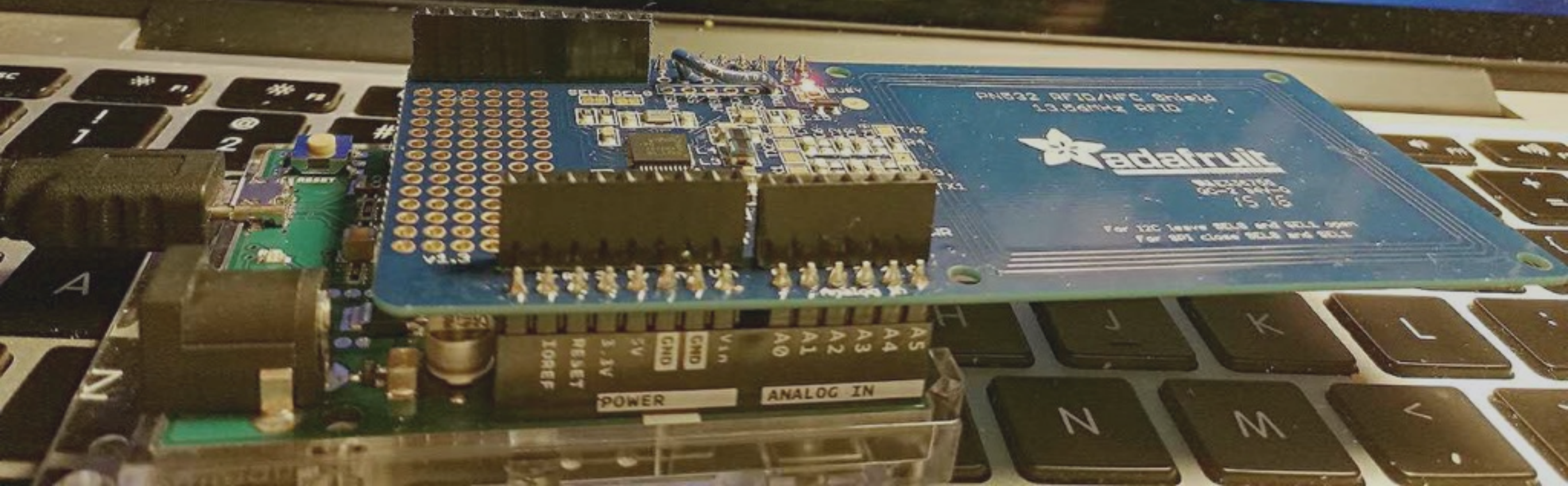
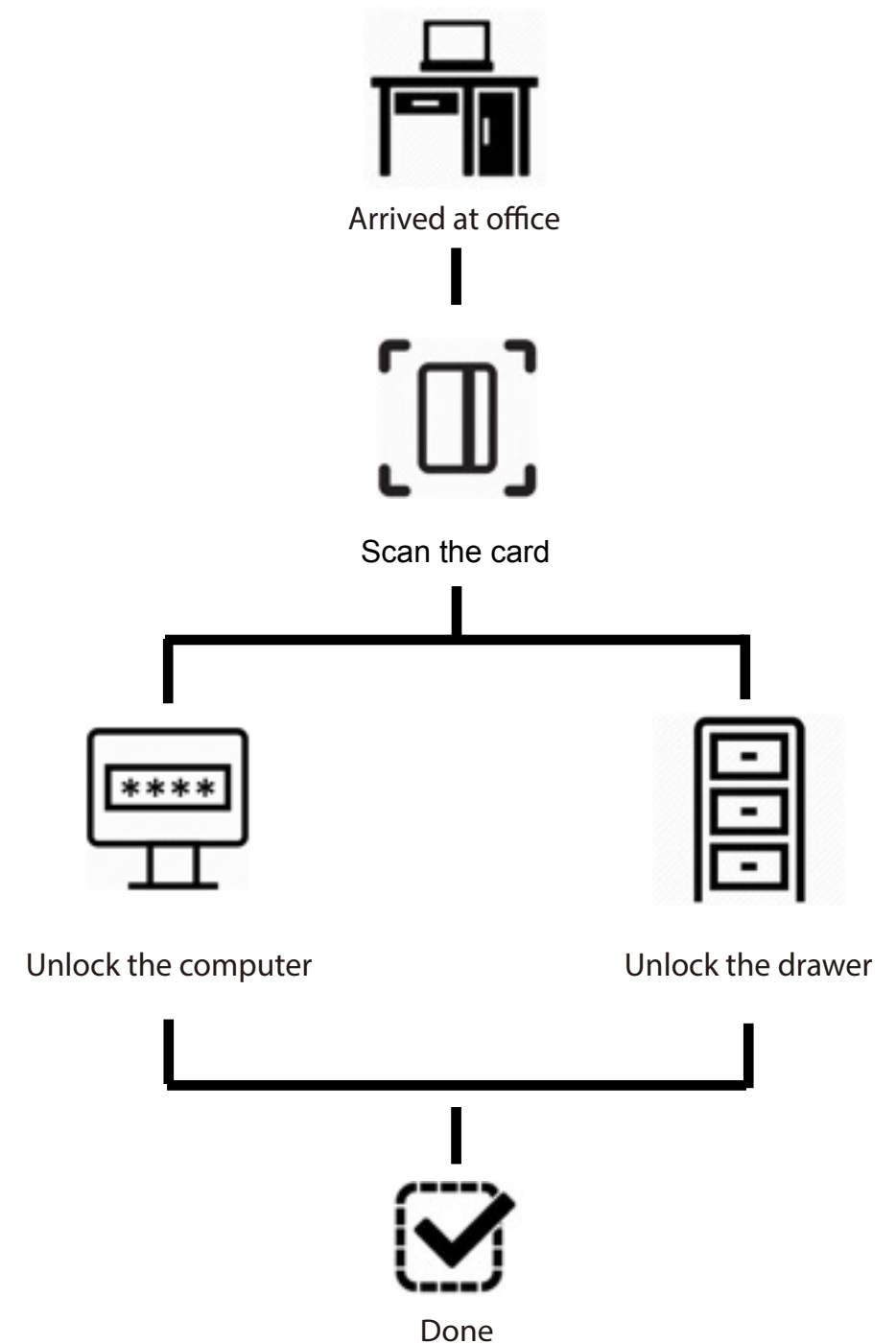
