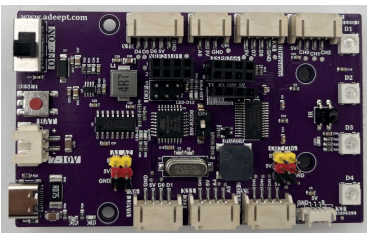# Lesson 5 Light up the LED

## 5.1 Overview

This course mainly introduces how to use Adeept Robot Control Board to control onboard LED lights. Through simple code writing and hardware connection, the LED lights can flash at fixed time intervals and their status can be viewed in real-time on the serial monitor.

## 5.2 Required Components

| Components | Quantity | Picture |
|---|---|---|
| Adeept Robot Control Board | 1 |  |
| Type-C USB Cable | 1 |  |

## 5.3 Principle Introduction

The D13 pin on the Adeept Robot Control Board is connected to the onboard LED. When outputting a high level (HIGH) to pin D13, the LED lights up; When the output is low (LOW), the LED light goes out. By controlling the voltage state of the D13 pin in the code, it is possible to control the on/off of the LED light.

| PINS of Adeept Robot Control Board | LED |
|---|---|
| D13 | LED |

# 5.4 Wiring Diagram

The onboard LED is connected to the D13 pin.
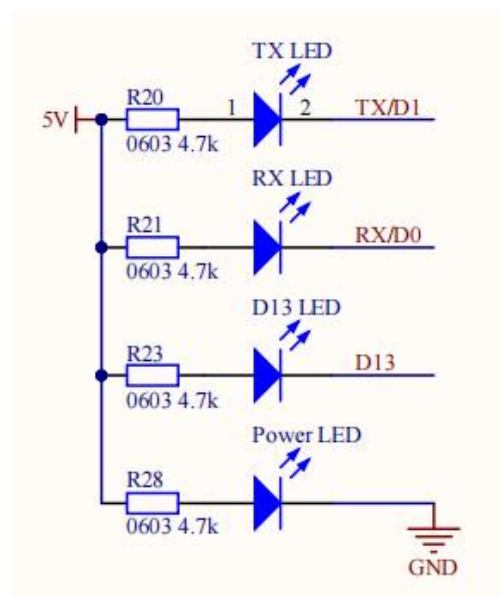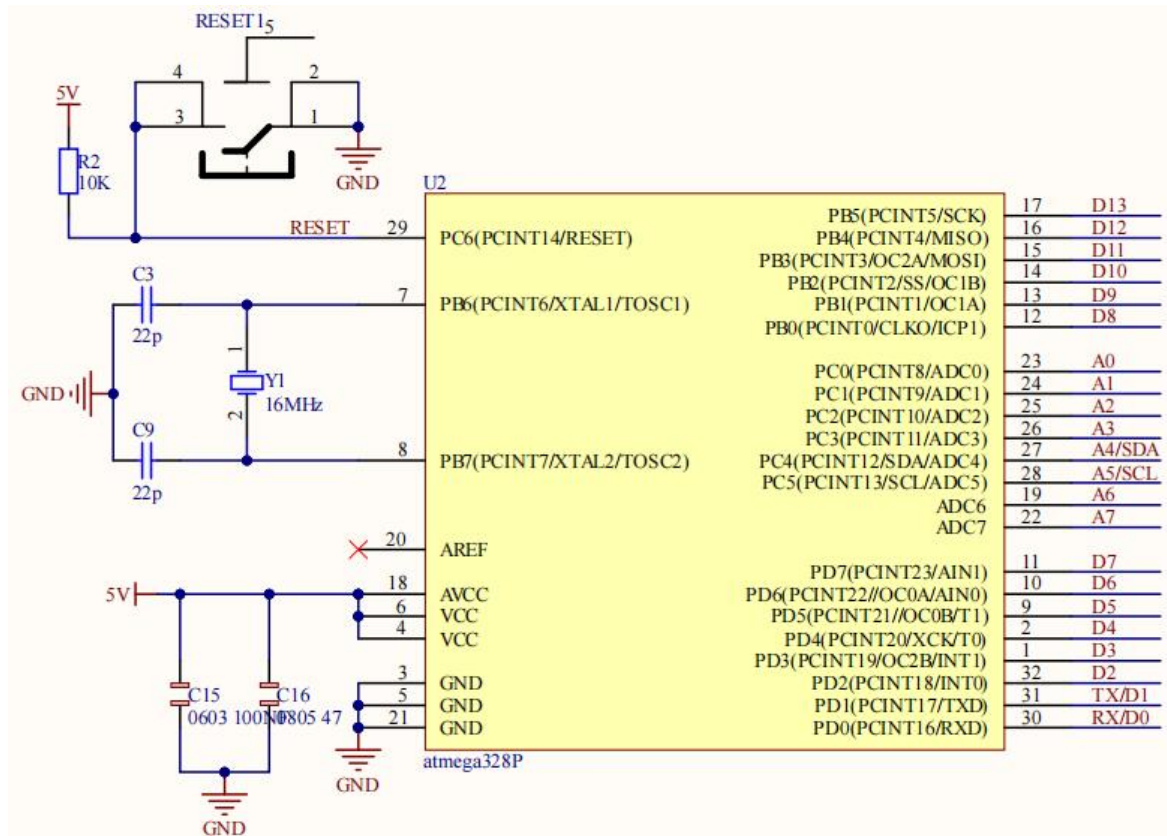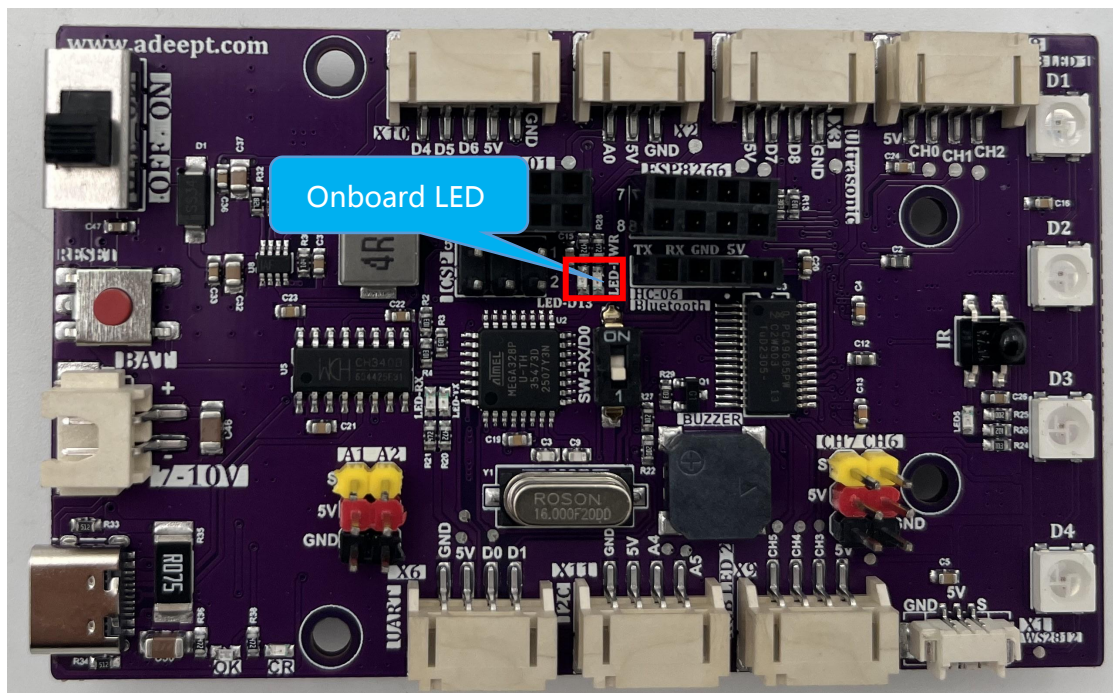
## 5.5 Demonstration

