

Lab Task 01

#Name: jiyanshu Raj

#Roll No. 24k-0987

```
#include<iostream>
```

```
#include<string>
```

```
#include<vector>
```

```
using namespace std;
```

```
void inputuser(string name[],int row){
```

```
    for (int i = 0; i < row; i++)
```

```
    {
```

```
        cout<<"Name["<<i+1<<"]: ";
```

```
        getline(cin,name[i]);
```

```
    }
```

```
}
```

```
void display(string name[],int row){
```

```
    for (int i = 0; i < row; i++)
```

```
    {
```

```
        cout<<"Name["<<i+1<<"] = "<<name[i]<<endl;
```

```
    }
```

```
}
```

```
bool attendance_checker(string name1[],string name2[],int row,string searchName){
```

```
    for (int i = 0; i < row; i++)
```

```
    {
```

```
if(name1[i]==searchName || name2[i]==searchName){
```

```
    return true;
```

```
}
```

```
}
```

```
return false;
```

```
}
```

```
int total_donnation(int max_input1,int max_input2){
```

```
    const int max_donation = 10;
```

```
    return max_donation*(max_input1+max_input2);
```

```
}
```

```
void reverse(string name[],int row){
```

```
    for (int i = row-1; i>0; i--)
```

```
    {
```

```
        cout<<"Name["<<i+1<<" ] = "<<name[i]<<endl;
```

```
    }
```

```
}
```

```
}
```

```
void bar_chart(int chart[],int row){
```

```
    int length = sizeof(chart)/sizeof(chart[0]);
```

```
    for (int i = 0; i <length+16; i++)
```

```
    {
```

```
        cout<<"event popularity bar chart"<<endl;
```

```
        for (int j = 0; j <row; j++)
```

```
        {
```

```
            cout<<"*";
```

```
        }
```

```
        cout<<"("<<row<<")"<<endl;
```

```
}
```

```
}
```

```
int main()
```

```
{
```

```
const int row = 5;
```

```
string name1[row];
```

```
string name2[row];
```

```
cout<<"Enter Name of participants for event 1:"<<endl;
```

```
inputuser(name1,row);
```

```
cout<<"Enter Name of participants for event 2:"<<endl;
```

```
inputuser(name2,row);
```

```
cout<<"Displaying the names of participants for event 1"<<endl;
```

```
display(name1,row);
```

```
cout<<"_____ "<<endl;
```

```
cout<<"Displaying the names of participants for event 2"<<endl;
```

```
display(name2,row);
```

```
string searchname;
```

```
cout<<"Enter Name you want to search: "<<endl;
```

```
getline(cin,searchname);
```

```
bool ac=attendance_checker(name1,name2,row,searchname);
```

```
if (ac==true)
```

```
{
```

```
cout<<"Name is Registered"<<endl;
```

```
}
```

```
else
```

```
{
```

```
cout<<"NON-REGISTERED"<<endl;
```

```
}
```

```
cout<<"total donation = "<<total_donnation(row,row)<<endl;
```

```
cout<<"reversing the name of participant for event 1"<<endl;
```

```
reverse(name1,row);
```

```
cout<<"_____ "<<endl;
```

```
cout<<"reversing the name of participant for event 2"<<endl;
```

```
reverse(name2,row);
```

```
int chart[2]={row,row};
```

```
bar_chart(chart,row);
```

```
return 0;
```

```
}
```

```

Enter Name of participants for event 1:
Name[1]: raja
Name[2]: satosh kumar
Name[3]: deepak
Name[4]: sanddesh
Name[5]: roni
Enter Name of participants for event 2:
Name[1]: riha khan
Name[2]: ram
Name[3]: karan
Name[4]: arjun
Name[5]: sabb
Displaying the names of participants for event 1
Name[1] = raja
Name[2] = satosh kumar
Name[3] = deepak
Name[4] = sanddesh
Name[5] = roni

-----
Displaying the names of participants for event 2
Name[1] = riha khan
Name[2] = ram
Name[3] = karan
Name[4] = arjun
Name[5] = sabb
Enter Name you want to search:
sabb
Name is Registered
Total donation = 100
Reversing the names of participants for event 1
Name[5] = roni
Name[4] = sanddesh
Name[3] = deepak
Name[2] = satosh kumar
Name[1] = raja

-----
Reversing the names of participants for event 2
Name[5] = sabb
Name[4] = arjun
Name[3] = karan
Name[2] = ram
Name[1] = riha khan
Event 1 Popularity: ***** (5)
Event 2 Popularity: ***** (5)
PS E:\OOP LAB TASKS\lab#1\output>

