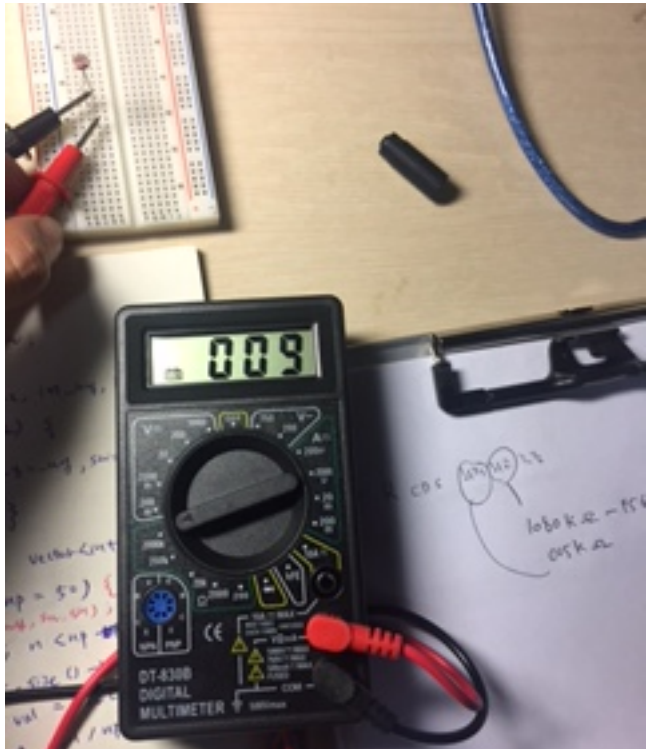
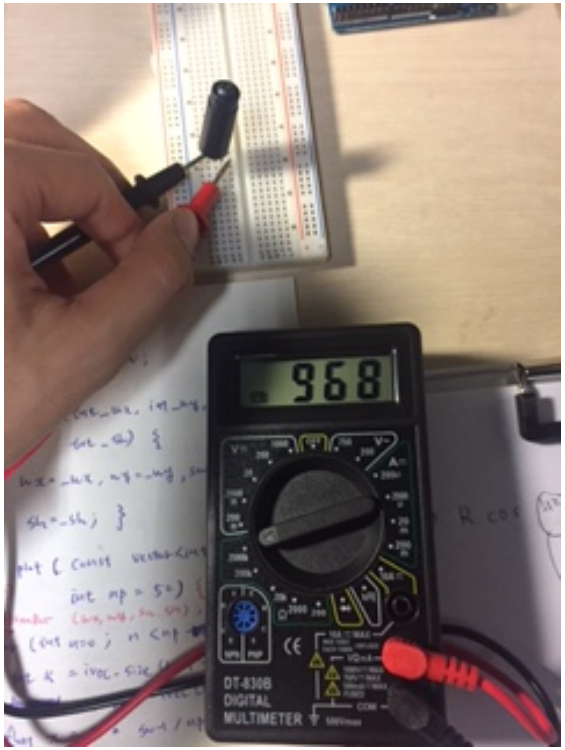
Drawing using CDS sensor & Openframeworks

