Spark Session: get_next_line

updated: 30/03/2022

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.