Computer Networks - Spring 2023 Assignment No. 3

Submission Deadline: 14th May, 2023 - 11:59pm (on google classroom)

Submission Guidelines

1. You can code your program in either c or c++.
2. Late submissions will be marked zero.
3. Only zipped files are acceptable. Any other format will be marked zero.
4. Submit your zipped file with the naming convention: RollNo_YourName_Section.zip
5. Plagiarism in the assignment will lead to zero marks.

Write a Program in C/C++ [TCP using fork()] for the given scenario.

In this assignment, you have to design a program to implement the working of a customized grading system for **XYZ** university. There are three types of users:

● Admin ● Teachers ● Students

The users (teachers and students) will be treated as clients whereas the user (admin) will be the server who will maintain the complete database. The database files will be separated by teacher names. Initially, the database contains the record of only two teachers. There will only be one server whereas there can be multiple clients for teachers and students.

Access of the Users:

● The admin has complete control over the database. It can add/edit as well as view the information (marks of all the courses and students) along with creating files.

● The teachers can add/edit and view the information of only their own course and its registered students.

● The students can only view the information of their own course.
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Instructions:

➔ The client will have the functionality of the teacher as well as the student. Whenever a client is run on the terminal, the user is asked to enter whether he is a teacher or a student. The client proceeds with the desired functionality then.

Student:

➔ If the user enters student, he can view the information that he wants by asking the server. He has to give his roll number to the server first, which will be matched in all the files, sending a message to the client if the roll number does not exist.

➔ The student with roll number **X** cannot view the information of the student with roll number **Y**.

Teacher:

➔ If the user enters teacher, he can view the information that he wants by asking the server. He/She has to give his/her name to the server first, which will be matched with all file names, sending a message to the client if the file does not exist, along with asking if he wants to create the file. In case of a positive response, the server will create a new file with the entered name The teacher can then add information about a student in the same format as the existing files have.

Admin:

➡ On the termination of all teachers and students after their desired work, the server should calculate the percentage of each student and write it in front of their roll numbers in the file.

Some Clarification regarding the Server:

➡ The admin has the complete database and it can create files, as well as add/edit and view information.

➡ Whatever changes the teacher wants to do, will be done by sending a request to the admin.

➡ Whatever information the student/teacher wants to view, will be viewed by sending a request to the server.

Working:

There will only be one terminal for the server. There can be multiple teachers and students connected to the server as clients.

Note: Write a 1 page report to explain how your code works. Mention your strategy used for the functionality implemented.

Good Luck