예술공학 V2016122
홍진성

Measuring CDS resistance value

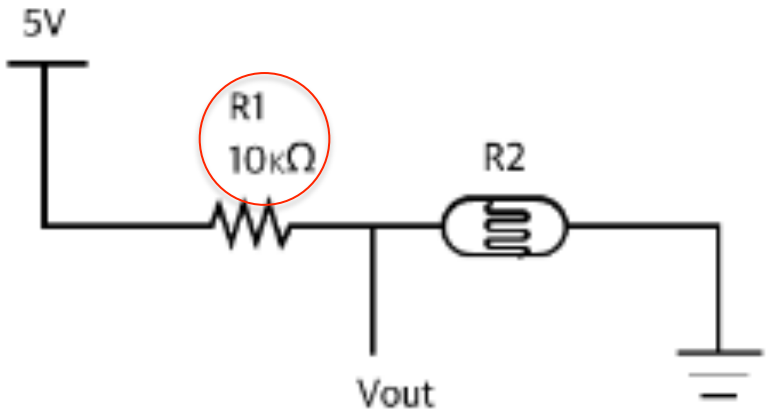


The lowest register value of CDS
approx : 5kΩ



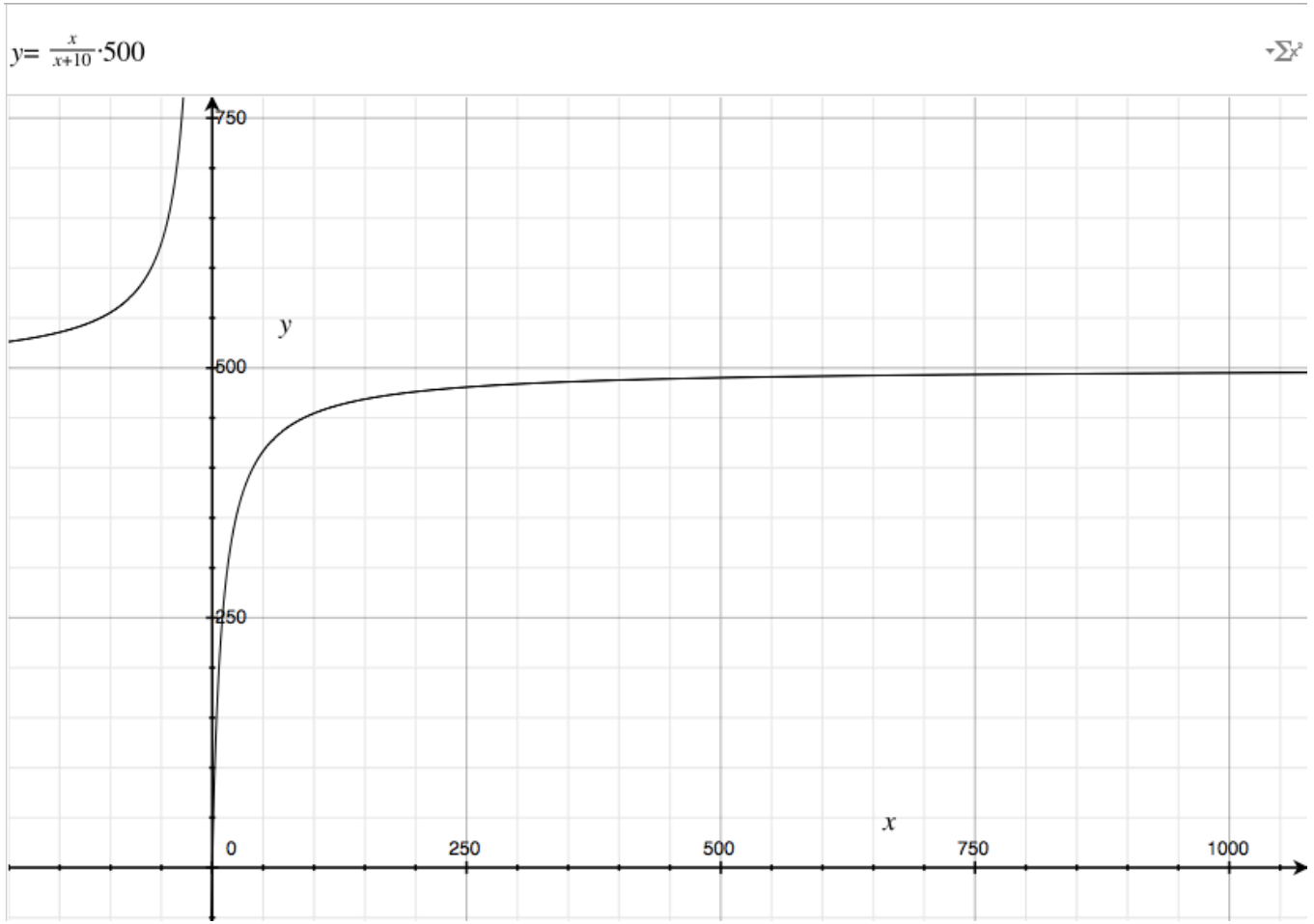
The highest value of CDS
approx : 1000 KΩ

