Daily Coding Problem #109

Problem

This problem was asked by Cisco.

Given an unsigned 8-bit integer, swap its even and odd bits. The 1st and 2nd bit should be swapped, the 3rd and 4th bit should be swapped, and so on.

For example, `10101010` should be `01010101`. `11100010` should be `11010001`.

Bonus: Can you do this in one line?

Solution

We can do this by applying a bitmask over all the even bits, and another one over all the odd bits. Then we shift the even bitmask right by one and the odd bitmask left by one.

```python
def swap_bits(x):
    EVEN = 0b10101010
    ODD = 0b01010101
    return (x & EVEN) >> 1 | (x & ODD) << 1
```

In one line, that would be:

```python
def swap_bits(x):
    return (x & 0b10101010) >> 1 | (x & 0b01010101) << 1
```

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