Description of the Arduino development board Bootloader program re-burn method

Version：1.2

Revision history

Date	Version	Description	Author
2018-5-25	V.1.0	Create a document that describes the download method	Jason Yang
2018-7-4	V.1.1	Review the document	Ken Chen
2018-10-26	V.1.2	Add screenshots of important steps in the download process to optimize the document	Abbott Chen

Contents

1. Summarize

1.1 What is bootloader

On the board of arduino, the core avr MCU usually download a bootloader, which is a small piece of code developed by arduino r&d team for the board of arduino. With this code, we can download our own code into the arduino chip directly through the UART port without external download tools.

1.2 Why to re-burn bootloader

Our products are downloaded bootloader at the factory and passed the test. But it there are many uncertainties outside, which may lead to the loss of the main chip bootloader. For example, Chip over current, over voltage, static electricity, high temperature. Or if the chip interrupts power during the download process (using Bluetooth UART to download the program), our program has the operation ERROM, which is easy to damage the arduino bootloader. But there's no need to worry, as we'll go into more detail below, without having to go through the pro download method, to download bootloader again.

1.3 Necessary tools

1.3.1 Tool list

- 1 * UNO or Nano boards that can be used normally
- 1 * Need to download bootloader board
- 6 *Dupont lines
- A USB type-b cable (or a USB mini-b cable)

1.3.2 Statement

In the following methods of reburning Bootloader, there are two methods of burning Bootloader with the same board. In order to clearly describe the different functions of the same board, the name of the board is divided. Taking UNO for example, the UNO board directly connected to the computer is called "UNO board as a burner". Call the UNO board that needs to burn the Bootloader "target UNO board."

2. Compile and download the ArduinoISP procedure for the Arduino board as a burner

1) Normally connect the Nano board (or UNO board) as the burner to the computer (Remark: the Nano board as the burner is not connected to the target Nano board);
2) Check whether the computer has identified the Nano board (or UNO board) as the burner. If correctly identified;
3) Open Arduino IDE，choose‘File→Examples→11.ArduinoISP→ ArduinoISP ’ as shown in figure 2-4-2 .

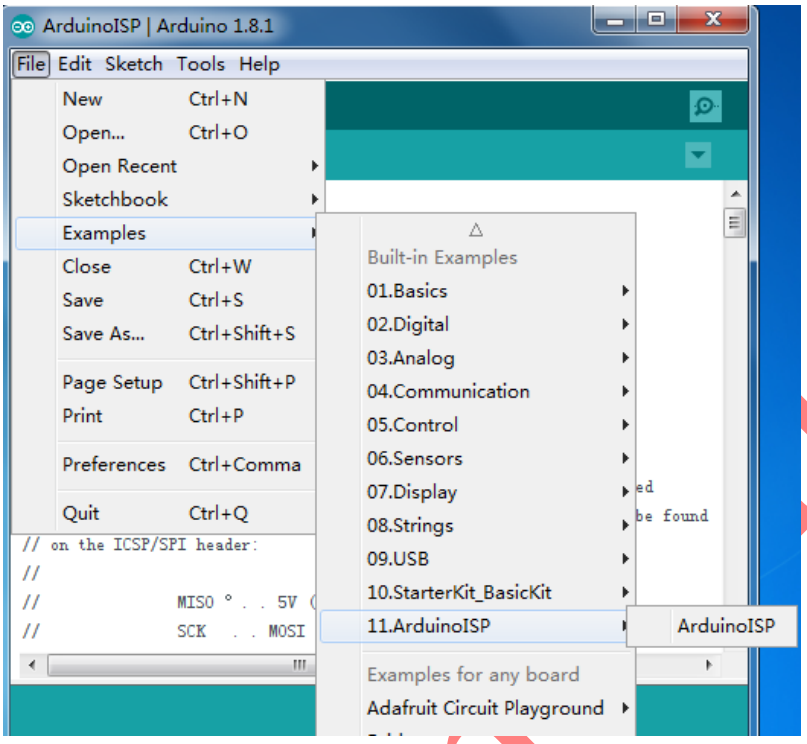

Figure 2-4-2

4) Click 'Tools→Board→Arduino Nano(if you use UNO board, need to click 'Tools→Board→Arduino/Genuino UNO')', Click 'Tools→Processor→ATmega328', click 'Tools→Port→COM4(Match the port number in step 2)' as show in figure2-4-3.

