INTERNATIONAL STANDARDIZED PROFILE

ISO/IEC ISP 11186-3

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Information technology — International Standardized Profiles FVT3nn — Virtual Terminal Basic Class — Register of attribute assignment type definitions —

Part 3: FVT312 — Repertoire Assignment Type for ISO/IEC 2022 Level 2

Technologies de l'information — Profils normalisés internationaux FVT3nn — Classe de base du terminal virtuel — Registre de définitions de type d'allocation d'attribut —

Partie 3: FVT312 — Type d'affectation de répertoire pour le niveau 2 de l'ISO/CEI 2022

Reference number
ISO/IEC ISP 11186-3:2000(E)

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work.

In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1. In addition to developing International Standards, ISO/IEC JTC 1 has created a Special Group on Functional Standardization for the elaboration of International Standardized Profiles.

An International Standardized Profile is an internationally agreed, harmonized document which identifies a standard or group of standards, together with options and parameters, necessary to accomplish a function or a set of functions.

Draft International Standardized Profiles are circulated to national bodies for voting. Publication as an International Standardized Profile requires approval by at least 75 % of the national bodies casting a vote.

International Standardized Profile ISO/IEC ISP 11186-3 was prepared with the collaboration of

— Asia-Oceania Workshop (AOW);

— European Workshop for Open Systems (EWOS);

— Open Systems Environment Implementors' Workshop (OIW).

Attention is drawn to the possibility that some of the elements of this part of ISO/IEC ISP 11186 may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights.

ISO/IEC ISP 11186 consists of the following parts, under the general title *Information technology — International Standardized Profiles FVT3nn — Virtual Terminal Basic Class — Register of attribute assignment type definitions*:

— *Part 1: FVT321 — Font Assignment Type No. 1*

— *Part 2: FVT311 — Repertoire Assignment Type for ISO/IEC 10646*

— *Part 3: FVT312 — Repertoire Assignment Type for ISO/IEC 2022 Level 2*

— *Part 4: FVT322 — Font Assignment Type No.2*

Annexes A, B and C of this part of ISO/IEC 11186 are for information only.

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Introduction

ISO/IEC ISP 11186 is defined within the context of Functional Standardization, in accordance with the principles specified in ISO/IEC TR 10000, “Framework and Taxonomy of International Standardized Profiles”. The context of Functional Standardization is one part of the overall field of Information Technology (IT) standardization activities, covering base standards, profiles and registration mechanisms.

The Open Systems Interconnection (OSI) Standard ISO/IEC 9040 for the Virtual Terminal Basic Class Service provides for the identification of attribute assignment types by means of ASN.1 object identifiers. This International Standardized Profile provides a means for the registration of such attribute assignment type definitions in accordance with ISO/IEC 9834-1. The individual entries in this register constitute Interchange Format and Representation Profiles (F-Profiles) within the framework of ISO/IEC TR 10000.

This part of ISO/IEC ISP 11186 was developed by the European Workshop for Open Systems (EWOS) in close cooperation with the other two Regional OSI Workshops, namely the OSE Implementors' Workshop (OIW) of the United States and the OSI Asia-Oceania Workshop (AOW). The text is harmonized between these three Workshops and it has been ratified by the plenary assemblies of each Workshop.

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Information technology — International Standardized Profiles FVT3nn — Virtual Terminal Basic Class — Register of attribute assignment type definitions —

Part 3: FVT312 — Repertoire Assignment Type for ISO/IEC 2022 Level 2

1 Scope

1.1 General

The concept of Profiles for OSI, and the structure of the International Standardized Profiles that document them, are defined in ISO/IEC TR 10000-1. Such Profiles are divided into a number of different classes and sub-classes. Two of these classes contain sub-classes comprising functions of the Virtual Terminal Basic Class Service and Protocol specified in the base standards ISO/IEC 9040 and ISO/IEC 9041. These are the Application Profiles (A-Profiles) and the Interchange Format and Representation Profiles (F-Profiles).

The relationship between A-Profiles and F-Profiles is described in 7.3.2 of ISO/IEC TR 10000-1 and is as follows. Application Layer base standards require, implicitly or explicitly, the structure of information carried or referenced by them to be specified for each instance of communication. It is the purpose of F-Profiles to specify such information structures. Particular functional requirements may then be met by the combination of an A-Profile with one or more F-Profiles.

Establishment of a VT-association involves the selection by negotiation of a particular Virtual Terminal Environment profile (VTE-profile), and of particular values for any arguments of that VTE-profile. The VTE-profile specification, and possibly also the values of certain VTE-profile arguments, may in turn reference the definitions of VT control object types and attribute assignment types. These VTE-profiles, control object types and attribute assignment types are therefore Information Objects that require explicit reference within the VT protocol. Particular instances of these Information Objects are fully defined within the base standards, but the base standards also provide for further instances to be defined by registration. Each registered instance constitutes an F-Profile within the framework of ISO/IEC TR 10000.

