Lab prog - 10

Given a File of N employee records with a set of keys (4 - digit) which uniquely determine the record in file F.

Assume that file F is maintained in memory by a Hash Table (HT) of m memory locations with L as the set of memory addresses (2 - ~~bit~~ digit) of locations in HT. Let the keys in K and addresses in L are integers.

Design and develop a program in C that uses Hash function H: K → L as H(K) = K mod m (remainder method), and implement hashing technique to map a given key K to the address space L.

Resolve the collision (if any) using linear probing.

code:

```
#include <stdio.h>
#define MAX 20
int hashTable [MAX];
int m;
void insert (int key)
{
    int index = key % m;
    if (hashTable [index] == -1)
    {
        hash Table [index] = key;
    }
```

```
else
{
    int i = 1;
    while (hashTable[(index + i) % m] != -1)
    {
        i++;
    }
    hashTable[(index + i) % m] = key;
}
}
void display()
{
    printf("\n Hash Table :\n");
    for (int i = 0; i = m; i++)
    {
        if (hashTable[i] != -1)
            printf("Address %d : %d\n", i,
                hashTable[i]);
        else
            printf("Address %d : Empty\n", i);
    }
}
int main()
{
    int n, key;
    printf("Enter size of hash table (m): ");
    scanf("%d", &m);
    printf("Enter number of employee records:");
    scanf("%d", &n);
    for (int i = 0; i < m; i++)
```

```
printf("Enter %d employee keys (4-digit):", n);
for (int i=0; i<n ; i++)
{
    scanf("%d", &key);
    insert(key);
}
display();
return 0;
}
```

Output:

```
Enter size of hash table (m): 5
Enter number of employee records: 3
Enter 3 employee keys (4-digit):
1010
1020
1030
```

Hash Table:

```
Address 0: 1010.
Address 1: 1020.
Address 2: 1030.
Address 3: Empty.
Address 4: Empty.
```

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