
**Information technology — Programming
languages — COBOL**

Technologies de l'information — Langages de programmation — COBOL

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/IEC 1989:2002](https://standards.iteh.ai/catalog/standards/sist/b5eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002)

<https://standards.iteh.ai/catalog/standards/sist/b5eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002>



PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

ISO/IEC 1989:2002

<https://standards.iteh.ai/catalog/standards/sist/b5eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002>

© ISO/IEC 2002

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.ch
Web www.iso.ch

Printed in Switzerland

Contents

Contents	iii
Tables	xvii
Figures	xviii
Foreword	xix
Introduction	xx
1 Scope	1
2 Normative references	2
3 Conformance to this International Standard	3
3.1 A conforming implementation	3
3.1.1 Acceptance of standard language elements	3
3.1.2 Interaction with non-COBOL runtime modules	3
3.1.3 Interaction between COBOL implementations	3
3.1.4 Implementor-defined language elements	3
3.1.5 Processor-dependent language elements	4
3.1.6 Reserved words	4
3.1.7 Standard extensions	4
3.1.8 Nonstandard extensions	4
3.1.9 Substitute or additional language elements	5
3.1.10 Archaic language elements	5
3.1.11 Obsolete language elements	5
3.1.12 Externally-provided functionality	5
3.1.13 Limits	6
3.1.14 User documentation	6
3.1.15 Character substitution	6
3.2 A conforming compilation group	6
3.3 A conforming run unit	6
3.4 Relationship of a conforming compilation group to a conforming implementation	7
3.5 Relationship of a conforming run unit to a conforming implementation	7
4 Terms and Definitions	8
5 Description techniques	17
5.1 General formats	17
5.1.1 Keywords	17
5.1.2 Optional words	17
5.1.3 Operands	17

5.1.4	Level numbers	18
5.1.5	Options	18
5.1.5.1	Brackets	18
5.1.5.2	Braces	18
5.1.5.3	Choice indicators	18
5.1.6	Ellipses	18
5.1.7	Punctuation	19
5.1.8	Special characters	19
5.1.9	Meta-terms	19
5.2	Rules	19
5.2.1	Syntax rules	19
5.2.2	General rules	19
5.2.3	Argument rules	19
5.2.4	Returned value rules	19
5.3	Arithmetic expressions	20
5.3.1	Textually subscripted operands	20
5.3.2	Ellipses	20
5.4	Integer operands	20
5.5	Informal description	20
5.6	Hyphens in text	21
5.7	Verbal forms for the expression of provisions	21
6	Reference format	22
6.1	Indicators	22
6.1.1	Fixed indicators	22
6.1.2	Floating indicators	23
6.2	Fixed-form reference format	24
6.3	Free-form reference format	26
6.4	Logical conversion	28
7	Compiler directing facility	29
7.1	Text manipulation	29
7.1.1	Text manipulation elements	30
7.1.2	COPY statement	32
7.1.3	REPLACE statement	36
7.2	Compiler directives	40
7.2.4	Conditional compilation	41
7.2.5	Compile-time arithmetic expressions	41
7.2.6	Compile-time boolean expressions	41
7.2.7	Constant conditional expression	42
7.2.8	CALL-CONVENTION directive	44
7.2.9	DEFINE directive	45
7.2.10	EVALUATE directive	46
7.2.11	FLAG-85 directive	49
7.2.12	FLAG-NATIVE-ARITHMETIC directive	51
7.2.13	IF directive	52

iTeh STANDARD PREVIEW
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/b5eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002>

