
**Programming languages — Guidance
to avoiding vulnerabilities in
programming languages —**

**Part 3:
C**

*Langages de programmation — Conduite pour éviter les
vulnérabilités dans les langages de programmation —*

Partie 3: C





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Contents

	Page
Foreword	vii
Introduction	viii
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Language concepts	2
5 Avoiding programming language vulnerabilities in C	2
6 Specific guidance for C vulnerabilities	3
6.1 General.....	3
6.2 Type system [IHN].....	4
6.2.1 Applicability to language.....	4
6.2.2 Guidance to language users.....	5
6.3 Bit representations [STR].....	5
6.3.1 Applicability to language.....	5
6.3.2 Guidance to language users.....	5
6.4 Floating-point arithmetic [PLF].....	6
6.4.1 Applicability to language.....	6
6.4.2 Guidance to language users.....	6
6.5 Enumerator issues [CCB].....	6
6.5.1 Applicability to language.....	6
6.5.2 Guidance to language users.....	7
6.6 Conversion errors [FLC].....	8
6.6.1 Applicability to language.....	8
6.6.2 Guidance to language users.....	9
6.7 String termination [CJM].....	10
6.7.1 Applicability to language.....	10
6.7.2 Guidance to language users.....	10
6.8 Buffer boundary violation (buffer overflow) [HCB].....	10
6.8.1 Applicability to language.....	10
6.8.2 Guidance to language users.....	11
6.9 Unchecked array indexing [XYZ].....	11
6.9.1 Applicability to language.....	11
6.9.2 Guidance to language users.....	12
6.10 Unchecked array copying [XYW].....	12
6.10.1 Applicability to language.....	12
6.10.2 Guidance to language users.....	12
6.11 Pointer type conversions [HFC].....	13
6.11.1 Applicability to language.....	13
6.11.2 Guidance to language users.....	13
6.12 Pointer arithmetic [RVG].....	13
6.12.1 Applicability to language.....	13
6.12.2 Guidance to language users.....	14
6.13 Null pointer dereference [XYH].....	14
6.13.1 Applicability to language.....	14
6.13.2 Guidance to language users.....	14
6.14 Dangling reference to heap [XYK].....	15
6.14.1 Applicability to language.....	15
6.14.2 Guidance to language users.....	15
6.15 Arithmetic wrap-around error [FIF].....	16
6.15.1 Applicability to language.....	16
6.15.2 Guidance to language users.....	16
6.16 Using shift operations for multiplication and division [PIK].....	17

6.16.1	Applicability to language	17
6.16.2	Guidance to language users	17
6.17	Choice of clear names [NAI]	17
6.17.1	Applicability to language	17
6.17.2	Guidance to language users	17
6.18	Dead store [WXQ]	18
6.18.1	Applicability to language	18
6.18.2	Guidance to language users	18
6.19	Unused variable [YZS]	18
6.19.1	Applicability to language	18
6.19.2	Guidance to language users	18
6.20	Identifier name reuse [YOW]	18
6.20.1	Applicability to language	18
6.20.2	Guidance to language users	19
6.21	Namespace issues [BJL]	19
6.21.1	Applicability to language	19
6.22	Initialization of variables [LAV]	19
6.22.1	Applicability to language	19
6.22.2	Guidance to language users	19
6.23	Operator precedence and associativity [JCW]	19
6.23.1	Applicability to language	19
6.23.2	Guidance to language users	20
6.24	Side-effects and order of evaluation of operands [SAM]	20
6.24.1	Applicability to language	20
6.24.2	Guidance to language users	20
6.25	Likely incorrect expression [KOA]	21
6.25.1	Applicability to language	21
6.25.2	Guidance to language users	21
6.26	Dead and deactivated code [XYQ]	22
6.26.1	Applicability to language	22
6.26.2	Guidance to language users	22
6.27	Switch statements and static analysis [CLL]	22
6.27.1	Applicability to language	22
6.27.2	Guidance to language users	23
6.28	Demarcation of control flow [EOJ]	23
6.28.1	Applicability to language	23
6.28.2	Guidance to language users	23
6.29	Loop control variables [TEX]	24
6.29.1	Applicability to language	24
6.29.2	Guidance to language users	24
6.30	Off-by-one error [XZH]	25
6.30.1	Applicability to language	25
6.30.2	Guidance to language users	25
6.31	Unstructured programming [EWD]	25
6.31.1	Applicability to language	25
6.31.2	Guidance to language users	25
6.32	Passing parameters and return values [CSJ]	26
6.32.1	Applicability to language	26
6.32.2	Guidance to language users	26
6.33	Dangling references to stack frames [DCM]	27
6.33.1	Applicability to language	27
6.33.2	Guidance to language users	27
6.34	Subprogram signature mismatch [OTR]	27
6.34.1	Applicability to language	27
6.34.2	Guidance to language users	28
6.35	Recursion [GDL]	28
6.35.1	Applicability to language	28
6.35.2	Guidance to language users	28

