Assignment:	**2**	**Subject:**	**Data structures and algorithms**
Section:	**D12**	**Total Marks**	**30**
Submission Date:	**27 April 2023**		

INSTRUCTIONS

Note: Please read instruction before starting assignment and follow all the instructions. Only submission through portal is acceptable. Late submission or submission through email will not be accepted.

1. **Put all your relevant code files along with word file having all of your code in it in a .zip file and images of output of the program after running in visual studio.**
   a. **Write your Name and registration number in word file.**
   b. **Write your Name and registration number in code files and comment them.**
   c. **Image of handwritten answer is not acceptable.**
2. **Submission is created, submit .zip file on portal before submission deadline.**

Q1.Given a singly linked list in C++, write a function named "void deleteMiddle()" that deletes middle element of linked list. Delete middle node in case of odd length linked list and delete middle two nodes in case of even length linked list. (10)

(Hint: You may need to calculate length of linked list first)

For example,

Input Linked List: 5 → 6 → 7 → 8 → 9 → null

Output Linked List: 5 → 6 → 8 → 9 → null

Input Linked List: 5 → 6 → 7 → 8 → 9 → 10 → null

Output Linked List: 5 → 6 → 9 → 10 → null

Q2. Design a program in C++ to implement a linked list of employees having attributes as Name (string type), ID (int of 4 digits), and Year of joining (int). The program should allow the user to insert new employee records into the linked list, find and delete duplicate records from the linked list, sort the linked list with respect to the year of joining, and display each employee record after sorting. (20)

The program should perform the following operations:

1. Insert a new employee record: The program should prompt the user to enter the Name, ID, and Year of joining of the employee. The program should then create a new node with the employee details and insert it at the end of the linked list.
2. Find and remove duplicate employee records: The program should traverse the linked list and find any duplicate employee records. If a duplicate record is found, the program should remove that node from the linked list.

3. Sort the linked list with respect to the year of joining: The program should sort the linked list in ascending order based on the year of joining of the employees.
4. Display the employee records: After sorting, the program should display the details of each employee record in the linked list.