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**Class:BSCA-3A**

**DSA LAB EXAM 2**

**Task 1:**

**Code:**

#include<iostream>

using namespace std;

int f\_id, f\_dob, f\_phone;

string f\_name, f\_gender;

struct node {

int id;

int dob;

int cell;

string name;

string gender;

node\* next;

node\* prev;

};

node\* head = NULL;

node\* tail = NULL;

void createNode() {

cout << "\nEnter your Id: ";

cin >> f\_id;

cout << "\nEnter your Name: ";

cin >> f\_name;

cout << "\nEnter your Date of Birth: ";

cin >> f\_dob;

cout << "\nEnter your Gender: ";

cin >> f\_gender;

cout << "\nEnter your Cell no: ";

cin >> f\_phone;

node\* temp = new node;

temp->id = f\_id;

temp->name = f\_name;

temp->dob = f\_dob;

temp->gender = f\_gender;

temp->cell = f\_phone;

temp->next = NULL;

temp->prev = NULL;

head = temp;

tail = temp;

}

void insertEnd() {

if (head == NULL) {

createNode();

}

else {

cout << "\nEnter your Id: ";

cin >> f\_id;

cout << "\nEnter your Name: ";

cin >> f\_name;

cout << "\nEnter your Date of Birth: ";

cin >> f\_dob;

cout << "\nEnter your Gender: ";

cin >> f\_gender;

cout << "\nEnter your Cell no: ";

cin >> f\_phone;

node\* temp = new node;

temp->id = f\_id;

temp->name = f\_name;

temp->dob = f\_dob;

temp->gender = f\_gender;

temp->cell = f\_phone;

temp->next = NULL;

temp->prev = tail;

tail->next = temp;

tail = temp;

}

}

void deletePos(int pos)

{

struct node\* ptr, \* temp, \* temp2;

ptr = head;

for(int i=0;i<pos-1;i++){

ptr = ptr->next;

}

temp = ptr->prev;

temp2 = ptr->next;

temp->next = temp2;

temp2->prev = temp;

free(ptr);

}

void printFor() {

node\* ptr;

ptr = head;

while (ptr != NULL) {

cout << "\nID : " << ptr->id;

cout << "\nName : " << ptr->name;

cout << "\nDOB : " << ptr->dob;

cout << "\nGender : " << ptr->gender;

cout << "\nCell no : " << ptr->cell;

ptr = ptr->next;

cout << "\n-----------------";

}

}

void printBack() {

node\* ptr;

ptr = tail;

while (ptr != NULL) {

cout << "\nID : " << ptr->id;

cout << "\nName : " << ptr->name;

cout << "\nDOB : " << ptr->dob;

cout << "\nGender : " << ptr->gender;

cout << "\nCell no : " << ptr->cell;

ptr = ptr->prev;

cout << "\n-----------------";

}

}

int main() {

int val=0, choice=0;

int pos;

cout << "\n----------------------DoublyLinked List ----------------------------------";

cout << "\n 1. Insert an element at the end.";

cout << "\n 2. Display List Forward";

cout << "\n 3. Display List Backward";

cout << "\n 4. Delete an element by data ";

cout << "\n 5. Exit";

cout << "\n --------------------------------------------------------------------------";

while (choice != 5) {

cout << "\nPlease Enter Your Choice : ";

cin >> choice;

switch (choice) {

case 1:

cout << "\nEnter no of friends?";

cin >> val;

for (int i = 1; i <= val; i++) {

cout << "\nEnter data for friend " << i;

insertEnd();

}

break;

case 2:

cout << "\n--------Printing FORWARD-----------\n";

printFor();

break;

case 3:

cout << "\nPrint Backward\n";

printBack();

break;

case 4:

cout << "\nEnter Position : ";

cin >> val;

deletePos(val);

break;

case 5:

exit(0);

}

}

return 0;

}

**Output:**

**Text

Description automatically generated with low confidence**

**Text

Description automatically generated**

**Text

Description automatically generated**

**Deletion of friend #3:**

**Text

Description automatically generated**