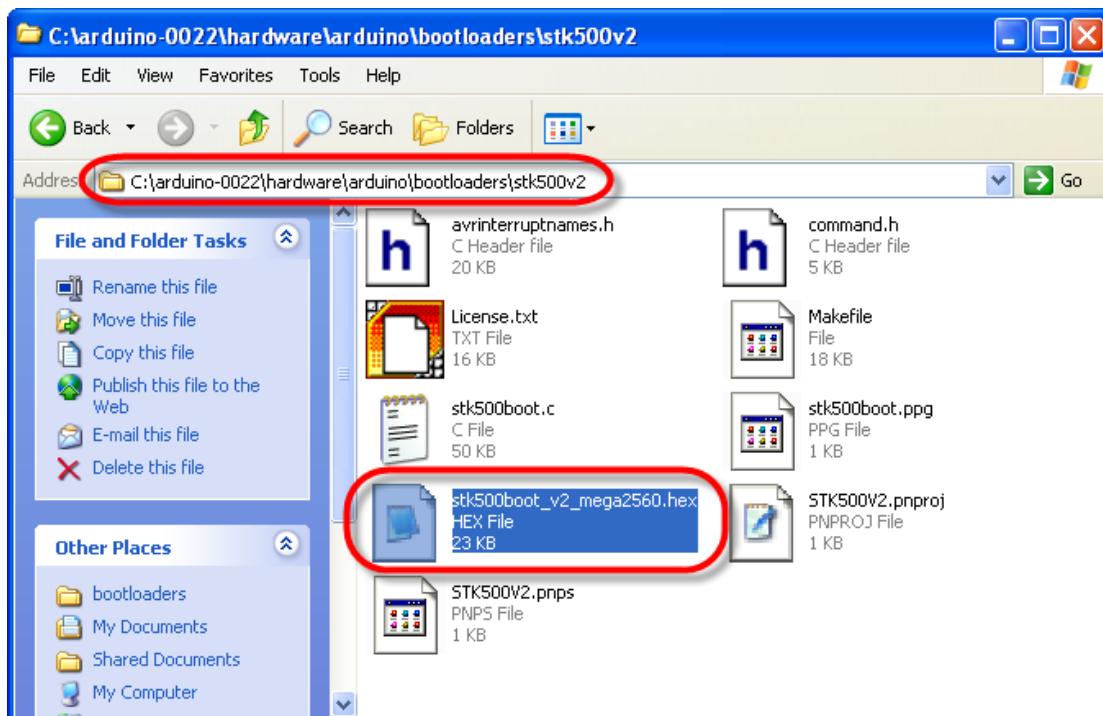


## Develop Program of ET-MEGA2560-ADK by Arduino

Normally, Board ET-MEGA2560-ADK has already installed Program Bootloader into MCU; it uses Bootloader called "**stk500boot\_v2\_mega2560.hex**" that is the standard of Bootloader from Arduino. This Program Bootloader is used to communicate and upload Code from computer PC into MCU on board, without using any external Programmer. The specifications of Bootloader version Arduino-0022 are listed below;

- Use stk500v2 Protocol to communicate with external program
- Use Baudrate 115200 at Frequency XTAL 16MHz
- Use 8 KByte Program Bootloader and run at location 0x3E000-0x3FFF
- Use LED that is connected with Pin Digital-13 to display operating status while Bootloader is running
- Programs in Bootloader run automatically after reset. MCU always starts running in this Bootloader because it waits for signal from program to upload Code into MCU. If it does not receive any signal in the specified time, it skips to run program that user has loaded instantly.

