CSE 102 Spring 2025 – Computer Programming
Assignment 14
Due on 20 June, 2025 at 23:59

You will implement a student management system. Students will have name, id, grades for different lectures and gpa information. Number of lectures range from 0 to 5. The lectures and their credits are shown below:

CSE101	2
CSE102	3
CSE103	3
CSE104	4
CSE105	5

Grades will range 0 to 100. The id must be unique, even if the names are the same. Start the ID from 1 and increment it by one after each addition. Use enum data type for lectures.

- You will use Linked List, dynamic memory allocation and struct data type.
- You will implement a function to add a new student to the list. After the addition, calculate the gpa of the new student and print all the ids in the list, separated by commas. The user will be prompted to enter:
  - The name of the student (e.g., “Berk”)
  - The taken lectures list with comma seperated (e.g., “CSE101,CSE102,CSE103”)
  - The grades of lectures (e.g., “80,85,90”)
- You will implement a function to add a new lecture and its grade to the specific id, update gpa. If the lecture is already in the array, update its grade.This function will use id, lecture and grade informations.
- You will implement a function to remove a lecture and its grade to the specific id, update gpa. This function will use id, lecture informations.
- You will implement a function to search for a student by id. If found, return its pointer and print the student details. If the student is not found, display an appropriate message. (e.g., "Student not found").
- You will implement a function to remove a student from the list by id.
- You will implement a function that prints the linked list contents in a table format.
- GPA calculation method: GPA= ∑(lecture grade x lecture credit) / ∑ lecture credit

Menu
1. Add Student
2. Remove Student
3. Search Student
4. Add Lecture
5. Remove Lecture
6. Print ID
7. Print List
8. Exit

Choice: 1
Enter student name: Kaan Cengiz
Enter lectures: CSE101, CSE102
Enter grades: 80, 90
Student added.
id : 1,2,3,4,10,13

Choice: 6
id : 1,2,3,4,10,13

Choice: 3
Enter student id: 3

Name	Lectures	Grades	GPA
Mete	CSE101, CSE102, CSE103	80, 70, 90	81.25

Choice: 3

Enter student id: 7
Student not found.

Choice: 2
Enter student id: 1
Student was removed.
id : 2,3,4,10,13

Choice: 4
Enter student id: 13
Enter lectures: CSE101, CSE103
Enter grades: 85, 93

Name	Lectures	Grades	GPA
Kaan Cengiz	CSE101, CSE102, CSE103	85, 90, 93	89.875

Choice: 5
Enter student id: 13
Enter lectures: CSE101

Name	Lectures	Grades	GPA
Kaan Cengiz	CSE102, CSE103	90, 93	91.5

Choice 7:

Name	Lectures	Grades	GPA	id
Kutay	CSE101	95	95	2
Mete	CSE101, CSE102, CSE103	80, 70, 90	81.25	3
Orhun	CSE103	85	85	4
Teoman	CSE104	45	45	10
Kaan Cengiz	CSE102, CSE103	90, 93	91.5	13

Choice: 8
Freeing memory… Have a nice day!

Notes:

- Use dynamic memory allocation. You can use Valgrind to check for memory leaks.
- Do not forget to indent your code and provide comments.
- Check the validity of the user input.
- Test your programs very carefully at least with 10 different runs.
- Submit your homework as a zip file named as your student id (StudentID.zip) and this file should include:
- ○ YourStudentID.c file
- Programs with compilation errors will get 0.
- The output format must be as given, do not change it.
- Compile your work with the given command “gcc --ansi your_program.c -o your_program”.