Хранилка за животни

Изготвено от:

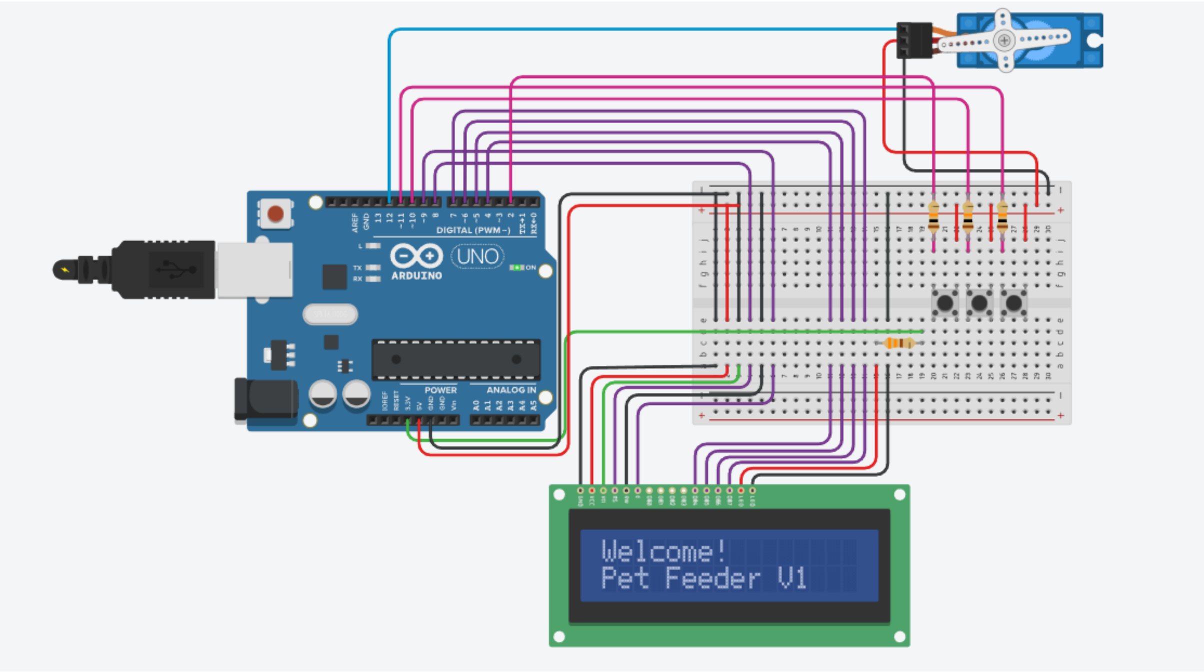
Айхан Хасанов, Симона Белчева, Юлиана Иванова

Съдържание

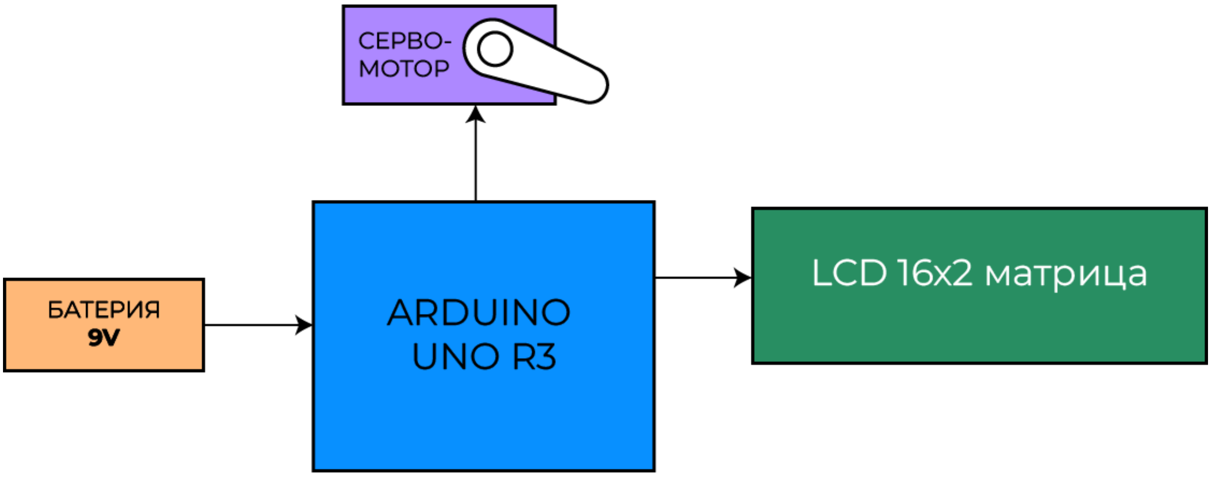
Въведение:

Pet Feeder е ардуино проект с цел автоматичното хранене на домашен любимец. Пуска храна чрез въртенето на сервомотора, който е контролиран от потребителя като се посочат час и минути след които да се задейства. Проектът има налична симулация.

Ел. Схема:



Блок схема:



Съставни части:

1. Arduino Uno R3
2. 330Ω Resistor
3. 10 kΩ Resistor
4. Pushbutton
5. Positional Micro Servo
6. LCD 16x2
7. Breadboard

Сорс Код*:

**ТОВА Е ЦЕЛИЯТ СОРС КОД (наличен и в github)*

```
#include <LiquidCrystal.h>
#include <Servo.h>

Servo servomotor;
LiquidCrystal lcd(8,9,4,5,6,7);

int mode = 0;
const int servoPin = 12;

int h = 0; // hours
int m = 0; // minutes

void setup()
{
  Serial.begin(9600);
  lcd.begin(16,2);
  lcd.print("Welcome!  ");
  lcd.setCursor(0,1);
  lcd.print("Pet Feeder V1  ");
  pinMode(10,INPUT);
  pinMode(11,INPUT);
  pinMode(2, INPUT);
  pinMode(A0, INPUT);
  servomotor.attach(servoPin);
  servomotor.write(0);
  delay(500);
}

/*
LEFT BUTTON - navigates through different modes
MIDDLE BUTTON - used for adding 1 hour/minute
RIGHT BUTTON - used for removing 1 hour/minute
*/
void loop()
{

  ChangeMode();

  if(mode == 0)
  {
      lcd.setCursor(0,0);
      lcd.print("Welcome!");
      lcd.setCursor(0,1);
      lcd.print("Pet Feeder V1");
  }

  if(mode == 1)
  {
    SetHours();
    }

  if(mode == 2)
  {
     SetMinutes();
     }
  if(mode == 3)
  {
    Timer();
  }

  if(mode == 4)
  {
     CancelTimer();
  }
}

/*
When the most left button ("mode change button") is pressed the mode changes /*
mode 0 - home screen - "Pet Feeder V1"
mode 1 - set hours
mode 2 - set minutes
mode 3 - start timer
mode 4 - cancel current timer
*/
void ChangeMode()
{
    if(digitalRead(2) == HIGH)
    {
        mode++;
        lcd.clear();
        Serial.println("Mode changed to ");
        Serial.println(mode);

        if(mode >= 5)
        {
            mode = 0;
            h = 0;
            m = 0;
        }
        delay(1000);
    }
}

/*
Sets the hour for the timer
*/
void SetHours()
{
  if(digitalRead(10) == HIGH)
  {
    if(h <= 24)
    {
      h++;
      if(h == 24)
      {
        h = 0;
      }
      Serial.print("Hour Added!\n");
      Serial.print(h);
      Serial.print("\n");
    }
  }

  if(digitalRead(11) == HIGH)
  {
    if(h > 0)
    {
      h--;
      Serial.print("Hour removed!\n");
      Serial.print(h);
      Serial.print("\n");
    }
  }
  Print(1);
  delay(150);
}


/*
Set the minutes for the timer
*/
void SetMinutes()
{
  if(digitalRead(10) == HIGH)
  {
    if(m <= 59)
    {
      m++;
      if(m==59)
      {
        m = 0;
      }
      Serial.println("Minute added!");
      Serial.println(m);
    }
  }

  if(digitalRead(11) == HIGH)
  {
    if(m > 0)
    {
      m--;
      Serial.println("Minute removed!");
      Serial.println(m);
    }
  }

  Print(2);
  delay(100);
}

/*
A prototype of a real timer
Uses "delay();" to act as a real timer
Checks
*/
void Timer()
{
  if(m > 0)
  {
    m--;
    Serial.println("A minute has passed! Remaining minutes: ");
    Serial.println(m);
  }

  if(m == 0 && h != 0)
  {
    h--;
    m = 59;