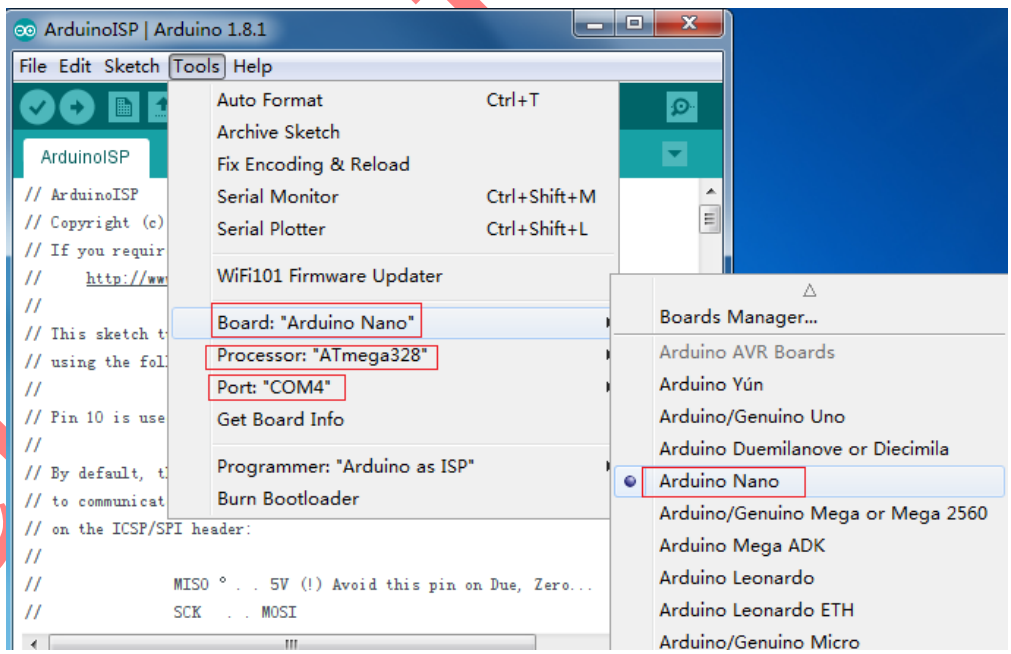

Figure 2-4-3

5) click 'Tools→Programmer→ArduinoISP' as show in figure 2-4-4.

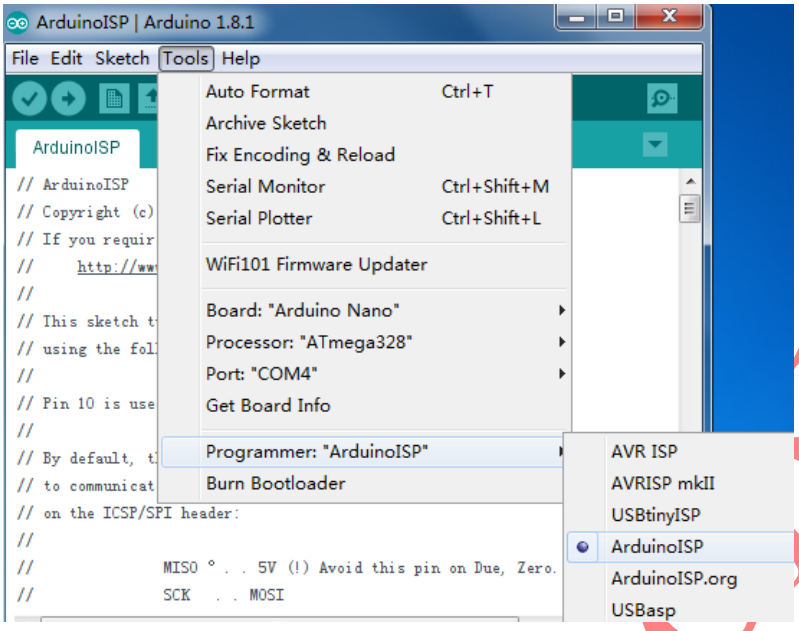

Figure 2-4-4

6) Click Arduino IDE, The arrow in the upper left corner starts uploading. After successful uploading, there will be a prompt for successful uploading in the lower left corner of Arduino IDE, as show in figure 2-4-5.

