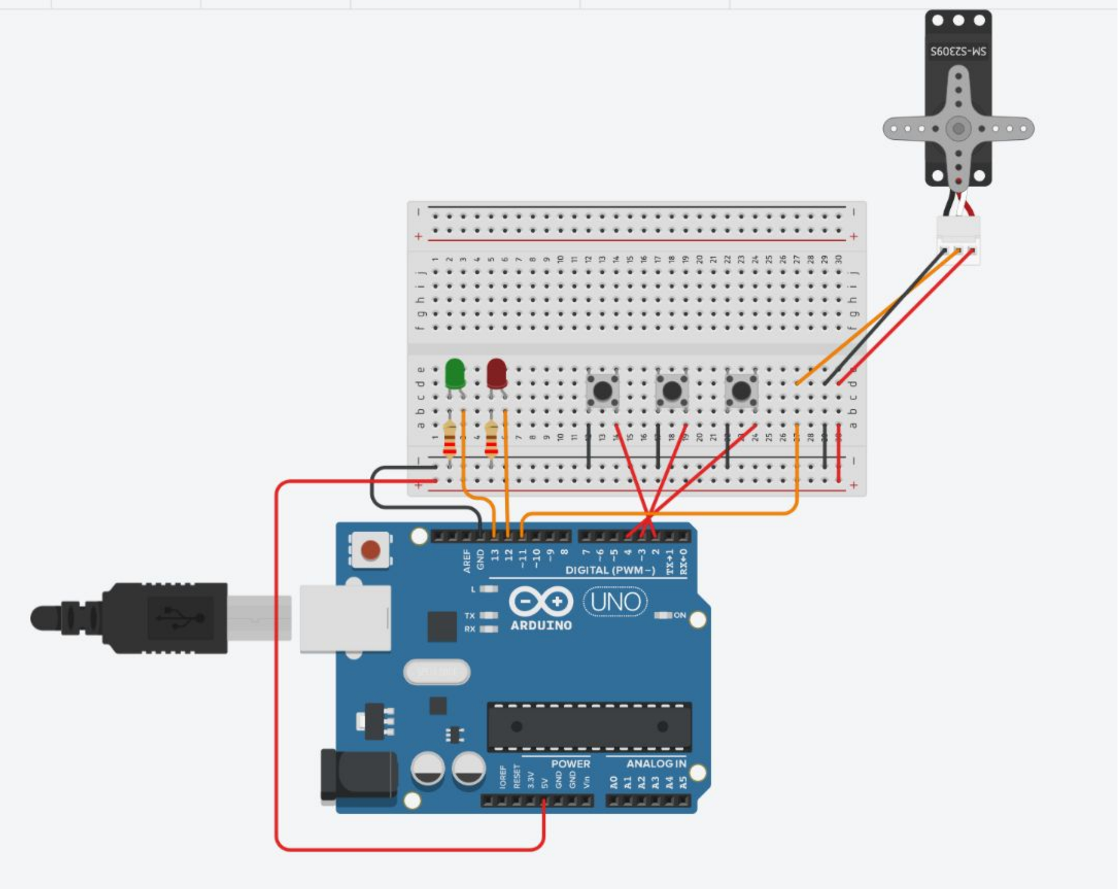
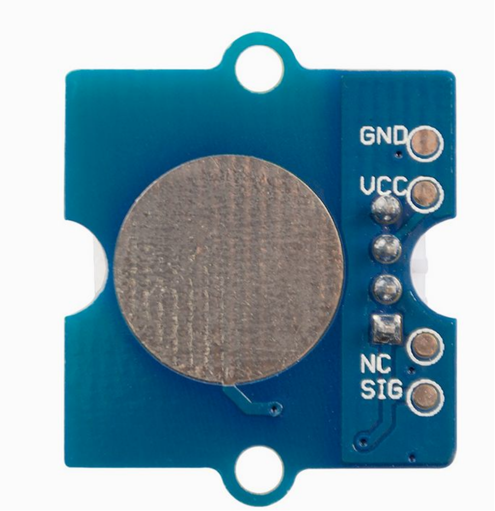
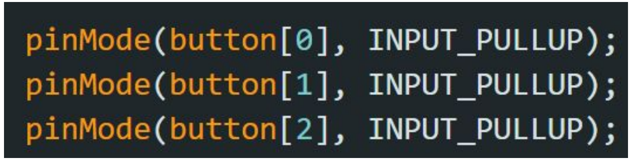
Design overview



