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477200

Lab Manual 9 lab task

Q1. Make 2d array in c++ and print left diagonal and right diagonal sum of a 3x3 matrix.

```cpp
#include <iostream>
using namespace std;

int main() {
    int arr[3][3];
    int ld=0;
    int rd=0;
    cout << "Enter your values from left to right and then going downwards" << endl;
    for (int i=0;i<=2;i++) {
        for (int j=0;j<=2;j++) {
            cout << "Enter value: ";
            cin >> arr[i][j];
        }
    }
    for (int i=0;i<=2;i++) {
        ld+=arr[i][i];
    }
    for (int i=0;i<=2;i++) {
        rd+=arr[i][2-i];
    }
    cout << "Sum of left diagonal of the matrix is: " << ld << endl;
    cout << "Sum of right diagonal of the matrix is: " << rd << endl;
    return 0;
}
```

```
Enter your values from left to right and then going downwards
Enter value: 4
Enter value: 3
Enter value: 5
Enter value: 3
Enter value: 2
Enter value: 7
Enter value: 6
Enter value: 8
Enter value: 9
Sum of left diagonal of the matrix is: 15
Sum of right diagonal of the matrix is: 13

Process returned 0 (0x0)   execution time : 16.725 s
Press any key to continue.
```

Q2. Write a function to add two 2d arrays of size 3x3.

```cpp
#include <iostream>
using namespace std;

void addarr(int arr1[3][3],int arr2[3][3],int arr3[3][3]) {
    for (int i=0;i<=2;i++){
        for (int j=0;j<=2;j++) {
            arr3[i][j]=arr1[i][j]+arr2[i][j];
        }
    }
}
int main () {
    int arr2[3][3],arr1[3][3];
     int arr3[3][3]={{0,0,0},{0,0,0},{0,0,0}};
     cout << "Enter your values for array 1" << endl;
     for (int i=0;i<=2;i++) {
        for (int j=0;j<=2;j++) {
            cin >> arr1[i][j];
        }
     }
     cout << "Enter your values for array 2" << endl;
     for (int i=0;i<=2;i++) {
        for (int j=0;j<=2;j++) {
            cin >> arr2[i][j];
        }
     }
     addarr(arr1,arr2,arr3);
     cout << "Sum of your 2 arrays is: " << endl;
     for (int i=0;i<=2;i++) {
        for (int j=0;j<=2;j++) {
            cout << arr3[i][j] << endl;
        }
     }
    return 0;
}
```

```
Enter your values for array 1
1
2
3
4
5
6
7
8
9
Enter your values for array 2
1
2
3
4
5
6
7
8
9
Sum of your 2 arrays is:
2
4
6
8
10
12
14
16
18

Process returned 0 (0x0)   execution time : 9.450 s
Press any key to continue.
```

Q3. Using 2d arrays in c++, take transpose of a 3x3 matrix. Make a transpose function.

```cpp
#include <iostream>
using namespace std;

const int rows=3,colm=3;

void transpose(int arr[rows][colm]) {
    int temp;
    for (int i=0;i<colm;i++) {
        for (int j=i+1;j<colm;j++) {
            temp = arr[i][j];
            arr[i][j]=arr[j][i];
            arr[j][i]=temp;
        }
    }
}
int main () {
    int arr1[3][3];
    cout << "Enter your values for first array" << endl;
    for (int i=0;i<=2;i++) {
        for (int j=0;j<=2;j++) {
            cin >> arr1[i][j];
        }
    }
    transpose(arr1);
    cout << "transpose of the array is" << endl;
    for (int i=0;i<=2;i++) {
        for (int j=0;j<=2;j++) {
            cout << arr1[i][j];
        }
        cout << endl;
    }
    return 0;
}
```

```
Enter your values for first array
1
2
3
4
5
6
7
8
9
transpose of the array is
147
258
369

Process returned 0 (0x0)   execution time : 6.333 s
Press any key to continue.
```

Q4. Using 2d arrays in c++, implement 3x3 matrix multiplication. Make a function.

```
void multiplication(int array1[][col], int array2[][col], int result[][col]) {
    for (int i=0; i <col;i++) {
        for (int j = 0; j < col;j++) {
            result[i][j] = 0;
            for (int z = 0;  z< col; z++) {
                result[i][j] += array1[i][z] * array2[z][j];
            }}}
}

int main()
{int array2[3][3],array1[3][3];
    int array3[3][3]={{0,0,0},{0,0,0},{0,0,0}};
    cout <<"Enter your values for first array"<< endl;
    for(int i=0;i<=2;i++){


        for(int j=0;j<=2;j++){
         cin>>array1[i][j];
        }}
        cout <<"Enter your values for second array"<< endl;
    for(int i=0;i<=2;i++){
        for(int j=0;j<=2;j++){
        cin>>array2[i][j];
        }}
    cout << "your resultant array is" << endl;
    multiplication(array1,array2,array3);
     cout <<"product of both arrays isS"<< endl;

      for(int i=0;i<=2;i++){
        for(int j=0;j<=2;j++){
         cout <<array3[i][j]<< endl;
```

```
Enter your values for first array
1
2
3
4
5
6
7
8
9
Enter your values for second array
1
2
3
4
5
6
7
8
9
your resultant array is
addittion of both arrays isS
30
36
42
66
81
96
102
126
```

Q5. Print the multiplication table of 15 using recursion.

```
#include <iostream>

using namespace std;


void multiplationtable(int mynum, int start) {
    if (start > 10) {
        return;
    }
    else{
    int product=mynum * start;
    cout<<mynum<<"*"<<start<<"="<<product<<endl;
    multiplationtable(mynum,start+1);
    }
    }
int main(){
    int start=0;
    cout << "table of 15 is" << endl;
    multiplationtable(15,start);
    return 0;
}
```

```
table of 15 is
15*0=0
15*1=15
15*2=30
15*3=45
15*4=60
15*5=75
15*6=90
15*7=105
15*8=120
15*9=135
15*10=150

Process returned 0 (0x0)   execution time : 0.078 s
Press any key to continue.
```