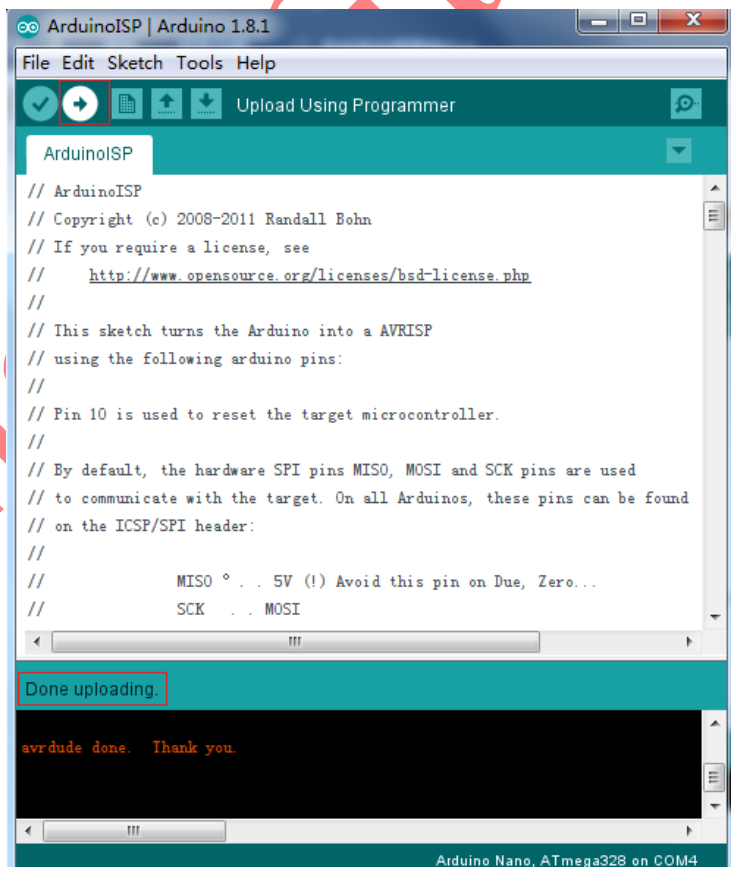

Figure 2-4-5

3. Develop board connect method with the re-burn bootloader step

3.1 UNO gives the Nano re-burned Bootloader

3.1.1 Connect diagram

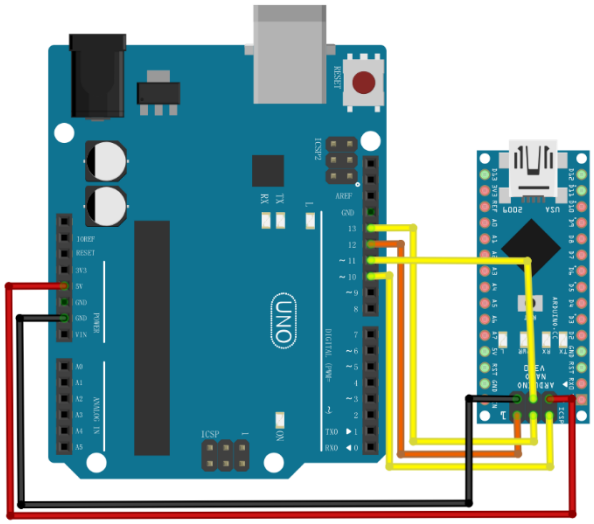

Figure 3-1-1

3.1.2 Burn bootloader steps

1) connect the UNO board as the burner to the target Nano board according to the wiring method shown in figure 3-1-1;
2) Click‘Tools→Board→Arduino Nano’，click‘Tools→programmer→Arduino as ISP’as show in figure 3-1-2.

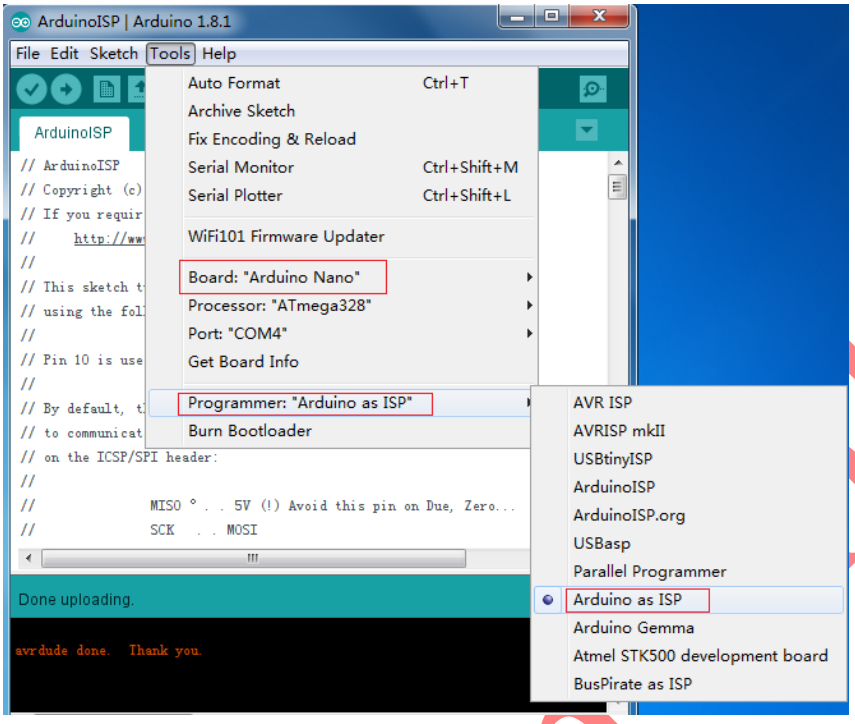

Figure 3-1-2

3) Click 'Tools→Burn Bootloader' See figure 3-1-3.

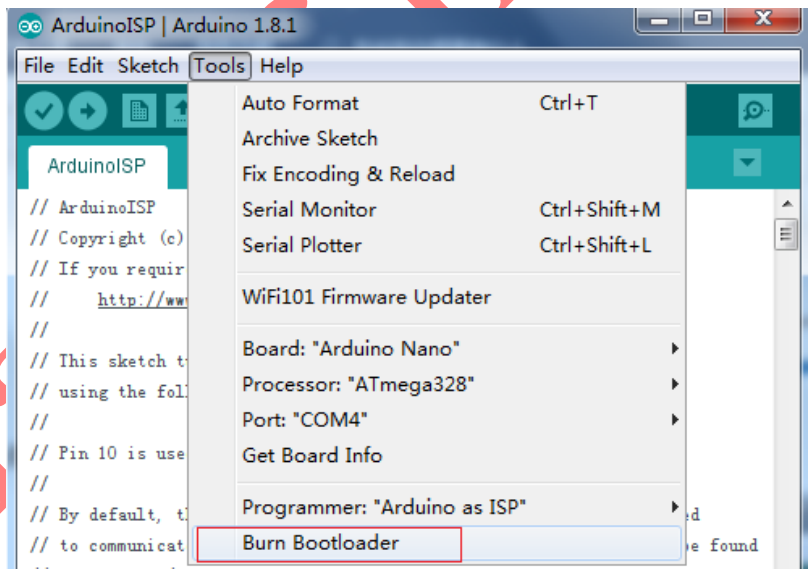

Figure 3-1-3

4) wait for the completion of the burn. After the successful burn, the prompt "complete the burn guide program" will appear in the lower left corner of Arduino IDE. See figure 3-1-4