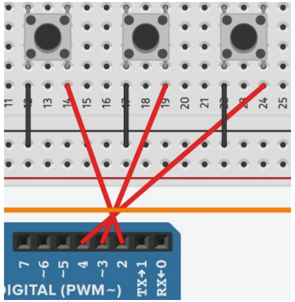


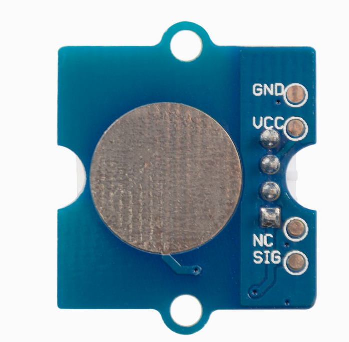
Inputs and outputs

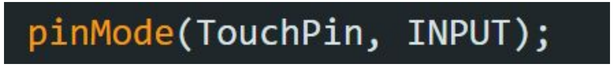
Inputs: Push buttons, touch sensor



```
pinMode(button[0], INPUT_PULLUP);
pinMode(button[1], INPUT_PULLUP);
pinMode(button[2], INPUT_PULLUP);
```

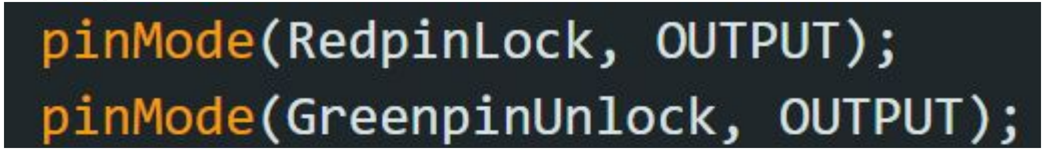




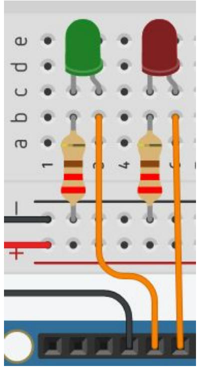


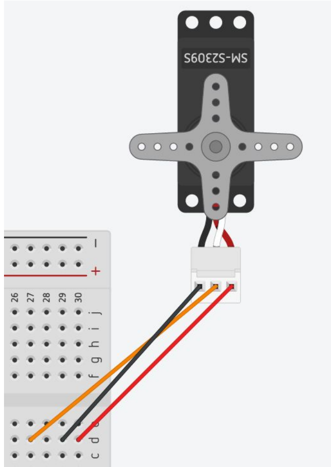
```
pinMode(TouchPin, INPUT);