6.36	Ignored error status and unhandled exceptions [OYB]	28
6.36.1	Applicability to language	28
6.36.2	Guidance to language users	28
6.37	Type-breaking reinterpretation of data [AMV]	29
6.37.1	Applicability to language	29
6.37.2	Guidance to language users	29
6.38	Deep vs. shallow copying [YAN]	29
6.38.1	Applicability to language	29
6.38.2	Guidance to language users	29
6.39	Memory leaks and heap fragmentation [XYL]	30
6.39.1	Applicability to language	30
6.39.2	Guidance to language users	30
6.40	Templates and generics [SYM]	30
6.41	Inheritance [RIP]	30
6.42	Violations of the Liskov substitution principle or the contract model [BLP]	30
6.43	Redispatching [PPH]	30
6.44	Polymorphic variables [BKK]	30
6.45	Extra intrinsics [LRM]	30
6.46	Argument passing to library functions [TRJ]	30
6.46.1	Applicability to language	30
6.46.2	Guidance to language users	31
6.47	Inter-language calling [DJS]	31
6.47.1	Applicability to language	31
6.47.2	Guidance to language users	31
6.48	Dynamically linked code and self-modifying code [NYY]	31
6.48.1	Applicability to language	31
6.48.2	Guidance to language users	32
6.49	Library signature [NSQ]	32
6.49.1	Applicability to language	32
6.49.2	Guidance to language users	32
6.50	Unanticipated exceptions from library routines [HJW]	32
6.51	Pre-processor directives [NMP]	32
6.51.1	Applicability to language	32
6.51.2	Guidance to language users	33
6.52	Suppression of language-defined run-time checking [MXB]	33
6.53	Provision of inherently unsafe operations [SKL]	33
6.53.1	Applicability to language	33
6.53.2	Guidance to language users	33
6.54	Obscure language features [BRS]	34
6.54.1	Applicability of language	34
6.54.2	Guidance to language users	34
6.55	Unspecified behaviour [BQF]	34
6.55.1	Applicability of language	34
6.55.2	Guidance to language users	34
6.56	Undefined behaviour [EWF]	34
6.56.1	Applicability to language	34
6.56.2	Guidance to language users	35
6.57	Implementation-defined behaviour [FAB]	35
6.57.1	Applicability to language	35
6.57.2	Guidance to language users	35
6.58	Deprecated language features [MEM]	36
6.58.1	Applicability to language	36
6.58.2	Guidance to language users	36
6.59	Concurrency — Activation [CGA]	36
6.59.1	Applicability to language	36
6.59.2	Guidance to language users	36
6.60	Concurrency — Directed termination [CGT]	36
6.61	Concurrent data access [CGX]	36

6.61.1	Applicability to language	36
6.61.2	Guidance to language users	37
6.62	Concurrency — Premature termination [CGS]	37
6.62.1	Applicability to language	37
6.62.2	Guidance to language users	37
6.63	Lock protocol errors [CGM]	37
6.63.1	Applicability to language	37
6.63.2	Guidance to language users	37
6.64	Reliance on external format strings	37
6.64.1	Applicability to language	37
6.64.2	Guidance to language users	37
Bibliography		38
Index		39

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 22, *Programming languages, their environments and system software interfaces*.

This first edition cancels and replaces ISO/IEC TR 24772:2013, which has been split into several parts.

This document is intended to be used with ISO/IEC TR 24772-1, which discusses programming language vulnerabilities in a language independent fashion.

A list of all parts in the ISO/IEC 24772 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document provides guidance for the programming language C, so that application developers considering or using C can better avoid the programming constructs that lead to vulnerabilities and their attendant consequences. This guidance can also be used by developers to select source code evaluation tools that can discover and eliminate such constructs in their software, or the developers of such tools.

It should be noted that this document is inherently incomplete. It is not possible to provide a complete list of programming language vulnerabilities because new weaknesses are discovered continually. Any such report can only describe those that have been found, characterized, and determined to have sufficient probability and consequence. The guidance in this document has been drawn from existing safety and security coding rules^{[4][5][7][9][11]to[15]}.

Programming languages — Guidance to avoiding vulnerabilities in programming languages —

Part 3: C

1 Scope

This document specifies software programming language vulnerabilities to be avoided in the development of systems where assured behaviour is required for security, safety, mission-critical and business-critical software. In general, this guidance is applicable to the software developed, reviewed, or maintained for any application.

This document describes the way that the vulnerabilities listed in ISO/IEC TR 24772-1 are manifested or avoided in the C language.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 2382, *Information technology — Vocabulary*

ISO/IEC 9899, *Information Technology — Programming Languages — C*

ISO/IEC TR 24772-1, *Programming languages — Guidance to avoiding vulnerabilities in programming languages — Part 1: Language-independent guidance*