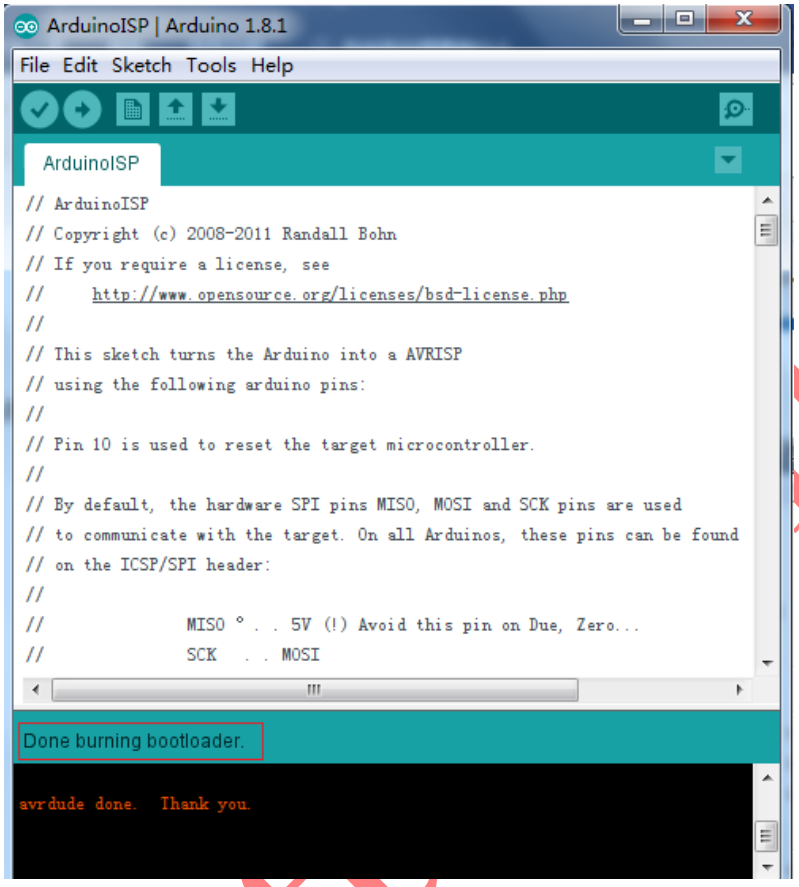

Figure 3-1-4

3.2 UNO gives the UNO board burn Bootloader

3.2.1 connect diagram

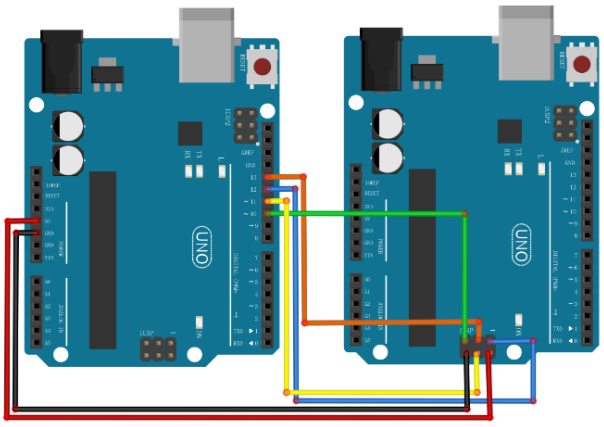

Figure 3-2-1

3.2.2 Burn bootloader steps

1) connect the UNO board as the burner to the target Nano board according to the wiring method shown in figure 3-2-1;

2) Click ' Tools→Board→Arduino/Genuino Uno ', as show in figure 3-2-2.

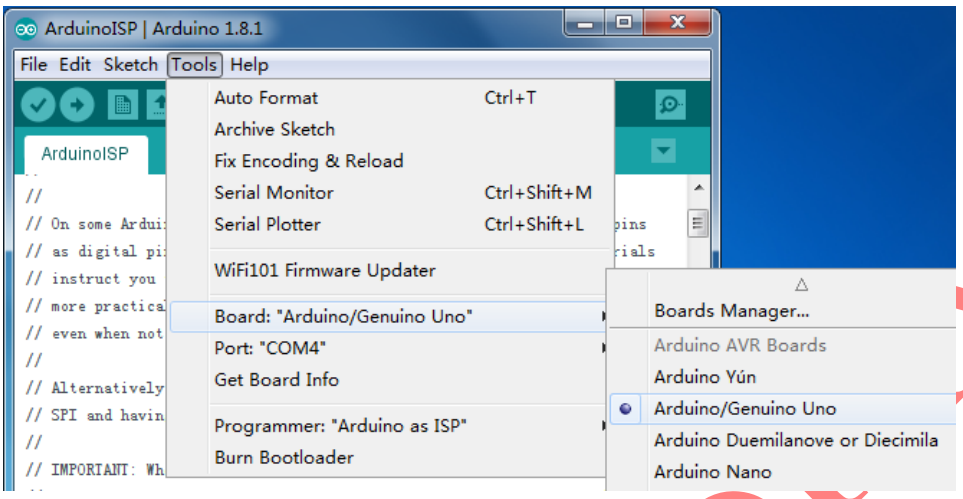

Figure 3-2-2

3) Click 'Tools→programmer→Arduino as ISP' as show in figure 3-2-3.