```

Outputs: Micro Servo, LEDs

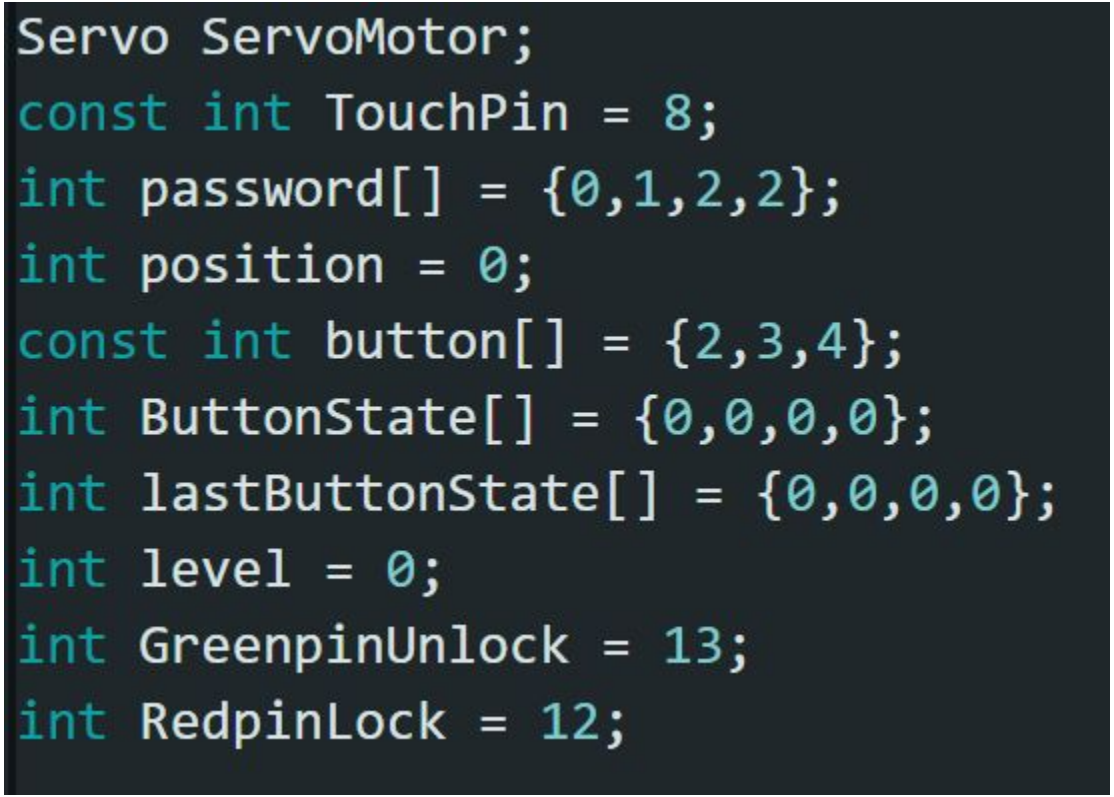


```
pinMode(RedpinLock, OUTPUT);
pinMode(GreenpinUnlock, OUTPUT);
```





Code



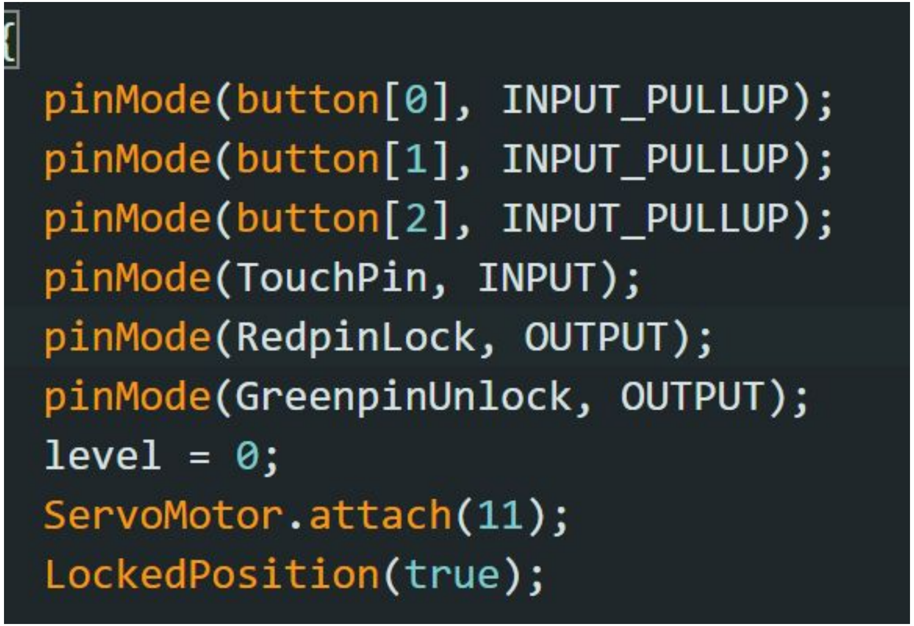
```
Servo ServoMotor;
const int TouchPin = 8;
int password[] = {0,1,2,2};
int position = 0;
const int button[] = {2,3,4};
int ButtonState[] = {0,0,0,0};
int lastButtonState[] = {0,0,0,0};
int level = 0;
int GreenpinUnlock = 13;
int RedpinLock = 12;
```

