Hello! Below is a short code snippet written in the C programming language. Please review the snippet and (briefly!) write the purpose of the supplied function on the line at the bottom of the page.

Just a few friendly reminders:

- The & operator is the bitwise AND (not the logical AND)
- The >> operator is the right shift operator – the operation *a >> b* shifts *a's* bits *b* positions to the right
- uint32_t is a 32-bit unsigned integer, uint8_t is an 8-bit unsigned integer

```
uint32_t num_set_bits[] = {     0,
                                1,
                                1,
                                2,
                                1,
                                2,
                                2,
                                3,
                                1,
                                2,
                                2,
                                3,
                                2,
                                3,
                                3,
                                4 };
uint32_t f(uint8_t* data, int data_length) {

        uint32_t count = 0;

        for (int i=0; i<data_length; i++)

                count += num_set_bits[data[i] & 0xF] + num_set_bits[(data[i] >> 4) & 0x0F];

        return count;

}
```

What does f do?

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Great! Now you understand what *f* does.

Now, please modify *f* so that it will count the number of pairs of set bits instead of single bits. Also please count pairs even if they overlap with a previously counted pair.

Here are a few examples:

- The pattern 00000111 contains 2 pairs
- The pattern 11011000 contains 2 pairs
- The pattern 01101000 contains 1 pair

Good luck!