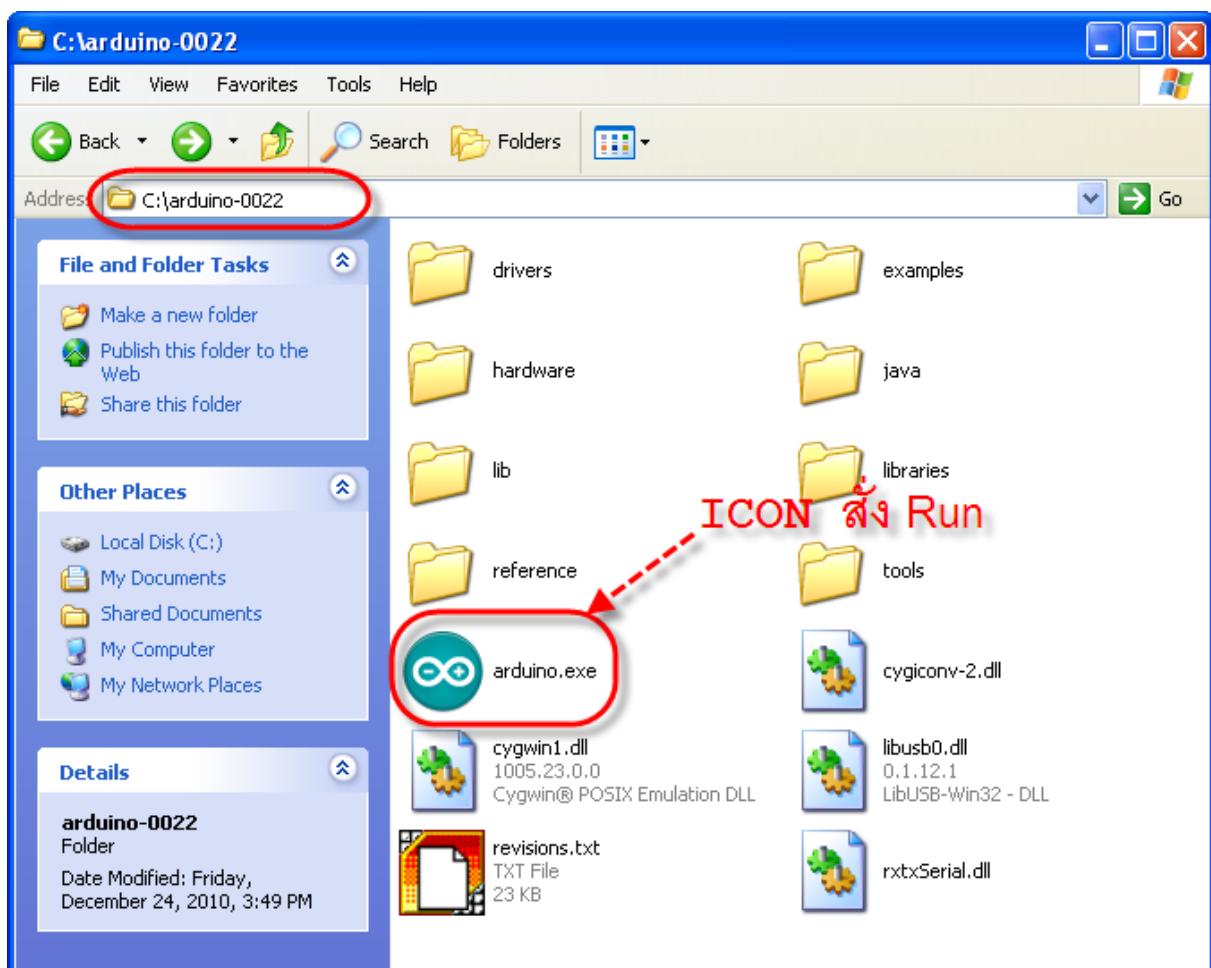


This Board ET-MEGA2560-ADK supports RESET MCU automatically from USB Bridge (FT232RL); it uses Pin DTR from FT232RL to be Pin Control Reset MCU.