Attaches the touch sensor named touch pin to the board

Sets the password, and connects buttons to pins

Button state is 0000

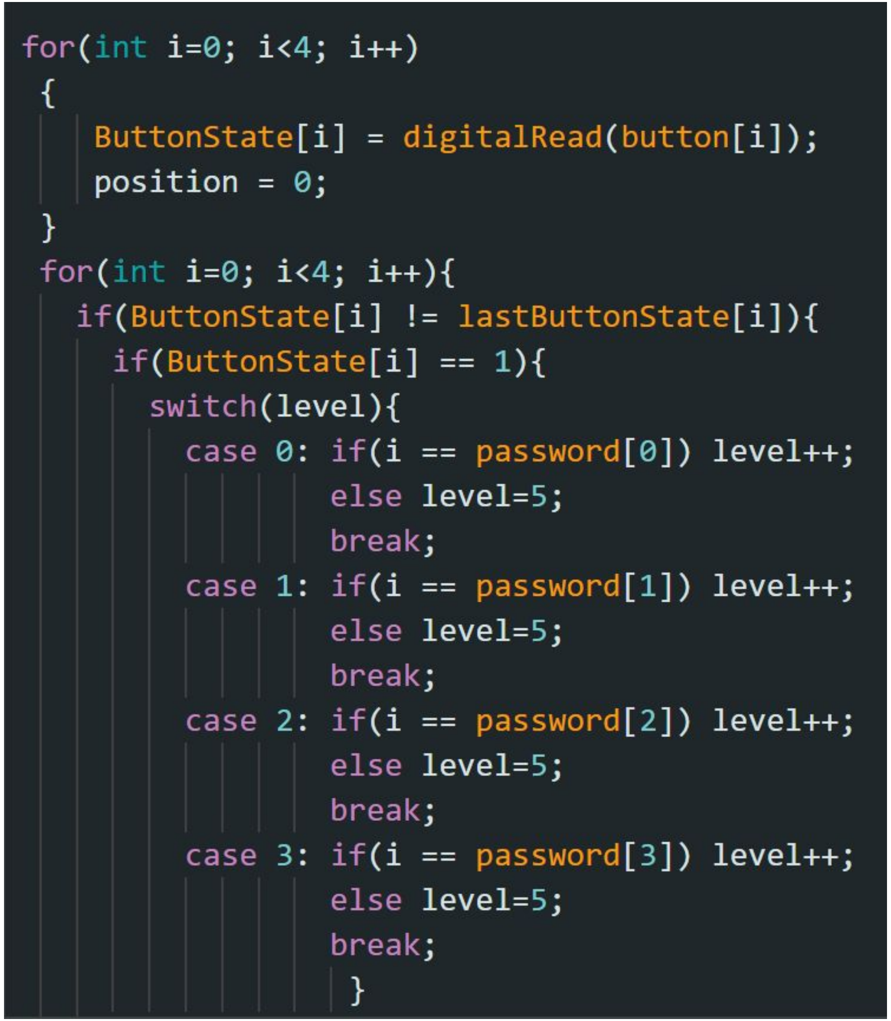
Names the Red and Green LED’s as locked and unlocked and their number on the board



```
{
  pinMode(button[0], INPUT_PULLUP);
  pinMode(button[1], INPUT_PULLUP);
  pinMode(button[2], INPUT_PULLUP);
  pinMode(TouchPin, INPUT);
  pinMode(RedpinLock, OUTPUT);
  pinMode(GreenpinUnlock, OUTPUT);
  level = 0;
  ServoMotor.attach(11);
  LockedPosition(true);
```

Inputs and outputs for the Buttons, assigns them values of 0,1, and 2.

Sets the LED’s as inputs and their state, red locked, green unlocked



```
for(int i=0; i<4; i++)
 {
    ButtonState[i] = digitalRead(button[i]);
    position = 0;
 }
 for(int i=0; i<4; i++){
   if(ButtonState[i] != lastButtonState[i]){
     if(ButtonState[i] == 1){
       switch(level){
         case 0: if(i == password[0]) level++;
                 else level=5;
                 break;
         case 1: if(i == password[1]) level++;
                 else level=5;
                 break;
         case 2: if(i == password[2]) level++;
                 else level=5;
                 break;
         case 3: if(i == password[3]) level++;
                 else level=5;
                 break;
                  }
```