Choose register 1

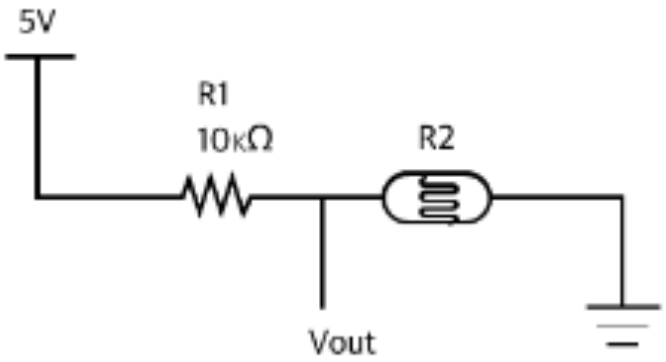


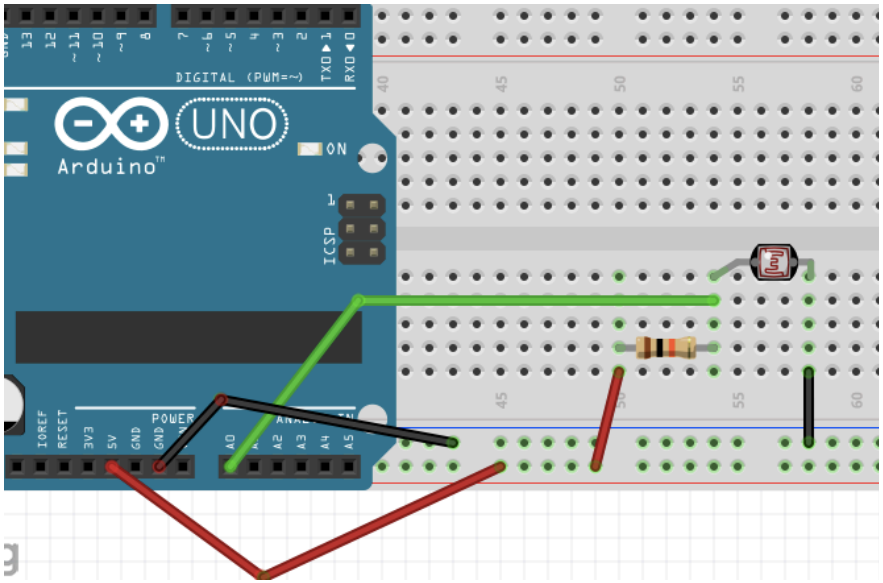
- Vout = R2 / R1 + R2
- The lowest value = 5 / 10 + 5 = 0.33
- The highest value = 1000 / 10 + 1000 = 0.99