## How to install Program Arduino

Program Arduino has been developed to use with the Operating System in many Platforms. Nowadays (September, 2011), Program Arduino has been updated to version "Arduino-0022". There are 4 Platforms; Windows, Mac, OSx and Linux. User can check and download newer program versions of Arduino free without any charge from <http://arduino.cc/> or <http://arduino.cc/en/Main/Software>. These websites collect, publish details and update news of Arduino.

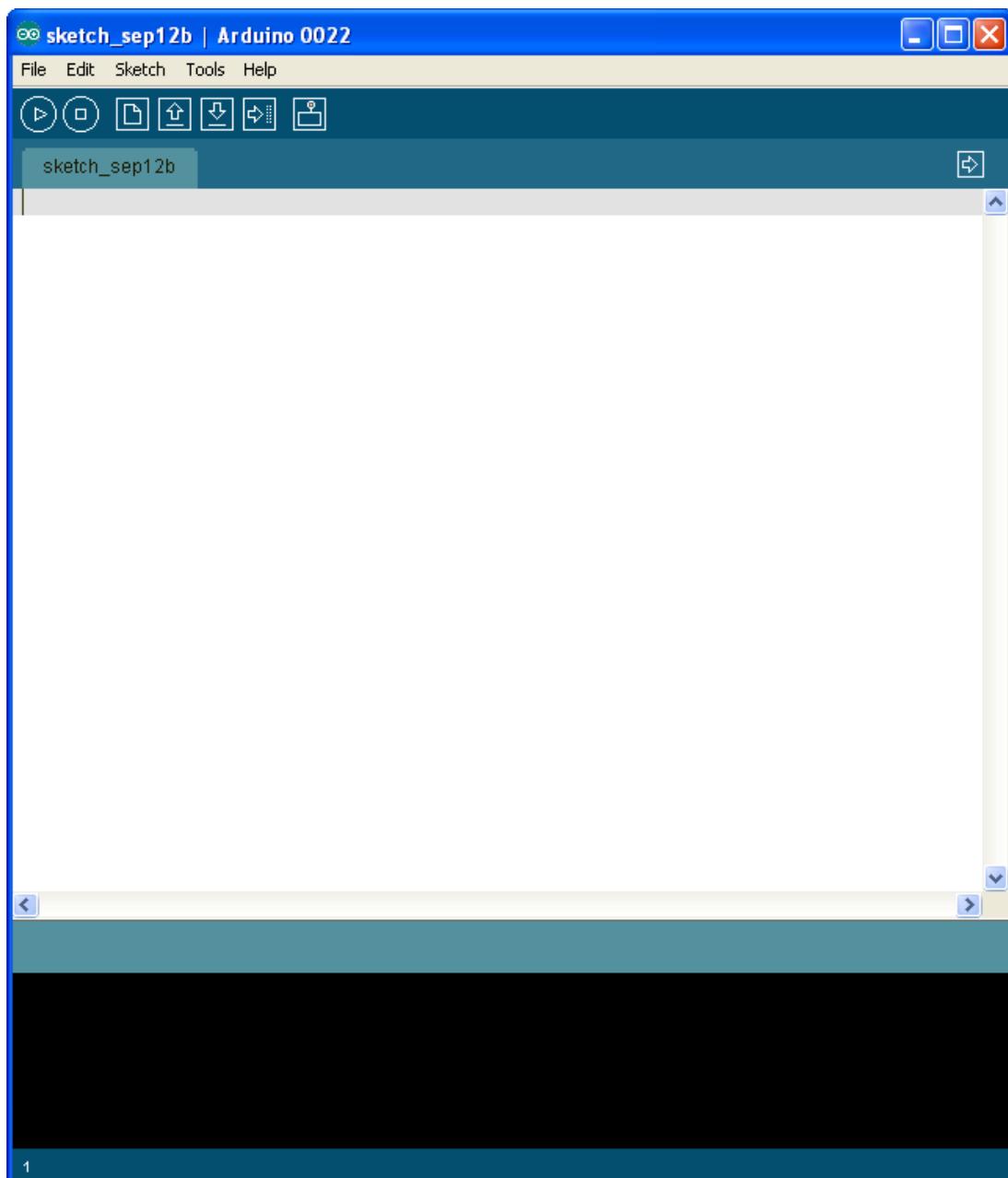
If user required installing Program Arduino, it has to unzip and copy files and then paste them in the Folder "c:\arduino-0022" as shown in the example below;



