Homework

Question 1

Write a C program to manipulate a linked list of students with information of a student as:

Struct student{

char[100] name;

Int student_id;

float gpa;

}

Program show a menu for user:

1. Create an empty linked list of students (If list is not empty, delete and free all existing nodes of list)
2. Print the number of nodes of list
3. Print all nodes of list (information of all students of list is shown on Console)
4. Enter information of a student and add this student at the beginning of list
5. Enter information of a student and add this student at the end of list
6. Enter a student_id and delete the student with the student_id
7. Enter a name and delete all the students with the same name
8. Sort the list by gpa. (Which sorting algorithms can be used for linked list?)
9. Exit (before exiting, free all memory allocated for list)

Depending on the number which user enter from keyboard, the program with implement the corresponding task.

Question 2 (**sorted List)** Create a linked list contained numbers inputted from keyboard, but when we insert a new node, we need to find appropriate position of the new node to guarantee that the original list is a sorted list.

Question 3

You are given a linked list, L, and another linked list, P, containing integers sorted in ascending order. The operation PrintLots(L,P) will print the elements in L that are in positions specified by P. For instance, if P = 1, 3,4,6, the first, third, fourth, and sixth elements in L are printed. Write the procedure PrintLots(L,P). You should use only the basic list operations. What is the running time of your procedure?