Practical No.4

```
#include<bits/stdc++.h>
#define MAX 10
using namespace std;
struct details
{
	long long int phNo;
};
class get_details
{
	public:
		long long int x,temp;
		details d[MAX];

		void initialise()
		{
			for(int i=0;i<MAX;i++)
			{
				d[i].phNo=0;
			}
		}

		int search(details a[MAX],long long int fkey)
		{
			for(int i=0;i<MAX;i++)
			{
				if(a[i].phNo==fkey)
				{
					return i;
				}
			}
```

```
	return 0;
}

int find_duplicate(details a[MAX],long long int fkey)
{
	for(int i=0;i<MAX;i++)
	{
		if(d[i].phNo==x)
			return 1;

	}
	return 0;
}

void hash_Nreplacement()
{
	char ch;
	do{
	cout<<"\nEnter phone number:";
	cin>>x;
	int dup=find_duplicate(d,x);
	if(dup==1)
	{
	cout<<"\nDuplicate entered!";
	continue;
	}
	else
	{

		int index;
		index=(x%MAX);
```

```
                if(d[index].phNo==0)
                {
                d[index].phNo=x;

                }
                else
                {
                for(int i=index;i<MAX;i++)
                {
                        if(d[i].phNo==0)
                        {
                                d[i].phNo=x;
                                break;
                        }
                }

        }
}
        cout<<"\n Do you want to continue adding?(y/n):";
        cin>>ch;
        }while(ch!='n');
        cout<<"\n Enter element to search:";
        cin>>temp;
        int ans=search(d,temp);
        if(ans!=0)
                cout<<"\n Phone number found at location "<<ans;
        else
                cout<<"\n Element not found";

}
```

```
void hash_Wreplacement()
{
	char ch;
	do{

	cout<<"\nEnter phone number:";
	cin>>x;
	int dup=find_duplicate(d,x);
	if(dup==1)
	{
	cout<<"\nDuplicate entered!";
	continue;
	}
	else
	{

	int index,tmp_index;
	index=(x%MAX);

	if(d[index].phNo==0)
	{
		d[index].phNo=x;
		tmp_index=index;
	}
	else if(d[index].phNo!=0 && index==tmp_index)
	{
		for(int i=index;i<MAX;i++)
		{
			if(d[i].phNo==0)
			{
				d[i].phNo=x;
```

```
                                        break;
                                }
                        }
                }
                else
                {
                        if(d[index].phNo!=0)
                        {
                                temp=d[index].phNo;
                                d[index].phNo=x;
                        }
                        for(int i=index;i<MAX;i++)
                        {
                                if(d[i].phNo==0)
                                {
                                        d[i].phNo=temp;
                                        break;
                                }
                        }

                }
}
cout<<"\n Do you want to continue(y/n):";
cin>>ch;
}while(ch!='n');
cout<<"\n Enter element to search:";
cin>>temp;
int ans=search(d,temp);
if(ans!=0)
        cout<<"\n Phone number found at location "<<ans;
else
```

```
                cout<<"\n Element not found";
        }
                void print()
                {
                        for(int i=0;i<MAX;i++)
                        {
                                cout<<"\n"<<d[i].phNo;
                        }
                }

};
int main()
{
        get_details g;
        g.initialise();
        int choice;
        do
        {
                cout<<"\n1.Without replacement";
                cout<<"\n2.With replacement";
                cout<<"\n3.Print";
                cout<<"\n4.Exit";
                cout<<"\nEnter your choice:";
                cin>>choice;
                switch(choice)
                {
                        case 1:
                                g.hash_Nreplacement();
                                break;
                        case 2:
                                g.hash_Wreplacement();
```

```
                    break;
                case 3:
                    g.print();
                    break;

            }
        }while(choice!=4);
}
```

Output:

1.Without Replacement

```
Enter your choice:1

Enter phone number:7620266631

 Do you want to continue adding?(y/n):
y

Enter phone number:9822987091

 Do you want to continue adding?(y/n):y

Enter phone number:7057187742

 Do you want to continue adding?(y/n):n

 Enter element to search:9822987091

 Phone number found at location 2
1.Without replacement
2.With replacement
3.Print
4.Exit
Enter your choice:3

0
7620266631
9822987091
7057187742
0
0
0
0
0
0
1.Without replacement
2.With replacement
3.Print
4.Exit
Enter your choice:4

--------------------------------
Process exited after 49.57 seconds with return value 0
Press any key to continue . . .
```

2.With Replacement:

```
1.Without replacement
2.With replacement
3.Print
4.Exit
Enter your choice:2

Enter phone number:7620266631

 Do you want to continue(y/n):y

Enter phone number:7057187741

 Do you want to continue(y/n):y

Enter phone number:9822987092

 Do you want to continue(y/n):n

 Enter element to search:9822987092

 Phone number found at location 2
1.Without replacement
2.With replacement
3.Print
4.Exit
Enter your choice:3

0
7620266631
9822987092
7057187741
0
0
0
0
0
0
1.Without replacement
2.With replacement
3.Print
4.Exit
Enter your choice:4

--------------------------------
Process exited after 33.96 seconds with return value 0
Press any key to continue . . .
```