LAB MANUAL 9

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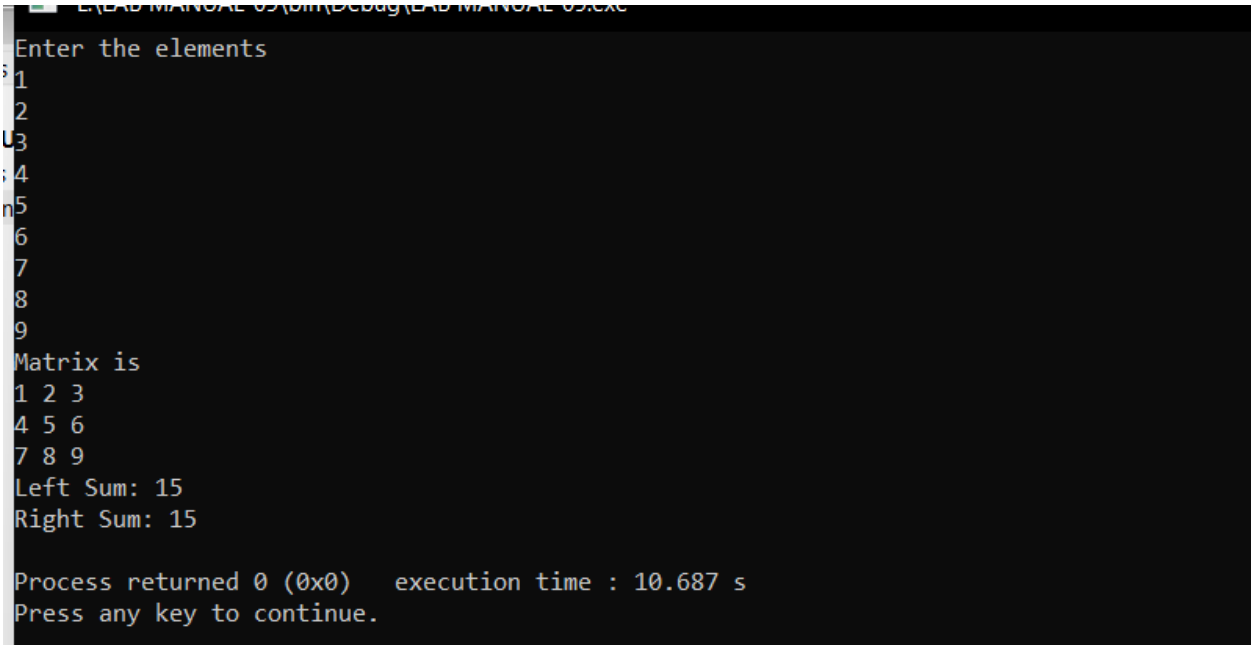
ME-15-B

Lab task 1:

```
#include <bits/stdc++.h>
using namespace std;
int main() {
   const int size = 3;
   int matrix[size][size];
   cout << "Enter the elements " << endl;
   for (int i = 0; i < size; ++i) {
      for (int j = 0; j < size; ++j) {
         cin >> matrix[i][j];
      }
   }
   cout << "Matrix is" << endl;
   for (int i = 0; i < size; ++i) {
      for (int j = 0; j < size; ++j) {
         cout << matrix[i][j] << " ";
      }
      cout << endl;
   }
   int leftDiagonalSum = 0;
   for (int i = 0; i < size; ++i) {
      leftDiagonalSum += matrix[i][i];
   }
   int rightDiagonalSum = 0;
   for (int i = 0; i < size; ++i) {
```

```
        rightDiagonalSum += matrix[i][size - 1 - i];
    }
    cout << "Left Sum: " << leftDiagonalSum << endl;
    cout << "Right Sum: " << rightDiagonalSum << endl;

    return 0;
}
```

