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**Information processing systems - Computer graphics - Graphical Kernel System (GKS) language bindings - Part 1: FORTRAN (ISO 8651-1:1988)**

Information processing systems - Computer graphics - Graphical Kernel System (GKS) language bindings - Part 1: FORTRAN (ISO 8651-1:1988)

Graphische Systeme der Informationsverarbeitung - Sprachbindungen für das Graphische Kernsystem (GKS) - Teil 1: FORTRAN (ISO 8651-1:1988)

Systemes de traitement de l'information - Infographie - Interfaces langage avec GKS - Partie 1: FORTRAN (ISO 8651-1:1988)

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**ICS:**

35.060	Jeziki, ki se uporabljajo v informacijski tehniki in tehnologiji	Languages used in information technology
35.140	Üæ } æ} ã\ æ\ æã æ	Computer graphics

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Systèmes de traitement de l'information -  
Infographie - Interfaces langage avec GKS  
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Graphische Systeme der Informationsverarbeitung  
- Sprachbindungen für das Graphische Kernsystem  
(GKS) - Teil 1: FORTRAN (ISO 8651-1:1988)

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PREVZET PO METODI RAZGLASITVE

-12- 1997

This European Standard was approved by CEN on 1992-08-13. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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European Committee for Standardization  
Comité Européen de Normalisation  
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

## FOREWORD

The Technical Board has decided to submit the

International Standard 8651-1:1988 "Information processing systems - Computer graphics - Graphical Kernel System (GKS) language bindings - Part 1: FORTRAN"

for Formal Vote. The standard was accepted.

At present the Standard exists in the English and French versions only.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 1993 and conflicting national standards shall be withdrawn at the latest by February 1993.

According to the CEN/CENELEC Common Rules, the following countries are bound to implement this standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

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The text of the ISO 8651-1:1988 was approved by CEN as a European Standard without any modification.



## INTERNATIONAL STANDARD

ISO  
8651-1First edition  
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 INTERNATIONAL ORGANIZATION FOR STANDARDIZATION  
 ORGANISATION INTERNATIONALE DE NORMALISATION  
 МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ
 

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**Information processing systems —  
 Computer graphics — Graphical Kernel  
 System (GKS) language bindings —**

**Part 1 :  
 FORTRAN**

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*Systèmes de traitement de l'information — Infographie — Système graphique de base (GKS)*  
 — Interface langage —

*Partie 1 : FORTRAN*

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## ISO 8651-1:1988 (E)

## 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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 8651-1 was prepared by Technical Committee ISO/TC 97, *Information processing systems*.

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Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

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# Information processing systems — Computer graphics — Graphical Kernel System (GKS) language bindings —

## Part 1 : FORTRAN

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### 0 Introduction

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The Graphical Kernel System (GKS), the functional description of which is given in ISO 7942, is specified in a language independent manner and needs to be embedded in language dependent layers (language bindings) for use with particular programming languages. The purpose of this part of ISO 8651 is to define a standard binding for the FORTRAN computer programming language.

ISO 8651-1:1988 (E)

## 1 Scope and field of application

ISO 7942 (GKS) specifies a language independent nucleus of a graphics system. For integration into a programming language, GKS is embedded in a language dependent layer obeying the particular conventions of that language. This part of ISO 8651 specifies such a language dependent layer for the FORTRAN language.

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## 2 References

ISO 7942, *Information Processing - Computer graphics - Graphical Kernel System (GKS) functional description*.

ISO 1539, *Programming Languages - FORTRAN*.

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### 3 The FORTRAN language binding of GKS

#### 3.1 Specification

The GKS language binding interface for ISO FORTRAN 77 (ISO 1539) shall be described as in clauses 3, 4, 5, 6, 7, 8, and 9.

