

Lab #3: Optimizing Lab 2 Using loops + Arrays

Once you have solved lab #2 (before the extension involving just the six LED's) you can use For Loops and Arrays to make it more efficient and use less lines of code.

[Read through the Arduino Programming - Loops Overview note](#) first and then [Read through the Arrays note](#) second. You need to click on the links to open the PowerPoints.

A helpful video on for loops is here: <https://youtu.be/OdHzRbR0xHQ>

```
/*
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Description: This program takes a look at how we can modify lab #2 to use lines of code to
initialize all of the pins used for the LED.
*/

int ledPinsUsed[] = {6, 7, 8, 9, 10, 11}; //holds the digital I/O pin numbers used by the six LED's
int pButton = 12; // pin 12 is used by the push button. It will be used as an input pin.

void setup()
{
  //the for loop and the array used help to declare the LED pins as Output pins.
  for (int i = 0; i < 6; i++)
  {
    pinMode(ledPinsUsed[i], OUTPUT);
  }

  /* The code in this comment is replaced by the for loop above. See how many lines of code
  we saved?
  pinMode(6, OUTPUT);
  pinMode(7, OUTPUT);
  pinMode(8, OUTPUT);
  pinMode(9, OUTPUT);
  pinMode(10, OUTPUT);
  pinMode(11, OUTPUT);
  */

  //This is for the push button. It is an input component that is connected to pin 12.
  pinMode(pButton, INPUT);
}

void loop()
{
  //code is put here that will run an infinite number of times one line at a time from top to bottom.
}
```

Your turn:

- 1) Remember that when you show a certain number of LED's ON, there is a period of five seconds before they all turn off? Use a for loop and array to turn off all six LED's to make your code more efficient. It is best to duplicate your original lab #2 before making the change.
- 2) Look at other areas of your code. Where else can you use a combination of a for loop and array to make your code more efficient? Look at your code and update at least one part that can be optimized. You do not need to do ALL parts but a **hint** would be to look at the area of your code where LED's are turned ON.

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Save your program as **lab3_optimized.ino** and upload it to this post. You need to add it to your portfolio but only as a program. You do not need to record it working with a screen recording program. Remember to include comments. Click on “Turn In” when you are done.