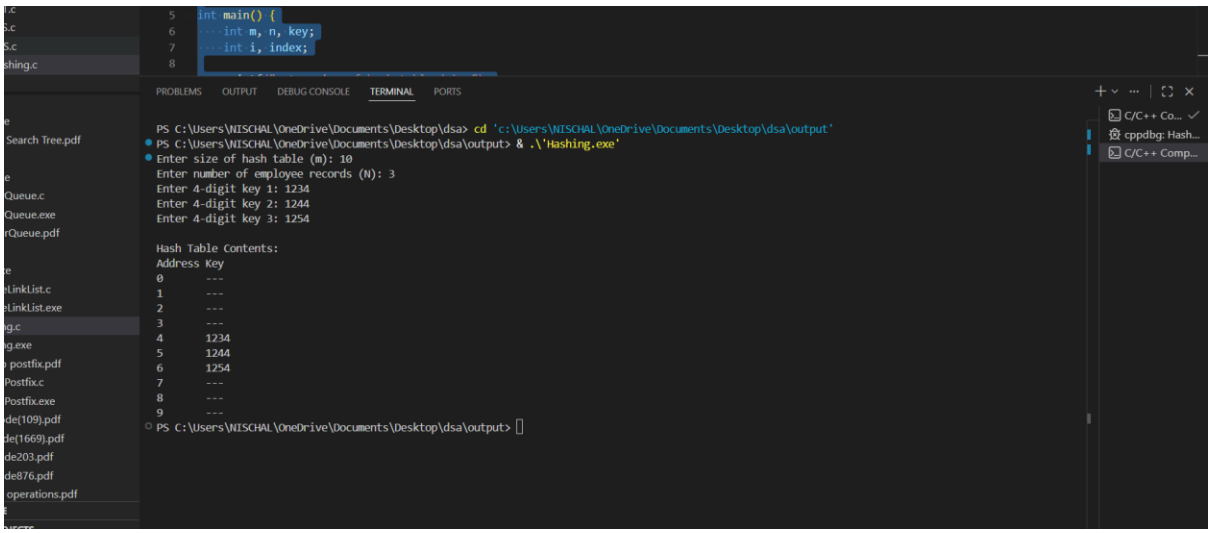
Given a File of N employee records with a set K of Keys(4- digit) which uniquely determine the records in file F. Assume that file F is maintained in memory by a Hash Table (HT) of m memory locations with L as the set of memory addresses (2-digit) of locations in HT. Let the keys in K and addresses in 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.

```
#include <stdio.h>

#define EMPTY -1

int main() {
   int m, n, key;
   int i, index;

   printf("Enter size of hash table (m): ");
   scanf("%d", &m);

   int hashTable[m];

   // Initialize hash table
   for (i = 0; i < m; i++) {
      hashTable[i] = EMPTY;
   }

   printf("Enter number of employee records (N): ");
   scanf("%d", &n);
```

```
    for (i = 0; i < n; i++) {
        printf("Enter 4-digit key %d: ", i + 1);
        scanf("%d", &key);

        index = key % m;   // Hash function

        // Linear probing for collision resolution
        while (hashTable[index] != EMPTY) {
            index = (index + 1) % m;
        }

        hashTable[index] = key;
    }

    // Display hash table
    printf("\nHash Table Contents:\n");
    printf("Address\tKey\n");
    for (i = 0; i < m; i++) {
        if (hashTable[i] != EMPTY)
            printf("%d\t%d\n", i, hashTable[i]);
        else
            printf("%d\t---\n", i);
    }

    return 0;
}
```

OUTPUT:


int main() {
int m, n, key;
int i, index;
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
PS C:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa> cd 'c:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa\output'
PS C:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa\output> & .\'Hashing.exe'
Enter size of hash table (m): 10
Enter number of employee records (N): 3
Enter 4-digit key 1: 1234
Enter 4-digit key 2: 1244
Enter 4-digit key 3: 1254
Hash Table Contents:
Address Key
0 ---
1 ---
2 ---
3 ---
4 1234
5 1244
6 1254
7 ---
8 ---
9 ---
PS C:\Users\NISCHAL\OneDrive\Documents\Desktop\dsa\output>