    Serial.println("An hour has passed! Remaining hours: ");
    Serial.println(h);
  }

  Print(0);

  /*
  1 minute = 60 000 ms = 600 * 100 -> (iterations * delay ms)

  Using a loop of 600 iterations each of which is delayed by 100 ms
  allows the user to cancel the timer in intervals of 100 ms.

  If 'delay(60000);' was used the user wouldn't be able to abort the timer
  before a minute passes
  */
  for(int i = 0; i < 600; i ++)
  {
      delay(100);
      ChangeMode();
      if(mode == 4)
      {
          CancelTimer();
          Serial.println("The timer has been cancelled!");
          return;
      }
  }
}

/*
Prints message and time in accordance to the given 'print type' code

CODES:
0 - none, print only timer
1 - set hours
2 - set minutes
*/
void Print(int type)
{
  if(type == 1)
  {
   lcd.setCursor(0,0);
   lcd.print("Setting hours:");
    PrintTime();
  }

  if(type == 2)
  {
  lcd.setCursor(0,0);
  lcd.print("Setting minutes:");
  PrintTime();
  }

  if(type == 0)
  {
    if(h == 0 && m == 0)
    {
      lcd.clear();
      Feed();
      lcd.print("Pet is fed");
      h = -1;
      m = -1;
      mode++;
```

```
    }
    else
    {
        lcd.setCursor(0,0);
              lcd.print("Feeding pet in:");
       PrintTime();
        delay(1000);

    }
  }
}

/*
Prints only the time on the second line of the lcd matrix
*/
void PrintTime()
{
  lcd.setCursor(0,1);
  if(h<10)
  {
    lcd.print("0");
    lcd.print(h);
  }
  else
  {
    lcd.print(h);
  }

  lcd.print(":");

  if(m < 10)
  {
    lcd.print("0");
    lcd.print(m);
  }
  else
  {
    lcd.print(m);
  }
}

/*
Rotates servomotors wing allowing the food to drop
*/
void Feed()
{
  servomotor.write(90);
  delay(1000);
  servomotor.write(0);
  Serial.println("Pet has just been fed!");
}

/*
Cancels the timer
Set hours and minutes to 0
*/
void CancelTimer()
{
    h = 0;
    m = 0;
    lcd.setCursor(0,0);
    lcd.print("Timer is         ");
    lcd.setCursor(0,1);
    lcd.print("Cancelled        ");

}#include <Servo.h>

Servo servomotor;
LiquidCrystal lcd(8,9,4,5,6,7);
int mode = 0;
const int servoPin = 12;

int h = 0; // hours
int m = 0; // minutes

void setup()
{
  Serial.begin(9600);
  lcd.begin(16,2);
  lcd.print("Welcome!  ");
  lcd.setCursor(0,1);
  lcd.print("Pet Feeder V1  ");
  pinMode(10,INPUT);
  pinMode(11,INPUT);
  pinMode(2, INPUT);
  pinMode(A0, INPUT);
  //attachInterrupt(digitalPinToInterrupt(2), changemode, RISING);
  servomotor.attach(servoPin);
  servomotor.write(0);
  delay(500);
}

/*
LEFT BUTTON - navigates through different modes
MIDDLE BUTTON - used for adding 1 hour/minute
RIGHT BUTTON - used for removing 1 hour/minute
*/
void loop()
{
    ChangeMode();

  if(mode == 0)
  {
      lcd.setCursor(0,0);
      lcd.print("Welcome!");
      lcd.setCursor(0,1);
      lcd.print("Pet Feeder V1");
  }

  if(mode == 1)
  {
    SetHours();
  }

  if(mode == 2)
  {
    SetMinutes();
  }

  if(mode == 3)
  {
    Timer();
  }
  if(mode == 4)
  {
    CancelTimer();
  }
}


/*
When the most left button ("mode change button") is pressed the mode changes /*
mode 0 - home screen - "Pet Feeder V1"
