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

1. Write an Arduino program that contains the required “Setup” and “Loop” procedures.
2. Define an integer variable to hold the pin position for an external “red” LED
3. Define an integer variable to hold the pin position for an external “green” LED
4. Add code to blink the “red” LED for one second and then blink the “green” LED for one second.
5. Cut and copy your program code below this line and submit to your GitHub repository.

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(1000); // waits for a second

}

**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.

const int greenPin= 4; //the green led pin attact to

const int redPin= 7; //the red led pin attach to

String comdata = "";

int lastLength = 0;

void setup()

{

  pinMode(greenPin,OUTPUT);  //initialize the greenPin as output

  pinMode(redPin, OUTPUT);  //initialize the redPin as output

  Serial.begin(9600);  // start serial port at 9600 bps:

  Serial.println("Please input any color of LED:");  //print message on serial monitor

}

void loop()

{

  //read string from serial monitor

  if(Serial.available()>0)    // check if data has been sent from the computer

  {

    comdata = "";

    while (Serial.available() > 0)

    {

      comdata += char(Serial.read());

      delay(2);

    }

    Serial.println(comdata);

  }

    if(comdata == "red")

    {

      digitalWrite(redPin, HIGH);//turn the red led on

      digitalWrite(greenPin, LOW);//turn the green led off

    }

    else if(comdata == "green")

    {

      digitalWrite(redPin, LOW);//turn the red led off

      digitalWrite(greenPin, HIGH);//turn the green led on

    }

    else

    {

      digitalWrite(redPin, LOW);//turn the red led off

      digitalWrite(greenPin, LOW);//turn the green led off

    }

}

}

**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.

int redLEDPin=13; //Declare redLEDPin an int, and set to pin 9

int GreenLEDPin=12; //Declare GreenLEDPin an int, and set to pin 10

int redOnTime=250; //Declare redOnTime an int, and set to 250 mseconds

int redOffTime=250; //Declare redOffTime an int, and set to 250

int GreenOnTime=250; //Declare GreenOnTime an int, and set to 250

int GreenOffTime=250; //Declare GreenOffTime an int, and set to 250

int numGreenBlinks=5; //Number of times to blink Green LED

int numRedBlinks=5; //Number of times to blink red LED

String redMessage="The Red LED is Blinking"; //Declaring a String Variable

String GreenMessage="The Green LED is Blinking"; //Declaring a String Variable

void setup() {

Serial.begin(115200); // Turn on the Serial Port

pinMode(redLEDPin, OUTPUT); // Tell Arduino that redLEDPin is an output pin

pinMode(GreenLEDPin, OUTPUT); //Tell Arduino that GreenaLEDPin is an output pin

}

void loop() {

Serial.println(redMessage);

for (int j=1; j<=numRedBlinks; j=j+1) { // Start our for loop

Serial.print(" You are on Blink #: ");

Serial.println(j);

digitalWrite(redLEDPin,HIGH); //Turn red LED on

delay(redOnTime); //Leave on for redOnTime

digitalWrite(redLEDPin,LOW); //Turn red LED off

delay(redOffTime); //Leave off for redOffTime

}

Serial.println(" ");

Serial.println(yellowMessage);

for (int j=1; j<=numGreenBlinks; j=j+1) { // Start our for loop

Serial.print(" You are on Blink #: ");

Serial.println(j);

digitalWrite(GreenLEDPin,HIGH); //Turn yellow LED on

delay(GreenOnTime);