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**LAB 1**

**Advanced Programming**

**Documentation**

**Introduction**

This lab was about matrix multiplication. We were asked to implement 2 methods. The iterative method and the Strassen algorithm. We made two matrices: matrix A and matrix B. Then the two matrices were multiplied resulting in a product matrix: matrix C.

**Approach**

I have used c++ language to write this matrix multiplication program. I have made classes and function for the two methods. First task was solved by using three for loops. Second task was solved by making 7 equations. Because of this, the function becomes

T(N)=7T(N/2) + O(N^2)

By using the master method, this turns out to be

O(N^log7) i.e. O(N^2.8)

**Analysis and Run**

Iterative algorithm

This uses maximum 3 for loops. As a result, it has a time complexity of O(n^3)

Strassen algorithm

This uses 7 multiplications instead of 8 and further addition subtraction. As a result, it has a time complexity of O(n^log7) = O(n^2.8)