ON SOFTWARE ISSUES
IN
DISTRIBUTED COMPUTING

BY

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CERTIFICATE

Certified that the thesis entitled 'ON SOFTWARE ISSUES IN DISTRIBUTED COMPUTING' being submitted by Mr. N.K. Sharma, is a record of work carried out by him under my supervision and guidance. The matter embodied in this thesis has not been submitted for the award of any other degree.

24 January, 1983

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DEDICATED TO MY PARENTS

ABSTRACT

This thesis deals with some of the important software design issues related to distributed computing systems. The first part of the thesis describes two methodologies to design the distributed programming language which can be used to develop well-structured, reliable, and efficient distributed programs systematically. In one of the designs, the interprocess communication and synchronization are accomplished through procedure calls and in other one through input/output commands. A comparison of the suggested languages is carried out with other distributed programming languages available in the literature. Issues involved in the abstract implementation of these languages have also been discussed. A mechanism for writing terminating distributed programs has also been suggested which can be introduced in any distributed programming language.

In the second part of the thesis, a methodology to design the distributed operating system is discussed. The design of the distributed operating system has been expressed using both the distributed programming languages suggested in the thesis. It can tolerate processor or communication link failures and provide message delivery assurance.

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