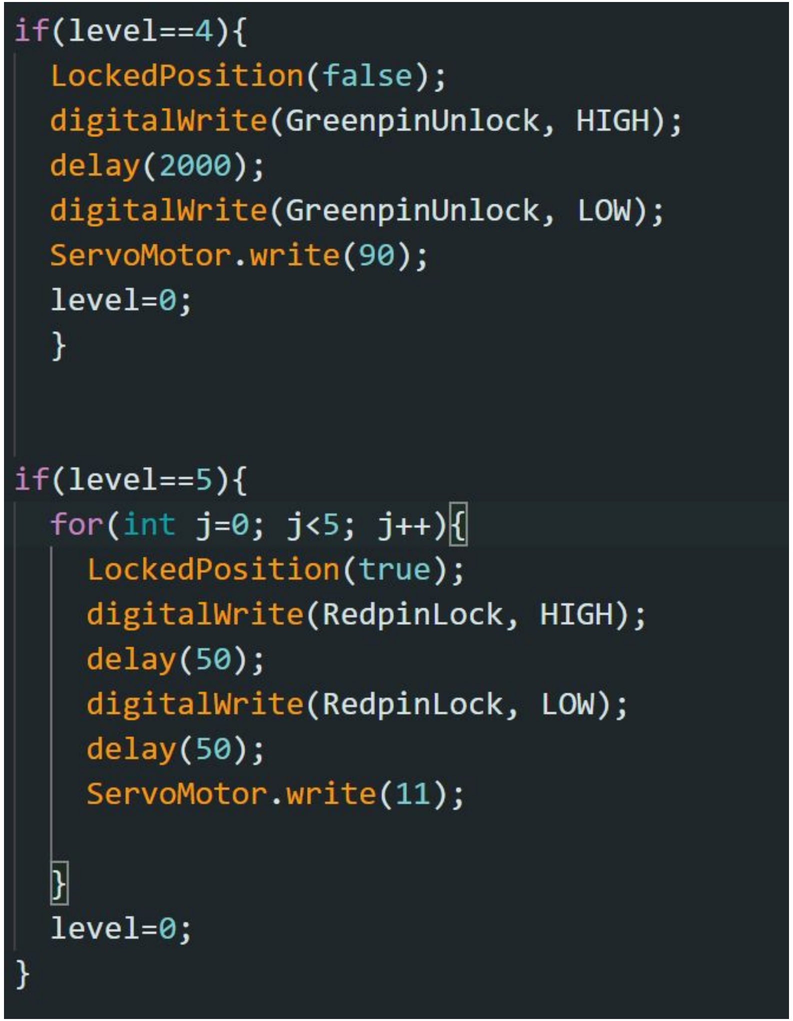
Works through integers 0 through 4

Stores the button state that is being read as zero

If the button state does not equal the last button state, so if it’s 1
Then there is a switch case with 4 cases called levels

If the variable is equal to the password being 0 then the level moves up by an increment unless the level is 5 then it brakes. This repeats for case 1-3

Then it stores the last button state

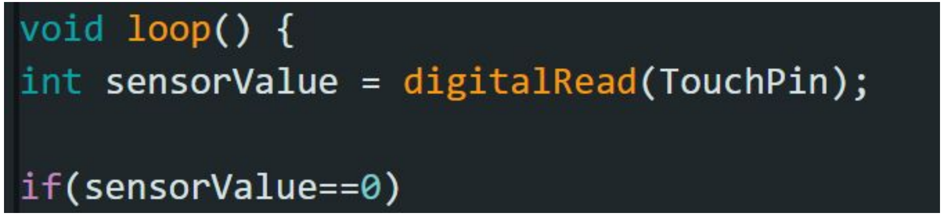


```
if(level==4){
  LockedPosition(false);
  digitalWrite(GreenpinUnlock, HIGH);
  delay(2000);
  digitalWrite(GreenpinUnlock, LOW);
  ServoMotor.write(90);
  level=0;
  }


if(level==5){
  for(int j=0; j<5; j++){
    LockedPosition(true);
    digitalWrite(RedpinLock, HIGH);
    delay(50);
    digitalWrite(RedpinLock, LOW);
    delay(50);
    ServoMotor.write(11);

  }
  level=0;
}
```