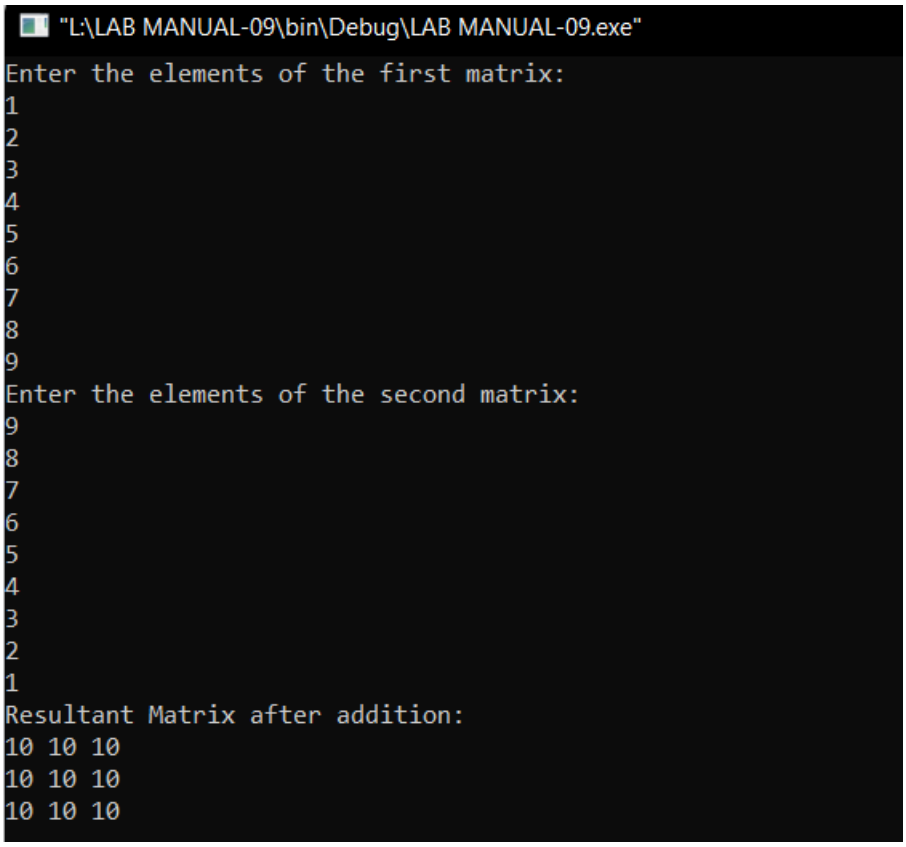


LAB TASK 2:

```
#include <bits/stdc++.h>

using namespace std;

void sum(const int matrix1[3][3], const int matrix2[3][3], int result[3][3]) {
    for (int i = 0; i < 3; ++i) {
        for (int j = 0; j < 3; ++j) {
            result[i][j] = matrix1[i][j] + matrix2[i][j];
        }
```

```
    }
}

int main() {
    const int size = 3;
    int matrix1[size][size];
    int matrix2[size][size];
    int result[size][size];

    cout << "Enter the elements of the first matrix:" << endl;
    for (int i = 0; i < size; ++i) {
        for (int j = 0; j < size; ++j) {
            cin >> matrix1[i][j];
        }
    }



    cout << "Enter the elements of the second matrix:" << endl;
    for (int i = 0; i < size; ++i) {
        for (int j = 0; j < size; ++j) {
            cin >> matrix2[i][j];
        }
    }

    sum(matrix1, matrix2, result);

    cout << "answer Matrix:" << endl;
    for (int i = 0; i < size; ++i) {
        for (int j = 0; j < size; ++j) {
```

```
            cout << result[i][j] << " ";
        }
        cout << endl;
    }

    return 0;
}
```

