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/*Program 12 - Hashing*/

#include<stdio.h>
#define MAX 5

struct employee
{
    int empid;
    char empname[10];
};

struct employee HT[MAX];
int L[MAX], count=0;

int hash(int n)
{
    return n%MAX;
}

int linear_probe(int key)
{
    int i;
    for (i=(key+1)%MAX; i!=key; i=(i+1)%MAX)
    {
        if (L[i]==-1)
            break;
    }
    return i;
}

void insert(int key, int empid, int empname)
{
    int k=key;

    if (L[key]!=-1)
    {
        printf("Collision occurred. Applying linear probing\n");
        key=linear_probe(key);
    }

    L[key]=k;
    HT[key].empid=empid;
    strcpy(HT[key].empname, empname);
    count++;
}

void display()
{
    int i;

    printf("\nThe contents of the HASH TABLE\n");
    printf("L\tEmpid\tName\n");
    for (i=0; i<MAX; i++)

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        printf("%d\t%d\t%s\n", L[i], HT[i].empid, HT[i].empname);
    }

void main()
{
    int i, ch=1, key, empid;
    char empname[20];

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

    do
    {
        if(count==MAX)
        {
            printf("HASH TABLE is full\n");
            break;
        }
        printf("\nEnter employee id   :");
        scanf("%d", &empid);
        printf("Enter employee name :");
        scanf("%s", empname);
        key=hash(empid);
        insert(key, empid, empname);
        printf("Do you want to continue?(1/0):");
        scanf("%d", &ch);
    } while(ch==1);

    display();
}

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