

Lab Assignment Week 13

CSC 3320 – System-level Programming

Week of April 8th, 2024

Introduction

Welcome to the 12th programming lab of CSC 3320! Today, we will be covering the following topics:

1. Structures
2. Dynamic Memory Allocation

Lab Policies

- Attendance is mandatory.
- Labs must be completed **individually**.
- TAs are here to help you. Ask them for help!
- Lab assignments are due at midnight on the day of your lab.

Deliverables:

1. The C Code for your program. (.c file).
2. A screenshot of the output in the Terminal.

If you have any questions, please do not hesitate to ask your TA.

Program: Dynamic Student Grade Management System

Modify your Student Grade Management System program from last week to store the student's grade as a dynamically allocated linked list.

Program Functionality:

- Unlimited Class size:
 - a. Allow the user to enter an “unlimited” number of students
 - i. Dynamically allocate a new student structure each time the user wants to enter a new student.
- Student Structure:
 - a. Modify the Student structure to convert it to a linked list.
 - i. Add a pointer as a member of the Student Structure.

Your program should retain the previous grade calculation functionality. However, your data is now stored in a linked list instead of a fixed array size.

- Grade Calculations:
 - a. For each student, calculate the total grade by summing up their individual subject grades.
 - b. Calculate the average grade for the student by dividing the total grade by the number of subjects (5).
- Output and Statistics:
 - a. Display a formatted table showing student names, roll numbers, individual subject marks, total marks, and average marks.
 - b. Calculate and display the class average (average of all students' average grade).
 - c. Identify the student with the highest average grade and the lowest average grade.

Deliverables

For today's lab, you must upload the C program code for your grade management program and its output in the terminal on iCollege. Please name your C code and screenshot as follows:

- C Files
 - lastname_firstname_filename.c
 - For example: **hawamdeh_faris_dynamic_grade_management.c**
- Screenshots
 - lastname_firstname_filename.png
 - For example: **hawamdeh_faris_dynamic_grade_management.png**