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157. Read N Characters Given Read4

Premium

Solved

Easy | Topics | Companies

Given a `file` and assume that you can only read the file using a given method `read4`, implement a method to read `n` characters.

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.

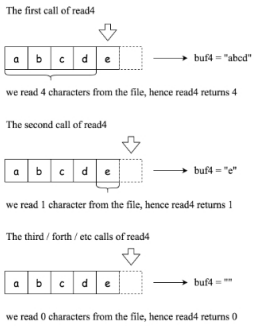
Note that `read4()` has its own file pointer, much like `FILE *fp` in C.

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:




```
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 will only be called once for each test case.
- You may assume the destination buffer array, `buf`, is guaranteed to have enough space for storing `n` characters.

Example 1:

```
Input: file = "abc", n = 4
Output: 3
Explanation: After calling your read method, buf should contain "abc". We read a total of 3
characters from the file, so return 3.
Note that "abc" is the file's content, not buf. buf is the destination buffer that you will
have to write the results to.
```

Example 2:

```
Input: file = "abcde", n = 5
Output: 5
Explanation: After calling your read method, buf should contain "abcde". We read a total of 5
characters from the file, so return 5.
```

Example 3:

```
Input: file = "abcdABCD1234", n = 12
Output: 12
Explanation: After calling your read method, buf should contain "abcdABCD1234". We read a total
of 12 characters from the file, so return 12.
```

Constraints:

- `1 <= file.length <= 500`
- `file` consist of English letters and digits.
- `1 <= n <= 1000`

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

Yes | No

Accepted 190.2K | Submissions 458.3K | Acceptance Rate 41.5%

Topics

Companies

Similar Questions

Discussion (16)

Code

Python3 • Auto

```python
"""
The read4 API is already defined for you.

    @param buf, a list of characters
    @return an integer
    def read4(buf):

# Below is an example of how the read4 API can be called.
file = File("abcdefghijk") # File is "abcdefghijk", initially file pointer (fp) points to 'a'
buf = [' '] * 4 # Create buffer with enough space to store characters
read4(buf) # read4 returns 4. Now buf = ['a','b','c','d'], fp points to 'e'
read4(buf) # read4 returns 4. Now buf = ['e','f','g','h'], fp points to 'i'
read4(buf) # read4 returns 3. Now buf = ['i','j','k',...], fp points to end of file
"""

class Solution:
    def read(self, buf, n):
        """
```

Saved

Ln 6, Col 20

Testcase | Test Result

Accepted Runtime: 57 ms

• Case 1 • Case 2 • Case 3

Input

"abc"

4

Output

"abc"

Expected

"abc"

abc