#include <stdio.h>

#include <stdlib.h>

#include <string.h>

#include "fun\_proto.h"

#include "fun\_def.h"

int main(){

Node \*hd,\*tail,\*pos;

int ind,len;

int \*ptr\_ind;

ptr\_ind=&ind;

char Name[30],nName[30],\*arr[20];

hd=CreateEmptyList();

tail=hd->next;

while(tail->next!=NULL)

tail = tail->next;

printf("OPERATIONS\n1: Insert at Beginning.\n2: Insert at last.\n3: Insert after a name.\n4: Search a name.\n5: Delete\n6: Display All\n7: Diaplay in alphabetical order.\n");

int choice;

printf("\nEnter your choice: ");

scanf("%d", &choice);

do{

switch(choice){

case 1: printf("Enter the name to be inserted: ");

scanf("%s", Name);

add\_beg(hd,Name);

break;

case 2: printf("Enter the name to be inserted: ");

scanf("%s", Name);

add\_end(tail,Name);

break;

case 3: printf("Enter the name after which you want to insert: ");

scanf("%s", Name);

pos = position(Name,hd,ptr\_ind);

if(pos==NULL){

printf("Name not Found!!\nPlease enter the correct name.");

}

else{

printf("Enter the name to be inserted: ");

scanf("%s", nName);

insert(nName,pos);

}

break;

case 4: printf("Enter the name to be searched: ");

scanf("%s", Name);

pos = position(Name,hd,ptr\_ind);

if(pos==NULL)

printf("Name not Found!!\nPlease enter the correct name.");

else

printf("Position of %s is %d", Name,ind);

break;

case 5: printf("Enter the name of the student to be deleted: ");

scanf("%s", Name);

pos = position(Name,hd,ptr\_ind);

if(pos==NULL)

printf("Name not Found!!\nPlease enter the correct name.");

else

delete(pos);

break;

case 6: display(hd);

break;

case 7: len = alpha\_ord\_display(hd,arr);

for(int i = 0 ; i < len ; i++)

printf("%s\n", arr[i]);

break;

}

printf("\nOPERATIONS\n1: Insert at Beginning.\n2: Insert at last.\n3: Insert after a name.\n4: Search a name.\n5: Delete\n6: Display All\n7: Diaplay in alphabetical order.\n");

printf("\nEnter your choice(To stop enter -1): ");

scanf("%d", &choice);

}while(choice != -1);

}

/\*fun\_proto.h

struct dl\_list{

char name[30];

struct dl\_list \*next;

struct dl\_list \*prev;

};

typedef struct dl\_list Node;

Node \*CreateEmptyList();

void add\_beg(Node \*hd,char Name[]);

void add\_end(Node \*tail,char Name[]);

Node \*position(char Name[], Node \*hd,int \*ind);

void insert(char Name[],Node \*p);

void delete(Node \*p);

void display(Node \*hd);

int alpha\_ord\_display(Node \*hd,char \*arr[]);

\*/

/\*fun\_def.h

Node \*CreateEmptyList(){

Node \*hd,\*tail;

hd = (Node \*)malloc(sizeof(Node));

tail = (Node \*)malloc(sizeof(Node));

hd->next = tail;

tail->prev = hd;

return hd;

}

void add\_beg(Node \*hd,char Name[]){

Node \*temp,\*p;

temp = (Node \*)malloc(sizeof(Node));

strcpy(temp->name,Name);

temp->next = hd->next;

temp->prev = hd;

hd->next->prev = temp;

hd->next = temp;

}

void add\_end(Node \*tail,char Name[]){

Node \*temp,\*p;

temp = (Node \*)malloc(sizeof(Node));

strcpy(temp->name,Name);

temp->next = tail;

temp->prev = tail->prev;

tail->prev->next = temp;

tail->prev = temp;

}

Node \*position(char Name[], Node \*hd,int \*ind){

int i=1;

Node \*pos;

pos = hd->next;

while(pos != NULL && strcmp(pos->name,Name) != 0 ){

pos = pos->next;

i++;

}

if(pos==NULL)

return pos;

\*ind = i;

return pos;

}

void insert(char Name[],Node \*p){

Node \*temp = (Node \*)malloc(sizeof(Node));

strcpy(temp->name,Name);

temp->next = p->next;

temp->prev = p;

temp->next->prev = temp;

p->next = temp;

}

void delete(Node \*p){

if(p==NULL){

printf("Element is not present!!");

return;

}

Node \*temp = p;

temp->next->prev = temp->prev;

temp->prev->next = temp->next;

free(temp);

return;

}

void display(Node \*hd){

Node \*t = hd->next;

while(t != NULL){

printf("%s\n", t->name);

t = t->next;

}

}

int alpha\_ord\_display(Node \*hd,char \*arr[]){

int i=0;

char temp[30];

for(Node \*t = hd->next ; t != NULL ; t = t->next , i++){

arr[i]=(char \*)malloc(strlen(t->name)\*sizeof(char));

strcpy(arr[i],t->name);

}

int len=i;

for(int j = 0 ; j < len-1 ; j++){

for(int k = 0; k < len-1 ; k++){

if(strcmp(arr[k],arr[k+1])>0){

strcpy(temp,arr[k]);

strcpy(arr[k],arr[k+1]);

strcpy(arr[k+1],temp);

}

}

}

return len;

}

\*/

/\*OUTPUT

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice: 1

Enter the name to be inserted: Marques

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice(To stop enter -1): 2

Enter the name to be inserted: Jake

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice(To stop enter -1): 1

Enter the name to be inserted: Coby

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice(To stop enter -1): 3

Enter the name after which you want to insert: Coby

Enter the name to be inserted: Tyler

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice(To stop enter -1): 2

Enter the name to be inserted: Garret

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice(To stop enter -1): 6

Coby

Tyler

Marques

Jake

Garret

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice(To stop enter -1): 4

Enter the name to be searched: Jake

Position of Jake is 4

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice(To stop enter -1): 4

Enter the name to be searched: John

Name not Found!!

Please enter the correct name.

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice(To stop enter -1): 5

Enter the name of the student to be deleted: John

Name not Found!!

Please enter the correct name.

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice(To stop enter -1): 6

Coby

Tyler

Marques

Jake

Garret

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice(To stop enter -1): 5

Enter the name of the student to be deleted: Jake

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice(To stop enter -1): 6

Coby

Tyler

Marques

Garret

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice(To stop enter -1): 3

Enter the name after which you want to insert: John

Name not Found!!

Please enter the correct name.

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice(To stop enter -1): 6

Coby

Tyler

Marques

Garret

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice(To stop enter -1): 3

Enter the name after which you want to insert: Marques

Enter the name to be inserted: Jake

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice(To stop enter -1): 7

Coby

Garret

Jake

Marques

Tyler

OPERATIONS

1: Insert at Beginning.

2: Insert at last.

3: Insert after a name.

4: Search a name.

5: Delete

6: Display All

7: Display in alphabetical order.

Enter your choice(To stop enter -1): -1

\*/