/\* Assignment 7 : Hash Table – I

Set A: Write program to implement various types of hash functions which are used to place the data in a hash table

a. Division Method b. Mid square method

\*/

#include<stdlib.h>

#include<stdio.h>

#define MAX 10

int divide(int value)

{

return value % MAX;

}

int midsquare(int value)

{

int sqr = value \* value;

int digit=0,i,rem;

int temp=sqr;

while(temp!=0)

{

rem = temp %10;

temp=temp/10;

digit++;

}

printf("\nno.of digits = %d\n",digit);

for(i=0;i<=digit/2;i++)

{

rem=sqr%10;

sqr=sqr/10;

}

printf("\nmiddle digit = %d\n",rem);

return rem % MAX;

}

int main()

{

int hashtable[MAX],i,ch,n,ele,key,j,k;

int ht\_midsq[MAX][MAX];

do

{

for(i=0;i<MAX;i++)

{

hashtable[i]=-1;

ht\_midsq[i][0]=-1;

ht\_midsq[i][1]=-1;

}

printf("\n0.Exit\n1.division\n2.midsquare\n");

printf("\nEnter ur choice:");

scanf("%d",&ch);

switch(ch)

{

case 0: exit(0);

case 1:

for(i=0;i<MAX;i++)

printf("\nBucket %d: %d",i,hashtable[i]);

printf("\nHow many elements:");

scanf("%d",&n);

for(i=0;i<MAX;i++) hashtable[i]=-1;

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

{

printf("\nEnter element:");

scanf("%d",&ele);

key=divide(ele);

if(hashtable[key]==-1)

hashtable[key]=ele;

else

{

printf("\ncollision\n");

for(j=key+1; j!=key;j=(j+1)%MAX)

{

if(hashtable[j]==-1)

{

hashtable[j]=ele;

break;

}

}

if(j==key) printf("\nHash table full\n");

}

}

printf("\nHash table using division method:\n");

for(i=0;i<MAX;i++)

printf("\nBucket %d: %d",i,hashtable[i]);

break;

case 2:

for(i=0;i<MAX;i++)

printf("\nBucket %d: %d",i,hashtable[i]);

printf("\nHow many elements:");

scanf("%d",&n);

for(i=0;i<MAX;i++) hashtable[i]=-1;

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

{

printf("\nEnter element:");

scanf("%d",&ele);

key=midsquare(ele);

if(hashtable[key]==-1)

hashtable[key]=ele;

else

{

printf("\ncollision\n");

for(j=key+1; j!=key;j=(j+1)%MAX)

{

if(hashtable[j]==-1)

{

hashtable[j]=ele;

break;

}

}

if(j==key) printf("\nHash table full\n");

}

}

printf("\nHash table using midsquare method:\n");

for(i=0;i<MAX;i++)

printf("\nBucket %d: %d",i,hashtable[i]);

break;

}

}while(ch!=0);

}