Experiment 006 Push Button

#WeAreAllMakers

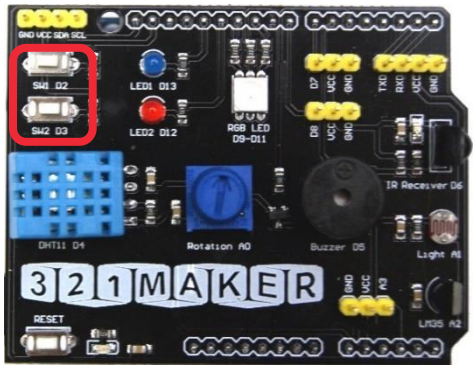
OVERVIEW

In this experiment you will use the push buttons to provide input and control programs.

OUTCOMES

By the end of this experiment you will be able to:

- Read the value from a push button.
- Control a program based on an input device.



REQUIREMENTS

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

PREREQUISITES

- Getting Started Tutorial: http://321maker.com/start
- Source Code: https://git.io/vPJmN

VIDEO TUTORIAL

http://youtube.com/indevelopment

BACKGROUND

Push Button

The temperature sensor changes its output voltage linearly based on the ambient temperature around the sensor. The push buttons are connected to digital pins D2 and D3 on the Arduino.

LEVEL 1 PROCEDURE

- [ ] Connect your Arduino to your computer using the USB port. Open the Arduino software.
- [ ] Download the **Push Button** program code from here: https://git.io/vPJmN
- [ ] Copy and paste the program code into the Arduino software editor.
- [ ] Make sure you have the correct Arduino Board and Communications port setup.
- [ ] 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.
- [ ] Congratulations, you are now reading data from the push buttons. You should see Red LED (D12) and Blue LED (D13) light up when you press the button.

LEVEL 2 PROGRAM MODIFICATION

- [ ] Modify the program to such that when you push the button the light will stay on for 3 seconds, even if you let go of the button.

LEVEL 3 ADVANCED APPLICATION

- [ ] Modify the program to have button 1(SW1) start a red-green-blue colour cycling(it repeats itself) then use button 2 to stop the cycle(after the sequence finishes).

LEVEL 4 PROJECT CHALLENEGE

- [ ] **Coin Flip –** Write a program that will simulate flipping a coin. IE) When the user presses a button, there is a 50% chance it will light up the red LED (D12) and a 50% it will light up the blue LED (D13)

- [ ] **Reflex Game-** Write a program that allow two competitors to test their reflexes. Have the RGB led start off as red, after a couple of second the RGB led will switch too green. Once the RGB led turns green. The first button that is pressed SW1 or SW2, will light up the corresponding LED, Blue (D13) or red (D12) to show which button was pressed first.