

A SEQUENTIAL PASCAL MANUAL FOR FORTRAN PROGRAMMERS

by

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CONTENTS

0.	INTRODUCTION.....	0.1
1.	SIMPLE FEATURES.....	1.1
2.	CONTROL STRUCTURES.....	2.1
3.	SIMPLE DATA TYPES.....	3.1
4.	ARRAYS.....	4.1
5.	RECORDS.....	5.1
6.	PROGRAM AND PROCEDURE STRUCTURE.....	6.1
7.	PARAMETERS.....	7.1
8.	INPUT/OUTPUT.....	8.1
9.	STANDARD PREFIX.....	9.1
10.	RUNNING THE PROGRAM.....	10.1
11.	DIFFERENCES BETWEEN "PASCAL" AND "SPASCAL"...	11.1

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TABLE OF FIGURES

As the main body of this report consists of nothing but slides, the table of contents and the first slide in each slide set form a tree structure for locating figures depicting particular subjects.

EXAMPLE

Locate a slide showing operations that can be performed on arrays:

1. The table of contents indicates the array slide set begins on page 4.1.
2. Page 4.1 indicates that slide(s) showing operations on arrays begin on page 4.9.

INTRODUCTION

1. PASCAL, SEQUENTIAL PASCAL, AND CONCURRENT PASCAL.

The programming language Pascal was developed by Niklaus Wirth and was specifically designed as a general purpose language which could be used for systematic programming. As a result, Pascal is very readable and can be used in top-down program design in which the final source language program still reflects the structured design and lends itself to systematic verification.⁵

Sequential Pascal (SPASCAL) refers to a specific implementation of Pascal defined by Per Brinch Hansen and Alfred Hartmann of California Institute of Technology for a PDP-11/45 computer. SPASCAL differs from Wirth's definition of Pascal in several areas because of restrictions and extensions required for the implementation.

Concurrent Pascal (CPASCAL) has also been defined by Brinch Hansen and was designed for structured programming of computer operating systems. CPASCAL is an extension of SPASCAL which allows concurrent processes, monitors and classes and was used by Brinch Hansen to write a single user operating system called SOLO for the PDP-11/45 computer.

2. KANSAS STATE UNIVERSITY IMPLEMENTATION OF PASCAL.

Kansas State University Department of Computer Science has implemented SPASCAL, CPASCAL, and SOLO as defined by Brinch Hansen for the INTERDATA 8/32 computer. This implementation was made as part of a research project investigating computer networks. Pascal was chosen because it enforces structured programming, contains very powerful data structures, is very readable, and the SPASCAL compiler can detect many errors which would not be found at compile time using other languages.

3. OBJECTIVE OF THIS REPORT.

This report is designed to serve as an instructional aid for introducing persons who can at least read FORTRAN programs to the Kansas State University implementation of SPASCAL. The design concept is to expand on the student's existing knowledge of FORTRAN so that