

Programming the ATmega Board

Use the Arduino IDE to program the ATmega Board.

Site: [iCODE](#)
Course: Machine Science Guides (Arduino Version)
Book: Programming the ATmega Board
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Programming the ATmega Board

Now that you have built the ATmega Board, you are ready to start programming the ATmega168 microcontroller by writing code on your computer and downloading it to the chip, as shown in Figure 1.

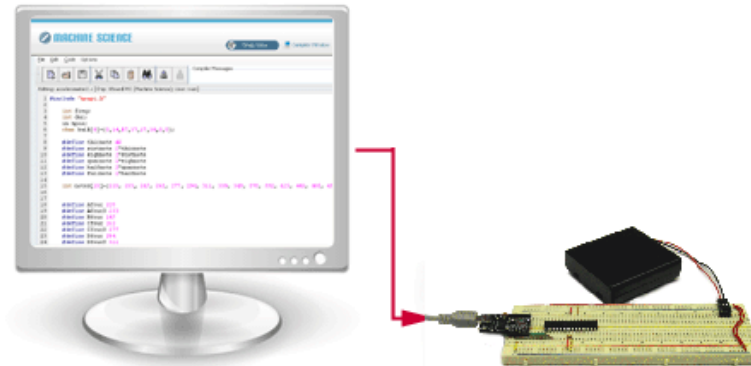


Figure 1. Programming the microcontroller.

If you have not already done so, please follow the instructions in the tutorials on [Setting Up the USB Connection](#) and [Setting Up the Local Programmer \(Arduino IDE\)](#). This will guide you installing the driver for the USB programming board and installing and configuring the Arduino IDE.

Opening an Example Code File

A large number of example code files can be accessed through the Arduino IDE's file menu. In this step, you will open and compile (verify) an example code file.

1. Launch the Arduino IDE.
2. In the File menu, select the Examples option.
3. Navigate to the folder called MS_BREADBOARDS and select the "text" code file, as shown in Figure 2.

