Fundamentals of Programming

Lab Task: 9

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Task:1

```cpp
#include <iostream>
using namespace std;
int main() {
      int L =0;
   int R =0;
int arr[3][3]={{5,3,7},{2,5,2},{2,5,7}};

 for(int i=0;i<3;i++){
     R += arr[i][i];
     L += arr[i][2-i];}
cout<<"The sum of digits at right Diagonal is "<<R<<endl;
cout<<"The sum of digits at left Diagonal is "<<L<<endl;

return 0;
}
```

Output:

```
The sum of digits at right Diagonal is 17
The sum of digits at left Diagonal is 14
```

Task: 2

Code:

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

void sumMatrix(int array1[3][3],int array2[3][3],int sum[3][3]){
    for(int i=0;i<3;i++){
    for(int j=0;j<3;j++){
       sum[i][j]=array1[i][j]+array2[i][j];
    }}
     }
int main(){

 int a1[3][3]={{1,2,3},{4,5,6},{7,8,9}};
 int a2[3][3]={{1,2,3},{4,5,6},{7,8,9}};
 int sum[3][3];

 sumMatrix(a1,a2,sum);

   cout<<"The sum of these arrays is"<<endl;
 for(int i=0;i<3;i++){
    for(int j=0;j<3;j++){
    cout<<sum[i][j]<<" ";}
    cout<<endl;}

return 0;
}
```
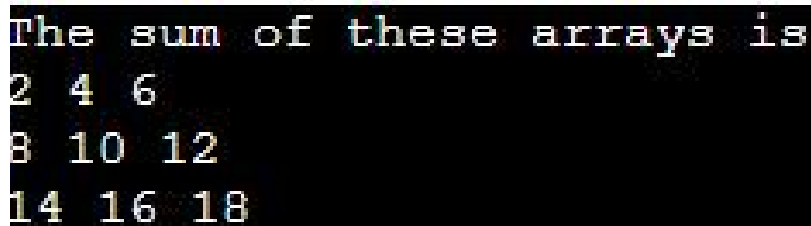
Output:

```
The sum of these arrays is
2 4 6
8 10 12
14 16 18
```

Task: 3

Code:

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

void transpose( int arr[3][3],int transposed[3][3]){
    for(int i=0;i<3;i++){
        for(int j=0;j<3;j++){
            transposed[j][i]=arr[i][j];
        }
    }
}

int main(){
    int arr[3][3]={{1,4,7},{2,5,8},{3,6,9}};
    int res[3][3];

    cout<<"Selected Matrix"<<endl;
        for(int i=0;i<3;i++){
        for(int j=0;j<3;j++){
            cout<< arr[i][j]<<" ";}
        cout<<endl;        }
    transpose(arr,res);

    cout<<"Transposed Matrix"<<endl;
        for(int i=0;i<3;i++){
        for(int j=0;j<3;j++){
            cout<< res[i][j]<<" ";}
        cout<<endl; }

    return 0;}
```
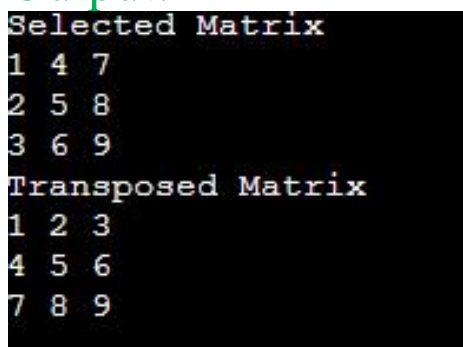
Output:

```
Selected Matrix
1 4 7
2 5 8
3 6 9
Transposed Matrix
1 2 3
4 5 6
7 8 9
```

Task: 4

Code:

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

void multiplication(int arr[3][3],int array[3][3],int multiply[3][3]){
    for(int i=0;i<3;i++){
    for(int j=0;j<3;j++){
    multiply[i][j]=0;
    for(int k=0;k<3;k++){
        multiply[i][j]+=arr[i][k]*array[k][j];}}}
   }
int main() {

 int arr[3][3]={{1,2,3},{4,5,6},{7,8,9}};
 int array[3][3]={{1,2,3},{4,5,6},{7,8,9}};
 int multiply[3][3];

 multiplication(arr,array,multiply);

cout<<"Multiplication result is"<<endl;
 for(int i=0;i<3;i++){
   for(int j=0;j<3;j++){
cout<<multiply[i][j]<<" ";
   }
   cout<<endl;
}
return 0;}
```
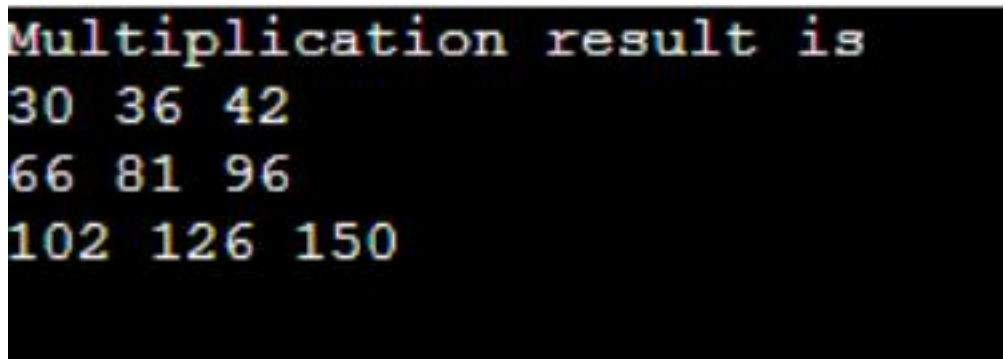
Output:

```
Multiplication result is
30 36 42
66 81 96
102 126 150
```
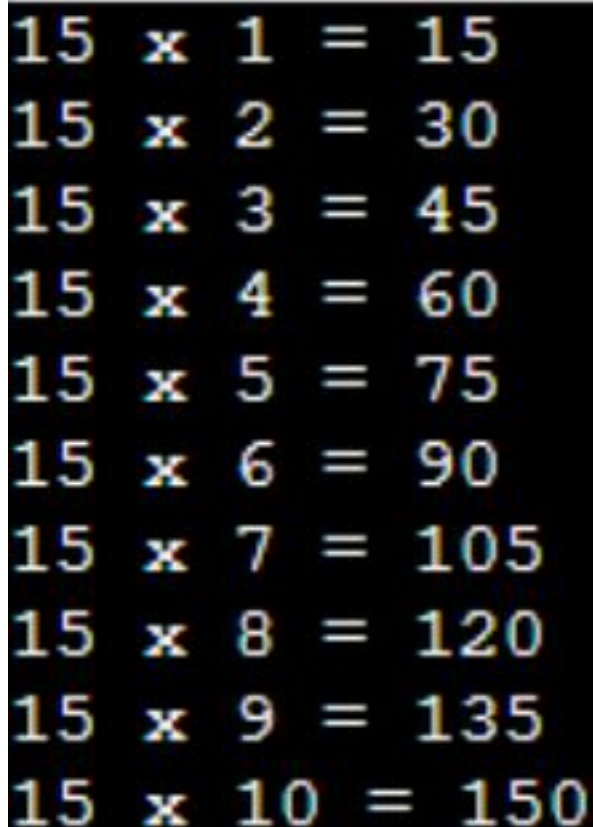
Task: 5

Code:

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

void table(int x , int y){
    if(y > 10) return ;
    cout<<x<<" x " << y <<" = "<<x*y<<endl;
    return table(x,y+1);

}
int main() {
    int x = 15;
    table(x,1);
    return 0;

}
```

Output:

```
15 x 1 = 15
15 x 2 = 30
15 x 3 = 45
15 x 4 = 60
15 x 5 = 75
15 x 6 = 90
15 x 7 = 105
15 x 8 = 120
15 x 9 = 135
15 x 10 = 150
```