ПМГ „Академик Боян Петканчин“ – Хасково

НП „Обучение за ИТ кариера“

Документация

Модул 8: Въведение в операционни системи и вградени системи

Тема: Geometric Shapes

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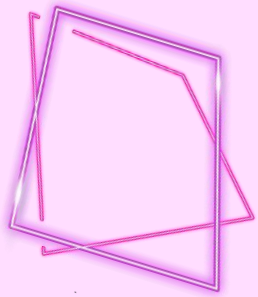
Съдържание

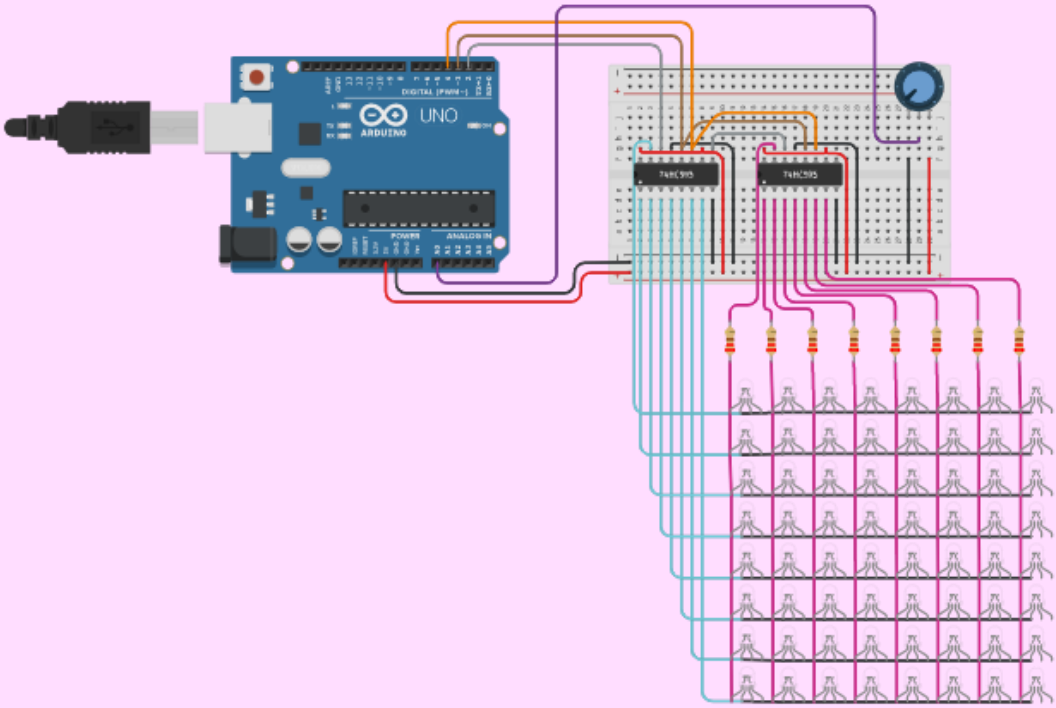
Какво представлява проекта?

Проекта представлява матрица от RGB LED лампички, в която се очертават различни фигурки.



