

LAB-02

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Q1. Merging sorted arrays. (in cpp)

```
//CS23B1034
//K V Jaya Harsha
#include <iostream>
using namespace std;
int main() {

    char arr1[]={ 'e','q','r','t','w' };
    char arr2[]={ 'b','c','v','x' };

    int size1 = sizeof(arr1) / sizeof(arr1[0]);
    int size2 = sizeof(arr2) / sizeof(arr2[0]);
    int size3 = size1 + size2;
    char arr[size3];

    int i = 0, j = 0, k = 0;
    while (i < size1 && j < size2) {
        if (arr1[i] <= arr2[j]) {
            arr[k] = arr1[i];
            i++;
        }
        else {
            arr[k] = arr2[j];
            j++;
        }
        k++;
    }

    while (i < size1) {
        arr[k] = arr1[i];
        i++;
        k++;
    }

    while (j < size2) {
        arr[k] = arr2[j];
        j++;
        k++;
    }

    cout << "Sorted Array: ";
    for (int i = 0; i < size3; i++)
        cout << arr[i] << " ";
    cout << endl;

    return 0;
}
```

```
● nge\dsa\labs\lab-2\" ; if ($?) { g++ merging-sort.
    merging-sort } ; if ($?) { .\merging-sort }
Merged sorted array: b c e q r t v w x
○ PS C:\Users\harsh\OneDrive\Documents\Desktop\chall
sa\labs\lab-2>
```

Q2. Selection sort algorithm. (in cpp)

```
//CS23B1034
//K V Jaya Harsha
#include <iostream>
using namespace std;
int selectionsort(char arr[], int size) {
    for (int i = 0; i < size - 1; i++) {
        int min = i;
        for (int j = i + 1; j < size; j++) {
            if (arr[j] < arr[min]) {
                min = j;
            }
        }
        char temp = arr[min];
        arr[min] = arr[i];
        arr[i] = temp;
    }
    return 0;
}
int main() {
    cout << "Enter the size of array: ";
    int size;
    cin >> size;
    char arr[size];
    cout << "Enter the elements of the array: ";
    for (int i = 0; i < size; i++) {
        cin >> arr[i];
    }
    cout << "The array before sorting: ";
    for (int i = 0; i < size; i++) {
        cout << arr[i] << " ";
    }
    cout << endl;
    selectionsort(arr, size);
    cout << "The array after sorting: ";
    for (int i = 0; i < size; i++) {
        cout << arr[i] << " ";
    }
    return 0;
}
```

```
Enter the size of array: 5
Enter the elements of the array: q w e r t
The array before sorting: q w e r t
The array after sorting: e q r t w
```

Q3. Insertion sort. (in cpp)

lab 27 - Insertion Sort.cpp - ...

```
//CS23B1034
//K V Jaya Harsha
#include<iostream>
using namespace std;
int selection(char arr[],int size){
    for (int i = 1; i < size; i++){
        int temp = arr[i];
        int j = i-1;
        while (j>=0&&arr[j]>temp){
            arr[j+1]=arr[j];
            j=j-1;
        }
        arr[j+1]=temp;
    }
    return 0;
}
int main(){
    cout << "Enter the size of array: ";
    int size;
    cin >> size;
    char arr[size];
    cout << "Enter the elements in the array! "<< endl;
    for (int i = 0; i < size; i++){
        cin >> arr[i];
    }
    cout << "Before sorting!" << endl;
    for (int i = 0; i < size; i++){
        cout << arr[i] << " ";
    }
    cout << endl;
    selection(arr,size);
    cout << "After sorting!" << endl;
    for (int i = 0; i < size; i++){
        cout << arr[i] << " ";
    }
    return 0;
}
```

```
{ V (Insertion Sort) }
Enter the size of array: 6
Enter the elements in the array!
h a r s h a
Before sorting!
h a r s h a
After sorting!
a a h h r s
```