1. Connect your computer and Adeept Robot Control Board (Arduino Board) with a USB cable.

2. Open "**01_LED**" folder in "/Code", double-click "01_LED.ino".



3. Select development board and serial port.

Board: Tools--->Board--->Arduino AVR Boards--->Arduino Uno

Port: Tools --->Port--->COMx

Note: The port number will be different in different computers.
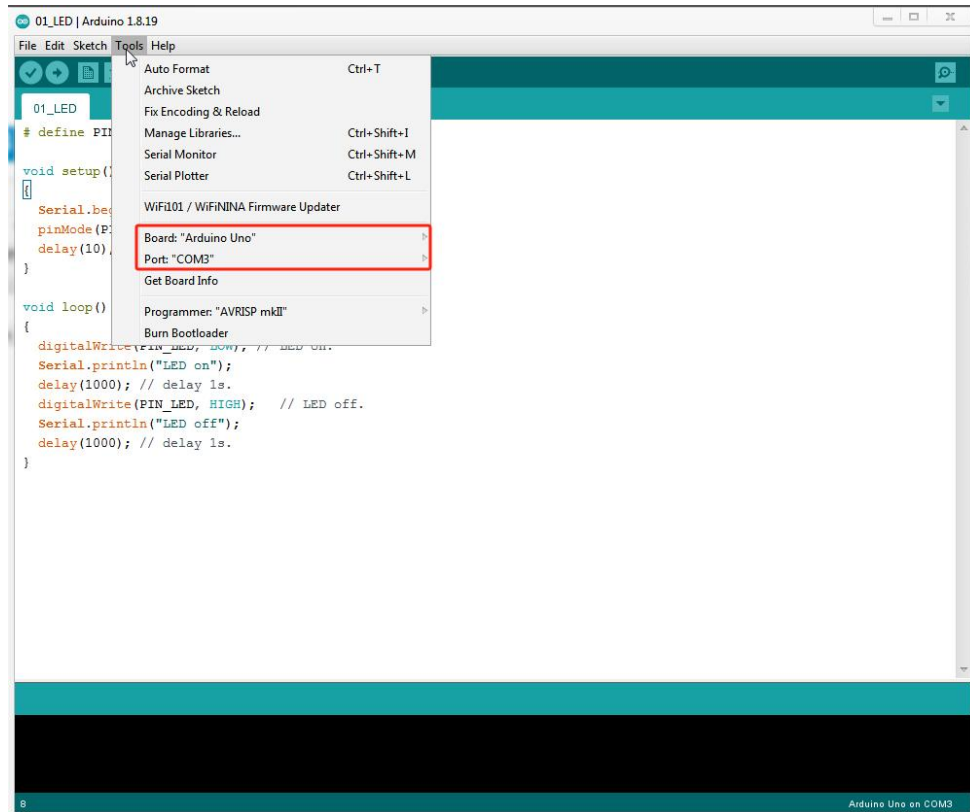


