IT DS 201 LAB

LAB 2 (INSERT/DELETE)

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Program 3: Write a program to insert an array element in a position in One Dimensional Array.

CODE

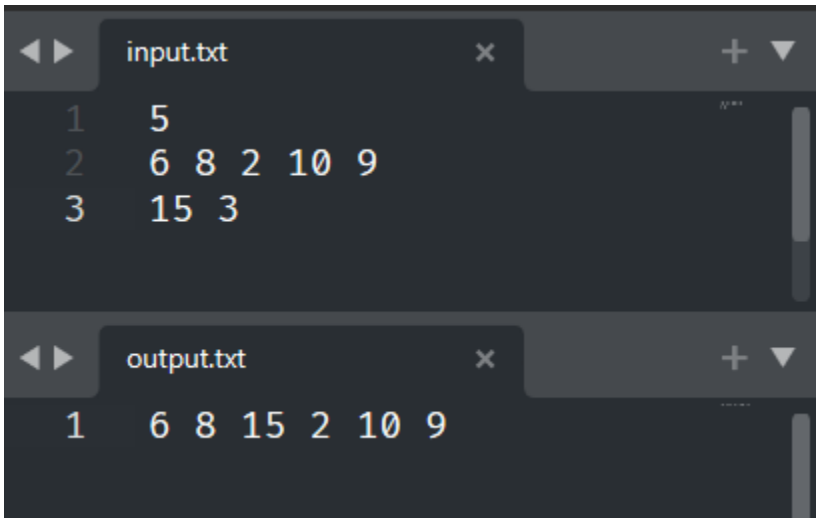
```
    int n,i;
    cin>>n;
    int arr[n+1];
    for(int i=0; i<n; i++){
        cin>>arr[i];
    }
    int element;
    cin>>element;

    int pos;
    cin>>pos;
    for(i=n; i>=pos; i--){
        arr[i] = arr[i-1];
    }

    arr[i] = element;

    for(i=0; i<n+1; i++){
        cout<<arr[i]<<" ";
    }
}
```

ALGORITHM

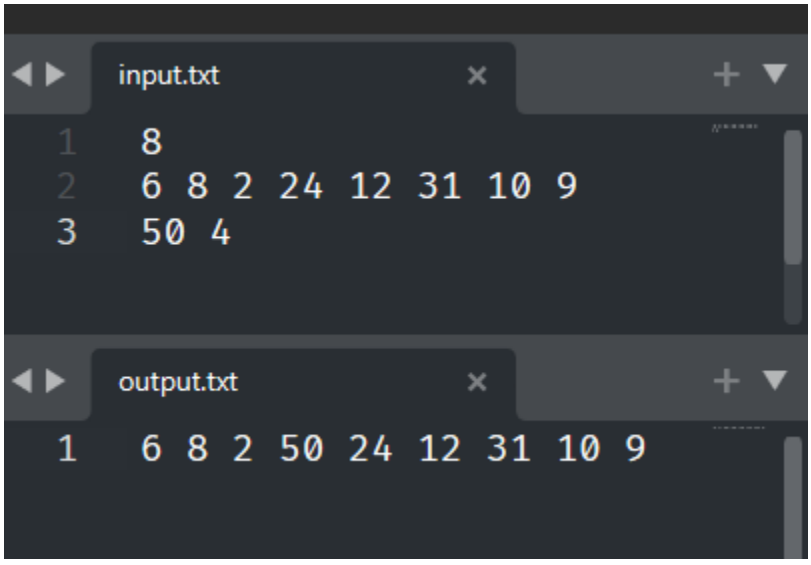
- First get the element to be inserted, say x
- Then get the position at which this element is to be inserted, say pos
- Create a new array with the size one greater than the previous size
- Copy all the elements from previous array into the new array till the position pos
- Insert the element x at position pos
- Insert the rest of the elements from the previous array into the new array after the position.

INPUT/OUTPUT

1.



2.



Program 4: Write a program to delete a given Row/Column in a Two Dimensional Array.

CODE

```
int ro,co;
cin>>ro>>co;
vector< vector<int> > vec(ro);
for (int i = 0; i < ro; i++)
    vec[i].resize(co);
for (int i = 0; i < vec.size(); i++) {
    for (int j = 0; j < vec[i].size(); j++) {
        vec[i][j] = i+j;
        cout <<vec[i][j] << " ";
    }
    cout << endl;
}
int row;
cin>>row;
vec.erase(vec.begin() + row);
cout << "row "<<row+1<<" deleted" << endl;
for (int i = 0; i < vec.size(); i++) {
    for (int j = 0; j < vec[i].size(); j++) {
        cout << vec[i][j] << " ";
    }
    cout << endl;
}
int column;
cin>>column;
for (int i = 0; i < vec.size(); i++) {
    vec[i].erase(vec[i].begin() + column);
}
cout << "column "<<column+1<<" deleted" << endl;
for (int i = 0; i < vec.size(); i++) {
    for (int j = 0; j < vec[i].size(); j++) {
        cout << vec[i][j] << " ";
    }
    cout << endl;
}
```

ALGORITHM

- Construct a 2d matrix, and input the specific row and column to be deleted.
- Iterate through the specific index and erase the entire row with the inbuilt erase function of vectors.
- Repeat the same for the column.
- Print the array after deleting rows and columns.

INPUT/OUTPUT

1. No. of Rows = 4, No. of Columns = 5;
   Delete, row = 3 and column = 1;

```
0 1 2 3 4
1 2 3 4 5
2 3 4 5 6
3 4 5 6 7
row 4 deleted
0 1 2 3 4
1 2 3 4 5
2 3 4 5 6
column 2 deleted
0 2 3 4
1 3 4 5
2 4 5 6
```

2. No. of Rows = 3, No. of Columns = 2;
   Delete, row = 2 and column = 1;

```
0 1
1 2
2 3
row 3 deleted
0 1
1 2
column 2 deleted
0
1
```