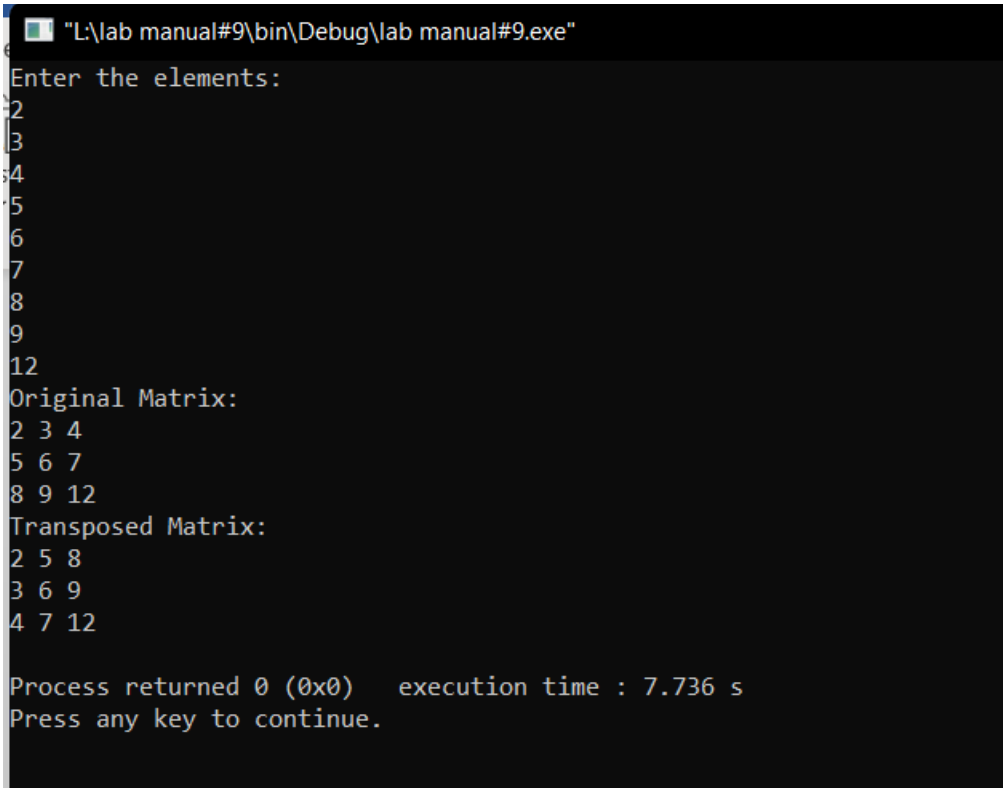


LAB TASK 3:

```
#include <bits/stdc++.h>
using namespace std;
void transpose(const int matrix[3][3], int result[3][3]) {
    for (int i = 0; i < 3; ++i) {
        for (int j = 0; j < 3; ++j) {
```

```
            result[j][i] = matrix[i][j];
        }
    }
}

int main() {
    const int size = 3;
    int matrix[size][size];
    int result[size][size];
    cout << "Enter the elements:" << endl;
    for (int i = 0; i < 3; ++i) {
        for (int j = 0; j < 3; ++j) {
            cin >> matrix[i][j];
        }
    }
    transpose(matrix, result);
    cout << "Original Matrix:" << endl;
    for (int i = 0; i < 3; ++i) {
        for (int j = 0; j < 3; ++j) {
            cout << matrix[i][j] << " ";
        }
        cout << endl;
    }

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

```
        cout << endl;
    }
    return 0;
}
```



LAB TASK 4:

```
#include <iostream>

using namespace std;

void multiplyMatrices(const int matrix1[3][3], const int matrix2[3][3], int result[3][3]) {
    for (int i = 0; i < 3; ++i) {
        for (int j = 0; j < 3; ++j) {
            result[i][j] = 0;
            for (int k = 0; k < 3; ++k) {
```

```
            result[i][j] += matrix1[i][k] * matrix2[k][j];
        }
      }
    }
}

int main() {
    const int size = 3;
    int matrix1[size][size];
    int matrix2[size][size];
    int result[size][size];
    cout << "Enter the elements of first matrix:" << endl;
    for (int i = 0; i < size; ++i) {
        for (int j = 0; j < size; ++j) {
            cin >> matrix1[i][j];
        }
    }
    cout << "Enter the elements of the second matrix:" << endl;
    for (int i = 0; i < size; ++i) {
        for (int j = 0; j < size; ++j) {
            cin >> matrix2[i][j];
        }
    }
    multiplyMatrices(matrix1, matrix2, result);
    cout << "Resultant :" << endl;
    for (int i = 0; i < size; ++i) {
        for (int j = 0; j < size; ++j) {
            cout << result[i][j] << " ";
        }
```

```
        cout << endl;
    }

    return 0;
}
```

```
"L:\lab manual#9\bin\Debug\lab manual#9.exe"
Enter the elements of first matrix:
1
2
3
4
5
6
7
8
9
Enter the elements of the second matrix:
23
45
65
45
23
12
34
56
76
Resultant :
215 259 317
521 631 776
827 1003 1235
```

LAB TASK 5:

```
#include <bits/stdc++.h>
using namespace std;
void Table(int number, int multiplier) {
    if (multiplier > 10) {
        return;
    }
```

```
    cout << number << " * " << multiplier << " = " << (number * multiplier) << endl;
    Table(number, multiplier + 1);
}

int main() {
     int number;
    cout<<"enter the number";
    cin>>number;

    cout << "Multiplication table of " << number << ":" << endl;
    Table(number, 1);

    return 0;
}
```