CSE 344
Homework #1
Due Date: 22 March 23:59

Scenario: Student Grade Management System with Process Creation

You are tasked with creating a student grade management system in C programming language. The system should allow the user to manage student grades stored in a file. The user should be able to perform the following operations:

gtuStudentGrades “grades.txt”

should create a file. Use fork() system call for process creation.

1. Add Student Grade: The user should be able to add a new student's grade to the system. The program should prompt the user to enter the student's name and grade, and then add this information to the file using a separate process for file manipulation.

addStudentGrade “Name Surname” “AA”

command should append student and grade to the end of the file.

2. Search for Student Grade: The user should be able to search for a student's grade by entering the student's name. The program should then display the student's name and grade if it exists in the file.

searchStudent “Name Surname”

command should return student name surname and grade.

3. Sort Student Grades: The user should be able to sort the student grades in the file. The program should provide options to sort by student name or grade, in ascending or descending order.

sortAll “gradest.txt”

command should print all of the entries sorted by their names.

4. Display Student Grades: The user should be able to display all student grades stored in the file. The program should display the student name and grade for each student. Also display content page by page and first 5 entries.

showAll “grades.txt”

command should print all of the entries in the file.

listGrades “grades.txt”

command should print first 5 entries.

listSome “numofEntries” “pageNumber” “grades.txt”

e.g. listSome 5 2 grades.txt command will list entries between 5th and 10th.

5. Logging: Create a log file that records the completion of each task as desired.

6. Usage: The user should be able to display all of the available commands by calling gtuStudentGrades without an argument.

gtuStudentGrades

command without arguments should list all of the instructions or information provided about how commands in your program.

For testing the assignment, consider a scenario where you have a file `grades.txt` that contains student grades in the format "name, grade" (e.g., "Name Surname, AA"). You can test adding, searching, sorting, and displaying student grades using this file. Ensure that the program handles errors gracefully and uses process creation (fork) to manage file operations concurrently.

Grading:

1) No compile: -100
2) No makefile or makefile without “make clean”: -30.
3) No Report: -100 You must test and show the results of every step.
4) Process creation without fork() system call is -50.
5) Fail to create a file: -100
6) There are 6 steps. Each missing one is -15.
7) Late submissions will not be accepted.

Good luck.