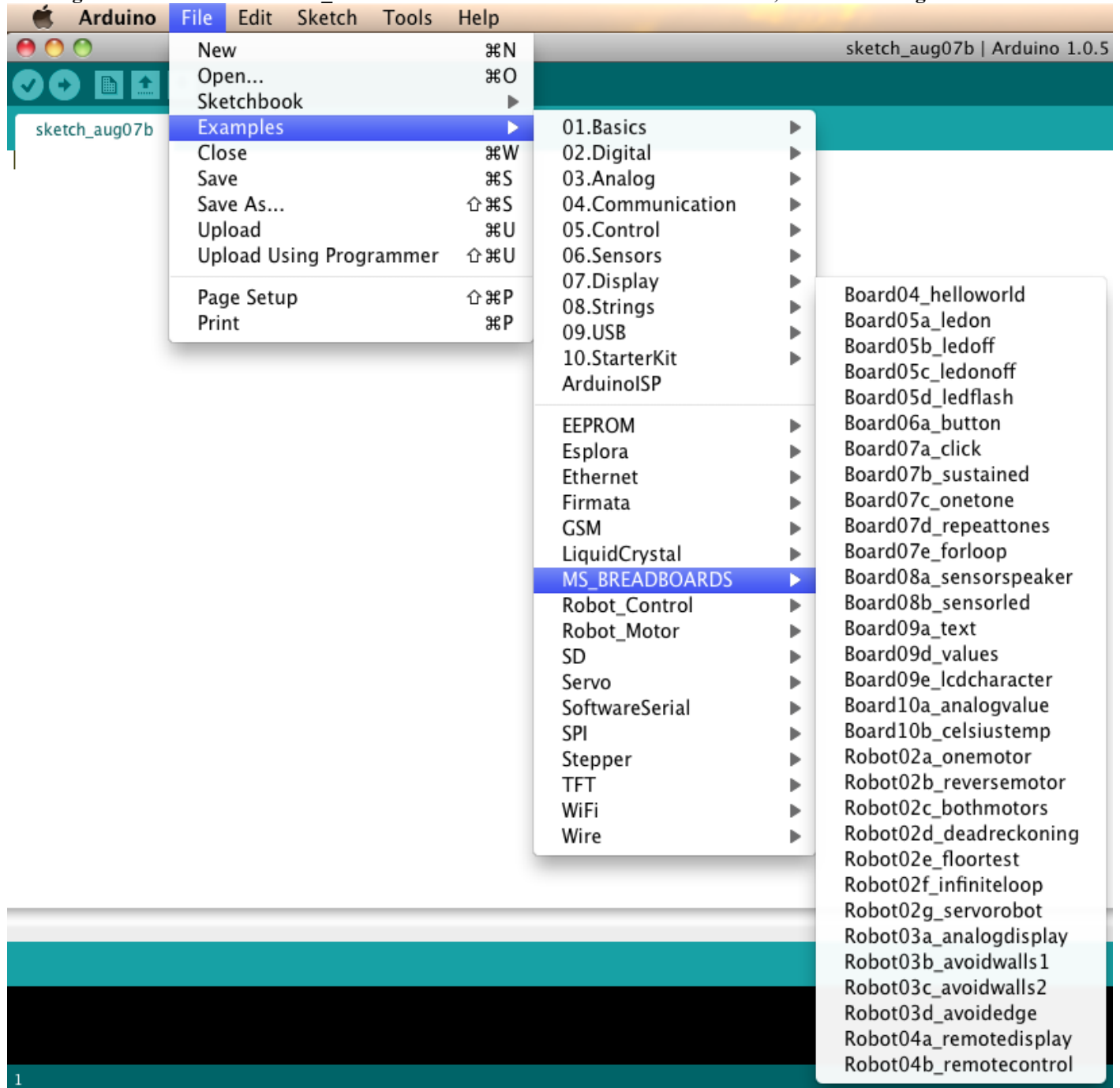


Figure 2. Choosing an example code file.

4. It will appear in editing window, as shown in Figure 3.



```
Board04_helloworld
#include <xapi.h>
#include <lcd.h>

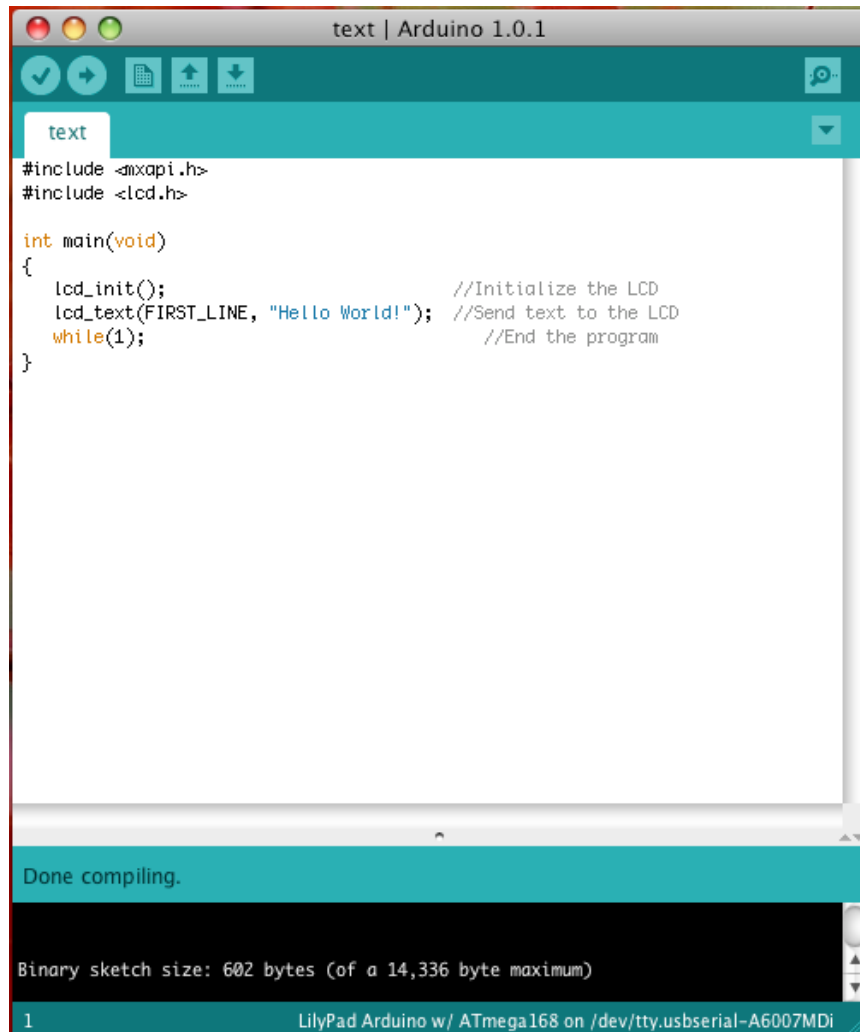
int main(void)
{
  lcd_init(); //Initialize the LCD
  lcd_text(FIRST_LINE, "Hello World!"); //Send text to the LCD
  while(1=1); //End the program
}
```

Figure 3. Example code file in Arduino IDE.

