

## Exercise 13: Pointers

### Equipment

For this exercise you will need:

- 1 x Arduino Uno

pointer = address  
\*pointer = value  
&x = address of x

### Reading

Chapter 8 & 9

### Questions & Exercises

**13a:** What would you find if you read the memory where a pointer is stored?

**13b:** Examine the following code. What is it doing?

```
int a[5] = {9,2,42,5,8};
int *pointer = &a[0];
void loop() {
    Serial.print("Address_of_pointer_is_");
    Serial.print((unsigned int)pointer, HEX);
    Serial.println();

    Serial.print("Value_of_pointer_is_");
    Serial.print(*pointer);
    Serial.println();

    pointer++;
    delay(3000);
}
```

**13c:** Why does the value of the pointer in 13b change to something seemingly random after the first five iterations?

**13d:** Use a pointer to change the value of an integer variable. You can declare a pointer to an integer variable like this:

```
int *pointer = &var;
```

**13e:** Write a function that swaps the value of two integer variables using pointers

```
void swap(int *pointer_a, int *pointer_b){
    . . .
}
```

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### Hint

When swapping two variables you will need a third temporary variable.