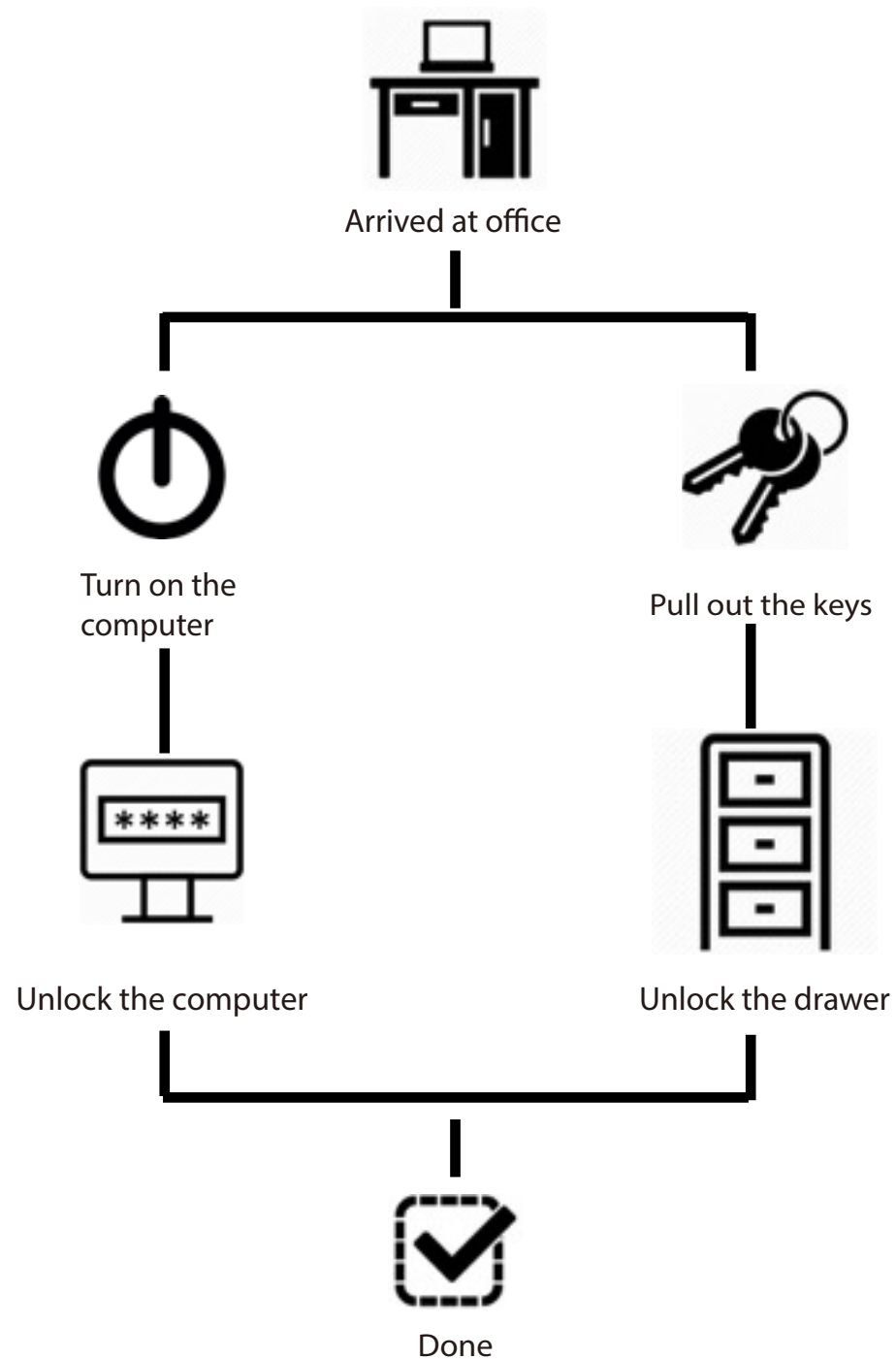


