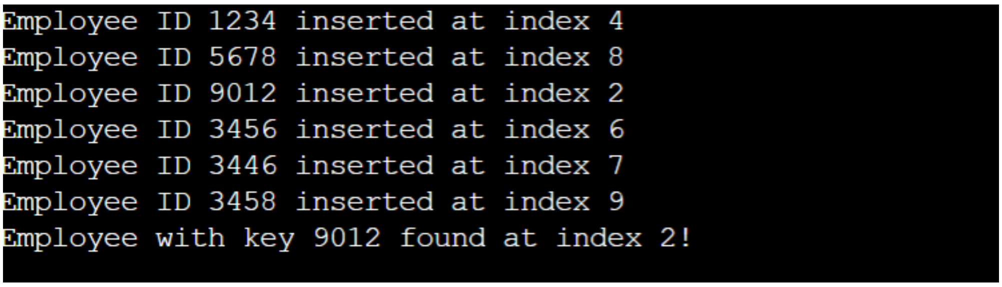
//Program 10

HashTable

```
#include <stdio.h>
#include <stdlib.h>

#define SIZE 10

// Structure to represent an employee record
struct Employee {
    int key;
    // Add other fields as needed
};

// Hash function: H(K) = K mod SIZE
int hash(int key) {
    return key % SIZE;
}

// Linear probing to resolve collisions
int probe(int H[], int key) {
    int index = hash(key);
    int i = 0;
    while (H[(index + i) % SIZE] != 0)
        i++;
    return (index + i) % SIZE;
}

// Insert an employee record into the hash table
void Insert(int H[], int key) {
    int index = hash(key);

    if (H[index] != 0)
        index = probe(H, key);
    if (index == -1) {
        printf("Error: Hash table is full. Unable to insert employee ID %d\n", key);
        return;
    }
    H[index] = key;

    printf("Employee ID %d inserted at index %d\n", key, index); // Print the index where the
employee ID is inserted
}

// Search for an employee record in the hash table
int Search(int H[], int key) {
    int index = hash(key);
    int i = 0;
    while (H[(index + i) % SIZE] != key) {
        if (H[(index + i) % SIZE] == 0) // If empty slot is encountered, key not found
```

```
            return -1; // Return -1 indicating key not found
        i++;
    }
    return (index + i) % SIZE;
}

int main() {
    int HT[SIZE] = {0};

    // Sample employee records
    Insert(HT, 1234);
    Insert(HT, 5678);
    Insert(HT, 9012);
    Insert(HT, 3456);
     Insert(HT, 3446);
     Insert(HT, 3458);
    //   Insert(HT, 3455);
    //   Insert(HT, 3451);
    //     Insert(HT, 3453);
    //      Insert(HT, 3433);
    //       Insert(HT, 3447);


    // Search for an employee record
    int searchKey = 9012; // Key to search for
    int resultIndex = Search(HT, searchKey);
    if (resultIndex != -1) {
        printf("Employee with key %d found at index %d!\n", searchKey, resultIndex);
    } else {
        printf("Employee with key %d not found!\n", searchKey);
    }

    return 0;
}
```

Output:



```
Employee ID 1234 inserted at index 4
Employee ID 5678 inserted at index 8
Employee ID 9012 inserted at index 2
Employee ID 3456 inserted at index 6
Employee ID 3446 inserted at index 7
Employee ID 3458 inserted at index 9
Employee with key 9012 found at index 2!
```