The Virtual Terminal Basic Class Service and Protocol may be used to realise a wide range of distinct functions. Particular functions may be realised through the selection of appropriate VT functional units, F-Profiles and other VTE-profile argument values. The specification of the selection required to realise a particular function and to promote interoperability constitutes a Virtual Terminal A-Profile within the framework of ISO/IEC TR 10000.

The three International Registers of VT information objects and the specifications of VT Application Profiles are each published as a separate multi-part ISP as follows:

— ISO/IEC ISP 11184 is the Register of VTE-profiles;

— ISO/IEC ISP 11185 is the Register of control object type definitions;

— ISO/IEC ISP 11186 is the Register of attribute assignment type definitions;

— ISO/IEC ISP 11187 contains the specifications of VT Application Profiles.

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This part of ISO/IEC ISP 11186 contains the definition of a repertoire assignment type for which a repertoire assignment value identifies the use of a level 2 version of the 8-bit code structure of ISO/IEC 2022 (multiple pre-designated character sets, without locking shifts). Such a version of ISO/IEC 2022 provides access to G2 and G3 code elements, in addition to the G0 and G1 code elements that may be accessed by means of the default repertoire assignment type specified in ISO/IEC 9040.

This repertoire assignment type also includes provision for restriction of the repertoire of characters to a subset of those that can be represented by the selected version of ISO/IEC 2022. The restriction of the repertoire may be by means outside the scope of ISO/IEC 2022. In particular the repertoire may be specified according to ISO/IEC 10646-1 even though the coding for information interchange is according to a level 2 version of ISO/IEC 2022. This facility should assist interworking during migration of applications from ISO/IEC 2022 coding to ISO/IEC 10646-1 coding.

NOTE 1 The use of locking shifts within the code structure of ISO/IEC 2022 is not consistent with the concept of a character-repertoire as defined in ISO/IEC 9040. A character-repertoire of the Virtual Terminal Service consists of a set of objects, each of which can be represented (uniquely) by a primary attribute value. If locking shifts were used, the character-box graphic element represented by a particular primary attribute value could change within a single instance of communication.

NOTE 2 The only levels of implementation defined in 10.3 of ISO/IEC 2022 that do not make use of locking shifts are levels 1 and 2 of the 8-bit code structure and level 1 of the 7-bit code structure.

NOTE 3 The use of a Level 1 version of either the 7-bit or the 8-bit code structure of ISO/IEC 2022 (elementary 7-bit and 8-bit codes) is already permitted by the default repertoire assignment type that is defined in ISO/IEC 9040 and which has the ASN.1 object identifier

{ iso standard 9040 repertoire(2) iso2022(0) }.

The repertoire assignment type defined in this part of ISO/IEC ISP 11186 therefore provides for the use within the Virtual Terminal Service of the only other level of implementation of ISO/IEC 2022 that is consistent with the definition of that service.

1.2 Position within the taxonomy

The taxonomy of International Standardized Profiles for OSI is laid down in ISO/IEC TR 10000-2. Within the classification scheme of this taxonomy, the OSI Profiles specified in this International Standardized Profile are in the Virtual Terminal Registered Object sub-class of the class of Interchange Format and Representation Profiles.

A Profile within this subclass has a Profile identifier of the form FVT*abc*, where *abc* is a structured numerical identifier that identifies the position of the Profile within each of the three levels of subdivision of the subclass. The values of *a* and *b* are single digits but *c* is an integer that is not necessarily a single digit.

In principle the ISO Virtual Terminal model allows for multiple classes of operation, although at the time of publication of this International Standardized Profile only the Basic Class has been defined. The value of the identifier component *a* distinguishes between distinct types of information object as follows:

— *a* = 1 for Basic Class VTE-profiles;

— *a* = 2 for Basic Class Control Objects;

— *a* = 3 for Basic Class Assignment Types.

Values of *a* greater than 3 are reserved for future developments.

This part of ISO/IEC ISP 11186 contains the specifications of the Profiles with identifiers of the form FVT3*bc*. For this form of identifier, the component *b* distinguishes between the three attributes of display object array elements for which assignment types are defined in accordance with ISO/IEC 9040. The values of *b* are allocated as follows:

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— *b* = 1 for repertoire assignment types;

— *b* = 2 for font assignment types;

— *b* = 3 for colour assignment types.