7.2.14 LEAP-SECOND directive	53
7.2.15 LISTING directive	54
7.2.16 PAGE directive	55
7.2.17 PROPAGATE directive	56
7.2.18 SOURCE FORMAT directive	57
7.2.19 TURN directive	58
8 Language fundamentals	59
8.1 Character sets	59
8.1.1 Computer's coded character set	59
8.1.2 COBOL character repertoire	60
8.1.3 Alphabets	62
8.1.4 Collating sequences	63
8.2 Locales	64
8.2.1 Locale field names	65
8.3 Lexical elements	66
8.3.1 Character-strings	66
8.3.1.1 COBOL words	66
8.3.1.2 Literals	74
8.3.1.3 Picture character-strings	81
8.3.2 Separators	81
8.4 References	83
8.4.1 Uniqueness of reference	83
8.4.1.1 Qualification	83
8.4.1.2 Subscripts	85
8.4.2 Identifiers	87
8.4.2.1 Identifier	87
8.4.2.2 Function-identifier	89
8.4.2.3 Reference-modification	92
8.4.2.4 Inline method invocation	94
8.4.2.5 Object-view	95
8.4.2.6 EXCEPTION-OBJECT	95
8.4.2.7 NULL	96
8.4.2.8 SELF and SUPER	96
8.4.2.9 Object property	97
8.4.2.10 Predefined-address	98
8.4.2.11 Data-address-identifier	99
8.4.2.12 Program-address-identifier	99
8.4.2.13 LINAGE-COUNTER	100
8.4.2.14 Report counters	100
8.4.3 Condition-name	101
8.4.4 Explicit and implicit references	102
8.4.5 Scope of names	102
8.4.5.1 Local and global names	103
8.4.5.2 Scope of program-names	104
8.4.5.3 Scope of class-names and interface-names	105

iTeH STANDARD PREVIEW
(standards.iteh.ai)

[ISO/IEC 1989:2002](https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002)

[https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-](https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002)

[2dd0189b5d8f/iso-iec-1989-2002](https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002)

8.4.5.4	Scope of method-names	105
8.4.5.5	Scope of function-prototype-names	105
8.4.5.6	Scope of user-function-names	105
8.4.5.7	Scope of program-prototype-names	106
8.4.5.8	Scope of compilation-variable-names	106
8.4.5.9	Scope of parameter-names	106
8.4.5.10	Scope of property-names	106
8.5	Data description and representation	107
8.5.1	Computer independent data description	107
8.5.1.1	Files and records	107
8.5.1.2	Levels	107
8.5.1.3	Limitations of character handling	108
8.5.1.4	Algebraic signs	108
8.5.1.5	Alignment of data items in storage	109
8.5.1.5.1	Alignment of alphanumeric groups and of data items of usage display	109
8.5.1.5.2	Alignment of data items of usage national	109
8.5.1.5.3	Alignment of data items of usage bit	109
8.5.1.5.4	Item alignment for increased object-code efficiency	110
8.5.2	Class and category of data items and literals	110
8.5.3	Types	113
8.5.3.1	Weakly-typed items	114
8.5.3.2	Strongly-typed group items	114
8.5.4	Zero-length items	114
8.6	Scope and life cycle of data	115
8.6.1	Global names and local names	115
8.6.2	External and internal items	115
8.6.3	Automatic, initial, and static internal items	115
8.6.4	Based entries and based data items	116
8.6.5	Common, initial, and recursive attributes	117
8.6.6	Sharing data items	117
8.7	Operators	118
8.7.1	Arithmetic operators	118
8.7.2	Boolean operators	118
8.7.3	Concatenation operator	118
8.7.4	Invocation operator	118
8.7.5	Relational operators	118
8.7.6	Logical operators	119
8.8	Expressions	120
8.8.1	Arithmetic expressions	120
8.8.2	Boolean expressions	124
8.8.3	Concatenation expressions	125
8.8.4	Conditional expressions	126
8.9	Reserved words	138
8.10	Context-sensitive words	141
8.11	Intrinsic function names	143
8.12	Compiler-directive words	144

