

linearprob.c - Code::Blocks 20.03

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Start here linearprob.c

```
1 #include <stdio.h>
2 #define MAX 100
3 struct Employee {
4     int key;
5     int used;
6 };
7 struct Employee HT[MAX];
8 int m;
9 void initTable() {
10     for (int i = 0; i < m; i++) {
11         HT[i].used = 0;
12     }
13 }
14 int hashFunction(int key) {
15     return key % m;
16 }
17 void insert(int key) {
18     int index = hashFunction(key);
19     int startIndex = index;
20     while (HT[index].used) {
21         index = (index + 1) % m;
22     }
23     if (index == startIndex) {
24         printf("Hash table is full. Cannot insert %d\n", key);
25         return;
26     }
27     HT[index].key = key;
28     HT[index].used = 1;
29     printf("Key %d inserted at address %d\n", key, index);
30 }
31 void search(int key) {
32     int index = hashFunction(key);
33     int startIndex = index;
34     while (HT[index].used) {
35         if (HT[index].key == key) {
36             printf("Key %d found at address %d\n", key, index);
37             return;
38         }
39         index = (index + 1) % m;
40     }
41     if (index == startIndex)
42         break;
43     printf("Key %d not found\n", key);
44 }
45 void display() {
46     printf("\nHash Table:\n");
47     for (int i = 0; i < m; i++) {
48         if (HT[i].used)
49             printf("Address %d : %d\n", i, HT[i].key);
50         else
51             printf("Address %d : EMPTY\n", i);
52     }
53 }
```

Activate Windows
Go to Settings to activate Windows.

C:\Users\Admin\Desktop\linearprob.c C/C++ Windows (CR+LF) WINDOWS-1252 Line 79, Col 8, Pos 1609 Insert Read/Write default ENG IN 11.32.09 AM 15-12-2025

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Start here linearprob.c

```
36     printf("Key %d found at address %d\n", key, index);
37     return;
38 }
39 index = (index + 1) % m;
40 if (index == startIndex)
41     break;
42 }
43 printf("Key %d not found\n", key);
44 }
45 void display() {
46     printf("\nHash Table:\n");
47     for (int i = 0; i < m; i++) {
48         if (HT[i].used)
49             printf("Address %d : %d\n", i, HT[i].key);
50         else
51             printf("Address %d : EMPTY\n", i);
52     }
53 }
54 int main() {
55     int choice, key;
56     printf("Enter hash table size (m): ");
57     scanf("%d", &m);
58     initTable();
59     do {
60         printf("\n1. Insert\n2. Search\n3. Display\n4. Exit\n");
61         printf("Enter your choice: ");
62         scanf("%d", &choice);
63         switch (choice) {
64             case 1:
65                 printf("Enter 4-digit employee key: ");
66                 scanf("%d", &key);
67                 insert(key);
68                 break;
69             case 2:
70                 printf("Enter key to search: ");
71                 scanf("%d", &key);
72                 search(key);
73                 break;
74             case 3:
75                 display();
76                 break;
77             case 4:
78                 printf("Exiting...\n");
79                 break;
80             default:
81                 printf("Invalid choice\n");
82         }
83     } while (choice != 4);
84     return 0;
85 }
```

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C:\Users\Admin\Desktop\linearprob.exe

Enter hash table size (m): 4

- 1. Insert
- 2. Search
- 3. Display
- 4. Exit

Enter your choice: 1

Enter 4-digit employee key: 2222

Key 2222 inserted at address 2

- 1. Insert
- 2. Search
- 3. Display
- 4. Exit

Enter your choice: 1

Enter 4-digit employee key: 3333

Key 3333 inserted at address 1

- 1. Insert
- 2. Search
- 3. Display
- 4. Exit

Enter your choice: 1

Enter 4-digit employee key: 4444

Key 4444 inserted at address 0

- 1. Insert
- 2. Search
- 3. Display
- 4. Exit

Enter your choice: 3

Hash Table:

Address 0 : 4444

Address 1 : 3333

Address 2 : 2222

Address 3 : EMPTY

- 1. Insert
- 2. Search
- 3. Display
- 4. Exit

Enter your choice: 2

Enter key to search: 2222

Key 2222 found at address 2

- 1. Insert
- 2. Search
- 3. Display
- 4. Exit

Enter your choice: 4

Exiting...

Process returned 0 (0x0) execution time : 28.547 s

Press any key to continue.

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Type here to search



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