

ISO/TC 154/WG 5

Secretariat: SAC

Date and time — Codes for calendar systems

Date et heure — Codes pour les systèmes de calendrier

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Foreword

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This document was prepared by Technical Committee ISO/TC 154, *Processes, data elements and documents in commerce, industry and administration*.

This document is amongst a series of International Standards dealing with the conversion of systems of writing produced by Technical Committee ISO/TC 154, *Processes, data elements and documents in commerce, industry and administration*, WG 5 *Date and time*.

This is the first edition of this document.

Introduction

Calendar systems are essential to the tracking of dates and events.

Date and time tracking applications, such as in computing, archiving, communication and bibliography, all depend on the accurate identification of calendar systems for their performance. Moreover, accuracy of date and time tracking is often paramount to important activities from civilian to military use.

This document describes methods to unambiguously define calendar systems, their properties, and provides a mechanism to assign unique identifiers to these data elements.

This document also sets out the necessary procedures to maintain an international registry of calendar systems. == Scope

This document provides a list of codes to represent calendar systems, metadata to support the usage of those codes, and the corresponding maintenance procedures.

The codes were devised for usage of any application requiring the expression of calendar systems in coded form, including for data interchange.

1 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 639-1¹⁾, *Codes for the representation of names of languages — Part 1: Alpha-2 code*

ISO 639-2²⁾, *Codes for the representation of names of languages — Part 2: Alpha-3 code*

ISO 3166-1, *Codes for the representation of names of countries and their subdivisions — Part 1: Country code*

ISO 5127, *Information and documentation — Foundation and vocabulary*

ISO 15924, *Information and documentation — Codes for the representation of names of scripts*

Date and time — Codes for calendar systems



Terms and definitions

For the purposes of this document, the terms and definitions given in [ISO 34000](#) and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org>

2.1

code

data representation in different forms according to a pre-established set of rules

[SOURCE: [ISO 639-2](#)]

2.2

calendar code

code ([2.1](#)) used to represent a calendar system

2.3

language code

combination of characters used to represent the name of a language or languages

[SOURCE: [ISO 5127, 3.2.5.14](#)]

2.4

script code

combination of characters used to represent the name of a script

[SOURCE: [ISO 15924, 3.8](#)]

1) Cancelled and replaced by ISO 639:2023.

2) Cancelled and replaced by ISO 639:2023.

3 Calendar system models overview

The data models are arranged as shown in the following structure.

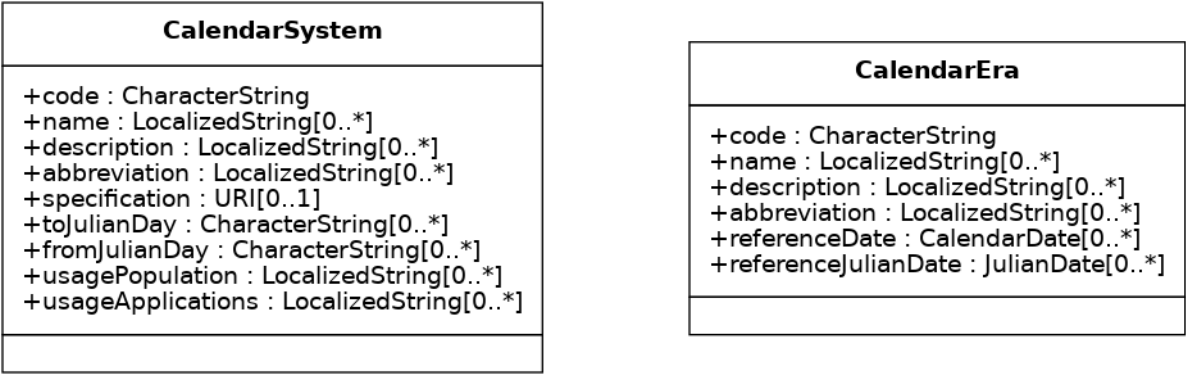


Figure 1

4 Data types

4.1 Core data types

These are the core data types used within this document.

- CharacterString
- DateTime, Date, Time
- Number, Integer, Decimal, Real
- Vector
- Boolean

4.2 Common data types

The following data models are used by other data models specified in this document.

