

*Arduino
Lesson 1
LED Blink
Homework*

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Agenda

- ChatGPT create LED blink sketch
- LED blink delay homework
- Maximum blink frequency

David Haworth, WA9ONY

Paul McWhorter Arduino Lesson 1



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Arduino Uno R4 WiFi LESSON 1: Getting Started for Absolute Beginners

All New Arduino R4 WiFi LESSONS for Absolute Beginners

Paul McWhorter
25 videos 351 views Updated yesterday

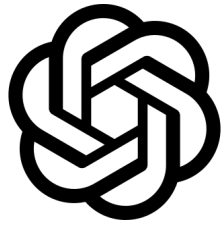
⋮ ↻ ⋮

▶ Play all ⌂ Shuffle

In this class I will present lessons designed for the absolute beginner. This tutorial series will take you from zero to hero. We are committed to teaching step by step, and will not leave anyone behind. In the class, we will be using the Sunfounder Elite kit, which you can get here:



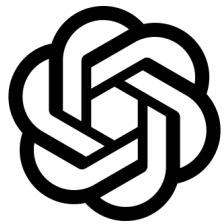
LED delay flashing to steady



OpenAI ChatGPT-4

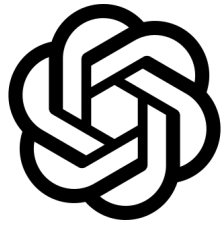


- Software Development Capabilities
- Skilled in creating and assisting with software programming, from basic scripts to complex applications.



Code Generation & Analysis

- Capable of in **multiple programming languages**.
 - Writing
 - Analyzing
 - Debugging code



ChatGPT-4 supports Arduino

- Assist with Arduino code & concepts
- ChatGPT-4 can provide code snippets or guidance,
 - but you would need to copy this code into the Arduino IDE to compile and upload it to your Arduino hardware.

ChatGPT Demo

- Create blink LED Arduino UNO sketch
- Share ChatGPT conversation



You

You are a code assistant that is requested to create an Arduino UNO sketch to blink its LED. Please create this sketch and explain it to the students.



ChatGPT

Certainly! Below is a simple Arduino sketch designed to blink the built-in LED on an Arduino UNO board. This sketch is a fundamental starting point for understanding how to program the Arduino to control hardware. After the code, I'll provide an explanation to help you understand how it works.

cpp

Copy code

```
// Define the LED pin
const int ledPin = LED_BUILTIN; // LED_BUILTIN is the built-in LED on t

// the setup function runs once when you press reset or power the board
void setup() {
    // initialize digital pin LED_BUILTIN as an output.
    pinMode(ledPin, OUTPUT);
}

// the loop function runs over and over again forever
void loop() {
    digitalWrite(ledPin, HIGH); // turn the LED on (HIGH is the voltage
    delay(1000);                // wait for a second
    digitalWrite(ledPin, LOW);  // turn the LED off by making the volta
    delay(1000);                // wait for a second
}
```


Homework Assignment Video

- Find the blink delay value between flickering and steady LED

Delay	Frequency	Visual	Cam Aliasing
15 mil-sec	31.9 Hz	Steady	1.9 Hz
16 mil-sec	29.9 Hz	Flickering	0.1 Hz
17 mil-sec	28.1 Hz	Flickering	1.9 Hz

Maximum Blink Frequency Demo

- Comment the delay functions
- Arduino UNO R4 WiFi, 48 MHz 3.0 X faster
 - ~585 kHz with jitter 4.0 X faster
- Arduino UNO R3, 16 MHz
 - 147.9 kHz dim LED

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LESSON 1: Arduino Uno R4 Wifi LESSON 1: Getting Started for Absolute Beginners

These are homework and notes for [LESSON 1](#)

Homework assignment is to determine the minimum delay time to see the blinking LED.

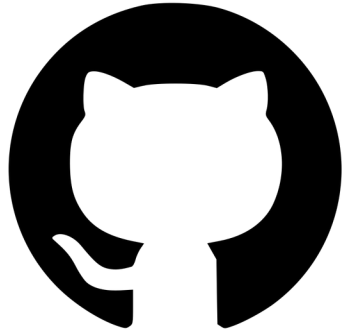
- [OpenAI](#) ChatGPT-4 [Persistence of vision](#) conversation.
 - Persistence of vision frequency is 24 to 30 Hz. Period is 41.6 ms to 33.3 ms. Delay is 20.8 ms to 16.7 ms.

Blinking LED persistence of vision homework video.

