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Subject: OOP Lab

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1. Write a program to add two matrix of 2*3 and display the sum in C++.

```cpp
oop-lab > lab-2-oop > G+ quest1.cpp > ⊙ main()
1    //add two matrix of 2*3 and display the sum
2    #include <iostream>
3    using namespace std;
4
5    int main()
6    {
7        int  a[2][3], b[2][3], sum[2][3], i, j;
8
9        // storing elements of first matrix
10       for(i = 0; i < 2; ++i)
11          for(j = 0; j < 3; ++j)
12          {
13              cout << "Enter element a" << i << j << " : ";
14              cin >> a[i][j];
15          }
16
17       // storing elements of second matrix
18       cout << endl << "Enter elements of 2nd matrix: " << endl;
19       for(i = 0; i < 2; ++i)
20          for(j = 0; j < 3; ++j)
21          {
22              cout << "Enter element b" << i << j << " : ";
23              cin >> b[i][j];
24          }
25
26       // adding the two matrices
27       for(i = 0; i < 2; ++i)
28          for(j = 0; j < 3; ++j)
29              sum[i][j] = a[i][j] + b[i][j];
30
31       // displaying the sum of the two matrices
32       cout << endl << "Sum of two matrix is: " << endl;
33       for(i = 0; i < 2; ++i)
34          for(j = 0; j < 3; ++j)
35          {
36              cout << sum[i][j] << "   ";
37              if(j == 2)
38                  cout << endl;
39          }
40
41       return 0;
42   }
```

Output:

```
PS C:\PRAJUKTA\learning-languages\cpp-programming> cd "c:\PRAJUKTA\learning-languages\cpp-programming\oop-lab\lab-2-oop\" ; if ($?) { g++ quest1.cpp -o quest1 } ;
 if ($?) { .\quest1 }
Enter element a00 : 1
Enter element a01 : 2
Enter element a02 : 3
Enter element a10 : 1
Enter element a11 : 2
Enter element a12 : 3

Enter elements of 2nd matrix:
Enter element b00 : 1
Enter element b01 : 2
Enter element b02 : 3
Enter element b10 : 1
Enter element b11 : 2
Enter element b12 : 3

Sum of two matrix is:
2  4  6
2  4  6
PS C:\PRAJUKTA\learning-languages\cpp-programming\oop-lab\lab-2-oop> []
```

2. Write a program to reverse a string without using an predefined function.

```cpp
oop-lab > lab-2-oop > G+ quest2.cpp > ⦿ main()
1    //reverse a string
2    #include <iostream>
3
4    using namespace std;
5
6    int main()
7    {
8        char s1[100], c = 'a';
9        int len = 0, i = 0;
10
11        cout << "Enter the String you want to reverse: ";
12        cin >> s1;
13
14        while (c != '\0') //\0 is the last character of any string
15        {
16            c = s1[i];
17            i++;
18        }
19        len= i - 1;//length of the string
20
21        cout << "\nLength of the entered string: " << len << "\n";
22
23        char s2[i]; //another char array to store the reverse of a string
```

```cpp
24
25        i = 0;
26        while (i != len + 1) //while i is not equal to the last character of the input string
27        {
28            s2[i] = s1[len - i - 1]; //extracting the characters from the end of the string
29            i++;
30        }
31
32        cout << "\nReverse of the entered string " << s1 << " is : " << s2 << "\n";
33
34        return 0;
35    }
36
```

Output:

```
PS C:\PRAJUKTA\learning-languages\cpp-programming> cd "c:\PRAJUKTA\learning-languages\cpp-programming\oop-lab\lab-2-oop\" ; if ($?) { g++ quest2.cpp -o quest2 } ;
 if ($?) { .\quest2 }
Enter the String you want to reverse: PRAJUKTA

Length of the entered string: 8

Reverse of the entered string PRAJUKTA is : ATKUJARP
PS C:\PRAJUKTA\learning-languages\cpp-programming\oop-lab\lab-2-oop> []
```

