A COMPUTER PROGRAM FOR THE ANALYSIS OF GEOMETRICALLY NON-LINEAR TRUSSES

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by

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CHAPTER I

INTRODUCTION

In our's todays complex society a variety of tasks are performed by digital computers. Such many engineering and scientistic problems are solved using a computer program. So to many people a computer is a source of deep, dark mystery controlled by skilled scientists and mathematicians to "think-out" the answers to seemingly complicated and profound problems.

There are so many program languages to use which solves engineering problems but in our case where the problem is about non-linear geometry analysis the best to use if FORTRAN. (FORmula TRANslation) is a digital computer programming language which resembles elementary, algebra, augmented by certain English works such as, DO, READ, WRITE, IF. Thus FORTRAN is "people-oriented" language, in contract to many other programming language known as "machine-oriented". For that reason is very easy to learn and simple to use FORTRAN. And also because of it's similarity to ordinary algebra, the FORTRAN language is practically well suited to solving problems in science, mathematics and engineering.

So the key in our Diploma Project was the FORTRAN language with some knowledge in analysis of non-linear geometrically trusses. In our procedure we had two methods of developing the non-linear equilibrium equations the (a) tangent stiffness approach carried by Karayianni Panayiota and (b) secant stiffness approach carried by Panteli Pantelis.

The two methods after developing the non-linear equations they came out to two different system of equations, the tangent (solved by Euler's Incremented Approach Method) and the Secant method (solved by Regular False Method).

Finally we came to the conclusion that the person who will involve with FORTRAN will have non difficulty in writing his own FORTRAN programs of varying, complexity for a wide variety of programs.

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