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An Introduction to System Programming — Based on the PDP11

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Preface

This book is intended as the text for an introductory practical course in System Programming based on the PDP11. It contains a description of the machine, the techniques used in programming it in machine language, and the programs needed to convert a machine, totally without software, into a usable system at assembly language level. The material might be viewed as both a bridge between hardware and software courses and as a platform upon which courses concerned with the design of compilers and operating systems might be built.

The material given is illustrated by reference to the PDP11 and is intended to be used in an environment in which 'hands on' access can be provided. It has grown out of a first year course of about 40 lectures and 10 half day practical sessions given in the Computer Science Department of the University of Manchester over the past 10 years. Mostly the computers used have been the PDP11/20 and the PDP11/40, but this presentation is aimed more at the LSI11.

In fact, the course is now supported by means of a PDP11/44 to which sixteen PDT11 with VT105 terminals are connected. The 11/44 is controlled by a general purpose operating system, and it is primarily used for file management and program assembly. Students downline load their assembled programs into the single user PDT11's, where they have hands on access. The only system software necessarily resident in the PDT11's are the TRANSMIT sequence and OCTAL LOADER introduced in Chapter 4.

Exercises are given at the end of each chapter which are appropriate to the material it contains. Those in the first three chapters are paper exercises only. From Chapter 4 onwards some exercises require a computer.

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