Compiling and Downloading Code

In the Arduino IDE, compiling and downloading code files from the computer to the microcontroller are referred to as "verifying" and "uploading," respectively.

1. Click the button with a checkmark icon. This will compile ("verify") your code. When the process completes, you should see the message shown in Figure 4.



```
text | Arduino 1.0.1
[checkmark] [right arrow] [grid] [upload] [download] [help]
text
#include <mxapi.h>
#include <lcd.h>

int main(void)
{
  lcd_init(); //Initialize the LCD
  lcd_text(FIRST_LINE, "Hello World!"); //Send text to the LCD
  while(1); //End the program
}

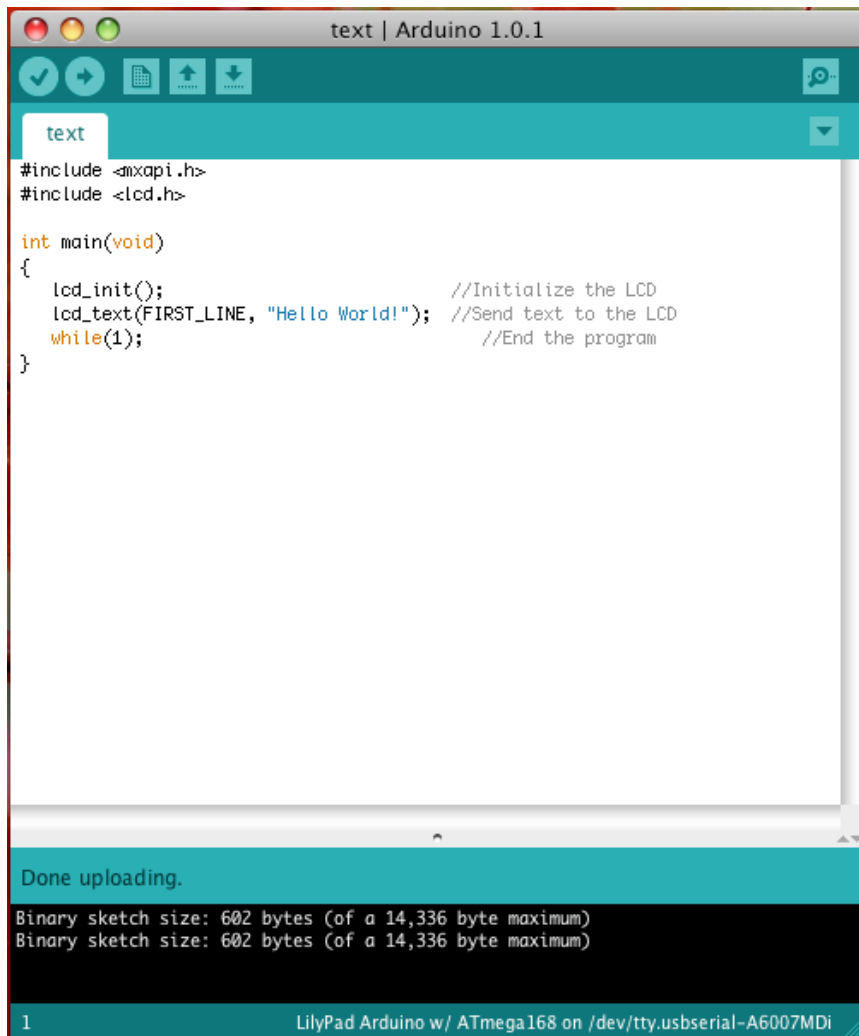
Done compiling.

Binary sketch size: 602 bytes (of a 14,336 byte maximum)

1 LilyPad Arduino w/ ATmega168 on /dev/tty.usbserial-A6007MDI
```

Figure 4. Code has been successfully compiled.

2. Click on the button with the right arrow symbol. This will transfer ("upload") the compiled code to the microcontroller. When the process completes, you should see the message shown in Figure 5.



```
text | Arduino 1.0.1
#include <mxapi.h>
#include <lcd.h>

int main(void)
{
  lcd_init(); //Initialize the LCD
  lcd_text(FIRST_LINE, "Hello World!"); //Send text to the LCD
  while(1); //End the program
}
```

Done uploading.

Binary sketch size: 602 bytes (of a 14,336 byte maximum)
Binary sketch size: 602 bytes (of a 14,336 byte maximum)

1 LilyPad Arduino w/ ATmega168 on /dev/tty.usbserial-A6007MDi

Figure 5. Code has been successfully transferred to microcontroller.