The identifier component *c* is the serial number of the attribute assignment type in the sub-register for the particular attribute concerned. Values of *b* greater than 3 are reserved for further attributes that may be defined as subject to registration in future amendments to ISO/IEC 9040.

This part of ISO/IEC ISP 11186 contains the definition of the repertoire assignment type with the Profile identifier

FVT312 — Repertoire Assignment Type for ISO/IEC 2022 Level 2

1.3 Scenario

The specification of the Virtual Terminal Service is given in ISO/IEC 9040. It is based on a model in which two VT-users communicate by means of a shared Conceptual Communication Area (CCA) that is a conceptual part of the VT service-provider. Information exchange is modelled by one VT-user updating the content of the CCA and the changed state of the CCA then being made accessible to the peer VT-user.

The CCA is structured by the Virtual Terminal Service into a number of components. Of these components, the Conceptual Data Store (CDS) contains one or two display objects (DOs), each of which includes a one, two or three dimensional array of array elements. Each array element is either empty or has a content that consists of a primary attribute and a number of secondary attributes. The primary attribute value selects one character-box graphic element from a repertoire of such elements that is determined by the character-repertoire secondary attribute. The other secondary attributes are the font, emphasis, foreground-colour and background-colour attributes which are collectively referred to as rendition attributes.

The values permitted for the secondary attributes are specified by attribute assignments that are included among the parameters of a Virtual Terminal Environment (VTE). The font attribute is subservient to the character-repertoire attribute in that a separate set of permitted values for the font attribute is specified for each permitted value of the character-repertoire attribute. The values permitted for the other secondary attributes are mutually independent.

With the exception of the emphasis attribute, an attribute assignment is composed of two parts, a type and a value. For the emphasis attribute, the syntax of permitted values is prescribed by the VT service base standard ISO/IEC 9040 and the semantics of each value is determined by the specification of the VTE-profile currently in use. For all other secondary attributes, the assignment type determines both the syntax of the permitted values and the semantic interpretation of each such value.

Assignment type definitions are required for only three distinct attributes, namely repertoire, font and colour, since both foreground-colour and background-colour secondary attributes reference the same assignment types. The attribute assignments specified by the parameter values of a VTE, and the assignment type definitions to which they refer, are held in the Data Structure Definition (DSD) component of the CCA. This is illustrated in figure 1, in which RepAT-1, RepAT-2, ... RepAT-*n* represent a number of different repertoire assignment types, FontAT-1, FontAT-2, ... FontAT-*n* represent a number of different font assignment types and ColAT-1, ColAT-2, ... ColAT-*n* represent a number of different colour assignment types. The negotiation during establishment of a VT-association will determine whether or not these will include the attribute assignment type whose definition is given in this part of ISO/IEC ISP 11186.

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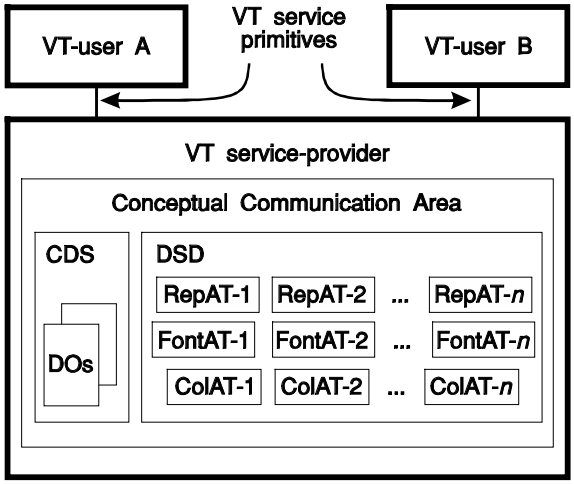

Figure 1 — Attribute assignment types in the VT Service model

NOTE A VTE-profile specification may prescribe the attribute assignments that are present in any VTE established by its use, or may provide VTE-profile arguments for the negotiation of these attribute assignments, or may use a combination of these methods. Where some or all of the attribute assignments are determined by negotiation, attribute assignment types are referenced by their registered name. The permitted syntax of the corresponding attribute assignment value is determined by the definition that has this registered name. Since the VT service-provider is not required to have knowledge of these registered definitions, in principle the VT-users provide the VT service-provider with such information through local management procedures. Whether or not this is necessary in practice depends on the nature of the implementations concerned.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard Profile. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International Standard Profile are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards. ITU-T maintains a list of currently valid ITU-T Recommendations.

ISO/IEC 2022:1994, *Information technology — Character code structure and extension techniques*.

ISO 2375:1985, *Data processing — Procedure for registration of escape sequences*[1)].