mode 1 - set hours
mode 2 - set minutes
mode 3 - start timer
mode 4 - cancel current timer
*/
void ChangeMode()
{
    if(digitalRead(2) == HIGH)
    {
        mode++;
        lcd.clear();
        Serial.println("Mode changed to ");
        Serial.println(mode);

        if(mode >= 5)
        {
            mode = 0;
            h = 0;
            m = 0;
        }

        delay(1000);
    }
}

void SetHours()
{
  if(digitalRead(10) == HIGH)
  {
    if(h <= 24)
    {
      h++;
      if(h == 24)
      {
        h = 0;
      }
      Serial.print("Hour Added!\n");
      Serial.print(h);
      Serial.print("\n");
    }
  }

  if(digitalRead(11) == HIGH)
  {
    if(h > 0)
    {
      h--;
      Serial.print("Hour removed!\n");
      Serial.print(h);
      Serial.print("\n");
    }
  }
  Print(1);
  delay(150);
}

void SetMinutes()
{
  if(digitalRead(10) == HIGH)
  {
    if(m <= 59)
    {
      m++;
      if(m==59)
      {
        m = 0;
      }
      Serial.println("Minute added!");
      Serial.println(m);
    }
  }

  if(digitalRead(11) == HIGH)
  {
    if(m > 0)
    {
      m--;
      Serial.println("Minute removed!");
      Serial.println(m);
    }
  }

  Print(2);
  delay(100);
}

void Timer()
{
  if(m > 0)
  {
    m--;
    Serial.println("A minute has passed! Remaining minutes: ");
    Serial.println(m);
  }

  if(m == 0 && h != 0)
  {
    h--;
    m = 59;
    Serial.println("An hour has passed! Remaining hours: ");
    Serial.println(h);
  }

  Print(0);
  for(int i = 0; i < 600; i ++)
  {
      delay(100);
      ChangeMode();
      if(mode == 4)
      {
          CancelTimer();
          Serial.println("The timer has been cancelled!");
          return;
      }
  }
}

/*
0 - none, print only timer
1 - set hours
2 - set minutes
*/
void Print(int type)
{
  if(type == 1)
  {
   lcd.setCursor(0,0);
   lcd.print("Setting hour:");
    PrintTime();
  }

  if(type == 2)
  {
  lcd.setCursor(0,0);
  lcd.print("Setting minutes:");
  PrintTime();
  }

  if(type == 0)
  {
    if(h == 0 && m == 0)
    {
      lcd.clear();
      Feed();
      lcd.print("Pet is fed");
      h = -1;
      m = -1;
      mode++;
    }
    else
    {
        lcd.setCursor(0,0);
              lcd.print("Feeding pet in:");
       PrintTime();
        delay(1000);
    }
  }
}

void PrintTime()
{
  lcd.setCursor(0,1);
  if(h<10)
  {
    lcd.print("0");
    lcd.print(h);
  }
  else
  {
    lcd.print(h);
  }

  lcd.print(":");

  if(m < 10)
{
    lcd.print("0");
    lcd.print(m);
  }
  else
  {
    lcd.print(m);
  }
}

void Feed()
{
  servomotor.write(90);
  delay(1000);
  servomotor.write(0);
  Serial.println("Pet has just been fed!");
}

void CancelTimer()
{
    h = 0;
    m = 0;
    lcd.setCursor(0,0);
    lcd.print("Timer is         ");
    lcd.setCursor(0,1);
    lcd.print("Cancelled        ");

}
```

Автори и контакти

Айхан Хасанов

EMAIL: ayhan.hsn.01@gmail.com
Github: **https://github.com/AyhanHasanov**

Симона Белчева

EMAIL: monniebellchewa@gmail.com
Github: **https://github.com/monnikyu**

Юлиана Иванова

EMAIL: julianaivanova04@gmail.com
Github: **https://github.com/saltyyul**