# Final Programming & Electronics

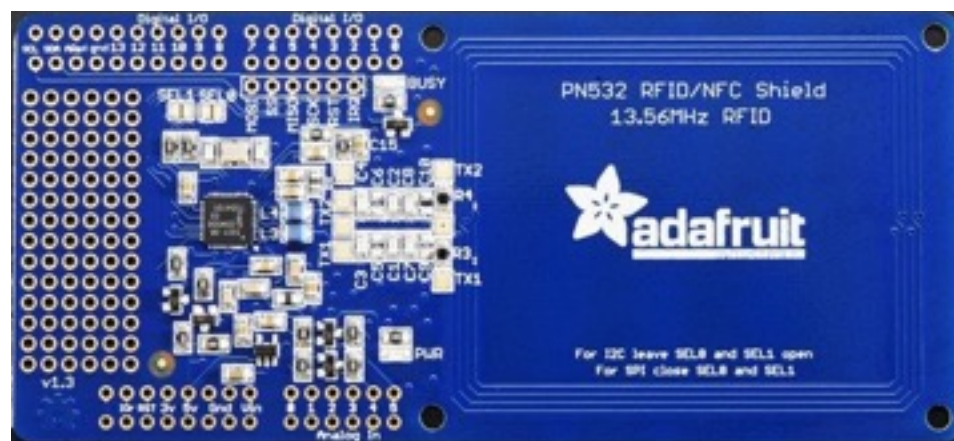


In the office room, most computer desks have a drawer. Normally people's basic behaviors to interact with computer table are sit down, turn on the desktop, type the password and sometimes user need open drawer to grab. How could I make a computer which gives user a better experience? I will separate my concept into two parts NFC Unlock Computer and drawer Unlock.





