

**Data Structures**

**(Lab)**

**Task 8**

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**Question 1:**

#include <iostream>

#include <string>

using namespace std;

struct Node {

string name;

int SAP\_ID;

Node\* next;

};

void insert(Node\*& head, string name, int SAP\_ID) {

Node\* newNode = new Node();

newNode->name = name;

newNode->SAP\_ID = SAP\_ID;

newNode->next = nullptr;

if (head == nullptr) {

head = newNode;

} else {

Node\* temp = head;

while (temp->next != nullptr) {

temp = temp->next;

}

temp->next = newNode;

}

}

void deleteNode(Node\*& head, int position) {

if (head == nullptr) return;

Node\* temp = head;

if (position == 1) {

head = temp->next;

delete temp;

return;

}

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

temp = temp->next;

}

if (temp == nullptr || temp->next == nullptr) return;

Node\* next = temp->next->next;

delete temp->next;

temp->next = next;

}

void display(Node\* head) {

Node\* temp = head;

while (temp != nullptr) {

cout << "Name: " << temp->name << ", SAP\_ID: " << temp->SAP\_ID << endl;

temp = temp->next;

}

}

int main() {

Node\* head = nullptr;

int n = 5;

string name;

int SAP\_ID;

for (int i = 0; i < n; i++) {

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

cin >> name;

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

cin >> SAP\_ID;

insert(head, name, SAP\_ID);

}

cout << "\nStudent Records:\n";

display(head);

deleteNode(head, 2);

deleteNode(head, 4);

cout << "\nStudent Records after deleting 2nd and 5th students:\n";

display(head);

return 0;

}