iTeh STANDARD PREVIEW
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002>

8.13 External repository	145
9 I-O, objects, and user-defined functions	146
9.1 Files	146
9.1.1 Physical and logical files	146
9.1.2 Record area	146
9.1.3 File connector	146
9.1.4 Open mode	147
9.1.5 Sharing file connectors	147
9.1.6 Fixed file attributes	147
9.1.7 Organization	147
9.1.7.1 Sequential	147
9.1.7.2 Relative	148
9.1.7.3 Indexed	148
9.1.8 Access modes	148
9.1.8.1 Sequential access mode	149
9.1.8.2 Random access mode	149
9.1.8.3 Dynamic access mode	149
9.1.9 Reel and unit	149
9.1.10 Current volume pointer	149
9.1.11 File position indicator	149
9.1.12 I-O status	150
9.1.13 Invalid key condition	154
9.1.14 Sharing mode	155
9.1.15 Record locking	156
9.1.16 Sort file	157
9.1.17 Merge file	157
9.1.18 Dynamic file assignment	157
9.1.19 Report file	157
9.2 Screens	158
9.2.1 Terminal screen	158
9.2.2 Function keys	158
9.2.3 CRT status	158
9.2.4 Cursor	159
9.2.5 Cursor locator	159
9.2.6 Current screen item	160
9.2.7 Color number	160
9.3 Objects	161
9.3.1 Objects and classes	161
9.3.2 Object references	161
9.3.3 Predefined object references	161
9.3.4 Methods	161
9.3.5 Method invocation	161
9.3.6 Method prototypes	162
9.3.7 Conformance and interfaces	162
9.3.8 Polymorphism	165

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[ISO/IEC 1989:2002](https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002)

[https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-](https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002)

[2dd0189b5d8f/iso-iec-1989-2002](https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002)

9.3.9 Class inheritance	165
9.3.10 Interface inheritance	165
9.3.11 Interface implementation	166
9.3.12 Parameterized classes	166
9.3.13 Parameterized interfaces	166
9.3.14 Object life cycle	166
9.4 User-defined functions	167
10 Structured compilation group	168
10.1 Compilation units and runtime modules	168
10.2 Source units	168
10.3 Contained source units	168
10.4 Source elements and runtime elements	169
10.5 COBOL compilation group	169
10.5.1 General format	169
10.5.2 Syntax rules	172
10.5.3 General rules	173
10.6 End markers	174
11 Identification division	175
11.1 Identification division structure	175
11.2 CLASS-ID paragraph	176
11.3 FACTORY paragraph	178
11.4 FUNCTION-ID paragraph	179
11.5 INTERFACE-ID paragraph	180
11.6 METHOD-ID paragraph	181
11.7 OBJECT paragraph	183
11.8 OPTIONS paragraph	184
11.8.4 ARITHMETIC clause	184
11.8.5 ENTRY-CONVENTION clause	185
11.9 PROGRAM-ID paragraph	186
12 Environment division	188
12.1 Environment division structure	188
12.2 Configuration section	189
12.2.4 SOURCE-COMPUTER paragraph	190
12.2.5 OBJECT-COMPUTER paragraph	191
12.2.6 SPECIAL-NAMES paragraph	194
12.2.7 REPOSITORY paragraph	204
12.3 Input-output section	209
12.3.3 FILE-CONTROL paragraph	210
12.3.4 File control entry	210
12.3.4.4 ACCESS MODE clause	216
12.3.4.5 ALTERNATE RECORD KEY clause	217
12.3.4.6 COLLATING SEQUENCE clause	218
12.3.4.7 FILE STATUS clause	220

iTeh STANDARD PREVIEW
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002>

12.3.4.8 LOCK MODE clause	221
12.3.4.9 ORGANIZATION clause	223
12.3.4.10 PADDING CHARACTER clause	224
12.3.4.11 RECORD DELIMITER clause	225
12.3.4.12 RECORD KEY clause	226
12.3.4.13 RELATIVE KEY clause	227
12.3.4.14 RESERVE clause	228
12.3.4.15 SHARING clause	229
12.3.5 I-O-CONTROL paragraph	230
12.3.6 SAME clause	230
13 Data division	232
13.1 Data division structure	232
13.2 Explicit and implicit attributes	232
13.3 File section	233
13.3.4 File description entry	234
13.3.5 Sort-merge file description entry	237
13.4 Working-storage section	238
13.5 Local-storage section	239
13.6 Linkage section	240
13.7 Report section	242
13.7.3 Report description entry	242
13.7.4 Report group description entry	242
13.7.5 Report subdivisions	242
13.8 Screen section	244
13.9 Constant entry	245
13.10 Record description entry	247
13.11 77-level data description entry	248
13.12 Report description entry	248
13.13 Report group description entry	249
13.14 Data description entry	251
13.15 Screen description entry	255
13.16 Data division clauses	259
13.16.1 ALIGNED clause	259
13.16.2 ANY LENGTH clause	260
13.16.3 AUTO clause	261
13.16.4 BACKGROUND-COLOR clause	262
13.16.5 BASED clause	263
13.16.6 BELL clause	264
13.16.7 BLANK clause	265
13.16.8 BLANK WHEN ZERO clause	266
13.16.9 BLINK clause	267
13.16.10 BLOCK CONTAINS clause	268
13.16.11 CLASS clause	269
13.16.12 CODE clause	270
13.16.13 CODE-SET clause	271

