Experiment No. 1

Student Name: Himanshu Raj   **UID: 21BCS9318**
Branch: CSE   **Section/Group: 902/A**
Semester: 3   **Date of Performance:22/08/22**
Subject Name: Data Structures   **Subject Code:21CSH-211**

Aim of the practical: Write a menu driven program that implement following operations (using separate functions) on a linear array:

1. Insert a new element at end as well as a the given position.

2. Delete an element from a given whose value is given or whose position is given.

3. To find the location of a given element.

4. To display the elements of the linear array.

Objective: To understand operations on linear arrays

DEPARTMENT OF
ACADEMIC AFFAIRS
Discover. Learn. Empower.
CHANDIGARH
UNIVERSITY
CU

NAAC
GRADE A+
ACCREDITED UNIVERSITY

Program Code:

```cpp
#include <bits/stdc++.h>

using namespace std;


void insert()

{

    int size;

    cout << "Enter the size of the array : " << endl;

    cin >> size;

    int arr[size];

    cout << "Input the element of array : " << endl;

    for (int i = 0; i < size; i++)

    {

        cin >> arr[i];

    }

    int pos;

    cout << "Enter the position : " << endl;

    cin >> pos;

    int element;

    cout << "Enter the element : " << endl;

    cin >> element;

    if (pos > size)

        cout << "Invalid Input";

    else

    {

        for (int i = size - 1; i >= pos - 1; i--)

        {
```

DEPARTMENT OF
ACADEMIC AFFAIRS
CU
CHANDIGARH
UNIVERSITY
Discover. Learn. Empower.

NAAC
GRADE A+
ACCREDITED UNIVERSITY

```cpp
            arr[i + 1] = arr[i];

        }

        arr[pos - 1] = element;

        cout << "Array after insertion is :\n";



        for (int i = 0; i <= size; i++)

        {

            cout << arr[i] << " ";

        }

    }

}


void delet()

{

    int size;

    cout << "Enter the size of the array : " << endl;

    cin >> size;

    int arr[size];

    cout << "Input the element of array : " << endl;

    for (int i = 0; i < size; i++)

    {

        cin >> arr[i];

    }

    int pos;

    cout<<"Enter the position : "<<endl;

    cin>>pos;

    if (pos >= size + 1)
```

```
            cout << "\nDeletion not possible.\n";

        else

        {

            for (int i = pos - 1; i < size - 1; i++)

                arr[i] = arr[i + 1];


            cout << "\nArray after deletion : ";


            for (int i = 0; i < size - 1; i++)

                cout << arr[i] << " ";

        }

    }


void locate()

{

    int size;

    cout << "Enter the size of the array : " << endl;

    cin >> size;

    int arr[size];

    cout << "Input the element of array : " << endl;

    for (int i = 0; i < size; i++)

    {

        cin >> arr[i];

    }

    int element;

    cout<<"Enter the element do you want to find !"<<endl;

    cin>>element;
```

DEPARTMENT OF
ACADEMIC AFFAIRS
Discover. Learn. Empower.

NAAC
GRADE A+
ACCREDITED UNIVERSITY

```cpp
for (int i = 0; i < size; i++)

{

    if(element==arr[i])

    {

        cout<<"Element located"<<endl;

        break;

    }

}

}


int main()

{

    int ch;

    cout << "Enter your choice : " << endl;

    cin >> ch;

    switch (ch)

    {

    case 1:

        // insert element at given position

        insert();

        break;


    case 2:

        // Delete an element from a given whose value is given or whose position is given.

        delet();

        break;
```

DEPARTMENT OF
ACADEMIC AFFAIRS
CHANDIGARH UNIVERSITY
Discover. Learn. Empower.

NAAC
GRADE A+
ACCREDITED UNIVERSITY

```
   case 3:

       // To find the location of a given element.

       locate();

       break;


   default:

       break;

   }

}
```

Output:

```
Enter your choice :
1
Enter the size of the array :
5
Input the element of array :
1 2 3 4 5
Enter the position :
3
Enter the element :
7
Array after insertion is :
1 2 7 3 4 5
```

DEPARTMENT OF
ACADEMIC AFFAIRS
Discover. Learn. Empower.

NAAC
GRADE A+
ACCREDITED UNIVERSITY

```
Enter your choice :
2
Enter the size of the array :
5
Input the element of array :
1 2 3 4 5
Enter the position :
3

Array after deletion : 1 2 4 5
```

```
Enter your choice :
3
Enter the size of the array :
5
Input the element of array :
1 2 3 4 5
Enter the element do you want to find !
3
Element located
```

Learning outcomes (What I have learnt):

3.   I have learnt about insertion operation on an array.

2.   I have learnt about deletion operation on an array.

3.   I have learnt about search operation in an array.

4.   I have learnt about traversing operation on an array.

5.   I have learnt about displaying of elements of an array.

Evaluation Grid :

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.	Student Performance (Conduct of experiment) objectives/Outcomes.		12
2.	Viva Voce		10
3.	Submission of Work Sheet (Record)		8
	Total		30