

CS 2103

Assignment in Data Structures # 7

(**Open Hashing**)

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With the structure definitions of:

#define SIZE 26

typedef struct{

char FN[24], LN[16], MI;

}nameType;

typedef struct{

nameType N;

unsigned long idNumber;

char course[5];

}studRec;

typedef struct node{

studRec S;

struct node \*next;

}nodeType, \*nPtr;

void init(Dictionary D)

{

int i;

for(i=0;i<SIZE;i++){

D[i] = NULL;

}

}

int hash(char LN[])

{

return LN[0] - 'A'; /\*0 for A, 2 for B, etc\*/

}

Boolean isMember(Dictionary D, studRec S)

{

int h;

nPtr trav;

h = hash(S.N.LN);

for(trav = D[h];trav!=NULL && trav->S.idNumber != S.idNumber; trav=trav->next){}

return (trav!=NULL)?TRUE:FALSE;

}

void deleteRec(Dictionary D, studRec S)

{

nPtr \*trav, temp;

int h;

h = hash(S.N.LN);

if(isMember(D, S)==TRUE){

for(trav = &D[h];\*trav!=NULL && (\*trav)->S.idNumber != S.idNumber ;trav = &(\*trav)->next){}

temp = (\*trav);

(\*trav) = temp->next;

free(temp);

}else{

printf("Element not in the set!\n");

}

}

void insert(Dictionary D, studRec S)

{

nPtr temp, \*trav;

int h;

h = hash(S.N.LN);

if(D[h] == NULL){

D[h] = (nPtr)malloc(sizeof(nodeType));

D[h]->S = S;

D[h]->next = NULL;

}else{

if(isMember(D, S)==FALSE){

for(trav = &D[h]; \*trav!=NULL && strcmp((\*trav)->S.N.LN, S.N.LN) < 0;trav = &(\*trav)->next){}

temp = (nPtr)malloc(sizeof(nodeType));

if(temp!=NULL){

temp->S = S;

temp->next = D[h];

D[h] = temp;

}

}

}

}