Resistance & Voltage Graph



Bread bord & Schematic



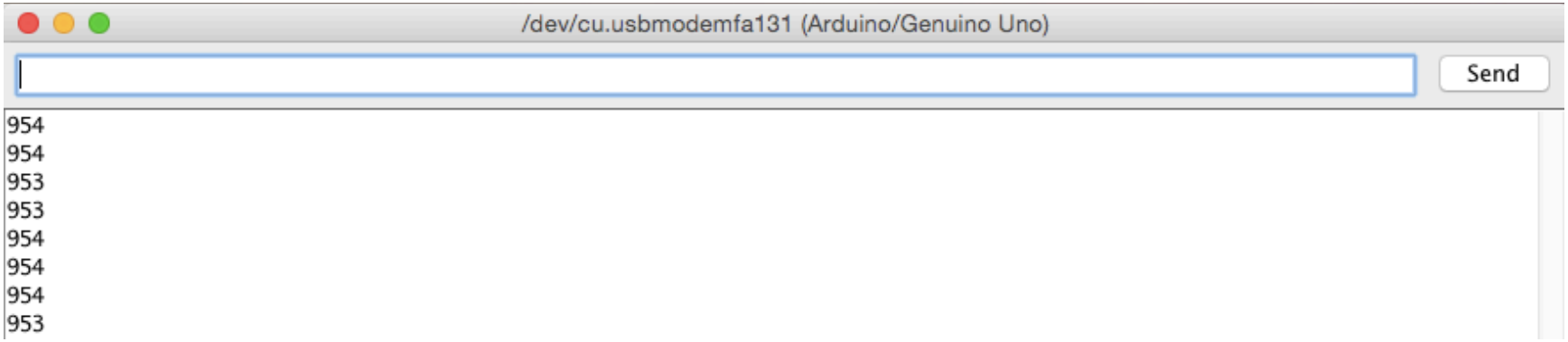


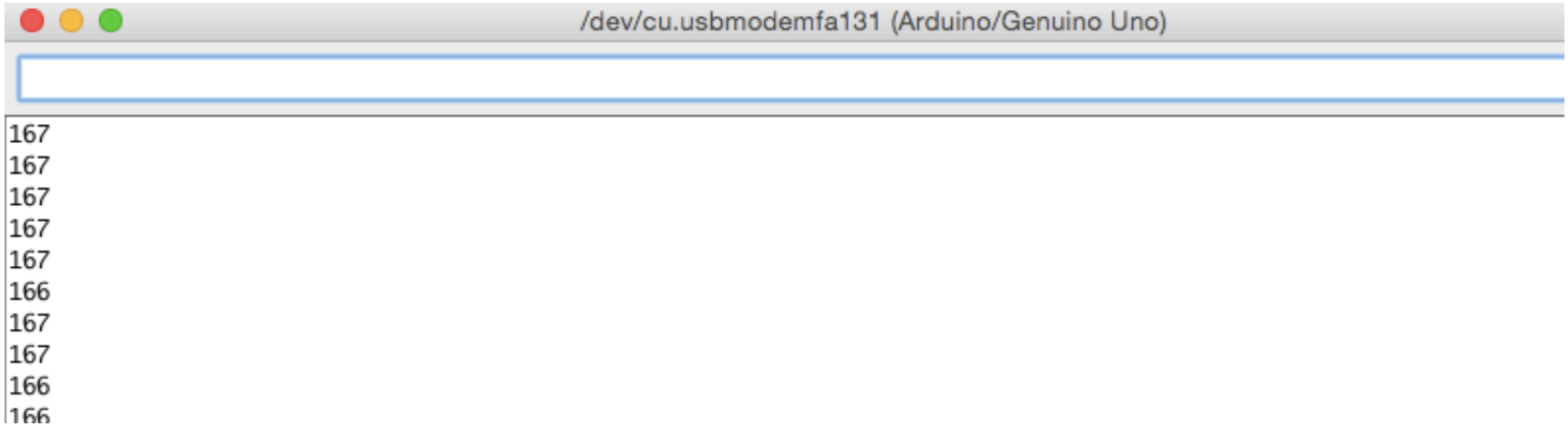
- 5V (power)
- A0 (analog signal)
- Ground

Arduino Source Code

```
void setup() {
  // put your setup code here, to run once:
Serial.begin(115200);
}

void loop() {
  // put your main code here, to run repeatedly:
Serial.println(analogRead(A0));
delay(200);
}
```

Arduino Serial monitor





OF Source code :: setup

```
void ofApp::setup(){

    serial.listDevices();
    vector <ofSerialDeviceInfo> deviceList = serial.getDeviceList();
    serial.setup("/dev/cu.usbmodemfa131", 115200);


    if(serial.isInitialized() == true) {

        cout << "Initialized" << endl;
       serial.flush();
    }
    else
       cout << "serial not initialized" << endl;
```

OF Source code :: update

```
void ofApp::update(){

    int ndata;

    ndata = serial.available();
    if (ndata > 0) {
        const int bufsz = 1024;
        unsigned char buf[bufsz];
        int nreq = ndata > bufsz ? bufsz : ndata;
        int n = serial.readBytes(buf, nreq);

        for(int i=0; i < nreq; i++) {
            serial2int(buf[i]);             // function

        } } }
```

