TA0297
WEMOS D1 R2 WIFI
ARDUINO
DEVELOPMENT BOARD
ESP8266
1. Overview – TA0297

In this instruction, we will introduce you through one simple example of WeMos D1 R2 Wifi Arduino Development Board ESP8266 using the Arduino IDE. Get your WeMos Wifi board. Let’s get it started!

2. Getting started:

2.1. What is WeMos D1 R2 Wifi Arduino Development Board?

WeMos-D1R2 is an ESP8266-12 based WiFi enabled microprocessor unit on an Arduino-UNO footprint. That means the board looks like an UNO. Apparently several shields, sensors and output devices that are manufactured for the Arduino platform will work on the UNO with the added advantage of built-in WiFi.

2.2. What is IDUINO UNO?

![UNO](image)

Figure 1 UNO

The Iduino Uno is based on the ATmega328. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator, a USB connection, a power jack, an ICSP header, and a reset button.

It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started. You can tinker with your UNO without worrying too much about doing something wrong, worst case scenario you can replace the chip for a few dollars and start over again.

For more information: https://store.arduino.cc/usa/arduino-uno-rev3

2.3. What are the differences between Arduino development boards and WeMos-D1R2?

Though the Arduino UNO and the WeMos-D1R2 are similar, there are a few differences in their pin assignment. The above illustration provides the mapping of the pins.

In some situations programs written for the UNO will need to be modified a little to the proper pin assignments of the WeMos-D1R2. More on this when we write our first sketch.
3. Software installation

In this section, We will introduce you the development platform where you translate creative mind into codes and let it fly.

3.1. Arduino Software/IDE

Downloads from [here](#). Open Windows-based app by double clicking it and follow the instruction to complete (Remember to install everything driver for Arduino). Easy!

![Windows Security](image)

Would you like to install this device software?

Name: Arduino USB Driver

Publisher: Arduino LLC

Always trust software from "Arduino LLC". [Install] [Don’t install]

You should only install driver software from publishers you trust. [How can I decide which device software is safe to install?]

Connect your WeMos board with your computer

Connect WeMos and your PC by a blue USB cable, and if connect correctly you will see the green power LED light on and another orange LED is blinking.
Find your Serial COM number and note it down.

Then we need to figure out which channel COM is currently communicating between PC and UNO. Following the path: Control panel | Hardware and Sound | Devices and Printers | Device Manager | Ports (COM & LPT) | Arduino UNO (COMx)

Note down the COM number as this will be required later. For this case, we are using the COM 4

3.2. Play with your first “Hello World” LED example

Firstly let’s tell IDE where to find our Arduino port and which board you are currently using: The following instruction (Figure 3 and 4) shows the details:
Then it’s time to play with you first simple example. Following the path by File | Examples | 01. Basics | Blink and a new code window would pop out and just single press the upload. You will notice the orange LED is blinking almost every second.

4. Before getting started

4.1. Connect your WeMos-D1R2 to your computer

The WeMos-D1R2 board comes without a USB cable. Make sure you have a data cable and not an ordinary charging cable.
A data cable causes your Windows OS to react. It announces the attachment of a new hardware and tries to install the USB drivers. It either finds the driver on your system or it does not. If it does not then you will need to download the USB drivers. The USB interface chip is the CH340G. You will need to install the drivers for this chip.

4.2. Driver installation

A Google search for the "CH340G drivers" finds several sites. You can download the Windows 7 drivers from here or the Windows 8 from here. Other operating systems can be downloaded from here. Windows 10 operating system come with the drivers.

a) Download the Windows CH340 Driver
b) Unzip the file
c) Run the installer which you unzipped
d) In the Arduino IDE when the CH340 is connected you will see a COM Port in the Tools > Serial Port menu, the COM number for your device may vary depending on your system.

Figure 7 Driver installation
4.3. Connecting correctly with your PC?

Let's find out if the WeMos-D1R2 and your computer are communicating with each other. Getting this step right is important for any further action. Open the Device Manager via Control Panel | Hardware and Sound.

![Device Manager]

**Figure 8 Device Manager**

5. Have fun

5.1. Telling Arduino IDE where to find Wemos-D1R2 Library

The following steps:

![Arduino IDE]

Click the Preferences
Fill in the Additional Board manager:

Open Tools | Board:|Boards Manager dialog box. Somewhere in there you will see the entry “Esp8266 of ESP8266 Community version 2.3.0” select that. The Install button will appear, click the Install button. Wait for a while… This process will take some time to download and complete. After the install it is a good idea to shut the Arduino program and restarted it.
Go to Tools | Board:… scroll way down and select WeMos D1 R2 & mini. The Tools menu changes to the second image shown above.

Determined the COM port WeMos-D1R2 appears on. To select the COM port, go to Tools | Port: and select the COM port, in my case it was COM 12.
To select the speed of communication between the WeMos-D1R2 and the computer. Go to Tools | Upload Speed: and select 115200. We are ready to upload our first sketch.

Test drive the complete setup using the boiler plate sketch. To upload the boiler plate sketch go to Sketch | Upload or use the shortcut key Ctrl+U or click on the right arrow button next to the check mark. A successful compile and upload means all systems are working and we are ready to get to the real stuff.
5.2. Trying the Blink Example

Load the packaged example Blink. To find it go to File | Examples | 01.Basics | Blink. Compile and upload as instructed in the previous step. Nothing happens. :

The reason nothing happens is because the on-board LED on the WeMos is connected to pin 13. Refer to the table in Step 2. On the WeMos-D1R2 the on-board LED is connected to pin 14.

Replace all instances of pin 13 with pin 14 and save the sketch as WeMosBlink. Viola the blue LED starts blinking.

![Arduino IDE with Blink sketch highlighted](image_url)
Disconnect the WeMos-D1R2 from your computer and connect an external 5V power source. I connected it to the power bank that I use to charge my phone. The LEDs will start blinking.

Happy IoTing.