```

```
#include <iostream>
```

```
using namespace std;
```

```
|
void Weekly_AQI_Tracker(int arr[][28], int cities[], int row) {
```

```
    for (int i = 0; i < row; i++) {
```

```
        int weeklyAvg = 0;
```

```
        for (int j = 0; j < 7; j++) {
```

```
            weeklyAvg += arr[i][j];
```

```
}
```

```
    cities[i] = weeklyAvg / 7;
```

```
}
```

```
|  
    cout << "\nWeekly average AQI for each city:\n";
```

```
    for (int i = 0; i < row; i++) {
```

```
        cout << "City " << i + 1 << ": " << cities[i] << endl;
```

```
    }
```

```
}
```

```
|  
void critical_pollution_days(int arr[][28], int row) {
```

```
    cout << "\nCritical Pollution Days (AQI >= 150):\n";
```

```
    for (int i = 0; i < row; i++) {
```

```
        cout << "City " << i + 1 << ":\n";
```

```
        for (int j = 0; j < 28; j++) {
```

```
            if (arr[i][j] >= 150) {
```

```
                cout << "  Day " << j + 1 << ": AQI = " << arr[i][j] << endl;
```

```
            }
```

```
        }
```

```
    }
```

```
}
```

```
|  
void compare_highest_lowest_AQI(int arr[][28], int row) {
```

```
    int highestAQI = 0, lowestAQI = 1000;
```

```
|  
    for (int i = 0; i < row; i++) {
```

```
        for (int j = 0; j < 28; j++) {
```

```
            if (arr[i][j] > highestAQI) {
```

```

        highestAQI = arr[i][j];
    }

    if (arr[i][j] < lowestAQI) {

        lowestAQI = arr[i][j];
    }
}

}

}

|
cout << "\nHighest AQI recorded during the month: " << highestAQI << endl;

cout << "Lowest AQI recorded during the month: " << lowestAQI << endl;

}

|

void monthly_average_aqi(int arr[][28], int row) {

    cout << "\nMonthly Average AQI for each city:\n";

    for (int i = 0; i < row; i++) {

        int totalAQI = 0;

        for (int j = 0; j < 28; j++) {

            totalAQI += arr[i][j];

        }

        cout << "City " << i + 1 << ": " << totalAQI / 28 << endl;

    }

}

|

void most_improved_air_quality(int arr[][28], int row) {

    int mostImprovedCity = -1;

    int maxDrop = -1;

    |
    for (int i = 0; i < row; i++) {

```

```

int firstWeekAvg = 0, lastWeekAvg = 0;

|
for (int j = 0; j < 7; j++) {

    firstWeekAvg += arr[i][j];

}

firstWeekAvg /= 7;

|
for (int j = 21; j < 28; j++) {

    lastWeekAvg += arr[i][j];

}

lastWeekAvg /= 7;

|
int drop = firstWeekAvg - lastWeekAvg;

|
if (drop > maxDrop) {

    maxDrop = drop;

    mostImprovedCity = i;

}

}

|
if (mostImprovedCity != -1) {

    cout << "\nCity with the most improved air quality (largest drop in AQI): City " << mostImprovedCity + 1
    << endl;

    cout << "Drop in AQI: " << maxDrop << endl;

} else {

    cout << "No significant improvement in air quality found.\n";

}

}

|
int main() {

