# Rajalakshmi Engineering College

Name: RAGHAVAN M.K
Email: 240701408@rajalakshmi.edu.in
Roll no: 240701408
Phone: 7397247776
Branch: REC
Department: I CSE FD
Batch: 2028
Degree: B.E - CSE

Scan to verify results

## NeoColab_REC_CS23231_DATA STRUCTURES

### REC_DS using C_Week 7_COD_Question 1

Attempt : 1
Total Mark : 10
Marks Obtained : 10

### Section 1 : Coding

1. Problem Statement

Ravi is building a basic hash table to manage student roll numbers for quick lookup. He decides to use Linear Probing to handle collisions.

Implement a hash table using linear probing where:

The hash function is: index = roll_number % table_sizeOn collision, check subsequent indexes (i+1, i+2, ...) until an empty slot is found.

You need to:

Insert a list of n student roll numbers into the hash table.Print the final state of the hash table. If a slot is empty, print -1.

***Input Format***

The first line of the input contains two integers n and table_size, where n is the

number of roll numbers to be inserted, and table_size is the size of the hash table.

The second line contains n space-separated integers — the roll numbers to insert into the hash table.

***Output Format***

The output should print a single line with table_size space-separated integers representing the final state of the hash table after all insertions.

If any slot remains unoccupied, it should be represented as -1.

Refer to the sample output for formatting specifications.

***Sample Test Case***

Input: 4 7
50 700 76 85
Output: 700 50 85 -1 -1 -1 76

***Answer***

```
#include <stdio.h>

#define MAX 100

// You are using GCC
void initializeTable(int table[], int size)
{
   for(int i=0; i<size; i++)
   {
      table[i] = -1;
   }
}

int linearProbe(int table[], int size, int num)
{
   int index = num%size;
   int i = index;
   do
   {
```

```
        if(table[i]==-1)
        {
            return i;
        }
        i = (i+1) % size;
    }
    while(i!=index);
    return -1;
}

void insertIntoHashTable(int table[], int size, int arr[], int n)
{
    for(int i=0; i<n; i++)
    {
        int index = linearProbe(table, size, arr[i]);
        if(index !=-1)
        {
            table[index] = arr[i];
        }

    }
}

void printTable(int table[], int size)
{
    for(int i=0; i<size; i++)
    {
        printf("%d ", table[i]);
    }
}
int main() {
    int n, table_size;
    scanf("%d %d", &n, &table_size);

    int arr[MAX];
    int table[MAX];

    for (int i = 0; i < n; i++)
        scanf("%d", &arr[i]);

    initializeTable(table, table_size);
    insertIntoHashTable(table, table_size, arr, n);
```

```
    printTable(table, table_size);

    return 0;
}
```

***Status :*** Correct ***Marks : 10/10***