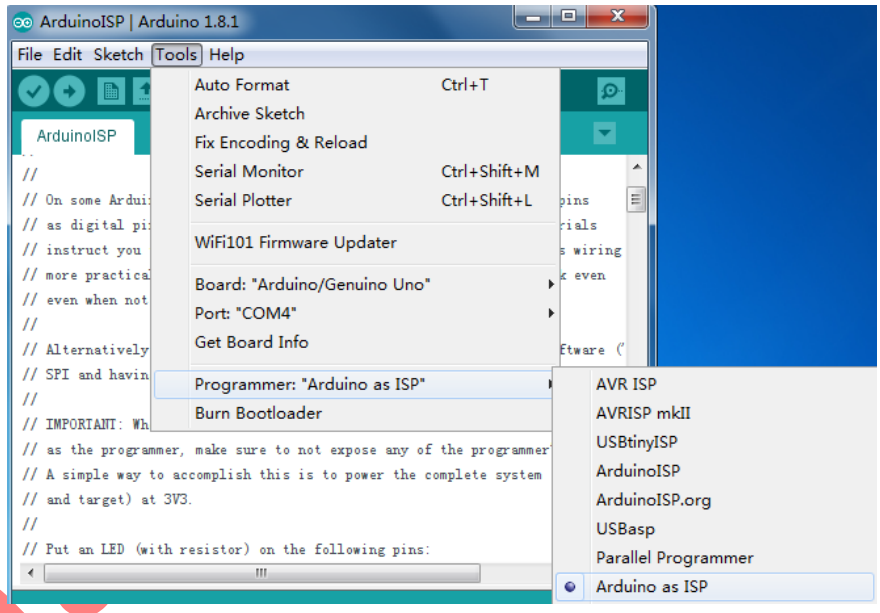

Figure 3-2-3

4) Click 'Tools→Burn Bootloader' See figure 3-2-4.

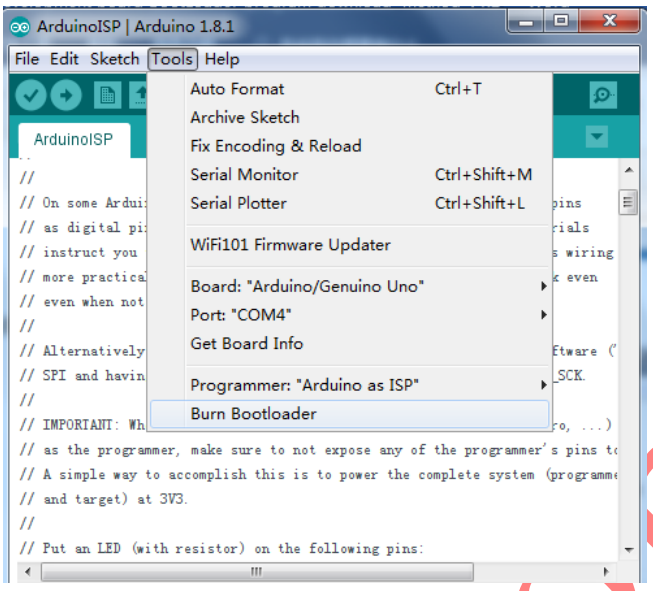

Figure 3-2-4

5) wait for the completion of the burn. After the successful burn, the prompt "complete the burn guide program" will appear in the lower left corner of Arduino IDE. See figure 3-2-5