#### 3.2 Mapping of GKS function names to FORTRAN subroutine names

The function names of GKS are all mapped to FORTRAN subroutine names which start with the letter G. The mapping is generally done in a one-to-one correspondence to ISO 7942. However, some inquiry functions are split into more than one subroutine in this binding, due to the number of parameters required. The remaining letters after the first one are obtained by deriving a unique acronym from the words of the function name; e.g., ACTIVATE becomes AC, WORKSTATION becomes WK. Hence, the FORTRAN subroutine name of GKS function ACTIVATE WORKSTATION is GACWK. For a list of all abbreviations, see clause 4. Names used internally which may be known outside GKS, e.g., during linking, start with some easily recognized and documented form such as GK (subroutine, function, and common block names). Therefore, no external names starting with this construct should be chosen when using GKS, in order to avoid name conflicts. Globally used GKS names may be renamed if necessary.

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#### 3.3 Parameters

In general, the order of GKS function parameters is preserved. For some subroutines, however, there are additional parameters which have been inserted in the normal parameter sequence (e.g., array length for arrays which are output parameters).

Values of input parameters are unaltered by any GKS function, by PACK DATA RECORD, or by UNPACK DATA RECORD.

In order that the application program may inquire any element of a list (member of a set), such as the set of segment names, in this binding the inquiry functions return only a single element of a list (member of a set). In addition, the total number of elements of the list (members of the set) is always returned. The elements (members) are numbered starting from 1; each invocation of the inquiry function requires the desired element (member) number as an input parameter and returns the corresponding element (member). When the list (set) is empty, a zero is returned as the number of elements (members) and the parameter representing the single element in the list is undefined.

#### 3.4 The FORTRAN subset

The binding for FORTRAN 77 Subset is different from that for full FORTRAN 77 in order to accommodate the FORTRAN 77 Subset restrictions.

Those GKS subroutines in the full FORTRAN 77 binding that have arguments of type CHARACTER\*(\*) have alternative subroutine definitions that include fixed length character strings, CHARACTER\*80, for the Subset.

In some cases, an additional INTEGER parameter (the number of characters) appears in the parameter list and the Subset version is distinguished by the addition of a final S, so that the two versions can coexist in the same implementation. In other cases the INTEGER parameter is

already present and the FORTRAN 77 Subset version has the same name as the full FORTRAN 77 version.

A full FORTRAN 77 implementation shall include both subroutines in the case when the names are distinct and only the full FORTRAN 77 version when the names are the same.

The enumeration values in this binding may be redefined for the Subset by replacing the PARAMETER statements with corresponding DATA statements.

### 3.5 Error handling

There are two error routines in every GKS system, named GERLOG and GERHND. The user may replace the latter with his own subroutine using the same name, GERHND, and calling sequence. Furthermore, this user-defined error routine may call the system-defined error logging procedure GERLOG.

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#### 4 Generating FORTRAN subroutine names

For the binding of the GKS functions which inquire lists (sets), the word element (member) is added to the GKS function name before the subroutine name is generated from the resulting terms.

The derivation of the abbreviation for the subroutine names is performed in several steps. First, plurals are reduced to their singular form, and grammatical derivations are unified. Next, some compound terms are reduced. Finally, each remaining word is replaced by the null string or by an abbreviation.

##### Plurals

ATTRIBUTES	→	ATTRIBUTE	NUMBERS	→	NUMBER
DEVICES	→	DEVICE	PRIMITIVES	→	PRIMITIVE
EVENTS	→	EVENT	PRIORITIES	→	PRIORITY
FACILITIES	→	FACILITY	SEGMENTS	→	SEGMENT
FLAGS	→	FLAG	TYPES	→	TYPE
INDICES	→	INDEX	VALUES	→	VALUE
NAMES	→	NAME	WORKSTATIONS	→	WORKSTATION

##### Keeping Uniqueness

ACTIVE	→	ACTIVATE
DRAWING	→	DRAW
IDENTIFIER	→	IDENTIFICATION
SPACING	→	SPACE

##### Reduce Compound Terms:

STATE TABLES	→	TABLES
TRANSFORMATION NUMBER	→	TRANSFORMATION
SET member	→	member
CURRENT NORMALISATION	→	CN
MAXIMUM LENGTH	→	LENGTH