iTech STANDARD PREVIEW

(standards.iteh.ai)

[ISO/IEC 1989:2002](https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002)[https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-](https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002)[2dd0189b5d8f/iso-iec-1989-2002](https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002)

13.16.14	COLUMN clause	273
13.16.15	CONTROL clause	277
13.16.16	DEFAULT clause	279
13.16.17	DESTINATION clause	280
13.16.18	Entry-name clause	281
13.16.19	ERASE clause	282
13.16.20	EXTERNAL clause	283
13.16.21	BACKGROUND-COLOR clause	284
13.16.22	FORMAT clause	285
13.16.23	FROM clause	288
13.16.24	FULL clause	289
13.16.25	GLOBAL clause	290
13.16.26	GROUP INDICATE clause	291
13.16.27	GROUP-USAGE clause	292
13.16.28	HIGHLIGHT clause	293
13.16.29	INVALID clause	294
13.16.30	JUSTIFIED clause	295
13.16.31	Level-number	296
13.16.32	LINAGE clause	297
13.16.33	LINE clause	299
13.16.34	LOWLIGHT clause	303
13.16.35	NEXT GROUP clause	304
13.16.36	OCCURS clause	306
13.16.37	PAGE clause	311
13.16.38	PICTURE clause	313
13.16.39	PRESENT WHEN clause	328
13.16.40	PROPERTY clause	330
13.16.41	RECORD clause	333
13.16.42	REDEFINES clause	336
13.16.43	RENAMES clause	338
13.16.44	REPORT clause	339
13.16.45	REQUIRED clause	340
13.16.46	REVERSE-VIDEO clause	341
13.16.47	SAME AS clause	342
13.16.48	SECURE clause	344
13.16.49	SELECT WHEN clause	345
13.16.50	SIGN clause	346
13.16.51	SOURCE clause	347
13.16.52	SUM clause	348
13.16.53	SYNCHRONIZED clause	351
13.16.54	TO clause	353
13.16.55	TYPE clause	354
13.16.56	TYPDEF clause	359
13.16.57	UNDERLINE clause	360
13.16.58	USAGE clause	361
13.16.59	USING clause	366

iTeh STANDARD PREVIEW
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002>

13.16.60 VALIDATE-STATUS clause	367
13.16.61 VALUE clause	369
13.16.62 VARYING clause	375
14 Procedure division	377
14.1 Procedure division structure	377
14.2 Declaratives	381
14.3 Procedures	381
14.3.1 Sections	381
14.3.2 Paragraphs	381
14.4 Procedural statements and sentences	382
14.4.1 Conditional phrase	384
14.4.2 Scope of statements	384
14.5 Execution	385
14.5.1 Run unit organization	385
14.5.2 State of a function, method, object, or program	385
14.5.3 Explicit and implicit transfers of control	387
14.5.4 Item identification	388
14.5.5 Results of runtime element execution	388
14.5.6 Locale identification	388
14.5.7 Sending and receiving operands	389
14.5.8 Alignment of data within data items	389
14.5.9 Overlapping operands	390
14.5.10 Normal run unit termination	390
14.5.11 Abnormal run unit termination	391
14.5.12 Condition handling	391
14.6 Common phrases and features for statements	399
14.6.1 At end condition	399
14.6.2 Invalid key condition	399
14.6.3 ROUNDED phrase	399
14.6.4 SIZE ERROR phrase and size error condition	399
14.6.5 CORRESPONDING phrase	401
14.6.6 Arithmetic statements	401
14.6.7 THROUGH phrase	402
14.6.8 RETRY phrase	403
14.7 Conformance for parameters and returning items	404
14.7.1 Parameters	404
14.7.2 Returning items	407
14.8 Statements	409
14.8.1 ACCEPT statement	409
14.8.2 ADD statement	415
14.8.3 ALLOCATE statement	418
14.8.4 CALL statement	420
14.8.5 CANCEL statement	426
14.8.6 CLOSE statement	428
14.8.7 COMPUTE statement	431