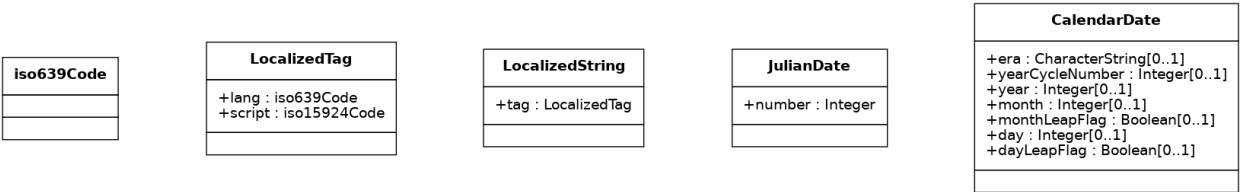


Figure 2

4.3 iso15924Code

The [ISO 15924](#) code list is used in this document to represent scripts.

4.4 iso639Code

The [ISO 639-2](#)³⁾ code list is used in this document to represent languages.

4.5 LocalizedTag

The LocalizedTag is a data structure used to tag a text with the script, language and transcription codes.

Table 1 — LocalizedTag attributes

Name	Definition	Mandatory / Optional / Conditional	Max Occur	Data Type
lang	ISO 639-2 code for identification of language.	M	1	iso639Code
script	ISO 15924 code for identification of script.	M	1	iso15924Code

4.6 LocalizedString

This represents a localized string with corresponding localization information.

Table 2 — LocalizedString attributes

Name	Definition	Mandatory / Optional / Conditional	Max Occur	Data Type
tag	Localization information.	M	1	LocalizedTag

4.7 JulianDate

This represents a reference to a day in the Julian Date system.

Table 3 — JulianDate attributes

Name	Definition	Mandatory / Optional / Conditional	Max Occur	Data Type
number	Number of days since Julian Date 0.	M	1	Integer

4.8 CalendarDate

This represents a date reference in a calendar system.

Table 4 — CalendarDate attributes

Name	Definition	Mandatory / Optional / Conditional	Max Occur	Data Type
era	Code of the calendar era	0	1	CharacterString
yearCycleNumber	Number of the year cycle (can be 0 or negative), used for calendar where year identification follows a cyclic pattern (ex: in a calendar where years follow a 60 years cycle, use this field to indicate the number of the current 60 years cycle). A CalendarDate cannot have both era and yearCycleNumber	0	1	Integer
year	Ordinal number of year in the calendar era or year cycle	0	1	Integer
month	Nominal number of month in the calendar year (note that in some calendars, nominal and ordinal month numbers can differ)	0	1	Integer

3) Cancelled and replaced by ISO 639:2023.

Table 4 (continued)

Name	Definition	Mandatory / Optional / Conditional	Max Occur	Data Type
monthLeapFlag	Flag indicating if the month is a leap month (second month in a row with the same nominal number)	0	1	Boolean
day	Nominal number of day in the previous date reference construct (note that in some calendars, nominal and ordinal day numbers can differ)	0	1	Integer
dayLeapFlag	Flag indicating if the day is a leap day (second day in a row with the same nominal number)	0	1	Boolean

5 Data models

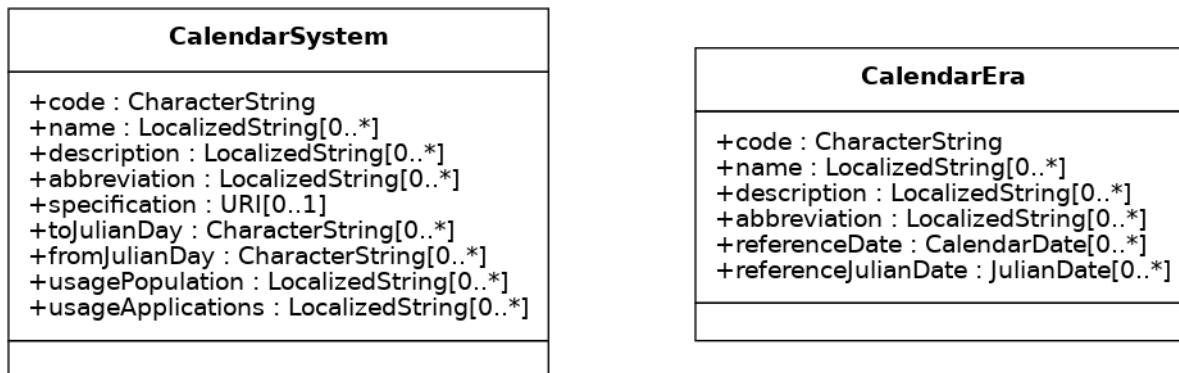


Figure 3

5.1 CalendarSystem

This represents a calendar system. Calendar systems are used to identify and mark days within a year.

