National University of Sciences and Technology (NUST)
School of Electrical Engineering and Computer Science

Software Construction

Lab 2

Submitted by:

Noor Ul Sehr Zia

BESE - 5A

Introduction

Matrix multiplication with iterative method and stressens method

ITERATIVE METHOD:

It uses 3 for loops to iterate over each element and then calculate the result matrix

STRESSEN METHOD

Used divide and conquer to multiply the matrices. It works for square matrices with power of two

equations:

The recursive equations are:

p1 = strassen(add(a1,a4),add(b1,b4),half_size/2)

p2 = strassen(add(a3,a4), b1,half_size/2)

p3 = strassen(a1,subtract(b2,b4),half_size/2)

p4 = strassen(a4,subtract(b3-b1),half_size/2)

p5 = strassen(add(a1,a2), b4,half_size/2)

p6 = strassen(subtract(a3,a1),add(b1,b2),half_size/2)

p7 = strassen(subtract(a2,a4), add(b3,b4),half_size/2)

and result is:

c11 = p1 + p4 - p5 + p7

c12 = p3 + p5

c21 = p2 + p4

c22 = p1 + p3 - p2 + p6

3 test cases have been written:

one for iterative

one for stressen

and one between stressen and iterative method

https://github.com/NoorZia/SoftwareConstructionlabs