Experiment 001 Blue Blink

#WeAreAllMakers

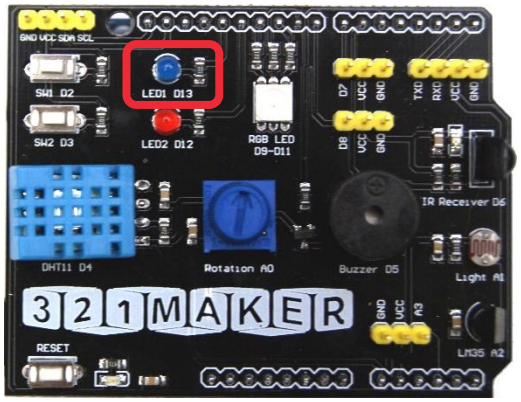
OVERVIEW

In this experiment you will control how the blue LED blinks on the 321Maker Shield.

OUTCOMES

By the end of this assignment the student will be able to:

- configure an Arduino port for use as an output
- describe the operation of a simple circuit.
- understand how to turn on and off a digital pin.
- use a delay in an Arduino program.



REQUIREMENTS

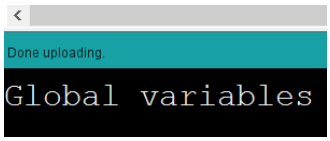
- Arduino-Compatible board
- 321Maker Things Shield
- USB Cable
- Arduino Software

PREREQUISITES

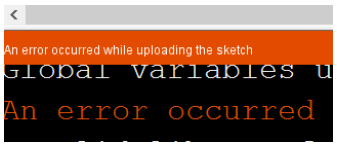
- Getting Started Tutorial: http://321maker.com/start
- Source code: http://git.io/viaTt

LEVEL 1 PROCEDURE

- [ ] Connect your Arduino to your computer using the USB port.
- [ ] Open the Arduino software.
- [ ] Download the Blue Blink Arduino program code from here: http://git.io/viaTt
- [ ] Copy and paste the program code into the Arduino software editor.
- [ ] Make sure you have the correct Board selected for your Arduino device. Click ***Tools, Board, Leonardo***.
- [ ] Make sure you have the correct communications port (COMM) port selected for your Arduino device. Click ***Tools, Ports and choose the highest Comm port number. On a Mac, choose the port that is not Bluetooth.***
- [ ] Click the upload button in the upper left corner to compile and upload the code to the Arduino device. If you see an Orange error in the bottom of your screen then something went wrong.

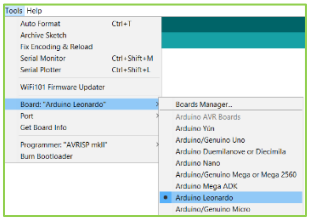


Upload successful

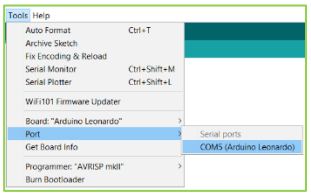


Upload Error

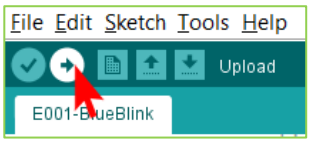
- [ ] Congratulations your blue LED should be blinking.



Board Selection



Communications Port



Upload Button

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LEVEL 2 PROGRAM MODIFICATION

- [ ] Modify the program code to blink on for 50 milliseconds and off for 950 milliseconds.
- [ ] Modify the program code to turn on for 1 second and off for 3 seconds.
- [ ] Modify the program code to blink faster at a rate of 10 times per second.

LEVEL 3 ADVANCED APPLICATION

- [ ] Modify the program to make the LED flash slow three times (1000 mS delay), then quickly three times. (100 mS delay)
- [ ] Modify the program to flash your initials using Morse code (See chart below). A "dot" would have the LED on for 100 mS and for a dash the LED would be on for 1000 mS.

LEVEL 4 PROJECT CHALLENEGE

- [ ] Write a program that starts strobing the SW1 button is pressed and stops strobing when the SW2 button is pressed.
- [ ] Write a program that alternates between the blue LED1 and red LED2, to simulate an emergency vehicle.

International Morse Code

1. The length of a dot is one unit.
2. A dash is three units.
3. The space between parts of the same letter is one unit.
4. The space between letters is three units.
5. The space between words is seven units.