158. Read N Characters Given read4 II - Call Multiple Times Premium

Solved

Hard Topics

Given a `file` and assume that you can only read the file using a given method `read4`, implement a method `read` to read `n` characters. Your method `read` may be **called multiple times**.

Method read4:

The API `read4` reads **four consecutive characters** from `file`, then writes those characters into the buffer array `buf4`.

The return value is the number of actual characters read.

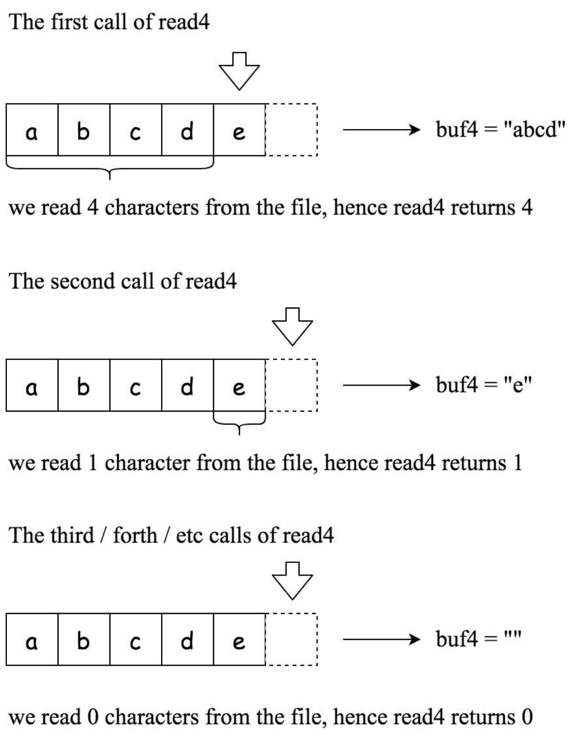
Note that `read4()` has its own file pointer, much like `FILE *fp` in C.

Definition of read4:

```
    Parameter:  char[] buf4
    Returns:    int

buf4[] is a destination, not a source. The results from read4 will be copied to buf4[].
```

Below is a high-level example of how `read4` works:


The first call of read4
a b c d e
buf4 = "abcd"
we read 4 characters from the file, hence read4 returns 4
The second call of read4
a b c d e
buf4 = "e"
we read 1 character from the file, hence read4 returns 1
The third / forth / etc calls of read4
a b c d e
buf4 = ""
we read 0 characters from the file, hence read4 returns 0

```
File file("abcde"); // File is "abcde", initially file pointer (fp) points to 'a'
char[] buf4 = new char[4]; // Create buffer with enough space to store characters
read4(buf4); // read4 returns 4. Now buf4 = "abcd", fp points to 'e'
read4(buf4); // read4 returns 1. Now buf4 = "e", fp points to end of file
read4(buf4); // read4 returns 0. Now buf4 = "", fp points to end of file
```

Method read:

By using the `read4` method, implement the method read that reads `n` characters from `file` and store it in the buffer array `buf`. Consider that you cannot manipulate `file` directly.

The return value is the number of actual characters read.

Definition of read:

> Parameters: char[] buf, int n
> Returns: int
>
> buf[] is a destination, not a source. You will need to write the results to buf[].

Note:

- Consider that you cannot manipulate the file directly. The file is only accessible for `read4` but not for `read`.
- The read function may be **called multiple times**.
- Please remember to **RESET** your class variables declared in Solution, as static/class variables are persisted across multiple test cases. Please see here for more details.
- You may assume the destination buffer array, `buf`, is guaranteed to have enough space for storing `n` characters.
- It is guaranteed that in a given test case the same buffer `buf` is called by `read`.

Example 1:

> **Input:** file = "abc", queries = [1,2,1]
> **Output:** [1,2,0]
> **Explanation:** The test case represents the following scenario:
> File file("abc");
> Solution sol;
> sol.read(buf, 1); // After calling your read method, buf should contain "a". We read a total of 1 character from the file, so return 1.
> sol.read(buf, 2); // Now buf should contain "bc". We read a total of 2 characters from the file, so return 2.
> sol.read(buf, 1); // We have reached the end of file, no more characters can be read. So return 0.
> Assume buf is allocated and guaranteed to have enough space for storing all characters from the file.

Example 2:

> **Input:** file = "abc", queries = [4,1]
> **Output:** [3,0]
> **Explanation:** The test case represents the following scenario:
> File file("abc");
> Solution sol;
> sol.read(buf, 4); // After calling your read method, buf should contain "abc". We read a total of 3 characters from the file, so return 3.
> sol.read(buf, 1); // We have reached the end of file, no more characters can be read. So return 0.

Constraints:

- `1 <= file.length <= 500`
- `file` consist of English letters and digits.
- `1 <= queries.length <= 10`
- `1 <= queries[i] <= 500`

Seen this question in a real interview before? 1/5

Yes No

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Topics

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