

2D Arrays

Object Oriented Programming

Lab Task #5

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Submitted to
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Q No. 1: Write a C++ program that will find maximum and minimum number in 2D array. Take number from user at run time (Initialize array by taking values from user).

Output should be like that:

Array values are:

28 33 38

01 48 12

44 27 10

Maximum Number is= 48

Minimum Number is= 1

Code:

```
Task1.cpp X
Task1.cpp > ...
1  #include<iostream>
2  using namespace std;
3  int main()
4  {
5      int arr[3][3];
6      cout<<"Enter the array elements"<<endl;
7      for (int i = 0; i < 3; i++)
8      {
9          for (int j = 0; j < 3; j++)
10         {
11             cin>>arr[i][j];
12         }
13     }
14     int max=arr[0][0] , min=arr[0][0];
15     cout<<endl<<"Array values are: "<<endl<<endl;
16     for (int r = 0; r < 3; r++)
17     {
18         for (int c = 0; c < 3; c++)
19         {
20             cout<<arr[r][c]<<"\t";
21             if (arr[r][c]>max)
22             {
23                 max=arr[r][c];
24             }
25         }
26         cout<<endl;
27     }
28     for (int r = 0; r < 3; r++)
29     {
30         for (int c = 0; c < 3; c++)
31         {
32             if (min>arr[r][c])
33             {
34                 min=arr[r][c];
35             }
36         }
37         cout<<endl;
38     }
39     cout<<"Maximum Number is = "<<max<<endl;
40     cout<<"Minimum Number is = "<<min<<endl;
41 }
42
43
44
```

Output:

```
TERMINAL  OUTPUT  PROBLEMS  DEBUG CONSOLE

Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS D:\Lab task> cd "d:\Lab task"
PS D:\Lab task> & .\"Task1.exe"
Enter the array elements
28
33
38
1
48
12
44
27
10

Array values are:

28      33      38
1        48      12
44       27      10

Maximum Number is = 48
Minimum Number is = 1
PS D:\Lab task> 
```

Q No. 2: Write a C++ program that will add two 2D arrays elements. Take values from user at runtime. Note display values of 1st, 2nd and their resultant array.

Hints: A will be the 1st array, B will be the 2nd array and C will be resultant array.

Note: Follow Mathematics Matrix Addition Rules

Output should be like that:

Enter values for array initialization

a[0][0] =3

b[0][0] =4

a[0][1] =5

b[0][1] =34

a[0][2] =3

b[0][2] =5

a[1][0] =6

b[1][0] =7

a[1][1] =7

b[1][1] =7

a[1][2] =7

b[1][2] =6

a[2][0] =4

b[2][0] =9

a[2][1] =7

b[2][1] =5

a[2][2] =3

b[2][2] =5

Values of Array a

3 5 3

6 7 7

4 7 3

Values of Array b

4 34 5

7 7 6

9 5 5

Values of Array c (Resultant array) after addition of Array a and b

7 39 8

13 14 13

13 12 8

Code:

```
G++ Task2.cpp X
G++ Task2.cpp > ...
1  #include<iostream>
2  using namespace std;
3  int main()
4  {
5      int arr_a[3][3];
6      int arr_b[3][3];
7      int sum;
8      cout<<"Enter values for array initialization"<<endl;
9      for (int r = 0; r < 3; r++)
10     {
11         for (int c = 0; c < 3; c++)
12         {
13             cout<<"a["<<r<<"]"<<"["<<c<<"] = ";
14             cin>>arr_a[r][c];
15             cout<<"b["<<r<<"]"<<"["<<c<<"] = ";
16             cin>>arr_b[r][c];
17         }
18     }
19
20     cout<<endl<<"Values of Array a"<<endl<<endl;
21     for (int r = 0; r < 3; r++)
22     {
23         for (int c = 0; c < 3; c++)
24         {
25             cout<<arr_a[r][c]<<"\t";
26         }
27         cout<<endl;
28     }
29
30     cout<<endl<<"Values of Array b"<<endl<<endl;
31     for (int r = 0; r < 3; r++)
32     {
33         for (int c = 0; c < 3; c++)
34         {
35             cout<<arr_b[r][c]<<"\t";
36         }
37         cout<<endl;
38     }
39
40     cout<<endl<<"Values of Array c (Resultant array) after addition of Array a and b "<<endl<<endl;
41     for (int r = 0; r < 3; r++)
42     {
43         for (int c = 0; c < 3; c++)
44         {
45             sum=arr_a[r][c]+arr_b[r][c];
46             cout<<sum<<"\t";
47         }
48         cout<<endl;
49     }
50
51 }
52
```

Output:

```
TERMINAL  OUTPUT  PROBLEMS  DEBUG CONSOLE

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PS D:\Lab task> cd "d:\Lab task"
PS D:\Lab task> & .\"Task2.exe"
Enter values for array initialization
a[0][0] = 3
b[0][0] = 4
a[0][1] = 5
b[0][1] = 34
a[0][2] = 3
b[0][2] = 5
a[1][0] = 6
b[1][0] = 7
a[1][1] = 7
b[1][1] = 7
a[1][2] = 7
b[1][2] = 6
a[2][0] = 4
b[2][0] = 9
a[2][1] = 7
b[2][1] = 5
a[2][2] = 3
b[2][2] = 5

Values of Array a

3      5      3
6      7      7
4      7      3

Values of Array b

4      34     5
7      7      6
9      5      5

Values of Array c (Resultant array) after addition of Array a and b

7      39     8
13     14     13
13     12     8
PS D:\Lab task> █
```