

CS 2103

Assignment in Data Structures # 8

(**Closed Hashing**)

Submitted by:

**Robert Michael Lim, BSCS – 2**

Submitted to:

**Ms. Christine F. Peña**

#define SIZE 7

#define EMPTY -1

#define DELETED -2

typedef struct{

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

}nameType;

typedef struct{

nameType name;

char course[5];

int yearLevel;

unsigned long idNumber;

}studType;

typedef studType Dictionary[SIZE];

**init()**

void initDictionary(Dictionary D)

{

int i;

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

D[i].yearLevel = EMPTY;

}

}

**hash()**

int hash(unsigned long x)

{

int sum;

while (x!=0){

sum +=(x%10);

x/=10;

}

return sum % SIZE;

}

**isMember()**

Boolean isMember(Dictionary D, studType P)

{

int x, hv = hash(P.idNumber);

Boolean retval = FALSE;

if(D[hv].idNumber == P.idNumber){

retval = TRUE;

}else{

x = (hv+1)%SIZE;

while(x!=hv && D[x].idNumber!= P.idNumber){

x = (x+1)%SIZE;

}

retval = (D[hv].idNumber == P.idNumber)?TRUE:FALSE;

}

return retval;

}

**insert()**

void insert(Dictionary D, studType P)

{

int hv, x, ctr = 0;

hv = hash(P.idNumber);

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

if(D[hv].yearLevel == EMPTY || D[hv].yearLevel == DELETED){

D[hv] = P;

}else{

x = (hv+1)%SIZE;

while(x!=hv && D[x].yearLevel!=EMPTY && D[x].yearLevel!=DELETED){

x = (x+1)%SIZE;

}

D[x] = P;

}

}

}

**delete()**

void deleteDictionary(Dictionary D, studType P)

{

int hv, x, ctr = 0;

hv = hash(P.idNumber);

if(D[hv].idNumber == P.idNumber){

D[hv].yearLevel = DELETED;

}else{

x = (hv+1)%SIZE;

while(x != hv && D[x].yearLevel != EMPTY && D[x].idNumber!=P.idNumber){

x = (x+1)%SIZE;

}

if(D[x].idNumber == P.idNumber){

D[x].yearLevel = DELETED;

}

}

}

Looking back at my experience with this matter, I easily got frustrated and did not even pass an assignment as I remember. This time around, I immediately got the idea of doing the modulo operator even not coding it yet, and this time, I have a lot of help, mainly Bojo and Simon. But even then, there is some kind of error that occurred and I would like you, Mam Peña, to help me debug in this case. This time, I am really close with getting this code, with only really few revisions and editing to be done. And yes mam, I indented the code and adjusted the margin for you to have an easier time in reading this code. ☺