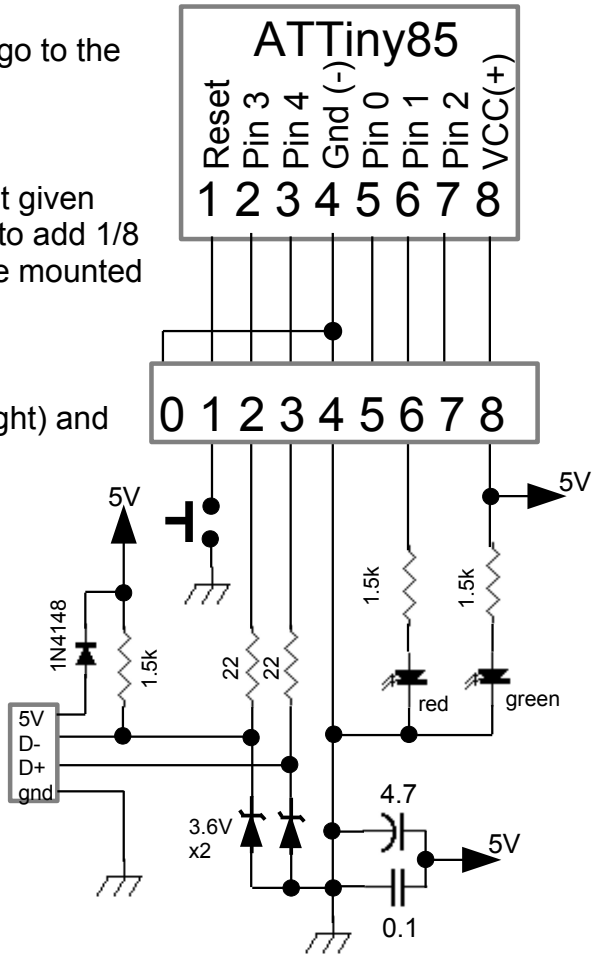
Attiny85 Arduino Assembly and Operation

For further instructions, information and links visit http://toolsfortechnologystudents.blogspot.ca/ and go to the July 21 2014 entry.



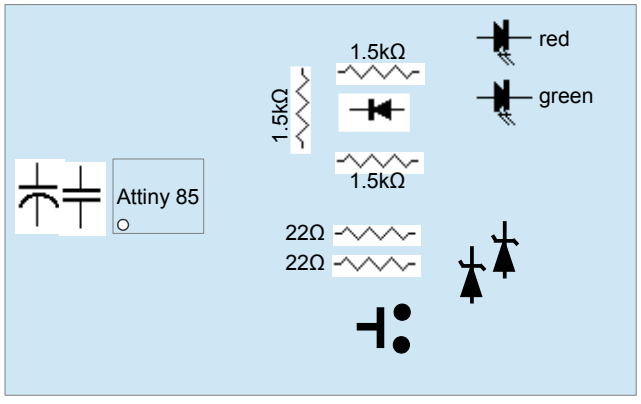

STEP 1
Manufacture the circuit board using the trace layout given following the classroom procedure. You may want to add 1/8 inch holes in each corner so that your board can be mounted using 4/40 screws at a later date.

STEP 2
Familiarize yourself with the schematic diagram (right) and parts placement (below).
Identify the following parts:

- USB signal
- Power
- Reset
- i/o

STEP 3
Place the components and solder them in place in the following order. Clip the excess leads after each set of components is soldered.

- Capacitors
- 8 pin socket
- 1.5kΩ resistors
- 1N4148
- 22Ω resistors
- 3.6V zener diodes
- LEDs
- reset pushbutton
- 9 pin header
- USB socket




STEP 4
Use a multimeter to check for shorts between traces. Notice that the USB power and signal traces are very close together and a USB short could affect your computer. If there are no shorts connect your Atiny85 Arduino via USB to a laptop for a moment. The green power LED should glow (and hopefully nothing else will happen).

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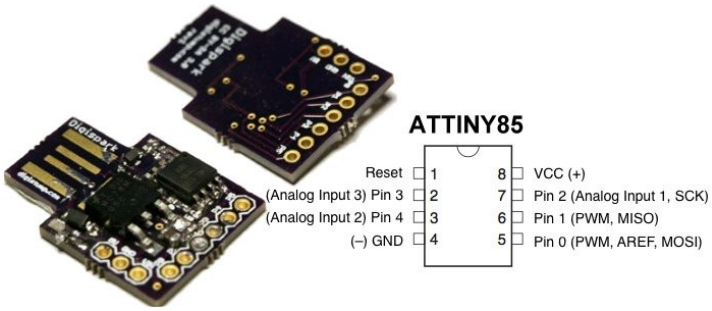
STEP 5
Unzip the Digispark Arduino IDE and locate the directory in the installs directory on a school laptop.

STEP 6
Use the InstallDriver utility inside /DigisparkArduino-Win32/DigisparkWindowsDriver to install the driver.

STEP 7
Run the Arduino IDE inside of /DigisparkArduino-Win32/Digispark-Arduino-1.0.4/

- Do not connect your Atiny85 Arduino to the computer yet.
- Under Tools choose Board and choose Digispark (Tiny Core).
- Under Tools choose Programmer and choose Digispark.
- Under File choose Examples and choose Digispark_Examples and choose Start.
- Click the upload button and watch the message area at the bottom of the IDE.
- Plug in your Atiny85 Arduino when the “Plug in device now . . .” message appears. Pin1 (sometimes called PB1) is pin 6 on the chip. Your built in red LED is connected to this pin. The program should cycle the LED on and off at 1 Hz.

This is the DigisparkArduino.




This is the ATTiny85 Arduino implemented on a breadboard.

Handy Reference Chart

| pin | Pin | Analog |
|---|---|---|
| 1 | Reset | |
| 2 | 3 | Input 3 |
| 3 | 4 | Input 2 |
| 4 | Gnd | |
| 5 | 0 | PWM,AREF,MOSI |
| 6 | 1 | PWM, MISO |
| 7 | 2 | Input 1, SCK |
| 8 | VCC | |