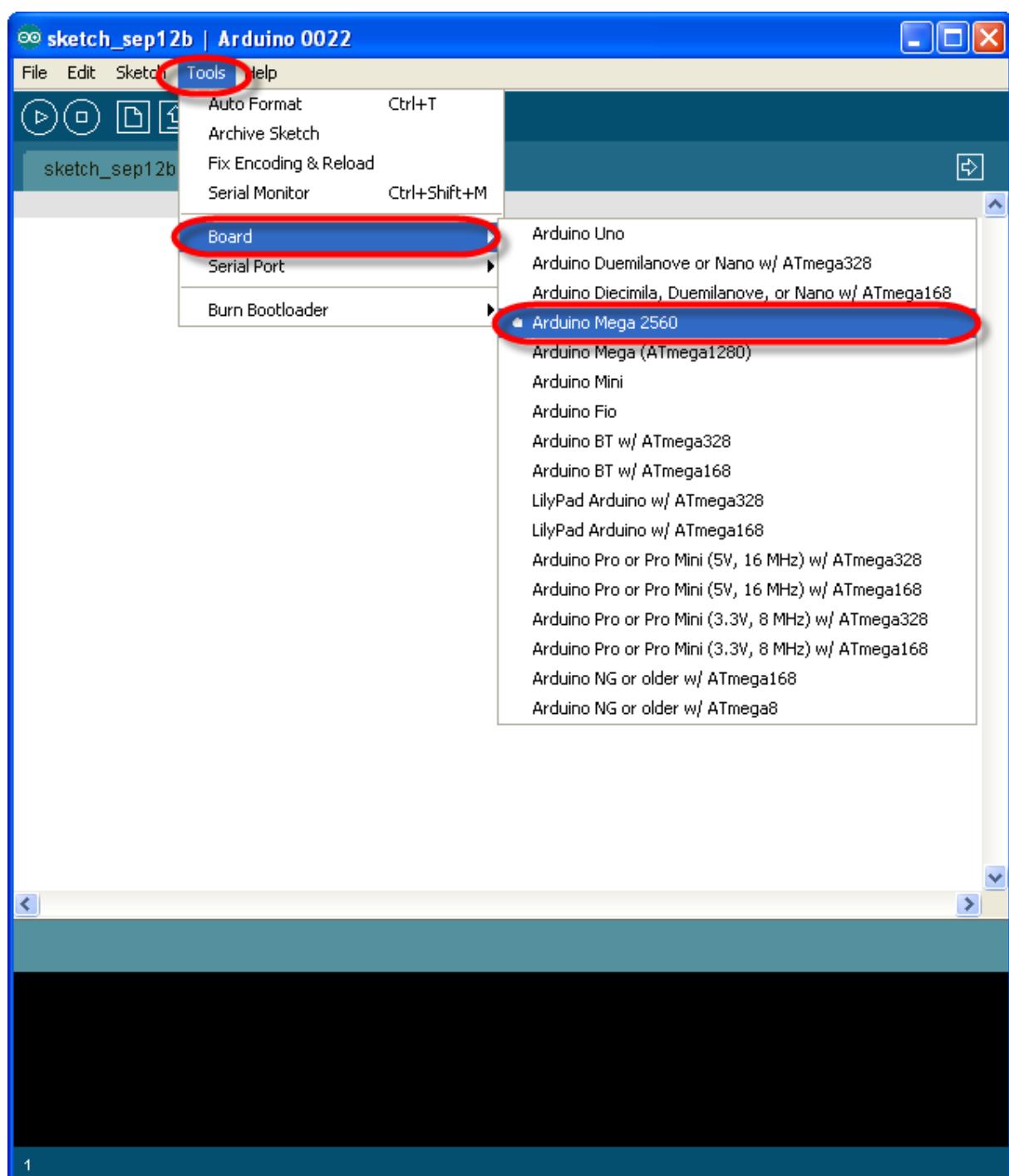
## Test on writing program by Arduino

After user has installed Program Arduino completely, it finished the process of preparation. Next, it is the process of using program, writing program, and