```
//We always have to include the library
#include "LedControl.h"
/*
 Now we need a LedControl to work with.
 pin 12 is connected to the DataIn
 pin 11 is connected to the CLK
 pin 10 is connected to LOAD
 We have only a single MAX7219
 */
LedControl lc=LedControl(12,11,10,1);

/* we always wait a bit between updates of the display */
unsigned long delaytime=250;

void setup() {
  /*
   The MAX72XX is in power-saving mode on startup,
   we have to do a wakeup call
   */
  lc.shutdown(0,false);
  /* Set the brightness to a medium values */
  lc.setIntensity(0,8);
  /* and clear the display */
  lc.clearDisplay(0);
}

/*
 This method will display the characters for the
 word "Arduino" one after the other on the matrix.
 (you need at least 5x7 leds to see the whole chars)
 */
void writeArduinoOnMatrix() {
  /* here is the data for the characters */
  byte a[5]={
    B01111110,B10001000,B10001000,B10001000,B01111110      };
  byte r[5]={
    B00111110,B00010000,B00100000,B00100000,B00010000      };
  byte d[5]={
    B00011100,B00100010,B00100010,B00010010,B11111110      };
  byte u[5]={
    B00111100,B00000010,B00000010,B00000100,B00111110      };
  byte i[5]={
    B00000000,B00100010,B10111110,B00000010,B00000000      };
  byte n[5]={
    B00111110,B00010000,B00100000,B00100000,B00011110      };
  byte o[5]={
    B00011100,B00100010,B00100010,B00100010,B00011100      };

  /* now display them one by one with a small delay */
  lc.setRow(0,0,a[0]);
  lc.setRow(0,1,a[1]);
  lc.setRow(0,2,a[2]);
  lc.setRow(0,3,a[3]);
  lc.setRow(0,4,a[4]);
  delay(delaytime);
  lc.setRow(0,0,r[0]);
  lc.setRow(0,1,r[1]);
  lc.setRow(0,2,r[2]);
  lc.setRow(0,3,r[3]);
  lc.setRow(0,4,r[4]);
  delay(delaytime);
  lc.setRow(0,0,d[0]);
  lc.setRow(0,1,d[1]);
  lc.setRow(0,2,d[2]);
  lc.setRow(0,3,d[3]);
  lc.setRow(0,4,d[4]);
  delay(delaytime);
  lc.setRow(0,0,u[0]);
  lc.setRow(0,1,u[1]);
  lc.setRow(0,2,u[2]);
  lc.setRow(0,3,u[3]);
  lc.setRow(0,4,u[4]);
```

```
  delay(delaytime);
  lc.setRow(0,0,i[0]);
  lc.setRow(0,1,i[1]);
  lc.setRow(0,2,i[2]);
  lc.setRow(0,3,i[3]);
  lc.setRow(0,4,i[4]);
  delay(delaytime);
  lc.setRow(0,0,n[0]);
  lc.setRow(0,1,n[1]);
  lc.setRow(0,2,n[2]);
  lc.setRow(0,3,n[3]);
  lc.setRow(0,4,n[4]);
  delay(delaytime);
  lc.setRow(0,0,o[0]);
  lc.setRow(0,1,o[1]);
  lc.setRow(0,2,o[2]);
  lc.setRow(0,3,o[3]);
  lc.setRow(0,4,o[4]);
  delay(delaytime);
  lc.setRow(0,0,0);
  lc.setRow(0,1,0);
  lc.setRow(0,2,0);
  lc.setRow(0,3,0);
  lc.setRow(0,4,0);
  delay(delaytime);
}

/*
  This function lights up a some Leds in a row.
 The pattern will be repeated on every row.
 The pattern will blink along with the row-number.
 row number 4 (index==3) will blink 4 times etc.
 */
void rows() {
  for(int row=0;row<8;row++) {
    delay(50);
    lc.setRow(0,row,B10100000);
    delay(50);
    lc.setRow(0,row,(byte)0);
    for(int i=0;i<row;i++) {
      delay(50);
      lc.setRow(0,row,B10100000);
      delay(50);
      lc.setRow(0,row,(byte)0);
    }
  }
}

/*
  This function lights up a some Leds in a column.
 The pattern will be repeated on every column.
 The pattern will blink along with the column-number.
 column number 4 (index==3) will blink 4 times etc.
 */
void columns() {
  for(int col=0;col<8;col++) {
    delay(50);
    lc.setColumn(0,col,B10100000);
    delay(50);
    lc.setColumn(0,col,(byte)0);
    for(int i=0;i<col;i++) {
      delay(50);
      lc.setColumn(0,col,B10100000);
      delay(50);
      lc.setColumn(0,col,(byte)0);
    }
  }
}

/*
 This function will light up every Led on the matrix.
 The led will blink along with the row-number.
```

```
 row number 4 (index==3) will blink 4 times etc.
 */
void single() {
  for(int row=0;row<8;row++) {
    for(int col=0;col<8;col++) {
      delay(50);
      lc.setLed(0,row,col,true);
      delay(50);
      for(int i=0;i<col;i++) {
        lc.setLed(0,row,col,false);
        delay(50);
        lc.setLed(0,row,col,true);
        delay(50);
      }
    }
  }
}

void loop() {
  lc.setIntensity(0,8);
  writeArduinoOnMatrix();
  delay(200);
  writeArduinoOnMatrix();
  delay(200);
  writeArduinoOnMatrix();
  delay(200);
  /*
  rows();
   lc.clearDisplay(0);
   columns();
   lc.clearDisplay(0);
   */
  single();

  for (int n=0; n<5; n++)
  {

    for (int z=0; z<16; z++)
    {
      lc.setIntensity(0,z);
      delay(100);
    }
    for (int z=15; z>-1; --z)
    {
      lc.setIntensity(0,z);
      delay(100);
    }
  }




  lc.clearDisplay(0);
}
```