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#include<stdio.h>

#include<stdlib.h>

#include<string.h>


#define BS 10


typedef struct employee
{
    int emp_num;
    char name[20];
}EMP;


EMP HT[BS];


FILE *outfile,*infile;

struct employee input;


void disp()
{
    int i;

    printf("\n\n*****HASH TABLE *****\n\n");

    printf("Bucket no    EMP NUM    NAME\n");

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

        printf("%d\t\t %d\t\t %s\n",i,HT[i].emp_num, HT[i].name);
}


void main()
{
    int i,key,j,c=0;

    outfile=fopen("employee.dat","w+");

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

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{
    HT[i].emp_num=-1;
    strcpy(HT[i]. name, " ");
}
printf("enter 0 for emp_num to end input...");
while(1)
{
    printf("\n emp num:");
    scanf("%d",&input.emp_num);

    if(input.emp_num==0)
        break;

    printf("first name:");
    scanf("%s",input.name);
    fwrite(&input, sizeof(struct employee),1,outfile);
}
fclose(outfile);

infile=fopen("employee.dat","r");
while(fread(&input,sizeof(struct employee),1,infile))
{
    printf("EMP NUM=%8d  NAME=%10s\n",input.emp_num,input.name);
    c++;

    if(c>BS)
    {
        printf("\n\n*****HASH TABLE OVERFLOW*****\n\n");
        break;
    }
}

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key=input.emp_num%BS;
if(HT[key].emp_num!=-1)
{
    HT[key].emp_num=input.emp_num;
    strcpy(HT[key].name,input.name);
    disp();
}
else
{
    printf("\n *****COLLISION AT %d bucket for emp
number=%d*****\n",key,input.emp_num);
    j=(key+1)%BS;
    while(j!=key)
    {
        if(HT[j].emp_num!=-1)
        {
            printf("\n*****USING LINEAR PROBING TO HANDLE COLLISION*****\n");
            printf("\n bucket %d is allocated for key %d\n",j,key);
            HT[j].emp_num=input.emp_num;
            strcpy(HT[j].name,input.name);
            disp();
            break;
        }
        else
            j=(j+1)%BS;
    }
}
}
}
}

```