studying and learning the device as required. First of all, user has to install Program of Arduino as described below;

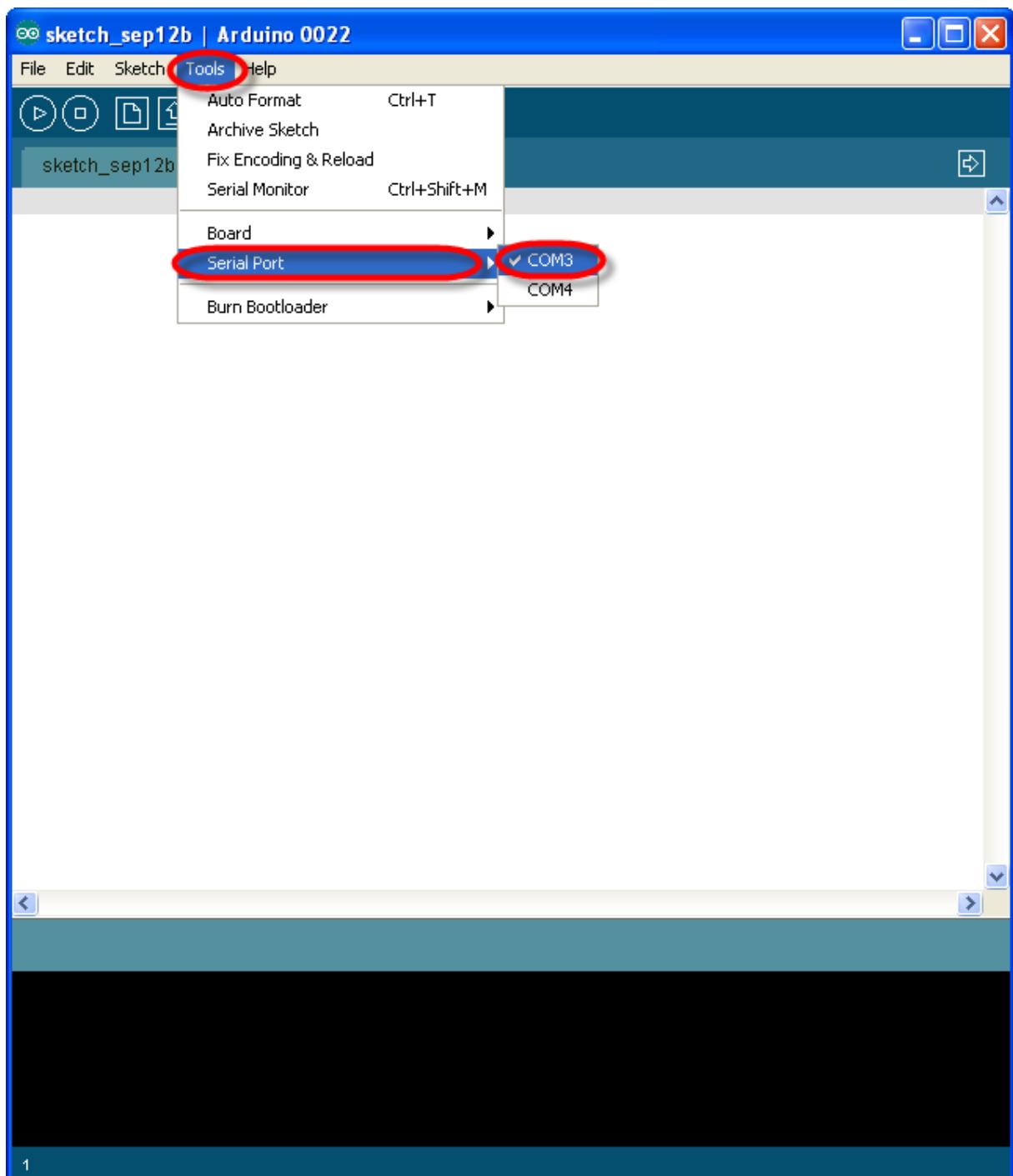
1. Run Program "arduino.exe" and it display the operating result as shown below;



