

Exam

Group 195

Section 1 (5 points) Given a string (a word) and the name of a text file, implement a function that counts and returns the **number of times that the word appears at the file**. The function should be **case insensitive**. Additionally, it should count the number of total lines of the file and the number of lines where this word appears (notice that each word can appear several times at the same line).

The function should return the number of lines of this file, the number of times that the word appears at the file, the number of lines where the word has appeared, and it should handle possible errors, returning the error value.

- Words delimiters in a text: space, tab, end of line and different punctuation marks.
- The function should check whether the file exists and if it can be read.
- The function must NOT print anything on the screen.
- The function must not have any memory leaks.

You can define new constants and data types if you consider it necessary.

Section 2 (5 points) Implement a main program that receives as arguments a word and the name of one or several text files.

- If it does not receive at least 2 arguments, it must finish.
- The program will create as many children as text file names it has received as an argument, and the necessary communication channels with them.
- It will wait for each child to send through the corresponding pipe, the result of processing its corresponding text file and the main program will print the information send by the child.
- It wait for all its children to finish, printing the exit status information for each one of them.

Each child process:

- It will use the function of the previous section to process the its corresponding file, calculating the number of lines of the file, the number of times that the word appears and the number of lines in which the word appears.
- Through the corresponding pipe, it will send to it parent if any error has happened in the processing and if the calling was successful, it will send to the parent process the result of processing the file
- It will finish