Table 5 — CalendarSystem attributes

Name	Definition	Mandatory / Optional / Conditional	Max Occur	Data Type
code	Unique identifying code of this calendar era.	M	1	CharacterString
name	Name of this calendar era.	0	N	LocalizedString
description	Localized versions of the calendar system names tagged with script codes (ISO 15924) and language codes (ISO 639-1 ^a).	0	N	LocalizedString
abbreviation	Abbreviation of this calendar era. Multiple abbreviations are accepted.	0	N	LocalizedString
specification	A URI that provides the full specification of this calendar system.	0	1	URI
toJulianDay	Mechanism to convert a calendar date in this calendar system to a calendar date in the Julian Date system.	0	N	CharacterString

Table 5 (continued)

Name	Definition	Mandatory / Optional / Conditional	Max Occur	Data Type
fromJulianDay	Mechanism to convert a calendar date in the Julian Date system to a calendar date in this calendar system.	0	N	CharacterString
usagePopulation	Populations that this calendar system is relevant to.	0	N	LocalizedString
usageApplications	Applications that this calendar system is relevant to.	0	N	LocalizedString
^a Cancelled and replaced by ISO 639:2023.				

5.2 CalendarEra

This represents a calendar era.

NOTE calendar eras within a calendar system may overlap, and is therefore unnecessary to have an end reference date.

Table 6 — CalendarEra attributes

Name	Definition	Mandatory / Optional / Conditional	Max Occur	Data Type
code	Unique identifying code of this calendar era.	M	1	CharacterString
name	Name of this calendar era.	0	N	LocalizedString
description	Localized versions of the calendar era names tagged with script codes (ISO 15924) and language codes (ISO 639-1).	0	N	LocalizedString
abbreviation	Abbreviation of this calendar era. Multiple abbreviations are accepted.	0	N	LocalizedString
referenceDate	Date of current calendar era at the day referred to by <code>referenceJulianDate</code> .	0	N	CalendarDate
referenceJulianDate	Julian date that marks the beginning of this calendar era.	0	N	JulianDate

6 Codes and identifiers

6.1 Requirements

6.1.1 General

A calendar system is eligible for assignment of an entry based on its usage of date identification and the need for international interchange.

Usage of a calendar system is determined by at least one of the following conditions, by presentation of evidence:

- The system has been approved for official use at some level of government (current, historic, or will be in the near future);
- The system has been used to identify with dates, such as in bibliographic information (current, historic, or will be in the near future).

Justification should be given to indicate that international interchange is necessary.

A similar set of requirements apply to the registration of calendar eras. A calendar era entry must be associated with at least one calendar system entry.

6.2 Principles for allocation of code elements

6.2.1 Relationship with names

Calendar systems have codes in the following format:

[system-code]

Figure 4

EXAMPLE `gregorian` or `gre` for the Gregorian calendar, whose specification is provided in [ISO 8601-1](#).

6.2.2 Construction of the alphabetic code

The following rules are to be adhered to for the assignment of the alphabetic code:

- The alphabetic code uses combinations, in lower case, of between 3 and 20 fixed letters of the 26-character Latin alphabet.
- Codes shall encourage descriptive and distinguishable alphabetic names.

An additional short alias for the alphabetic code composed of 3 fixed letters of the 26-character Latin alphabet is allowed.

6.2.3 User assigned code elements

If users need code elements to represent calendar systems not included in the calendar code registry, the code prefix of `zz` can be used.

The code length for the calendar system identifier must be 3 letters.

Such calendar system identifiers are in the following format:

`zz[calendar-system-identifier]`

Figure 5

NOTE Users are advised that the above series of codes are not universals, those code elements are not compatible between different entities.

6.3 List of calendar system and their code elements

The list of items composing the content of the country code is initially compiled in a separate dataset outside of this document. Additional and new entries will be listed by the ISO 34300/AG.

Data attributes provided in the list is defined in [Clause 6](#).

Bibliography

- [1] ISO 8601-1, *Date and time — Representations for information interchange — Part 1: Basic rules*
- [2] ISO/IEC 10646-2⁴⁾, *Information technology — Universal Multiple-Octet Coded Character Set (UCS) — Part 2: Supplementary Planes*
- [3] ISO/IEC TR 15285⁵⁾, *Information technology — An operational model for characters and glyphs*
- [4] ISO 34000, *Date and time — Vocabulary*
- [5] The XXIIIrd International Astronomical Union General Assembly, *The XXIIIrd International Astronomical Union General Assembly*, 1997. Available at: <https://www.iers.org/ IERS/EN/ Science/Recommendations/resolutionB1.html>

4) Cancelled and replaced by ISO/IEC 10646:2003.

5) Withdrawn.