2. If the program is called and used in the first time, user has to set values of Hardware system for using with Program of Arduino completely because nowadays, it has designed circuit and built hardware for using with many versions of Program Development of Arduino. In case of Board ET-MEGA2560-ADK, it has to specify name of board as "**Arduino Mega**"; click Menu "**Tools** → **Board** → "**Arduino Mega**" as shown in the picture below;



3. Set the Com Port number for communicating with board; in this case, it has to set the number according to the Com Port Number that has actually been connected with computer PC. For example, if the Com Port number of computer PC is "COM3", click Menu **Tools** → **Serial Port** → **COM3** as show in the picture below;



4. Try to write program, click Menu **File** → **New**; next, user can write program to test the operation or open the example file that has already been built instead. In this case, we advise user to test the operation by blinking program, click Menu "**File** → **sketchbook** → **Examples** → **Digital** → **Blink**" as shown in the picture below;



The screenshot shows the Arduino IDE interface with the title bar "Blink | Arduino 0022". The menu bar includes File, Edit, Sketch, Tools, and Help. Below the menu is a toolbar with icons for play, stop, upload, and other functions. The main window displays the "Blink" sketch. The code is as follows:

```
/*
Blink
Turns on an LED on for one second, then off for one second, repeatedly.

This example code is in the public domain.
*/

void setup() {
  // initialize the digital pin as an output.
  // Pin 13 has an LED connected on most Arduino boards:
  pinMode(13, OUTPUT);
}

void loop() {
  digitalWrite(13, HIGH);      // set the LED on
  delay(1000);                // wait for a second
  digitalWrite(13, LOW);       // set the LED off
  delay(1000);                // wait for a second
}
```

5. Compile program, click Menu "Sketch → Verify/Compile"; it checks whether instructions in the program are correct as shown in the program below;

The screenshot shows the Arduino IDE interface with the title bar "Blink | Arduino 0022". The menu bar has "Sketch" highlighted, and the submenu "Verify / Compile" (Ctrl+R) is circled in red. The code editor contains the standard "Blink" sketch. The bottom status bar displays the message "Done compiling." and the binary sketch size information: "Binary sketch size: 1588 bytes (of a 258048 byte maximum)".

```
/*  
 * Blink  
 *  
 * Turns on an LED on for one second, then off for one second, repeatedly.  
  
 * This example code is in the public domain.  
 */  
  
void setup() {  
    // initialize the digital pin as an output.  
    // Pin 13 has an LED connected on most Arduino boards:  
    pinMode(13, OUTPUT);  
}  
  
void loop() {  
    digitalWrite(13, HIGH);      // set the LED on  
    delay(1000);                // wait for a second  
    digitalWrite(13, LOW);       // set the LED off  
    delay(1000);                // wait for a second  
}
```

6. Download Code into board, click Menu “**File → Upload to I/O Board**”; user has to wait for a while until the program runs successfully. After it has uploaded Code into board completely, the board starts running the instructions that have been written instantly. In this case, user can see blinking LED that is alternating between ON and OFF all the time at a speed of 1 second and the operating result is shown below;

