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THEORY OF PROGRAM STRUCTURES, SCHEMES, SEMANTICS, VERIFICATION

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The material in these lecture notes of Professor Sheila A. Greibach from the Department of System Science at the University of California, Los Angeles offers, according to author's opinion expressed in the preface, an exposition — aimed at graduate students rather than researchers in the field — of a research direction usually called "program schemes".

The book is set up of 8 chapters including examples, one appendix, a collection of practical exercises as well as a reference organized by chapters.

Chapter I called "Introduction" makes a presentation of a very suggestive study mathematical models for programs and flowcharts which in fact shows the work's aim.

Chapter II "Program Schemes — Basic Definitions and Concepts "introduces some definitions of scheme syntax, notions concerning the linear form of scheme and equivalence of program schemes after eliminating the repeated instructions of some "Infinite" or repeated cycles. This chapter is a very good introduction to the rest of lecture notes.

The next chapter "Program Schemes — Basic Properties" is in fact the starting point for the next two chapters (Structured Programs and Correctness and Program Verification).

Chapter VI called "Decision Problems" introduces some very interesting theorems regarding Turing machines and the adequate proofs and examples.

At the same time, some theorems and lemma concerning the one variable program schemes (Ianov type schemes) are given.

Chapter VII "Recursion Schemes' is designed to reflect the recursive properties of programming languages.

On topic of concern will be when recursion equations can be translated into flowchart form.

There are also presented adequate theorems and lemma which like in the other chapters, are also very interesting.

The last chapter of the book-" Monadic Recursion Schemes" focusses the atention on the special case of monadic reursion schemes.

The exercises part of the work is organized by chapters and is a very useful method for studying this very interesting book.

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