4. After opening, click  to upload the code program to the Arduino. If there is no error warning in the console below, it means that the Upload is successful.
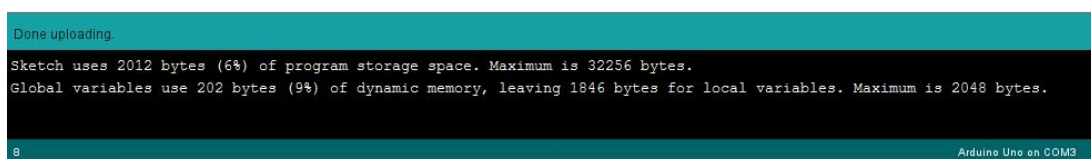


5. Click Serial Monitor, Set the baud rate as 115200.

6. After successfully running the program, the onboard LED will blink once every 1s.

## 5.6 Code

Complete code refer to 01_LED.ino

```
1.# define PIN_LED  13  // Define LED pin as 13.
2.
3.void setup()
4.{
5.  Serial.begin(115200);
6.  pinMode(PIN_LED, OUTPUT);
7.  delay(10);
8.}
9.
10.void loop()
11.{
12.  digitalWrite(PIN_LED, HIGH); // LED on.
13.  Serial.println("LED on").
14.  delay(1000); // delay 1s.
15.  digitalWrite(PIN_LED, LOW);   // LED off.
16.  Serial.println("LED off").
17.  delay(1000); // delay 1s.
18.}
```
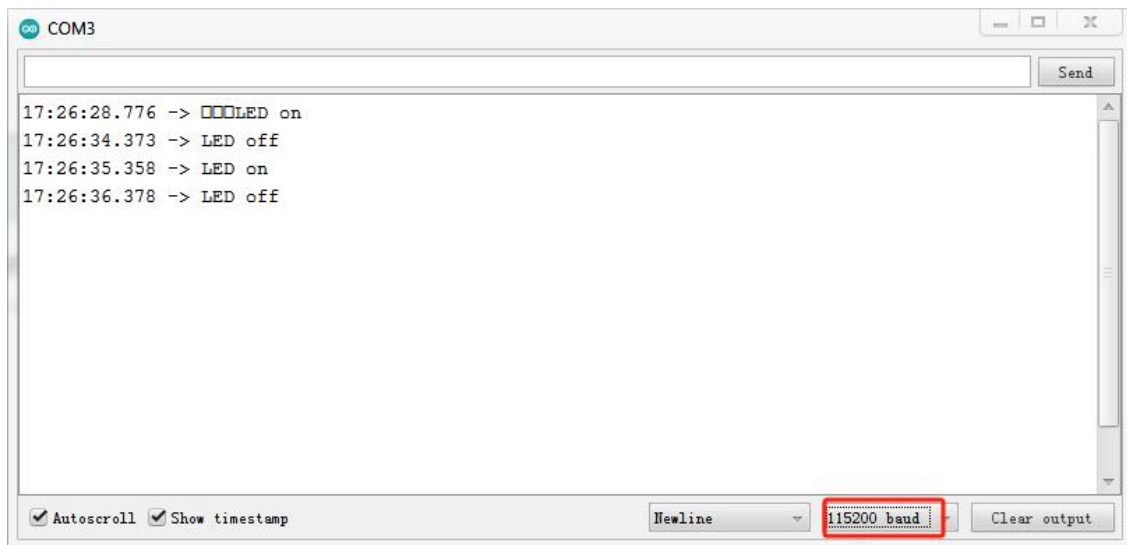
## Code explanation

Initialization phase:

Call the setup () function to complete hardware initialization.

Loop control process:

After entering an infinite loop, perform the following steps in sequence:

Stage 1: Turn on the LED and output "LED on" on the serial port → Delay for 1 second

Stage 2: Turn off all LEDs and output "LED off" on the serial port → Delay for 1 second

Forming a cyclic effect, driving the LED to continuously perform periodic actions of "lighting off", creating a visual effect of regular alternation.