

Spark Session: `get_next_line`

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Project description:

Write a function which returns a line read from a file descriptor, without the newline.

Topics

1. File Handling
2. Static Variables

File Handling

1. File handling involves 4 major operations that you must understand perfectly
 - Identify these 4 operations, their corresponding system calls, and man pages. (10 mins)
 - Discuss and make sure everyone understands their prototypes and return values. Pay attention to the following: (15 mins)
 - The types of the arguments and the return values;
 - The differences between opening a file in **append**, **truncate**, or **default** mode;
 - File descriptors and the 3 special values reserved by the system.

Break (5 mins)

2. Now that we're comfortable with these 4 operations in theory, let's give them a try!
 - Create a text file anywhere on your filesystem that contains a few lines of text using your favorite editor or the command `echo`.
 - Let's practice reading from a file. Write a program that: (15 mins)
 - opens that file you made in **read-only** mode,
 - reads the complete contents of the file using a buffer smaller than the file content,
 - writes the contents of that buffer onto standard output,
 - closes the file.
 - Now let's practice writing to a file. Write a program that: (10 mins)
 - opens that file you made in **write-only** and **append** mode,
 - writes some additional characters to the file,
 - closes the file.
 - Then display the content of your text file in the terminal using the `cat` command.

Break (5 mins)

Static Variables

1. What is a static variable?

- Use the internet to find the definition of a static variable and its unique characteristics.
- Discuss the following points together and make sure everyone understands: when might you use a static variable? Where is it allocated in memory? What are the disadvantages when it comes to memory and reusability?

2. Let's practice!

- Write a function that: (10 mins)
 - declares a **static int**,
 - initializes that int to 0,
 - increments it by 1,
 - then returns the int value.
- Write the accompanying main that calls that function in a loop 9 times and outputs the returned value using **write()** to the standard output on each iteration. What happens to the return value? (10 mins)
- As a closing step, discuss whether it's possible or not to restore a static variable to its initial value.