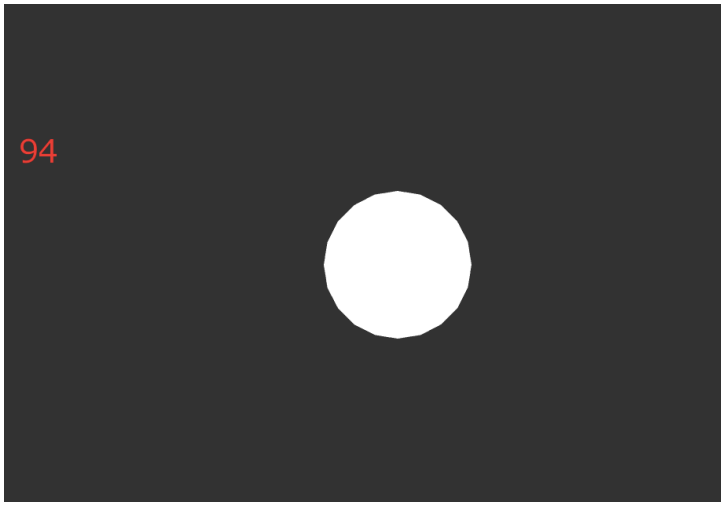
Serial2int function

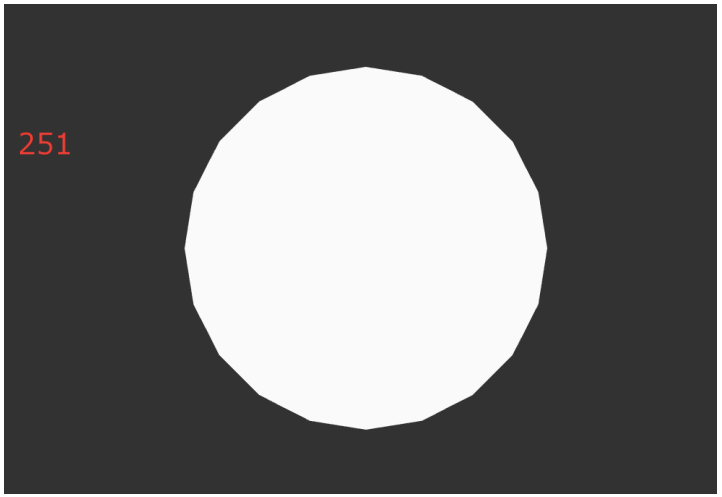
```
void serial2int(int byteRead) {

   int b = byteRead;
   printf("b = %d [%c] \n", b, (char)b);

   if(b == OF_SERIAL_NO_DATA || b == OF_SERIAL_ERROR)
      printf("OfSerial ERROR");

   else if ( b >= '0' && b <= '9') {           // 숫자인 경우 처리
      str.push_back((char)b); }

   else if (b == 10 && !str.empty())  {        // LF
      int num = std::stoi(str);               // string을 int 로 변환
      str.clear();
      a2d.push_back(num);                     // 변환 된 숫자를 a2d의 끝에 넣는다
      //printf("str = %s num = %d\n", str.c_str(), num);
      // printf("num = %d\n", num);
   }
   //printf("sizeof(int) = %d\n", sizeof(int));
   else {}


}
```

