

**Data Structures**

**(Lab)**

**Task 8**

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**Semester:** 3rd

**#include <iostream>**

**#include <string>**

**using namespace std;**

**struct Student {**

**string fullName;**

**int sapID;**

**Student\* nextStudent;**

**};**

**void addStudent(Student\*& head, string fullName, int sapID) {**

**Student\* newStudent = new Student();**

**newStudent->fullName = fullName;**

**newStudent->sapID = sapID;**

**newStudent->nextStudent = nullptr;**

**if (head == nullptr) {**

**head = newStudent;**

**} else {**

**Student\* current = head;**

**while (current->nextStudent != nullptr) {**

**current = current->nextStudent;**

**}**

**current->nextStudent = newStudent;**

**}**

**}**

**void removeStudent(Student\*& head, int position) {**

**if (head == nullptr) return;**

**Student\* current = head;**

**if (position == 1) {**

**head = current->nextStudent;**

**delete current;**

**return;**

**}**

**for (int i = 1; current != nullptr && i < position - 1; i++) {**

**current = current->nextStudent;**

**}**

**if (current == nullptr || current->nextStudent == nullptr) return;**

**Student\* nextToNext = current->nextStudent->nextStudent;**

**delete current->nextStudent;**

**current->nextStudent = nextToNext;**

**}**

**void showStudents(Student\* head) {**

**Student\* current = head;**

**while (current != nullptr) {**

**cout << "Full Name: " << current->fullName << ", SAP\_ID: " << current->sapID << endl;**

**current = current->nextStudent;**

**}**

**}**

**int main() {**

**Student\* head = nullptr;**

**int totalStudents = 5;**

**string fullName;**

**int sapID;**

**for (int i = 0; i < totalStudents; i++) {**

**cout << "Enter full name of student " << i + 1 << ": ";**

**cin.ignore();**

**getline(cin, fullName);**

**cout << "Enter SAP\_ID of student " << i + 1 << ": ";**

**cin >> sapID;**

**addStudent(head, fullName, sapID);**

**}**

**cout << "\nAll Students:\n";**

**showStudents(head);**

**removeStudent(head, 2);**

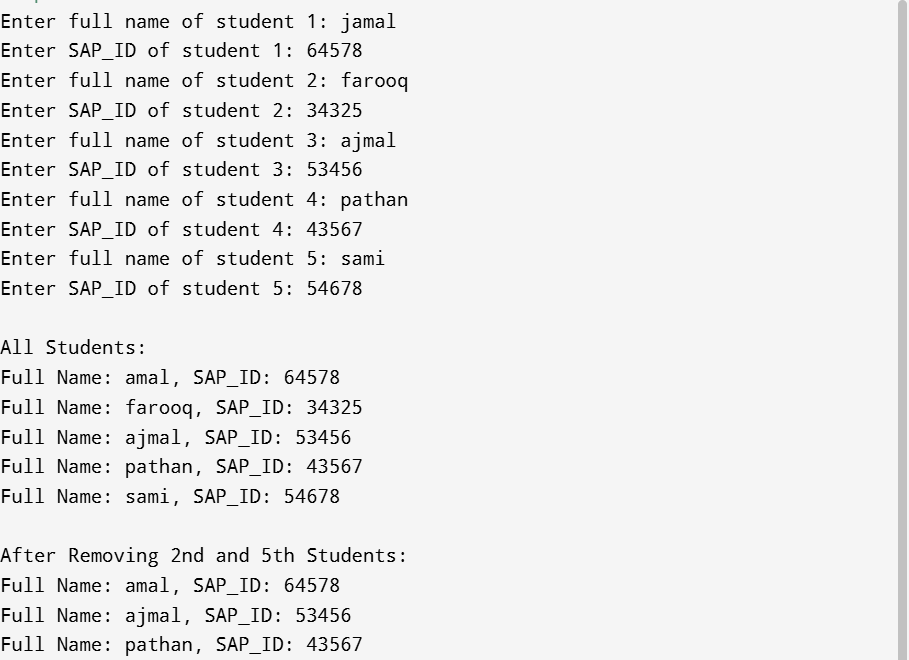
**removeStudent(head, 4);**

**cout << "\nAfter Removing 2nd and 5th Students:\n";**

**showStudents(head);**

**return 0;**

**}**

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