14.8.8	CONTINUE statement	432
14.8.9	DELETE statement	433
14.8.10	DISPLAY statement	435
14.8.11	DIVIDE statement	438
14.8.12	EVALUATE statement	441
14.8.13	EXIT statement	446
14.8.14	FREE statement	450
14.8.15	GENERATE statement	451
14.8.16	GO TO statement	453
14.8.17	GOBACK statement	454
14.8.18	IF statement	455
14.8.19	INITIALIZE statement	457
14.8.20	INITIATE statement	461
14.8.21	INSPECT statement	462
14.8.22	INVOKE statement	468
14.8.23	MERGE statement	472
14.8.24	MOVE statement	477
14.8.25	MULTIPLY statement	482
14.8.26	OPEN statement	484
14.8.27	PERFORM statement	489
14.8.28	RAISE statement	495
14.8.29	READ statement	496
14.8.30	RELEASE statement	503
14.8.31	RESUME statement	504
14.8.32	RETURN statement	505
14.8.33	REWRITE statement	507
14.8.34	SEARCH statement	512
14.8.35	SET statement	516
14.8.36	SORT statement	524
14.8.37	START statement	531
14.8.38	STOP statement	535
14.8.39	STRING statement	536
14.8.40	SUBTRACT statement	539
14.8.41	SUPPRESS statement	542
14.8.42	TERMINATE statement	543
14.8.43	UNLOCK statement	544
14.8.44	UNSTRING statement	545
14.8.45	USE statement	549
14.8.46	VALIDATE statement	554
14.8.47	WRITE statement	558
15	Intrinsic functions	566
15.1	Types of functions	566
15.2	Arguments	566
15.3	Returned values	568
15.3.1	Numeric and integer functions	568

iTech STANDARD PREVIEW
(standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002>

15.4	Date conversion functions	569
15.5	Summary of functions	569
15.6	ABS function	575
15.7	ACOS function	576
15.8	ANNUITY function	577
15.9	ASIN function	578
15.10	ATAN function	579
15.11	BOOLEAN-OF-INTEGERS function	580
15.12	BYTE-LENGTH function	581
15.13	CHAR function	582
15.14	CHAR-NATIONAL function	583
15.15	COS function	584
15.16	CURRENT-DATE function	585
15.17	DATE-OF-INTEGERS function	586
15.18	DATE-TO-YYYYMMDD function	587
15.19	DAY-OF-INTEGERS function	588
15.20	DAY-TO-YYYYDDD function	589
15.21	DISPLAY-OF function	590
15.22	E function	591
15.23	EXCEPTION-FILE function	592
15.24	EXCEPTION-FILE-N function	593
15.25	EXCEPTION-LOCATION function	594
15.26	EXCEPTION-LOCATION-N function	595
15.27	EXCEPTION-STATEMENT function	596
15.28	EXCEPTION-STATUS function	597
15.29	EXP function	598
15.30	EXP10 function	599
15.31	FACTORIAL function	600
15.32	FRACTION-PART function	601
15.33	HIGHEST-ALGEBRAIC function	602
15.34	INTEGER function	603
15.35	INTEGER-OF-BOOLEAN function	604
15.36	INTEGER-OF-DATE function	605
15.37	INTEGER-OF-DAY function	606
15.38	INTEGER-PART function	607
15.39	LENGTH function	608
15.40	LOCALE-COMPARE function	609
15.41	LOCALE-DATE function	610
15.42	LOCALE-TIME function	611
15.43	LOG function	612
15.44	LOG10 function	613
15.45	LOWER-CASE function	614
15.46	LOWEST-ALGEBRAIC function	615
15.47	MAX function	616
15.48	MEAN function	617
15.49	MEDIAN function	618

iTech STANDARD PREVIEW
(standards.iteh.ai)

