Programming Assignment (PA) - 5

(File Systems)

CS307 – Operating Systems

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Submission Report

by

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Problem Description

In this programming assignment we were expected to write a program that accepts the current working directory (the directory that contains this executable) as the root directory, traverses all of its sub-tree (all the directories and files reachable from this root directory) and modifies files with a txt extension.

C Program Implementation

First of all, an attempt was made to read the database.txt file from the existing root. If the read fails, the program is terminated. If the reading is successful, the total number of people in the database.txt file is calculated with the countlines() function and assigned to the personCount variable. Afterwards, a dynamic persons list was created to store the persons. After defining the total number of people the list will have, the getline() function started to read the database.txt file line by line. Each received line is divided with the strtok() function and assigned to variables named gender, name and surname. In order to assign a new Person to the Persons list according to the length of these variables; the gender, name and surname variables of the new person are assigned in memory. Then, the new gender, name and surname variables read from the database.txt file were saved to the list of persons with the strcpy() function. After the entire database.txt was read, the file was closed and the corrector() function, which was recursive, was sent to the current root and the files were started to be corrected.

With the "./" parameter sent to the corrector() function, the files from the current root are read in order and the current root is tried to be opened. Then with the readdir() function, the root's children are retrieved and each of them is processed. If children "." or "..", these children

are not processed and continue. If one of the children is a folder, this folder is detected with the S_ISDIR() function and the extension of the folder is sent as a parameter to the corrector() function and called recursively. In this way, the folders and files in the sub-roots are also processed. If the extension of one of the children is .txt and this child is not the database.txt file in the main root, this file starts to be processed. After the necessary verifications are provided for the file to be processed, the file is tried to be opened. If the file cannot be opened, the program is terminated. If the file is opened, the values in the file are read word by word with the fscanf() function. If this word matches a word in the persons list, the position and length of this word are found. According to these values and the surname and gender of the matching person, the file is updated, and the file is closed. After all the files in the path are processed, the path is closed and after all the paths are processed in the same way, the program is successfully terminated.