**Basic Challenge Requirements (Level 1 to Level 2)**

1. Write an Arduino program that contains the required “Setup” and “Loop” procedures.
2. /\* Blinking LED  
   \* ------------
3. \* Turns on and off a dual color light emitting diode (LED) with its color-specific leads connected to digital   
   \* pins 12 and 13. The LED blinks alternating from red to green in a sycopated interval of 1 s red, 700 ms green.
4. \* To limit current flow through the circuit, we added a 220 ohm resistor on the middle lead,
5. which then connects to the ground (GND) pin on the Arduino.
7. \*  
   \* Created 8 Sept. 2009 by Chung-Hay  
   \* [**http://arduino.berlios.de**](http://arduino.berlios.de/)  
   \*  
   \* based on an orginal by H. Barragan for the Wiring i/o board  
   \*/
8. int ledred = 13; // red LED connected to digital pin 13  
   int ledgreen = 12;  
     
   void setup() // run once, when the sketch starts  
   {  
    pinMode(ledred, OUTPUT); // sets the digital pin as output  
    pinMode(ledgreen, OUTPUT);  
   }  
     
   void loop() // run over and over again  
   {  
    digitalWrite(ledred, HIGH); // sets the red LED on  
    digitalWrite(ledgreen, LOW);  
    delay(1000); // waits for a second  
    digitalWrite(ledred, LOW); // sets the red LED off  
    digitalWrite(ledgreen, HIGH);  
    delay(700); // waits for a second  
   }
10. Define an integer variable to hold the pin position for an external “red” LED
11. void **setup**() // run once, when the sketch starts
12. {
13. Serial.begin(9600); // set up Serial library at 9600 bps
14. pinMode(switchPin, INPUT); // sets the digital pin as input to read switch
15. }
16. void **loop**() // run over and over again
17. {
18. Serial.print("Red switch input: ");  
     Serial.println(digitalRead(switchPin)); // Read the pin and display the value  
     delay(100);
19. }
20. Define an integer variable to hold the pin position for an external “green” LED
21. void **setup**() // run once, when the sketch starts
22. {
23. Serial.begin(9600); // set up Serial library at 9600 bps
24. pinMode(switchPin, INPUT); // sets the digital pin as input to read switch
25. }
26. void **loop**() // run over and over again
27. {

Serial.print("Green switch input: ");  
 Serial.println(digitalRead(switchPin)); // Read the pin and display the value

1. Add code to blink the “red” LED for one second and then blink the “green” LED for one second.
2. int greenled = 9;
3. int redled = 8;
4. void setup() {
5. pinMode(greenled, OUTPUT);
6. pinMode(redled, OUTPUT);
7. }
8. void loop() {
9. digitalWrite(redled, HIGH);
10. delay(1000);
11. digitalWrite(redled, LOW);
12. delay(1000);
13. digitalWrite(greenled, HIGH);
14. delay(1000);
15. digitalWrite(greenled, LOW);
16. delay(1000);
17. }
18. Cut and copy your program code below this line and submit to your GitHub repository.

int greenled = 9;

int redled = 8;

void setup() {

pinMode(greenled, OUTPUT);

pinMode(redled, OUTPUT);

}

void loop() {

digitalWrite(redled, HIGH);

delay(1000);

digitalWrite(redled, LOW);

delay(1000);

digitalWrite(greenled, HIGH);

delay(1000);

digitalWrite(greenled, LOW);

delay(1000);

}

**Standard Challenge Requirements (Level 3)**

1. Modify your program to read and write character strings from the serial monitor.
2. If the user types “red” then run the code to turn on the “red” LED.
   1. Also print “Red LED is On” to the serial monitor.
   2. Also make sure the “green” LED is off.
3. If the user types “green” then run the code to turn on the “green” LED.
   1. Also print “Green LED is On” to the serial monitor.
   2. Also make sure the “red” LED is off.
4. If the user types something other than “red” or “green” then run the code to turn on both LEDs off.
   1. Also print “Both LEDs are Off” to the serial monitor.
5. Cut and copy your program code below this line and submit to your GitHub repository.

3.

void setup() // run once, when the sketch starts

4. {

5. Serial.begin(9600); // set up Serial library at 9600 bps

6. pinMode(switchPin, INPUT); // sets the digital pin as input to read switch

7. }

8.

9.

10. void loop() // run over and over again

11. {

12. Serial.print("Red switch input: ");

Serial.println(digitalRead(switchPin)); // Read the pin and display the value

delay(100);

13. }

**Enhanced Challenge Requirements (Level 4)**

1. Modify your program to read numbers from the serial monitor.
2. If the number is even then blink the “green” LED the number of times.
3. If the number is odd then blink the “red” LED the number of times.
4. Cut and copy your program code below this line and submit to your GitHub repository.