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 <u>bitwise</u> 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

```c
uint32_t n[] = { 0,
                 1,
                 1,
                 2,
                 1,
                 2,
                 2,
                 3,
                 1,
                 2,
                 2,
                 3,
                 2,
                 3,
                 3,
                 4 };


uint32_t f(uint8_t* d, int l) {

        uint32_t c = 0;

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

                c += n[d[i] & 0xF] + n[(d[i] >> 4) & 0x0F];

        return c;

}
```

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 <u>pairs</u> 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!