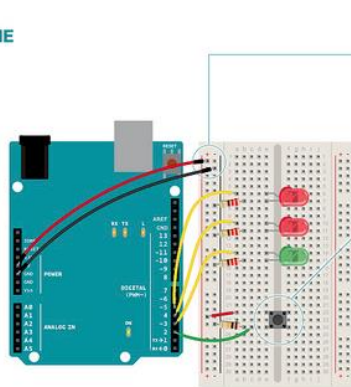


1 This exercise builds off the Blink activity by adding more LED's (Outputs) and a Switch (Input) to the circuit.

2 Change/Build your circuit to match the diagram below:

BUILD THE CIRCUIT

Fig. 1



1 Wire up your breadboard to the Arduino's 5V and ground connections, just like the previous project. Place the two red LEDs and one green LED on the breadboard. Attach the cathode (short leg) of each LED to ground through a 220 ohm resistor. Connect the anode (long leg) of the green LED to pin 3. Connect the red LEDs' anodes to pins 4 and 5, respectively.

2 Place the switch on the breadboard just as you did in the previous project. Attach one side to power, and the other side to digital pin 2 on the Arduino. You'll also need to add a 10k-ohm resistor from ground to the switch pin that connects to the Arduino. That pull-down resistor connects the pin to ground when the switch is open, so it reads LOW when there is no voltage coming in through the switch.



You can cover the breadboard the template provided in the kit. Or you can decorate it to make your own launch system. The lights turning on and off mean nothing by themselves, but when you put them in a control panel and give them labels, they gain meaning. What do you want the green LED to mean? What do the flashing red LEDs mean? You decide!

Top Tip: You will need two more LED's, a pushbutton switch, two more 220Ohm and one 10K Ohm resistors.

3 Open the sketch "p02_SpaceShipInterface" found in the StarterKit_BasicKit section of the Arduino Examples library. Examine the code and read the comments. You need to make the LEDs blink differently according to whether the button is pressed or not!

4 When you have made your changes upload your program to the Arduino and see it in action!

Try changing

1. The way the lights are flashing
2. The sequence of lights!
3. Add a buzzer to your circuit
4. Move on to the next Challenge!

Additional instructions can be found at www.arduino.cc/starterkit

Sample Code

```
p02_SpaceShipInterface | Arduino 1.8.3

p02_SpaceShipInterface
Created 13 September 2012
by Scott Fitzgerald

http://www.arduino.cc/starterKit

This example code is part of the public domain
*/

// Create a global variable to hold the
// state of the switch. This variable is persistent
// throughout the program. Whenever you refer to
// switchState, you're talking about the number it holds
int switchstate = 0;

void setup() {
  // declare the LED pins as outputs
  pinMode(3, OUTPUT);
  pinMode(4, OUTPUT);
  pinMode(5, OUTPUT);

  // declare the switch pin as an input
  pinMode(2, INPUT);
}

void loop() {

  // read the value of the switch
  // digitalRead() checks to see if there is voltage
  // on the pin or not
  switchstate = digitalRead(2);

  // if the button is not pressed
  // turn on the green LED and off the red LEDs
  if (switchstate == LOW) {
    digitalWrite(3, HIGH); // turn the green LED on pin 3 on
    digitalWrite(4, LOW); // turn the red LED on pin 4 off
    digitalWrite(5, LOW); // turn the red LED on pin 5 off
  }
  // this else is part of the above if() statement.
  // if the switch is not LOW (the button is pressed)
  // turn off the green LED and blink alternatively the red LEDs
  else {
    digitalWrite(3, LOW); // turn the green LED on pin 3 off
    digitalWrite(4, LOW); // turn the red LED on pin 4 off
    digitalWrite(5, HIGH); // turn the red LED on pin 5 on
    // wait for a quarter second before changing the light
    delay(250);
    digitalWrite(4, HIGH); // turn the red LED on pin 4 on
    digitalWrite(5, LOW); // turn the red LED on pin 5 off
    // wait for a quarter second before changing the light
    delay(250);
  }
}
```

Arduino



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Card **3** of **3**