```



```
int city;

cout << "Enter number of cities: ";

cin >> city;

|
int cities[city] = {0};

int arr[city][28];

|
for (int i = 0; i < city; i++) {

    for (int j = 0; j < 28; j++) {

        cout << "Enter AQI[" << i + 1 << "][" << j + 1 << "]: ";

        cin >> arr[i][j];

    }

}

|
Weekly_AQI_Tracker(arr, cities, city);

critical_pollution_days(arr, city);

compare_highest_lowest_AQI(arr, city);

monthly_average_aqi(arr, city);

most_improved_air_quality(arr, city);

|
return 0;

}

|
|
```

```
Enter number of cities: 4
Enter AQI[1][1]: 252
Enter AQI[1][2]: 84
Enter AQI[1][3]: 1111
Enter AQI[1][4]: 222
Enter AQI[1][5]: 21
Enter AQI[1][6]: 222
Enter AQI[1][7]: 58
Enter AQI[1][8]: 84236
Enter AQI[1][9]: 5425
Enter AQI[1][10]: 6542
Enter AQI[1][11]: 65412
Enter AQI[1][12]: 65425
Enter AQI[1][13]: 57425
Enter AQI[1][14]: 5555
Enter AQI[1][15]: 555
Enter AQI[1][16]: 555
Enter AQI[1][17]: 555
Enter AQI[1][18]: 222
Enter AQI[1][19]: 555
Enter AQI[1][20]: 2552
Enter AQI[1][21]: 222
Enter AQI[1][22]: 11
Enter AQI[1][23]: 11
Enter AQI[1][24]: 222
Enter AQI[1][25]: 22
Enter AQI[1][26]: 222
Enter AQI[1][27]: 222
Enter AQI[1][28]: 11
Enter AQI[2][1]: 541
Enter AQI[2][2]: 12541
Enter AQI[2][3]: 1
Enter AQI[2][4]: 2
Enter AQI[2][5]: 36
Enter AQI[2][6]: 6
Enter AQI[2][7]: 369
Enter AQI[2][8]: 963
Enter AQI[2][9]: 258
Enter AQI[2][10]: 222
Enter AQI[2][11]: 12
Enter AQI[2][12]: 21
Enter AQI[2][13]: 32
Enter AQI[2][14]: 36
Enter AQI[2][15]: 63
Enter AQI[2][16]: 96
Enter AQI[2][17]: 69
Enter AQI[2][18]: 58
Enter AQI[2][19]: 555
Enter AQI[2][20]: 555
Enter AQI[2][21]: 5555555
```

```
Enter AQI[2][20]: 555
Enter AQI[2][21]: 5555555
Enter AQI[2][22]: 555553
Enter AQI[2][23]: 11
Enter AQI[2][24]: 25
Enter AQI[2][25]: 36
Enter AQI[2][26]: 96336
Enter AQI[2][27]: 369
Enter AQI[2][28]: 364455
Enter AQI[3][1]: 36444422
Enter AQI[3][2]: 36
Enter AQI[3][3]: 88
Enter AQI[3][4]: 25
Enter AQI[3][5]: 44
Enter AQI[3][6]: 55555
Enter AQI[3][7]: 789
Enter AQI[3][8]: 987
Enter AQI[3][9]: 69
Enter AQI[3][10]: 936
Enter AQI[3][11]: 258
Enter AQI[3][12]: 147
Enter AQI[3][13]: 321
Enter AQI[3][14]: 12
Enter AQI[3][15]: 44
Enter AQI[3][16]: 47
Enter AQI[3][17]: 58
Enter AQI[3][18]: 85
Enter AQI[3][19]: 555
Enter AQI[3][20]: 58
Enter AQI[3][21]: 55
Enter AQI[3][22]: 5
Enter AQI[3][23]: 1
Enter AQI[3][24]: 2
Enter AQI[3][25]: 3
Enter AQI[3][26]: 4
Enter AQI[3][27]: 5
Enter AQI[3][28]: 6
Enter AQI[4][1]: 9
Enter AQI[4][2]: 8
Enter AQI[4][3]: 7
Enter AQI[4][4]: 2
Enter AQI[4][5]: 31
Enter AQI[4][6]: 4
Enter AQI[4][7]: 2
Enter AQI[4][8]: 6
Enter AQI[4][9]: 5
Enter AQI[4][10]: 4
Enter AQI[4][11]: 555
Enter AQI[4][12]: 45
Enter AQI[4][13]: 111
Enter AQI[4][14]: 2222
```

```
Enter AQI[4][14]: 2222
Enter AQI[4][15]: 333
Enter AQI[4][16]: 4444
Enter AQI[4][17]: 555
Enter AQI[4][18]: 6
Enter AQI[4][19]:
7
Enter AQI[4][20]: 8
Enter AQI[4][21]: 9
Enter AQI[4][22]: 11
Enter AQI[4][23]: 2
Enter AQI[4][24]: 33
Enter AQI[4][25]: 4
Enter AQI[4][26]: 5
Enter AQI[4][27]: 6
Enter AQI[4][28]: 7
```

Weekly average AQI for each city:

```
City 1: 281
City 2: 1928
City 3: 5214422
City 4: 9
```

Critical Pollution Days (AQI >= 150):

City 1:

```
Day 1: AQI = 252
Day 3: AQI = 1111
Day 4: AQI = 222
Day 6: AQI = 222
Day 8: AQI = 84236
Day 9: AQI = 5425
Day 10: AQI = 6542
Day 11: AQI = 65412
Day 12: AQI = 65425
Day 13: AQI = 57425
Day 14: AQI = 5555
Day 15: AQI = 555
Day 16: AQI = 555
Day 17: AQI = 555
Day 18: AQI = 222
Day 19: AQI = 555
Day 20: AQI = 2552
Day 21: AQI = 222
Day 24: AQI = 222
Day 26: AQI = 222
Day 27: AQI = 222
```

City 2:

```
Day 1: AQI = 541
Day 2: AQI = 12541
Day 7: AQI = 369
Day 8: AQI = 963
```

```
Day 27: AQI = 222
City 2:
Day 1: AQI = 541
Day 2: AQI = 12541
Day 7: AQI = 369
Day 8: AQI = 963
Day 9: AQI = 258
Day 10: AQI = 222
Day 19: AQI = 555
Day 20: AQI = 555
Day 21: AQI = 5555555
Day 22: AQI = 555553
Day 26: AQI = 96336
Day 27: AQI = 369
Day 28: AQI = 364455
City 3:
Day 1: AQI = 36444422
Day 6: AQI = 55555
Day 7: AQI = 789
Day 8: AQI = 987
Day 10: AQI = 936
Day 11: AQI = 258
Day 13: AQI = 321
Day 19: AQI = 555
City 4:
Day 11: AQI = 555
Day 14: AQI = 2222
Day 15: AQI = 333
Day 16: AQI = 4444
Day 17: AQI = 555

Highest AQI recorded during the month: 36444422

Monthly Average AQI for each city:
City 1: 10640
City 2: 235313
City 3: 1303736
City 4: 301

City with the most improved air quality (largest drop in AQI): City 3
Drop in AQI: 5214419
```