

ŘEŠENÍ ÚLOH

Úkol A)

```
1  #include <Wire.h>
2  #include <ADXL345.h>
3
4  ADXL345 acc;
5
6  const int row[8] = {2, 7, 19, 5, 13, 18, 12, 16};
7  const int col[8] = {6, 11, 10, 3, 17, 4, 8, 9};
8
9  int pixels[8][8];
10
11 int x = 5;
12 int y = 5;
13
14 void setup(){
15     acc.begin();
16
17     for(int i = 0; i < 8; i++){
18         pinMode(col[i], OUTPUT);
19         pinMode(row[i], OUTPUT);
20         digitalWrite(row[i], LOW);
21     }
22
23
24     for(int x = 0; x < 8; x++) {
25         for(int y = 0; y < 8; y++) {
26             pixels[x][y] = HIGH;
27         }
28     }
29 }
30
31 void loop(){
32     readSensors();
33     refreshScreen();
34 }
35
36 void readSensors(){
37     double pitch, roll, Xg, Yg, Zg;
38     acc.read(&Xg, &Yg, &Zg);
39
40     roll  = (atan2(-Yg, Zg)*180.0)/M_PI;
41     pitch = (atan2(Xg, sqrt(Yg*Yg + Zg*Zg))*180.0)/M_PI;
```

```
42
43     pixels[x][y] = HIGH;
44     x = 7 - map(roll, -20, 20, 0, 7);
45     y = map(pitch, -20, 20, 0, 7);
46     pixels[x][y] = LOW;
47 }
48
49 void refreshScreen(){
50     for(int j = 0; j<8;j++){
51         digitalWrite(row[j], HIGH);
52         for(int k = 0; k<8; k++){
53             int thisPixel = pixels[j][k];
54             digitalWrite(col[k], thisPixel);
55             if (thisPixel == LOW) {
56                 digitalWrite(col[k], HIGH);
57             }
58         }
59         digitalWrite(row[j], LOW);
60     }
61 }
66
```