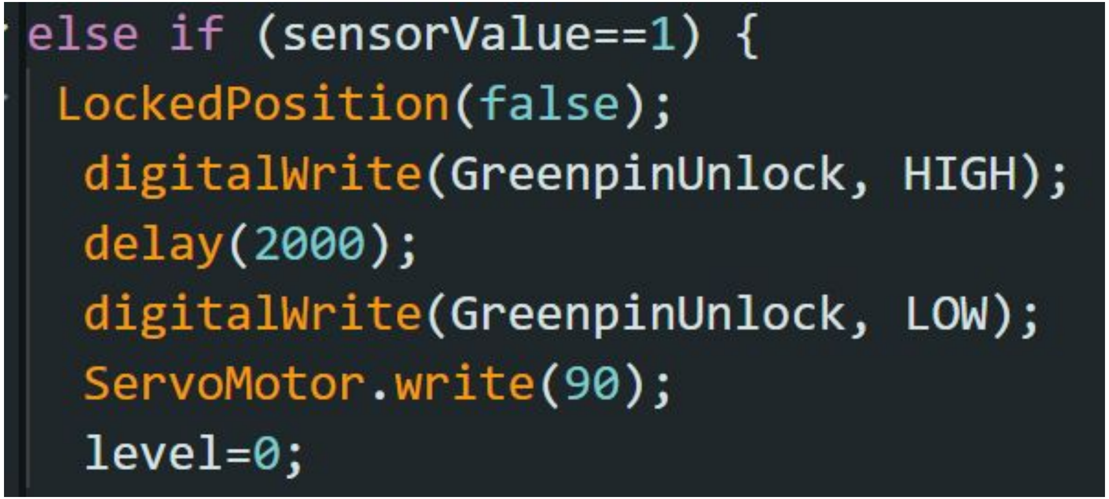
If the level is 4 then the Servo Motor is declared to not be locked and the green led is on, and servo moves 90%

If the level is 5 then then the Servo is locked and the red LED is turned on, then off.

Unless ???



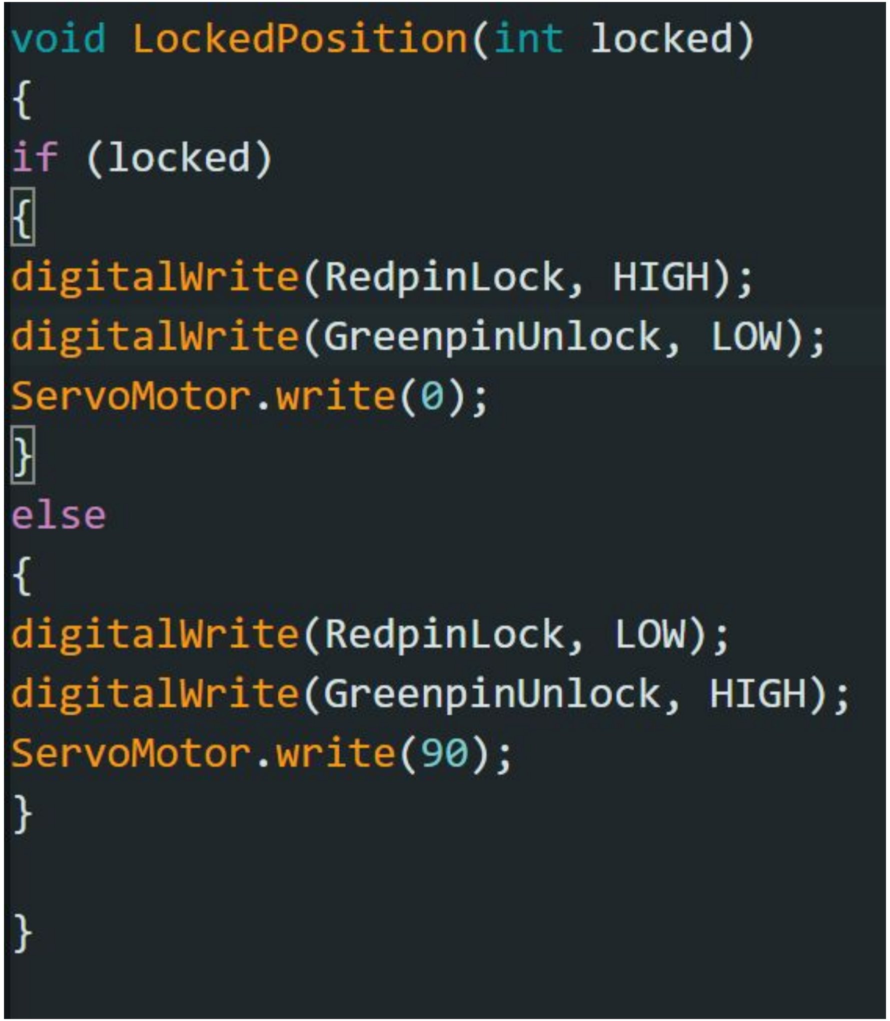
```
void loop() {
int sensorValue = digitalRead(TouchPin);

if(sensorValue==0)
```



```
else if (sensorValue==1) {
 LockedPosition(false);
  digitalWrite(GreenpinUnlock, HIGH);
  delay(2000);
  digitalWrite(GreenpinUnlock, LOW);
  ServoMotor.write(90);
  level=0;
```

