

L8 - Functions and Pointers

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1 Pointers and Functions

So here's a function that doesn't work:

```
In [7]: #include <stdio.h>
        #include <stdlib.h>

        void swap(int x, int y) // swap two variables
        {
            int temp;
            temp = x;
            x = y;
            y = temp;
        }

        int main()
        {
            int a = 10;
            int b = 20;

            swap(a, b);

            printf("a = %d, b = %d", a,b);

            return EXIT_SUCCESS;
        }
```

a = 10, b = 20

This function is an ostensibly reasonable way to swap two variables; but since the two parameters are *passed by value* into the function, the function is unable to modify the two variables in global scope.

We can accomplish a *pass-by-reference* to do this using pointers instead:

```
In [10]: #include <stdio.h>
         #include <stdlib.h>

         void swap(int* x, int* y) // swap two variables
```

```

{
    int temp;
    temp = *x;
    *x = *y;
    *y = temp;
}

int main()
{
    int a = 10;
    int b = 20;

    swap(&a, &b);

    printf("a = %d, b = %d", a,b);

    return EXIT_SUCCESS;
}

```

a = 20, b = 10