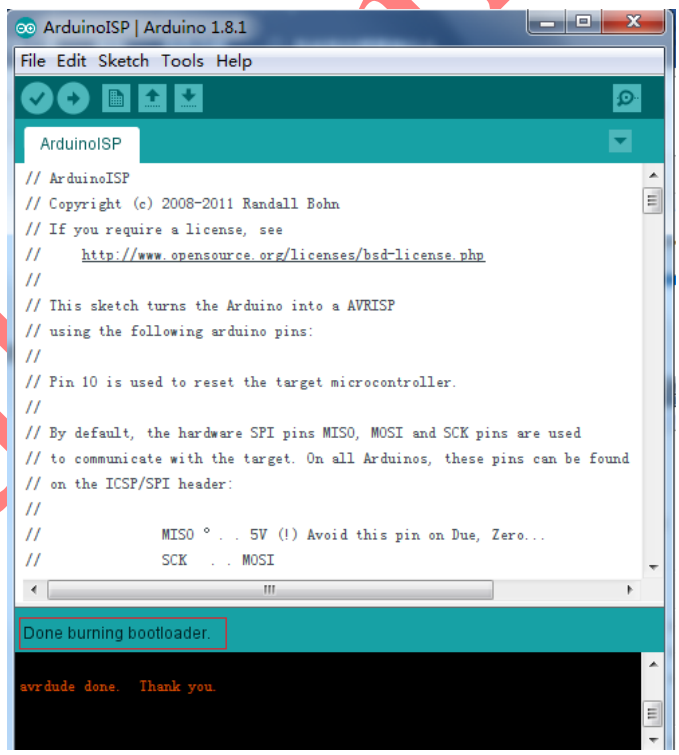

Figure 3-2-5

3.3 Nano give UNO board burn Bootloader

3.3.1 Connect diagram

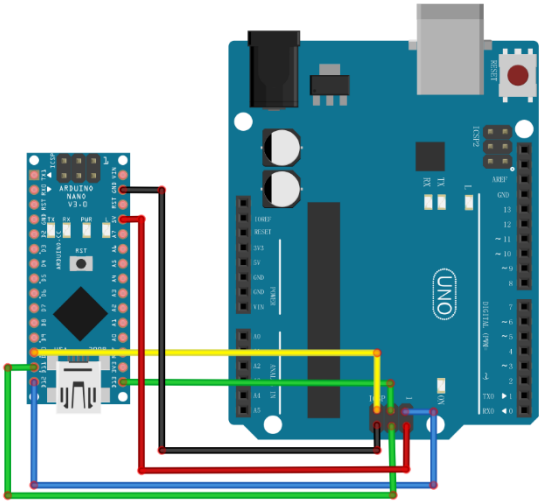

Figure 3-3-1

3.3.2 Burn Bootloader steps

1) connect the UNO board as the burner to the target Nano board according to the wiring method shown in figure 3-3-1;

2) Click ‘Tools→Board→Arduino/Genuino Uno’, as show in figure 3-3-2

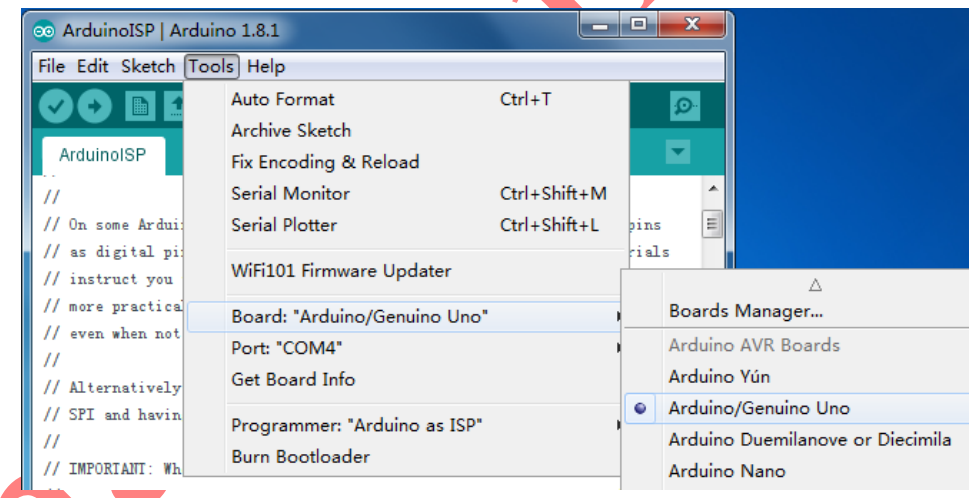

Figure 3-3-2

3) Click ‘Tools→Programmer→Arduino as ISP’ as show in 3-3-3.

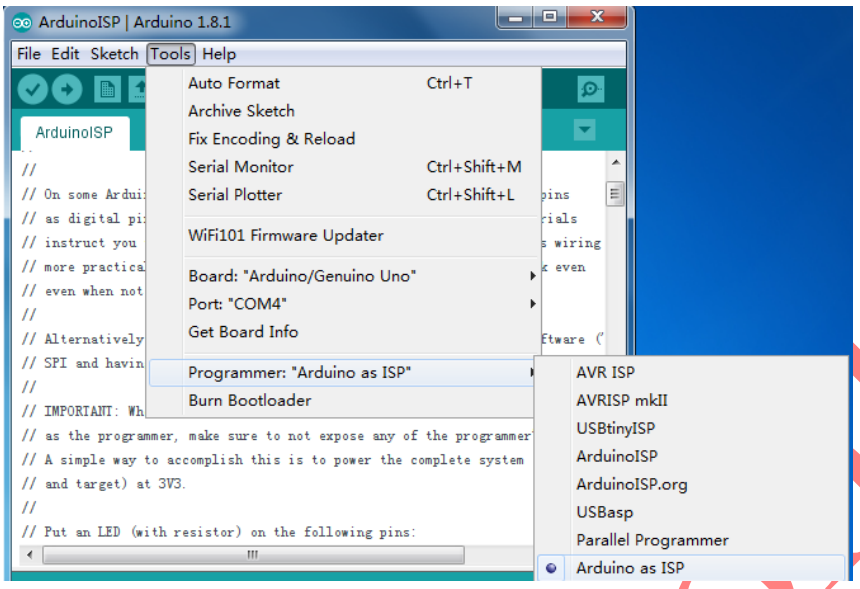

Figure 3-3-3

4) Click ‘Tools→Burn Bootloader’ as show in figure 3-3-4

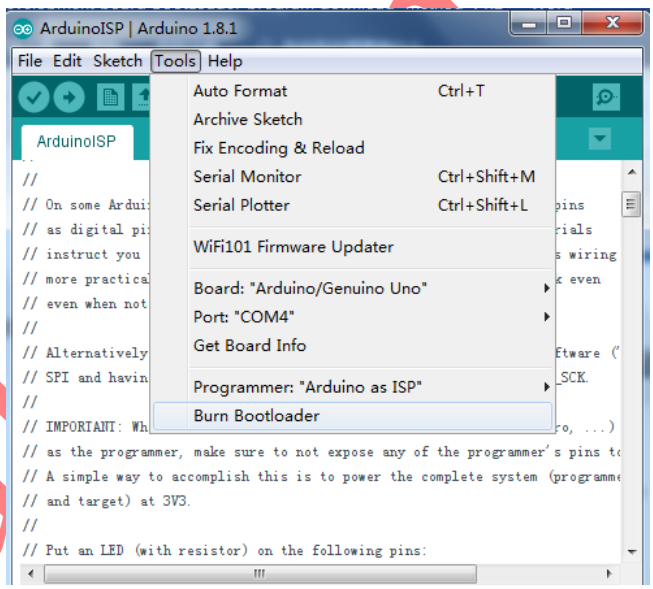

Figure 3-3-4

5) wait for the completion of the burn. After the successful burn, the prompt "complete the burn guide program" will appear in the lower left corner of Arduino IDE. See figure 3-3-5.

