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Abstract: This standard is part of the POSIX series of standards for applications and user interfaces to open systems. It defines the applications interface to a shell command language and a set of utility programs for complex data manipulation. When the User Portability Utilities Option is included, the standard also defines a common environment for general-purpose time-sharing users on character-oriented display terminals.

Keywords: API, application portability, data processing, open systems, operating system, portable application, POSIX, shell and utilities, user portability



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Foreword

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International Standard ISO/IEC 9945-2:1993 was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, subcommittee 22, *Programming languages, their environments and system software interfaces*.

ISO/IEC 9945 consists of the following parts, under the general title *Information technology – Portable Operating System Interface (POSIX)*:

- Part 1: *System application program interface (API) [C language]*
- Part 2: *Shell and Utilities*
- Part 3: *System administration* (under development)

Annexes A, B and C form an integral part of this part of ISO/IEC 9945. Annexes D, E, F, G and H are for information only.



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Introduction

(This introduction is not a normative part of ISO/IEC 9945-2, Information Technology — Portable Operating System Interface (POSIX) — Part 2: Shell and Utilities, but is included for information only.)

1 The primary purpose of this part of ISO/IEC 9945 is to define a standard interface
2 and environment for application programs that require the services of a “shell”
3 command language interpreter and a set of common utility programs. It is
4 intended for systems implementors and application software developers and is
5 complementary to ISO/IEC 9945-1: 1990 (IEEE Std 1003.1-1990) {8}¹⁾ (first in a
6 family of “POSIX” standards), which specifies operating system interfaces and
7 source code level functions based on the UNIX²⁾ system documentation. This part
8 of ISO/IEC 9945, referred to as “POSIX.2,” is based upon documentation and the
9 knowledge of existing programs that assume an interface and architecture similar
10 to that described by POSIX.1. (See 1.1 for a full description of the relationship
11 between the standards.)

12 The secondary purpose of this part of ISO/IEC 9945 is to supplement the applica-
13 tion portability interfaces to promote the “portability” of users and programmers
14 between conforming systems. The User Portability Utilities Option extends the
15 list of utilities, and features of utilities used primarily for application portability,
16 to provide a common interactive environment. It is intended for end users, pro-
17 gram developers, systems implementors, and application software developers.

18 Interfaces to satisfy these two purposes were originally developed by two separate
19 working groups, with user portability options packaged as a supplementary docu-
20 ment to the base set of application portability features. However, since the
21 development schedules eventually coincided, the draft documents have been
22 merged editorially into this single part of ISO/IEC 9945. Even with this merger,
23 the user portability features remain an optional component of this part of ISO/IEC
24 9945.

25 The majority of this part of ISO/IEC 9945 describes the functions of utilities that
26 can interface with application programs. The standard also provides high-level
27 language interfaces that the application uses to access these utilities and other
28 useful, related services. These language-independent service interfaces are tem-
29 porarily described in terms of their C-language bindings. The C language
30 assumed is that defined by the C Standard: ISO/IEC 9899: 1990 {7}.

31 1) The number in braces corresponds to those of the references in 1.2 (or the bibliographic entry in
32 Annex D if the number is preceded by the letter B).

33 2) UNIX is a registered trademark of UNIX System Laboratories in the USA and other countries.

34 **Organization of This Part of ISO/IEC 9945**

35 This part of ISO/IEC 9945 is divided into ten parts:

- 36 — General, including a statement of scope, normative references, conformance
37 requirements, and test methods (Section 1).
- 38 — Definitions, general requirements, and the environment available to appli-
39 cations (Section 2).
- 40 — The shell command language (Section 3).
- 41 — Descriptions of the utilities in the required “Execution Environment Utili-
42 ties” (Section 4).
- 43 — Descriptions of the utilities in the optional “User Portability Utilities,” for
44 interactive users on asynchronous terminals (Section 5).
- 45 — Descriptions of the utilities in the optional “Software Development Utili-
46 ties” (Section 6).
- 47 — Language-independent interfaces for high-level programming language
48 access to shell and related services (Section 7).
- 49 — Descriptions of the utilities in the optional “C-Language Development Utili-
50 ties” (Annex A).
- 51 — C-language bindings to the interfaces in Section 7 (Annex B).
- 52 — Descriptions of the utilities in the optional “FORTRAN Development and
53 Runtime Utilities” (Annex C).

54 This introduction, the foreword, any footnotes, notes accompanying the text, and
55 the *informative* annexes are not considered part of this part of ISO/IEC 9945.
56 Annexes D through H are informative. The line numbers are also not part of the
57 standard. They were added as an aid to the user due to the size of the document,
58 but they can vary in, or be omitted from, other editions translated into languages
59 other than English.³⁾

60 3) Because of minor editorial differences, some line numbers, page breaks, and bibliographic
61 reference numbers of the POSIX.2 version printed in June 1993 differ slightly from those in this
62 version, the joint publication of IEEE Std 1003.2-1992 and ISO/IEC 9945-2: 1993 (E). There are
63 also informative differences in Annexes D, G, and H; however, there are no normative differences
64 between these two printings. To assist in citing passages from the standard precisely, such as
65 for interpretation requests, readers are urged to identify the printed version of the standard—
66 either the “IEEE-only version” or the “joint IEEE/ISO/IEC version”—along with line and page
67 numbers and appropriate subclause numbers.