Dictionary of Computing

Fourth Edition

Oxford New York Tokyo
OXFORD UNIVERSITY PRESS
1996

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Oxford University Press, Walton Street, Oxford OX2 6DP
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Oxford is a trade mark of Oxford University Press

Published in the United States
by Oxford University Press Inc., New York

© *Market House Books, 1983, 1986, 1990, 1996*

First published 1993
Reprinted 1983, 1984, 1985
Second Edition 1986
Third Edition 1990
Reprinted 1990, 1991 (twice), 1992
Fourth Edition 1996

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A catalogue record for this book is available from the British Library

Library of Congress Cataloging in Publication Data
(Data available)

ISBN 0–19–853855–3

Text prepared by Market House Books Ltd, Aylesbury
Printed in Great Britain by
Biddles Ltd, Guildford & King's Lynn

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software A generic term for those components of a computer system that are intangible rather than physical. It is most commonly used to refer to the programs executed by a computer system as distinct from the physical hardware of that computer system, and to encompass both symbolic and executable forms for such programs. A distinction can be drawn between *systems software, which is an essential accompaniment to the hardware in order to provide an effective overall computer system (and is therefore normally supplied by the manufacturer), and *applications software specific to the particular role performed by the computer within a given organization.

Software Best Practice *See* ESSI.

Software Capability and Maturity Model *See* Capability and Maturity Model.

software component specification A precise statement of the effects that the software component of a system is required to achieve. When developing a system, production of the *software requirements specification is typically followed by a period of preliminary investigation and high-level design. It is then possible to identify any necessary hardware components of the system and to produce the software component specification for the software component.

A software component specification should be detailed, focusing on what the software is to do rather than how this is to be done. The traditional use of natural language for this purpose is being superseded by use of more formal notations.

software development environment (programmer workbench) The set of *software tools collected together (sometimes using a common database or user interface as in an *IPSE) for use by a software developer, or team of developers, when developing software.

software development process model (SDPM) A model that indicates a set of software processes – manual or automated – to be used in a software development project. The model should indicate the interdependencies that exist between the development processes including the products generated by each process, and the information (including products generated by other processes) required by each process.

software engineering The entire range of activities used to design and develop software, with some connotation of "good practice". Topics encompassed include user requirements elicitation, software requirements definition, architectural and detailed design (*see* program design), *program specification, program development using some recognized approach such as *structured programming, systematic *testing techniques, *program correctness proofs, *software quality assurance, software project management, documentation, performance and timing analysis, and the development and use of *software engineering environments. Further, software engineering is generally expected to address the practical problems of software development, including those encountered with large or complex systems. Thus, while there is some emphasis on formal methods, pragmatic techniques are employed where necessary. In its entirety, software engineering addresses all aspects of the development and support of reliable and efficient programs for the entire range of computer applications.

software engineering environment A software system that provides support for the development, repair, and enhancement of software, and for the management and control of these activities. A typical system contains a central database and a set of *software tools. The central database acts as a repository for all information related to a project throughout the lifetime of that project. The software tools offer support for the various activities, both technical and managerial, that must be performed on the project.

Different environments vary in the general nature of their databases and in the coverage provided by the set of tools. In particular, some encourage (or even enforce) one specific software engineering methodology, while others provide only general support and therefore allow any of a variety of methodologies to be adopted. All environments, however, reflect concern for the entire *software

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