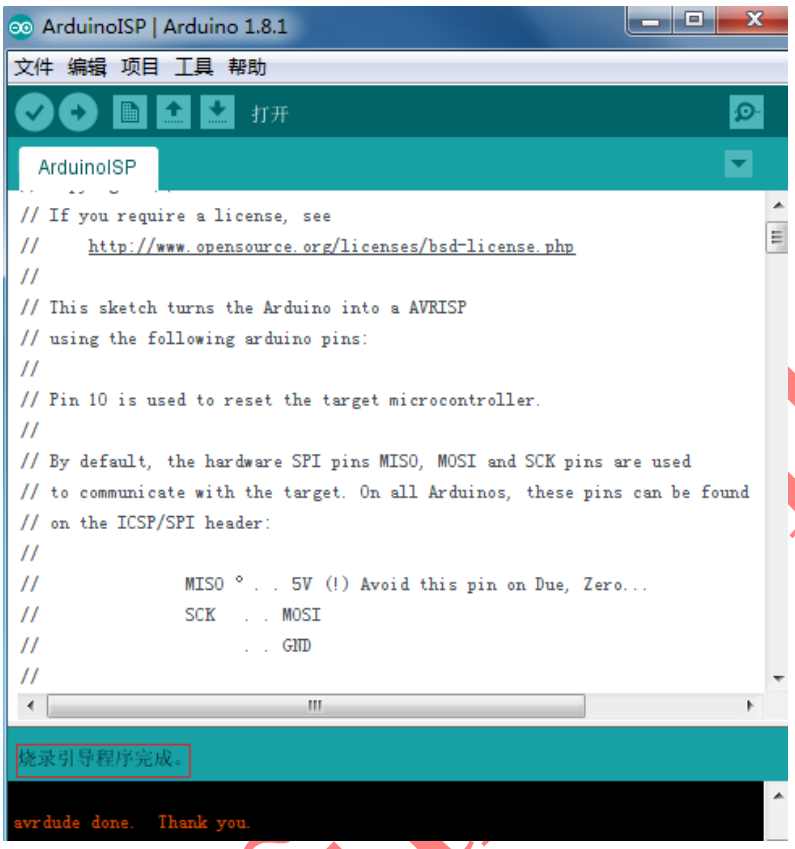

Figure 3-3-5

3.4 Nano give Nano board burn Bootloader

3.4.1 Connect diagram

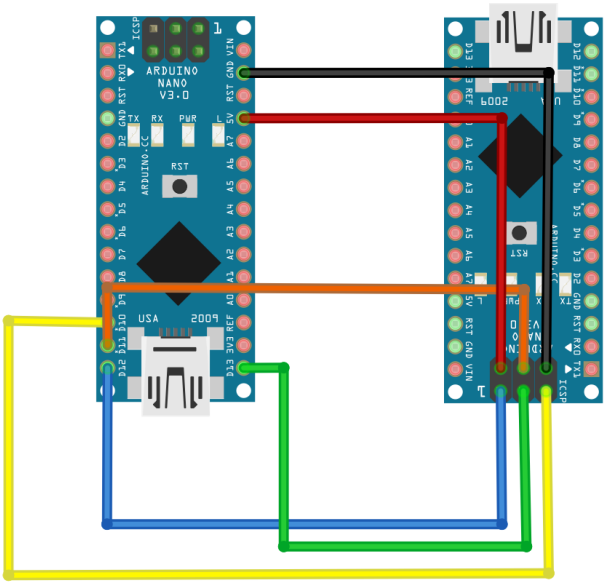

Figure 3-4-1

3.4.2 Burn bootloader steps

1) connect the UNO board as the burner to the target Nano board according to the wiring method shown in figure 3-4-1;
2) Click ‘Tools→Board→Arduino Nano’, click ‘Tools→programmer→Arduino as ISP’ as show in figure 3-4-2.

