HASHING			
File Name	hashing.c	**Compiler**	gcc
Experiment No	12	**Operating System**	Ubuntu
Date	15.10.24		
Aim	**Write a C program to implement a hash table**		

Program

```c
#include <stdio.h>
#include <stdlib.h>
int* create_hash_table(int size) {
    int* table = (int*)malloc(size * sizeof(int));
    for (int i = 0; i < size; i++) {
        table[i] = -1;
    }
    printf("Created hash table successfully\n");
    return table;
}
int mod_hash(int val, int size) {
    return val % size;
}
int double_mod_hash(int val,int size){
        return (2*val) % size;
}
void insert_value(int* table, int size, int value) {
        int index = mod_hash(value, size);
        if (table[index] == -1){
                table[index]= value;
                return;
        }
        int second_hash = double_mod_hash(value,size);
        if (table[second_hash] == -1){
                table[second_hash]= value;
                return;
        }else{
                int next = second_hash % size;
                for(int i=0;i<size; i++){
                        if(table[next] == -1){
                                table[next] = value;
                                break;
                        }
                        next = (next+1) % size;
                }
                return;
        }
}
void print_hash_table(int *table,int size){
     printf("\n INDEX \t | \t VALUE \n");
      for(int i = 0; i<size ; i++){
                printf(" %d \t | \t %d \n",i,table[i]);
        }
}
```

```
int main(){
        int size = 0,opt = -1,value = 0;
        printf("Enter the size of the hash table");
        scanf("%d",&size);
        int *table = create_hash_table(size);
        printf("\nEnter 1 to insert value into the hash table");
        printf("\nEnter 2 to display the hash table");
        printf("\nEnter 3 to exit");
        while(1){
                printf("\nEnter the option you want to perform :  ");
                scanf("%d",&opt);
                switch(opt){
                     case 1 :
                                    printf("Enter the value you want to insert :  ");
                                    scanf("%d",&value);
                                    insert_value(table,size,value);
                                    break;
                          case 2 : print_hash_table(table,size);
                          case 3 : exit(1);
                                break;


                }
        }
}
```

OUTPUT

```
student@cslab1pc26:~/Naveen$ gcc hashing.c
student@cslab1pc26:~/Naveen$ ./a.out
Enter the size of the hash table 5
Created hash table successfully

Enter 1 to insert value into the hash table
Enter 2 to display the hash table
Enter 3 to exit
Enter the option you want to perform :  1
Enter the value you want to insert :  12

Enter the option you want to perform :  1
Enter the value you want to insert :  22

Enter the option you want to perform :  1
Enter the value you want to insert :  32

Enter the option you want to perform :  1
Enter the value you want to insert :  45

Enter the option you want to perform :  1
Enter the value you want to insert :  15

Enter the option you want to perform :  2

 INDEX    |      VALUE
 0        |       32
 1        |       45
 2        |       12
 3        |       15
 4        |       22
student@cslab1pc26:~/Naveen$
```