The integer sensor value is being read as the touchpin
If the value of the touch sensor is 0 then the code can run as normal

Unless if the sensor value is not zero and is 1 then the servo is not locked and the green led is high



```
void LockedPosition(int locked)
{
if (locked)
{
digitalWrite(RedpinLock, HIGH);
digitalWrite(GreenpinUnlock, LOW);
ServoMotor.write(0);
}
else
{
digitalWrite(RedpinLock, LOW);
digitalWrite(GreenpinUnlock, HIGH);
ServoMotor.write(90);
}


}
```

Void function for the locked position and declares what that if the servo is locked then the red led is high and the green is low, and the servo is 0 unless the red led is low and the green is high, and or the servo is 90

```
#include <Servo.h>

Servo ServoMotor;
const int TouchPin = 8;
int password[] = {0,1,2,2};
int position = 0;
const int button[] = {2,3,4};
int ButtonState[] = {0,0,0,0};
int lastButtonState[] = {0,0,0,0};
int level = 0;
int GreenpinUnlock = 13;
int RedpinLock = 12;

void setup()
{
  pinMode(button[0], INPUT_PULLUP);
  pinMode(button[1], INPUT_PULLUP);
  pinMode(button[2], INPUT_PULLUP);
  pinMode(TouchPin, INPUT);
  pinMode(RedpinLock, OUTPUT);
  pinMode(GreenpinUnlock, OUTPUT);
  level = 0;
  ServoMotor.attach(11);
  LockedPosition(true);
```

```
}

void loop() {
int sensorValue = digitalRead(TouchPin);


if(sensorValue==0)
{

 for(int i=0; i<4; i++)
   {
       ButtonState[i] = digitalRead(button[i]);
       position = 0;
   }
  for(int i=0; i<4; i++){
    if(ButtonState[i] != lastButtonState[i]){
      if(ButtonState[i] == 1){
        switch(level){
          case 0: if(i == password[0]) level++;
                  else level=5;
                  break;
          case 1: if(i == password[1]) level++;
                  else level=5;
                  break;
          case 2: if(i == password[2]) level++;
                  else level=5;
                  break;
          case 3: if(i == password[3]) level++;
                  else level=5;
                  break;
                }
      }
      lastButtonState[i] = ButtonState[i];
    }
  }
```

```
  if(level==4){
    LockedPosition(false);
    digitalWrite(GreenpinUnlock, HIGH);
    delay(2000);
    digitalWrite(GreenpinUnlock, LOW);
    ServoMotor.write(90);
    level=0;
    }


  if(level==5){
    for(int j=0; j<5; j++){
      LockedPosition(true);
      digitalWrite(RedpinLock, HIGH);
      delay(50);
      digitalWrite(RedpinLock, LOW);
      delay(50);
      ServoMotor.write(0);

    }
    level=0;
  }

  delay(20);
}
else if (sensorValue== 1) {
 LockedPosition(false);
  digitalWrite(GreenpinUnlock, HIGH);
  delay(2000);
  digitalWrite(GreenpinUnlock, LOW);
  ServoMotor.write(90);
  level=0;
}
```

```
}


void
LockedPosition(int
locked)
{
if (locked)
{
digitalWrite(Redpin
Lock, HIGH);
digitalWrite(Greenp
inUnlock, LOW);
ServoMotor.write(0)
;
}
else
{
digitalWrite(Redpin
Lock, LOW);
digitalWrite(Greenp
inUnlock, HIGH);
ServoMotor.write(90
);
}

}
```