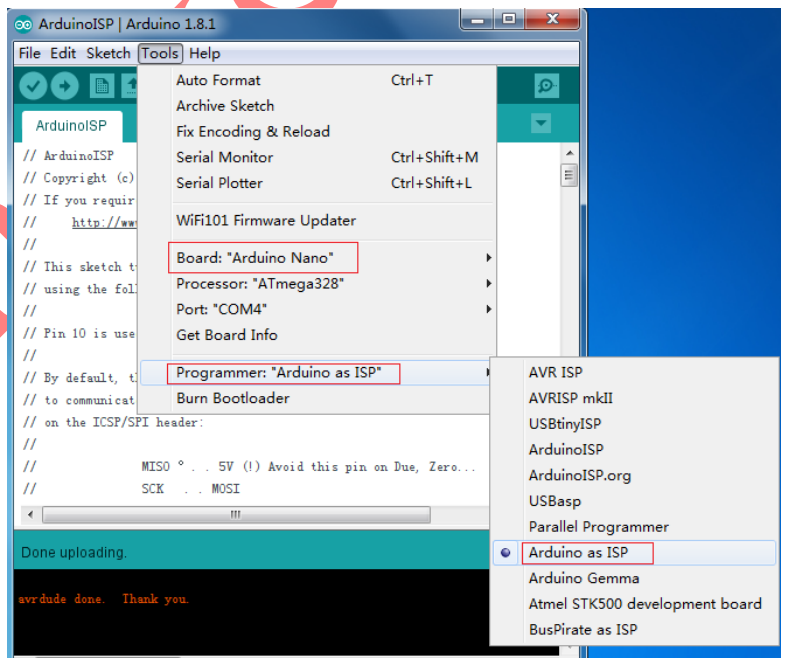

Figure 3-4-2

3) Click ‘Tools→Burn Bootloader’ as show in figure 3-4-3.

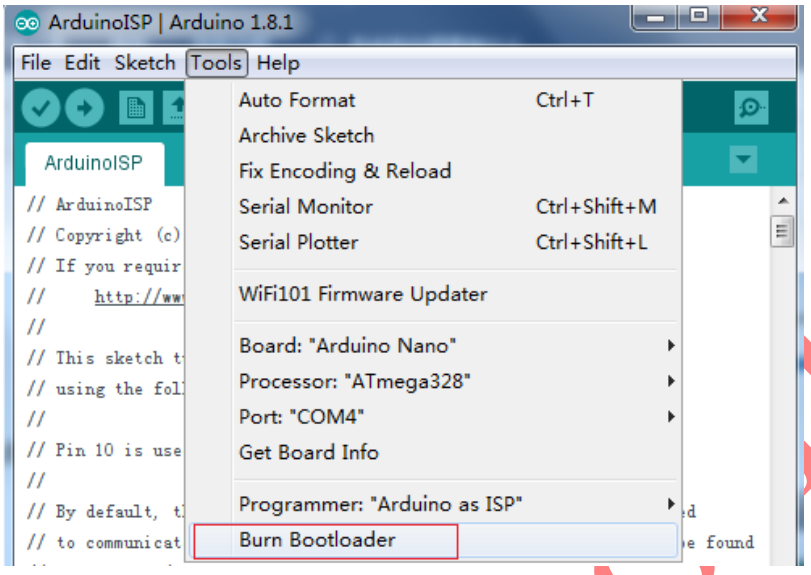

Figure 3-4-3

4) wait for the completion of the burn. After the successful burn, the prompt "complete the burn guide program" will appear in the lower left corner of Arduino IDE. See figure 3-4-4

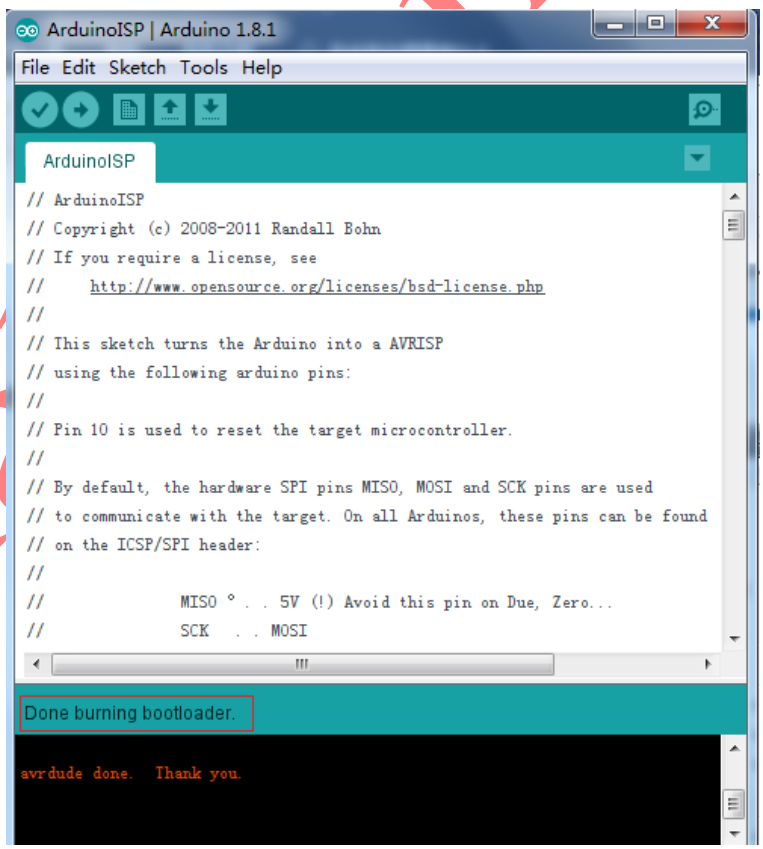

Figure 3-4-4

4. Matters need attention

1) When connecting the Arduino board as the burner to the target Arduino board, the connection with the computer shall be disconnected, and then connected to the computer after checking the connection is correct
2) Check whether the USB cable is intact before downloading
3) If the download fails, check whether the connection line is loose, and make sure it is downloaded again after connecting.