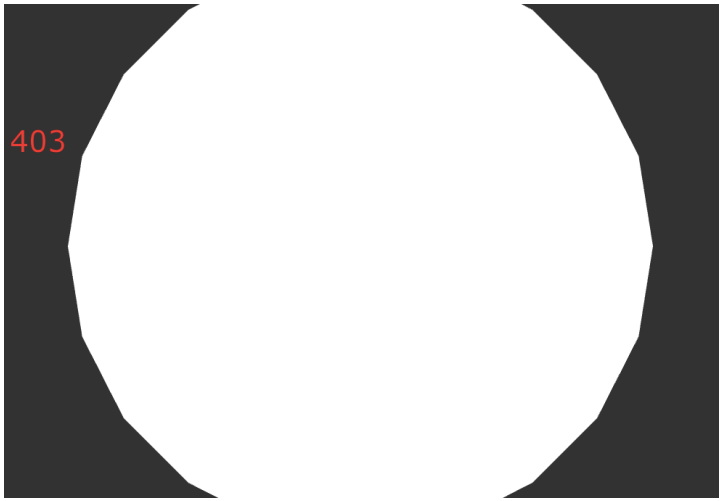
OF Source Code :: draw

```
void ofApp::draw(){

int val = a2d.back() ;
    string valstr = std::to_string(val);

    ofSetColor(255, 0, 0);
    verdana30.drawString(valstr, 30, 229);

    ofSetColor(ofRandom((int)0, (int)255), ofRandom((int)0,
(int)255), ofRandom((int)0, (int)255));
    ofDrawCircle(ofGetWidth() / 2, ofGetHeight() / 2, val );
```

Capture image

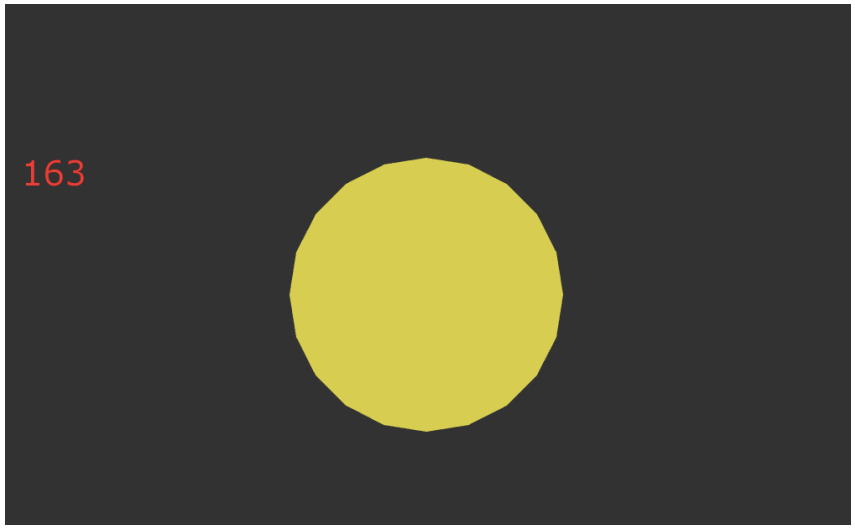


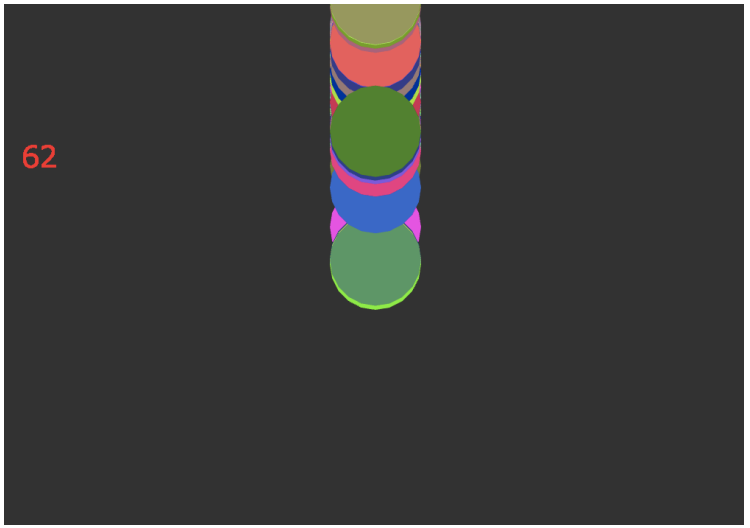




- Changes in the size of the circle according to to the brightness change

Capture image





- Change of color of circle according to random number (left)
- Change of position of y coordinate (right)