Блок схема

Електрическа схема



Списък от съставни части

1. Arduino Uno R3 - 1
2. LED RGB – 64
3. 250 kΩ Potentiometer – 1
4. 8-Bit Shift Register - 2
5. 220 Ω Resistor – 8

Сорс код

```
const int data = 2;
const int store = 3;
const int shift = 4;

int potiValue;

// column counter
int j = 0;
// showDuration counter
int k;

int row[8] = {127, 191, 223, 239, 247, 251, 253, 254};
// Heart
int columnH[8] = {102, 153, 129, 129, 129, 66, 36, 24};
// Heart1
int columnH1[8] = {102, 255, 219, 195, 195, 102, 60, 24};
```

```
// Heart2
int columnH2[8] = {102, 255, 255, 255, 255, 126, 60, 24};
// Triangle
int columnT[8] = {0, 0, 24, 36, 66, 255, 0, 0};
// Square
int columnS[8] = {0, 126, 66, 66, 66, 66, 126, 0};
// Circle
int columnC[8] = {60, 66, 129, 129, 129, 129, 66, 60};
// Rectangle
int columnR[8] = {126, 66, 66, 66, 66, 66, 66, 126};
// Moon
int columnM[8] = {28, 56, 112, 112, 112, 112, 56, 28};

void setup()
{
  Serial.begin(9600);
  // 74HC595
  pinMode(data, OUTPUT); // data
  pinMode(store, OUTPUT); // store
  pinMode(shift, OUTPUT); // shift
}

void poti()
{
  potiValue = analogRead(0);
}

void heart()
{
  for(k = 0; k < 15; k++)
```

```
  {
    for(int i = 0; i < 8; i++)
    {
      digitalWrite(store, LOW);
      shiftOut(data, shift, LSBFIRST, columnH[j]);
      shiftOut(data, shift, LSBFIRST, row[i]);
      digitalWrite(store, HIGH);
      j++;
      poti();
      delay(potiValue);
    }
    j = 0;
  }
}

void heart1()
{
  for(k = 0; k < 15; k++)
  {
    for(int i = 0; i < 8; i++)
    {
      digitalWrite(store, LOW);
      shiftOut(data, shift, LSBFIRST, columnH1[j]);
      shiftOut(data, shift, LSBFIRST, row[i]);
      digitalWrite(store, HIGH);
      j++;
      poti();
      delay(potiValue);
    }
    j = 0;
```

```
  }
}

void heart2()
{
  for(k = 0; k < 70; k++)
  {
    for(int i = 0; i < 8; i++)
    {
      digitalWrite(store, LOW);
      shiftOut(data, shift, LSBFIRST, columnH2[j]);
      shiftOut(data, shift, LSBFIRST, row[i]);
      digitalWrite(store, HIGH);
      j++;
      poti();
      delay(potiValue);
    }
    j = 0;
  }
}

void triangle()
{
  for(k = 0; k < 70; k++)
  {
    for(int i = 0; i < 8; i++)
    {
      digitalWrite(store, LOW);
      shiftOut(data, shift, LSBFIRST, columnT[j]);
      shiftOut(data, shift, LSBFIRST, row[i]);
```

```
      digitalWrite(store, HIGH);
      j++;
      poti();
      delay(potiValue);
    }
    j = 0;
  }
}

void square()
{
  for(k = 0; k < 70; k++)
  {
    for(int i = 0; i < 8; i++)
    {
      digitalWrite(store, LOW);
      shiftOut(data, shift, LSBFIRST, columnS[j]);
      shiftOut(data, shift, LSBFIRST, row[i]);
      digitalWrite(store, HIGH);
      j++;
      poti();
      delay(potiValue);
    }
    j = 0;
  }
}
void circle()
{
  for(k = 0; k < 70; k++)
  {
```

```
    for(int i = 0; i < 8; i++)
    {
      digitalWrite(store, LOW);
      shiftOut(data, shift, LSBFIRST, columnC[j]);
      shiftOut(data, shift, LSBFIRST, row[i]);
      digitalWrite(store, HIGH);
      j++;
      poti();
      delay(potiValue);
    }
    j = 0;
  }
}
void rectangle()
{
  for(k = 0; k < 70; k++)
  {
    for(int i = 0; i < 8; i++)
    {
      digitalWrite(store, LOW);
      shiftOut(data, shift, LSBFIRST, columnR[j]);
      shiftOut(data, shift, LSBFIRST, row[i]);
      digitalWrite(store, HIGH);
      j++;
      poti();
      delay(potiValue);
    }
    j = 0;
  }
}
```

```
void moon()
{
  for(k = 0; k < 70; k++)
  {
    for(int i = 0; i < 8; i++)
    {
      digitalWrite(store, LOW);
      shiftOut(data, shift, LSBFIRST, columnM[j]);
      shiftOut(data, shift, LSBFIRST, row[i]);
      digitalWrite(store, HIGH);
      j++;
      poti();
      delay(potiValue);
    }
    j = 0;
  }
}

void loop()
{
  heart();
  heart1();
  heart2();
  triangle();
  square();
  circle();
  rectangle();
  moon();
  heart();
}
```

Заключение