Probing

```
#include <stdio.h>
#include<stdlib.h>
int i,j,size,n,j,arr[20],table[20],choice,key,key1,t;
int hash(int a){
    int i;
    i=a%20;
    return(i);
}

int linear(int a){
    int i;
    i=(a+1)%20;
    return(i);
}
int quadratic(int a,int j){
    int i;
    i=(a+(j*j))%20;
    return(i);
}
int probed(int key,int val,int j){
    int i;
    i=key+j*((10-(val%10))%20);
    return(i);
}

int main()
{
    printf("Enter no of table elements \n");
    scanf("%d",&n);
```

```
 printf("Enter the elements \n");
 for(i=0;i<n;i++) {
   printf("Enter the %d th element \n",i+1);
   scanf("%d",&arr[i]);
 }
 for(i=0;i<20;i++){
     table[i]=-1;
 }

 printf(" \n 1. Linear Probing \n 2. Quad Probing \n 3. Double hashing \n 4. Exit \n");
printf("Enter your choice \n");
scanf("%d",&choice);
switch(choice) {
    case 1:
            for(i=0;i<n;i++){
             key=hash(arr[i]);
             while(table[key]!=-1){
                 key=linear(key);
             }
             table[key]=arr[i];
             printf(" \n Element %d inserted at %d \t",arr[i],key);
            }
            break;

     case 2:
            for(i=0;i<n;i++){
             key=hash(arr[i]);
             j=1;
             key1=key;
             while(table[key1]!=-1){
```

```
            key1=quadratic(key,j);
            j++;
          }
          table[key1]=arr[i];
           printf("\n Ele %d inserted at %d \t",arr[i],key1);
         }
         break;

   case 3:
          for(t=0;t<n;t++){
          key=hash(arr[t]);
          j=1;
          key1=key;
          while(table[key1]!=-1){
             key1=probed(key,arr[t],j);
             j++;
          }
          table[key1]=arr[t];
           printf("\n Ele %d inserted at %d %d %d \t",arr[t],key1,t,n);
         }
         break;


   case 4:exit(0);
       break;

   default:printf("Wrong choice \n");
          break;

}
```

```
    return 0;
}
```

Output

```
Enter no of table elements
7
Enter the elements
Enter the 1 th element
20
Enter the 2 th element
40
Enter the 3 th element
34
Enter the 4 th element
56
Enter the 5 th element
78
Enter the 6 th element
90
Enter the 7 th element
23

 1. Linear Probing
 2. Quad Probing
 3. Double hashing
 4. Exit
Enter your choice
1

 Element 20 inserted at 0
 Element 40 inserted at 1
 Element 34 inserted at 14
 Element 56 inserted at 16
 Element 78 inserted at 18
 Element 90 inserted at 10
 Element 23 inserted at 3
```

```
Enter no of table elements
7
Enter the elements
Enter the 1 th element
20
Enter the 2 th element
40
Enter the 3 th element
34
Enter the 4 th element
56
Enter the 5 th element
78
Enter the 6 th element
90
Enter the 7 th element
23

 1. Linear Probing
 2. Quad Probing
 3. Double hashing
 4. Exit
Enter your choice
2

 Ele 20 inserted at 0
 Ele 40 inserted at 1
 Ele 34 inserted at 14
 Ele 56 inserted at 16
 Ele 78 inserted at 18
 Ele 90 inserted at 10
 Ele 23 inserted at 3
```

```
Enter no of table elements
7
Enter the elements
Enter the 1 th element
20
Enter the 2 th element
40
Enter the 3 th element
34
Enter the 4 th element
56
Enter the 5 th element
78
Enter the 6 th element
90
Enter the 7 th element
23

 1. Linear Probing
 2. Quad Probing
 3. Double hashing
 4. Exit
Enter your choice
3

 Ele 20 inserted at 0 0 7
 Ele 40 inserted at 10 1 7
 Ele 34 inserted at 14 2 7
 Ele 56 inserted at 16 3 7
 Ele 78 inserted at 18 4 7
```