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BRANCH: BE_CSE SECTION:20BCS_13_A

DATE: 30/08/2021 SUBJECT: DS LAB

Question 1:

Write a program to perform Insertion and deletion operation where Let LA is a Linear Array (unordered) with N elements and K is a positive integer such that K<=N.

SOLUTION:

ALGORITHM

1. Start
2. Set J=N
3. Set N = N+1
4. Set LA[J+1] = LA[J]
5. Set J = J-1
6. Set LA[K] = ELEMENT

Deletion Operation

7. Set LA[J-1] = LA[J]
8. Set J = J+1
9. Set N = N-1
10. Set J=0
11. Repeat steps 4 and 5 while J < N
12. IF LA[J] is equal ITEM THEN GOTO STEP 6
13. Set J = J +1
14. PRINT J, ELEMENT

Update Operation

15. Set LA[K-1] = ELEMENT

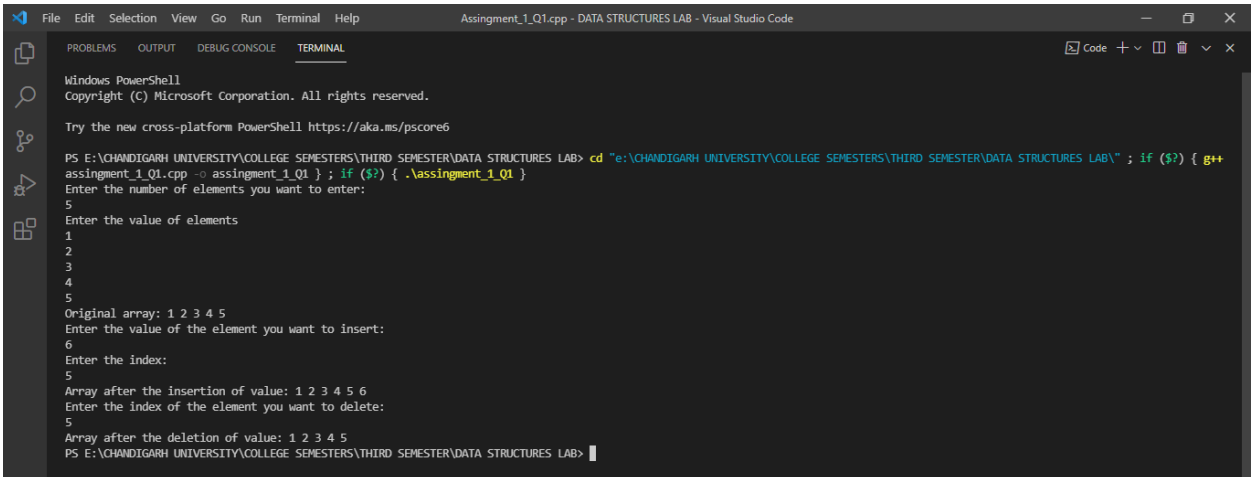
16. Stop

PROGRAM CODE

```
#include <iostream>
using namespace std;
void inputArray(int arr[], int elements)
{
cout << "Enter the value of elements" << endl;
for (int i = 0; i < elements; i++) {
cin >> arr[i];
}
}
void insertElement(int arr[], int elements, int x, int n)
{
cout << "Enter the value of the element you want to insert: "
<< endl;
cin >> n;
cout << "Enter the index: " << endl;
cin >> x;
for (int i = elements - 1; i >= x; i--)
{
arr[i + 1] = arr[i];
}
arr[x] = n;
}
void deleteElement(int arr[], int elements, int n)
{
cout << "Enter the index of the element you want to delete: "
<< endl;
cin >> n;
for (int i = n; i < elements - 1; i++) {
arr[i] = arr[i + 1];
}
}
void display(int arr[], int elements)
{
for (int i = 0; i < elements; i++) {
cout << arr[i] << " ";
```

```
}
}
int main()
{
int n, x, elements, end;
int arr[100];
cout << "Enter the number of elements you want to enter: " <<
endl;
cin >> elements;
inputArray(arr, elements);
cout << "Original array: ";
display(arr, elements);
cout << endl;
insertElement(arr, elements, x, n);
cout << "Array after the insertion of value: ";
elements = elements + 1;
display(arr, elements);
cout << endl;
deleteElement(arr, elements, n);
cout << "Array after the deletion of value: ";
elements = elements - 1;
display(arr, elements);
cout << endl;
return 0;
}
```

OUTPUT



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