- [OpenAI](#) ChatGPT-4 [Arduino Blinking LED Lesson 1](#) conversation.
- [OpenAI](#) ChatGPT-4 prompt:
 - You are a teacher. Today you're teaching your class about the Arduino Uno R3 microcontroller. You're going to teach your students to create their first program called Blink to turn on and off the LED at 1 Hz. Please give the sketch code and the details how to use the Arduino development environment version 1.8 to run this sketch. ChatGPT

Lesson 1: Arduino blinking LED script by ChatGPT.

```
void setup() {  
  pinMode(LED_BUILTIN, OUTPUT); // Initialize the digital pin as an output.  
}
```



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WA9ONY Homework

@WA9ONYHomework

This channel focuses on homework videos. >

github.com/WA9ONY/Arduino-Homework/blob/main/README.md

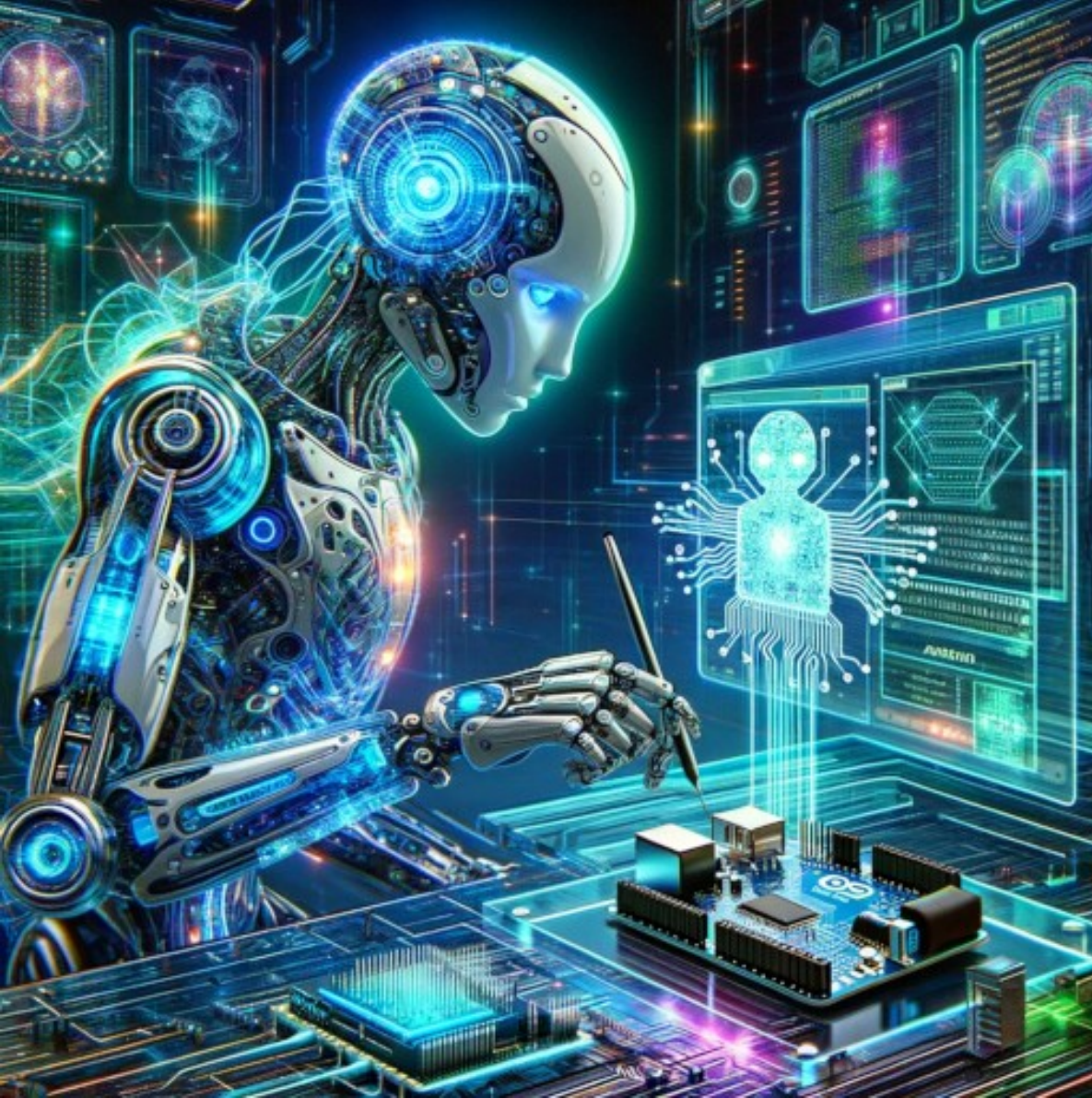
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Summary

- Arduino LED blink
 - Persistence of vision
 - Maximum frequency
- ChatGPT
 - Create code