Duino Kit Starter Guide

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This is a guided to get started on programming the ATTiny85 chip that comes with the Duino Kit. By the end of this guide you will become familiar uploading code into the ATTiny85.
Supported versions: MacOS, Windows //and Linux.

Materials

- A Laptop
- Duino Kit Tiny
- Jumper Cables
- 9V Battery

Installing the Arduino IDE

Windows 10

1) Go to: https://www.arduino.cc/en/Main/Software download and install the Arduino IDE onto your system.
2) Once installed, Open Arduino IDE.
3) Under File open Preferences ; Ctrl+Comma
4) Under Settings navigate to “Additional Boards Manager URLs:”
5) Copy URL “http://digistump.com/package_digistump_index.json”
6) Paste URL into the bar.
7) Select Ok.
8) Under Tools, hover over Board: “/*AVR Boards*/” and select Boards Manager…
9) Under Type select “Contributed” and search “Digistump AVR Boards”
10) Click Install.
11) Once installed, close out of the menu.
12) Under Tools, hover over Board: “/*AVR Boards*/” navigate to the end of the list and select “Digispark (Default - 16.5mhz)”
13) To make sure your system has the appropriate drivers to recognize the ATTiny85, plug the blue data cable to the ATTiny85 and to your laptop, the Windows system should display a message where you can proceed.
14) Unplug the data cable from your computer.
15) Once that is all set up Go ahead to the project section and you will be ready to start programming.

Mac OS

For the Mac OS we are going to run the Arduino IDE on the Java 6 environment. The current version of the Arduino IDE is not compatible with the ATTiny85 chip.

1) Make sure you have installed the Java 6 environment onto your machine. Here is a link to Apple: https://support.apple.com/kb/dl1572?locale=en_US
2) Go to: https://sourceforge.net/projects/digistump/files/DigisparkArduino-MacOSX-1.0.4-May19.zip/download
3) Download, unzip and extract the file to a desired directory.
4) Open the application
5) Under Tools>Boards make sure Digispark (Tiny Core) is selected
6) Once that is all set up Go ahead to the project section and you will be ready to start programming.

Linux

1) Instructions coming soon

Project

This is a guide to begin your journey programming the ATTiny85. This is also a test to see if you have installed the needed components onto your system correctly.

LED Blink

The simple of all Arduino sketches is blinking an LED. You will learn how to upload code that will blink an LED and wire the LED to a standalone circuit.

The Circuit

1) Connect the 9V battery to the Duino circuit board and make sure the switch on the side of the battery is switched off.
2) Grab a few jumper cables
3) With two jumper cables connect one to the positive pin of the battery and the other cable to the negative pin.
4) Connect the positive end of the battery to VIN and negative end to GND on the ATTiny85.
5) Connect a jumper cable from pin P0 to the positive end of an LED (This case green)
6) Connect a jumper cable from the negative end of the LED to ground
7) The circuit is complete. Verify the circuit with the image below.

The Code

1) Have the Arduino IDE open.
2) Copy and Paste the entire code

```
// Creating variable for the pin number
const int P0 = 0;
// the setup function runs once when you press reset or power the board
void setup() {
  // initialize digital pin P0 as an output.
  pinMode(P0, OUTPUT);
}

// the loop function runs over and over again forever
void loop() {
  digitalWrite(P0, HIGH);   // turn the LED on (HIGH is the voltage level)
  delay(1000);                       // wait for a second
  digitalWrite(P0, LOW);    // turn the LED off by making the voltage LOW
  delay(1000);                       // wait for a second
}
```

3) Verify the code to see if the code compiles by clicking the check button.
4) With your Duino Kit nearby, upload the sketch by clicking the arrow next to the check button and you will be prompted to plug in the Digispark board.
5) Plug the data cable into your computer. If the upload failed and stopped at some percentage, try this step again.

The result should make the green LED on the Duino kit blink on and off, both for 1 second. Feel free to manipulate some of the variables to get an understanding between the hardware and code. Here are some challenges to get you thinking.

Challenges

- Change the pin output to the 5th pin (P5).
- Blink the LED every 5 seconds
- Make the LED blink 3 times in one set in the duration of 2 seconds
- Make the buzzer blink with the LED