## 1. Electric soldering



## 2.Code

```
#include <Wire.h>
#include <Adafruit_NFCShield_I2C.h>
#include <Keyboard.h>
#include <Servo.h>
#define IRQ 6
#define RESET 8
Servo myservo;
Adafruit_NFCShield_I2C nfc(IRQ, RESET);

////////////////////// SETUP
int pos = 0;
void setup() {
  myservo.attach(9);
  // set up Serial library at 9600 bps
  Serial.begin(9600);

  // find Adafruit RFID/NFC shield
  nfc.begin();

  uint32_t versiondata = nfc.getFirmwareVersion();
  if (! versiondata) {
    Serial.print("Didn't find PN53x board");
    while (1); // halt
  }

  Serial.print("Found chip PN5"); Serial.println((versiondata>>24) & 0xFF, HEX);
  Serial.print("Firmware ver. "); Serial.print((versiondata>>16) & 0xFF, DEC);
  Serial.print('.'); Serial.println((versiondata>>8) & 0xFF, DEC);

  // configure board to read RFID tags
  nfc.SAMConfig();
  Keyboard.begin();
}
```

1

```
////////////////////////////////////// LOOP

unsigned digit = 0;

void loop() {
  // sets the servo position according to the scaled value

  uint8_t success;
  uint8_t uid[] = { 0, 0, 0, 0, 0, 0, 0, 0 }; // Buffer to store the returned UID
  uint8_t uidLength; // Length of the UID (4 or 7 bytes depending on ISO14443A card type)

  // wait for RFID card to show up!
  Serial.println("Waiting for an ISO14443A Card ...");

  // Wait for an ISO14443A type cards (Mifare, etc.). When one is found
  // 'uid' will be populated with the UID, and uidLength will indicate
  // if the uid is 4 bytes (Mifare Classic) or 7 bytes (Mifare Ultralight)
  success = nfc.readPassiveTargetID(PN532_MIFARE_ISO14443A, uid, &uidLength);

  uint32_t cardidentifier = 0;

  if (success) {
    // Found a card!