[ISO/IEC 1989:2002](https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002)

[https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-](https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002)

[2dd0189b5d8f/iso-iec-1989-2002](https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002)

15.50 MIDRANGE function	619
15.51 MIN function	620
15.52 MOD function	621
15.53 NATIONAL-OF function	622
15.54 NUMVAL function	623
15.55 NUMVAL-C function	624
15.56 NUMVAL-F function	626
15.57 ORD function	627
15.58 ORD-MAX function	628
15.59 ORD-MIN function	629
15.60 PI function	630
15.61 PRESENT-VALUE function	631
15.62 RANDOM function	632
15.63 RANGE function	633
15.64 REM function	634
15.65 REVERSE function	635
15.66 SIGN function	636
15.67 SIN function	637
15.68 SQRT function	638
15.69 STANDARD-COMPARE function	639
15.70 STANDARD-DEVIATION function	640
15.71 SUM function	641
15.72 TAN function	642
15.73 TEST-DATE-YYYYMMDD function	643
15.74 TEST-DAY-YYYYDDD function	644
15.75 TEST-NUMVAL function	645
15.76 TEST-NUMVAL-C function	646
15.77 TEST-NUMVAL-F function	647
15.78 UPPER-CASE function	648
15.79 VARIANCE function	649
15.80 WHEN-COMPILED function	650
15.81 YEAR-TO-YYYY function	651
16 Standard classes	652
16.1 BASE class	652
16.1.1 New method	652
16.1.2 FactoryObject method	652
A Communications facility	654
A.1 Data division	655
A.2 Procedure division	667
A.2.1 ACCEPT MESSAGE COUNT statement	667
A.2.2 DISABLE statement	668
A.2.3 ENABLE statement	669
A.2.4 PURGE statement	670
A.2.5 RECEIVE statement	671

iTech STANDARD PREVIEW
 (standards.iteh.ai)

<https://standards.iteh.ai/catalog/standards/sist/b55eb6561-3acb-4d92-b1e8-2dd0189b5d8f/iso-iec-1989-2002>

A.2.6 SEND statement	673
B Language element lists	677
B.1 Implementor-defined language element list	677
B.2 Undefined language element list	690
B.3 Processor-dependent language element list	696
C Characters permitted in user-defined words	698
C.1 Notation	698
C.2 Repertoire of characters permitted in user-defined words	698
D Mapping of uppercase letters to lowercase letters	701
D.1 Notations	701
D.2 Case mapping list	701
E Concepts	705
E.1 Files	705
E.2 Table handling	714
E.3 Shared memory area	720
E.4 Compilation group and run unit organization and communication	721
E.5 Communications facility	734
E.6 Intrinsic function facility	740
E.7 Debugging	742
E.8 Types	742
E.9 Addresses and pointers	745
E.10 Boolean support and bit manipulation	746
E.11 Character sets	750
E.12 Collating sequences	752
E.13 Culturally-specific, culturally-adaptable, and multilingual applications	756
E.14 External switches	761
E.15 Common exception processing	761
E.16 Standard arithmetic	763
E.17 Object oriented concepts	768
E.18 Report writer	785
E.19 Validate facility	792
E.20 Conditional expressions	796
E.21 Examples of the execution of the INSPECT statement	800
E.22 Examples of the execution of the PERFORM statement	803
E.23 Example of free-form reference format	807
E.24 Conditional compilation	808
E.25 CALL-CONVENTION directive	809
E.26 ENTRY-CONVENTION clause	809
F Substantive changes list	810
F.1 Substantive changes potentially affecting existing programs	810
F.2 Substantive changes not affecting existing programs	823