3. Write a program to find the given length of a substring in a string.

```cpp
oop-lab > lab-2-oop > G quest3.cpp > main()
1    //wap to find a given length of a substring in a string
2    #include <iostream>
3    #include <string.h>
4    using namespace std;
5
6    int main()
7    {
8        string s1;
9        int a,b;
10
11       cout << "Enter the string: ";
12       cin >> s1 ;
13
14       cout<<"Enter the starting limit: ";
15       cin >> a ;
16
17       cout<<"Enter the ending limit: ";
18       cin >> b ;
19
20       string r = s1.substr(a, b);
21       cout<<"The substring is: "<<r<<endl;
22
23       cout<<"The length of the sub-string is: "<<r.size();
24
25       return 0;
26
27   }
```

Output:

```
PS C:\PRAJUKTA\learning-languages\cpp-programming> cd "c:\PRAJUKTA\learning-languages\cpp-programming\oop-lab\lab-2-oop\" ; if ($?) { g++ quest3.cpp -o quest3 } ;
 if ($?) { .\quest3 }
Enter the string: Prajukta
Enter the starting limit: 0
Enter the ending limit: 4
The substring is: Praj
The length of the sub-string is: 4
PS C:\PRAJUKTA\learning-languages\cpp-programming\oop-lab\lab-2-oop>
```

4. Write a program to compare two strings using library functions.

```cpp
oop-lab > lab-2-oop > G  quest4.cpp > main()
1    //wap to compare the two strings using library functions
2    #include <iostream>
3    #include <string.h>
4    using namespace std;
5
6    int main()
7    {
8        string s1;
9        string s2;
10       int a,b;
11
12       cout << "Enter the string 1: ";
13       cin >> s1 ;
14
15       cout << "Enter the string 2: ";
16       cin >> s2 ;
17
18       int cmp= s1.compare(s2);
19       if(cmp==0)
20       {
21           cout<<"The strings are the same.";
22       }
23       else
24       {
25           cout<<"The strings are not the same.";
26       }
27       return 0;
28  }
```

Output:

```
PS C:\PRAJUKTA\learning-languages\cpp-programming> cd "c:\PRAJUKTA\learning-languages\cpp-programming\oop-lab\lab-2-oop\" ; if ($?) { g++ quest4.cpp -o quest4 } ;
 if ($?) { .\quest4 }
Enter the string 1: Prajukta
Enter the string 2: Prajukta
The strings are the same.
PS C:\PRAJUKTA\learning-languages\cpp-programming\oop-lab\lab-2-oop> []
```

5. Write a program to compare two strings without using library functions.

```
oop-lab > lab-2-oop > C+ quest5.cpp > {} main()
1    //wap to compare the two strings without using library functions
2    #include<iostream>
3    using namespace std;
4    int main()
5    {
6        char str1[50], str2[50];
7        int i=0, cmp=0;
8
9        cout<<"Enter the first string: ";
10       cin>>str1;
11       cout<<"Enter the second string: ";
12       cin>>str2;
13
14       while(str1[i]!='\0' || str2[i]!='\0') //checking for the last character
15       {
16           if(str1[i]!=str2[i])
17           {
18               cmp = 1;
19               break;
20           }
21           i++;
22       }
23       if(cmp==0)
24           cout<<"\nStrings are equal.";
25       else
26           cout<<"\nStrings are not equal";
27       cout<<endl;
28       return 0;
29   }
```

Output:

```
PS C:\PRAJUKTA\learning-languages\cpp-programming> cd "c:\PRAJUKTA\learning-languages\cpp-programming\oop-lab\lab-2-oop\" ; if ($?) { g++ quest5.cpp -o quest5 } ;
 if ($?) { .\quest5 }
Enter the first string: Prajukta
Enter the second string: Prajukta

Strings are equal.
PS C:\PRAJUKTA\learning-languages\cpp-programming\oop-lab\lab-2-oop>
```