##### Deletions

ALL	FACTOR	LIST	OF	TABLES
AND	FROM	member	ON	TO
AVAILABLE	GKSM	MODIFICATION	POINT	TYPE
CURRENT	IN	MORE	SIZE	VALUE
DATA	INDICATOR	NAME	STATES	VECTOR
DEVICE	LENGTH	NUMBER	SUPPORTED	WITH
EVENT				

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## Abbreviations

ACCUMULATE	-	AC	LINETYPE	-	LN
ACTIVATE	-	AC	LINEWIDTH	-	LW
ALIGNMENT	-	AL	LOCATOR	-	LC
AREA	-	A	LOGGING	-	LOG
ARRAY	-	A	LOGICAL	-	L
ASPECT	-	A	MARKER	-	MK
ASSOCIATE	-	A	MATRIX	-	M
ASSOCIATED	-	AS	MAXIMUM	-	M
ATTRIBUTE	-	A	MESSAGE	-	MSG
AWAIT	-	WAIT	MODE	-	M
BASE	-	B	NORMALIZATION	-	N
CATEGORY	-	CA	OPEN	-	OP
CELL	-	C	OPERATING	-	OP
CHARACTER	-	CH	OVERFLOW	-	OV
CHOICE	-	CH	PACK	-	P
CLASSIFICATION	-	CL	PATH	-	P
CLEAR	-	CLR	PATTERN	-	PA
CLIPPING	-	CLIP	PICK	-	PK
CLOSE	-	CL	PIXEL	-	PX
COLOUR	-	C	POLYLINE	-	PL
CONNECTION	-	C	POLYMARKER	-	PM
COPY	-	C	PRECISION	-	P
CREATE	-	CR	PREDEFINED	-	P
DEACTIVATE	-	DA	PRIMITIVE	-	P
DEFAULT	-	D	PRIORITY	-	P
DEFERRAL	-	D	QUEUE	-	Q
DELETE	-	D	READ	-	RD
DETECTABILITY	-	DTEC	RECORD	-	REC
DIMENSIONS	-	D	REDRAW	-	R
DISPLAY	-	D	REFERENCE	-	RF
DRAW	-	D	RENAME	-	REN
DYNAMIC	-	D	REPRESENTATION	-	R
element	-	E	REQUEST	-	RQ
EMERGENCY	-	E	SAMPLE	-	SM
ERROR	-	ER	SCALE	-	SC
ESCAPE	-	ESC	SEGMENT	-	SG
EVALUATE	-	EV	SELECT	-	SEL
EXPANSION	-	XP	SET	-	S
EXTENT	-	X	SIMULTANEOUS	-	SIM
FACILITY	-	F	SOURCE	-	S
FILL	-	F	SPACE	-	SP
FLAG	-	F	STATE	-	S
FONT	-	F	STRING	-	ST
GENERALISED	-	G	STROKE	-	SK
GET	-	GT	STYLE	-	S
GKS	-	KS	SURFACE	-	S
HANDLING	-	HND	TEXT	-	TX
HEIGHT	-	H	TRANSFORMATION	-	T
HIGHLIGHTING	-	HLIT	UNPACK	-	U
IDENTIFICATION	-	ID	UPDATE	-	U
INDEX	-	I	USE	-	US
INITIALISE	-	IN	VALUATOR	-	VL
INPUT	-	I	VIEWPORT	-	VP
INQUIRE	-	Q	VISIBILITY	-	VIS
INSERT	-	IN	WIDTH	-	W
INTERIOR	-	I	WINDOW	-	WN
INTERPRET	-	I	WORKSTATION	-	WK
ITEM	-	ITM	WRITE	-	W
LINE	-	LN			

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