    Serial.print("Card detected #");
    // turn the four byte UID of a mifare classic into a single variable #
    cardidentifier = uid[3];
    cardidentifier <<= 8; cardidentifier |= uid[2];
    cardidentifier <<= 8; cardidentifier |= uid[1];
    cardidentifier <<= 8; cardidentifier |= uid[0];
    Serial.println(cardidentifier);

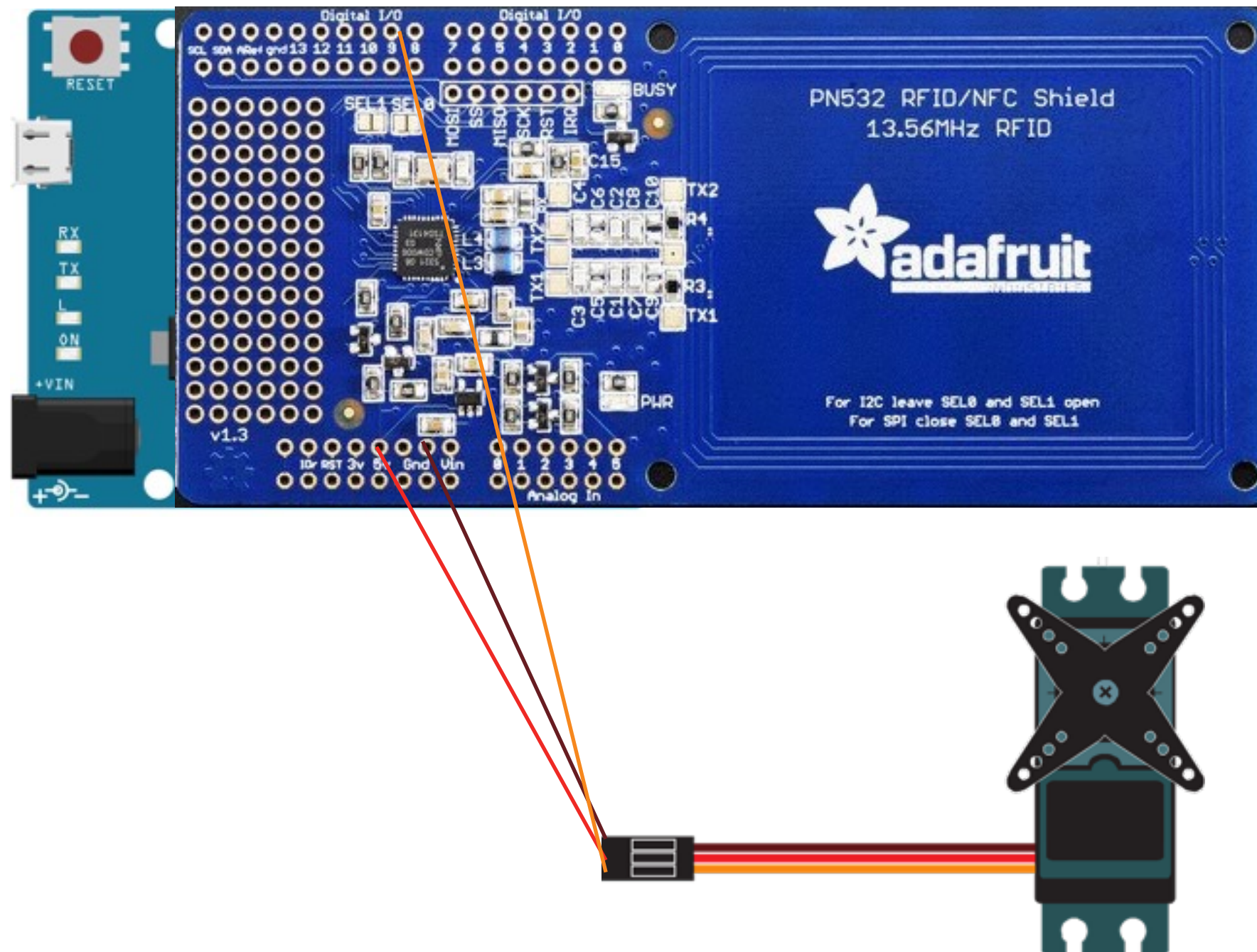
    if (cardidentifier == 4064242436) {
      Keyboard.write('2');
      Keyboard.write('0');
      Keyboard.write('0');
      Keyboard.write('8');
      Keyboard.write('2');
      Keyboard.write('0');
      Keyboard.write('0');
      Keyboard.write('8');
      Keyboard.write('a');
      Keyboard.write('c');
      Keyboard.write('\n');
      for (pos = 0; pos <= 180; pos += 1) { // goes from 0 degrees to 180 degrees
        // in steps of 1 degree
        myservo.write(pos); // tell servo to go to position in variable 'pos'
        delay(15); // waits 15ms for the servo to reach the position
      }

      // waits 15ms for the servo to reach the position

      delay(5000);
    }
  }
}
```

2





If I have more time....

1. Find out more method to interact with NFC chip
2. Try to use NFC chip in our phone
3. Microminiaturize NFC

1. How to connect NFC shield with Arduino board
2. How to active NFC shield
3. How to use NFC signal to trigger motor
4. How to input keyboard signal
5. How to make make motor code and NFC shield code coexist

<https://www.adafruit.com/product/789>

<http://forum.cubietech.com/forum.php?mod=viewthread&tid=277&extra=page%3D1>

<http://www.geek-workshop.com/forum.php?mod=viewthread&tid=9371&highlight=%CB%F8>

<https://www.youtube.com/watch?v=WgLV5X1iWWw>