ISO/IEC 8824-1:1995, *Information technology — Abstract Syntax Notation One (ASN.1): Specification of basic notation*. (See also ITU-T Recommendation X.680.)

ISO/IEC 8824-2:1995, *Information technology — Abstract Syntax Notation One (ASN.1): Information object specification*. (See also ITU-T Recommendation X.681.)

ISO/IEC 9040:1997, *Information technology — Open Systems Interconnection — Virtual Terminal Basic Class Service.*

ISO/IEC 9041-1:1997, *Information technology — Open Systems Interconnection — Virtual Terminal Basic Class Protocol — Part 1: Specification.*

1) The Registration Authority for ISO 2375 is the Information Processing Society of Japan/Information Technology Standards Commission of Japan (IPSJ/ITSCJ), Room 308-3, Kikai Shinko Kaikan Building, 3-5-8 Shiba-koen, Minato-ku, Tokyo 105-0011, Japan, from whom the corresponding register, the ISO *International Register of Coded Character Sets to be used with Escape Sequences*, may be obtained.

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ISO/IEC 9834-1:1993, *Information technology — Open Systems Interconnection — Procedures for the operation of OSI Registration Authorities: General procedures.* (See also ITU-T Recommendation X.660.)

ISO/IEC TR 10000-1:1998, *Information technology — Framework and taxonomy of International Standardized Profiles — Part 1: General principles and documentation framework.*

ISO/IEC TR 10000-2:1998, *Information technology — Framework and taxonomy of International Standardized Profiles — Part 2: Principles and Taxonomy for OSI Profiles.*

ISO/IEC 10731:1994, *Information technology — Open Systems Interconnection — Basic Reference Model — Conventions for the definition of OSI services.* (See also ITU-T Recommendation X.210.)

3 Terms and definitions

For the purposes of this part of ISO/IEC ISP 11186, the following terms and definitions apply.

3.1 General OSI terminology

3.1.1 This part of ISO/IEC ISP 11186 makes use of the following terms defined in ISO/IEC 10731:

a) service primitive;

b) service-provider.

3.1.2 This part of ISO/IEC ISP 11186 makes use of the following terms defined in ISO/IEC 8824-1:

a) character abstract syntax;

b) character string type;

c) character transfer syntax;

d) component type;

e) module;

f) object descriptor type;

g) object identifier;

h) restricted character string type;

i) sequence type;

j) unrestricted character string type.

3.1.3 This part of ISO/IEC ISP 11186 makes use of the following term defined in ISO/IEC 8824-2:

a) information object.

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3.1.4 This part of ISO/IEC ISP 11186 makes use of the following terms defined in ISO/IEC 9834-1:

a) registration;

b) registration-hierarchical-name.

3.2 Terminology of VT base standards

3.2.1 This part of ISO/IEC ISP 11186 makes use of the following definitions reproduced from ISO/IEC 9040:

3.2.1.1
character-repertoire
A set of objects which can be represented by primary attribute values; one such object, represented by its primary attribute value, can occupy an array element in a display object when the character-repertoire is in use for that array element. A control object of character-string category also has an associated repertoire.

3.2.1.2
character-box graphic element
An atomic element of a character-repertoire where use of the repertoire has been agreed through negotiation by VT-users.

3.2.1.3
primary attribute
The attribute of an array element of a display object which is a coded representation of the character-box graphic element assigned to that array element.

3.2.2 This part of ISO/IEC ISP 11186 makes use of the following additional terms defined in ISO/IEC 9040:

a) array element;

b) display object;

c) rendition attributes;

d) secondary attribute;

e) VT-association;

f) VT-environment (VTE);

g) VT-user;

h) VTE-parameter;

i) VTE-profile;

j) VTE-profile argument.

3.3 Terminology of coded character set standards

3.3.1 This part of ISO/IEC ISP 11186 makes use of the following definitions reproduced from ISO/IEC 2022:

NOTE The character set standards ISO/IEC 6937 and ISO/IEC 10646-1 also give definitions for some or all of these terms. The definitions are not identical in the various standards, and in particular the concept of repertoire varies significantly; see annex A for more details.

3.3.1.1
character
A member of a set of elements used for the organization, control or representation of data.

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3.3.1.2
coded character set
A set of unambiguous rules that establishes a character set and the one-to-one relationship between the characters of the set and their bit combinations.

3.3.1.3
combining character
A member of an identified subset of a coded character set, intended for combination with the preceding or following graphic character, or with a sequence of combining characters preceded or followed by a non-combining character.

3.3.1.4
graphic character
A character, other than a control function, that has a visual representation normally handwritten, printed or displayed, and that has a coded representation consisting of one or more bit combinations.

3.3.1.5
graphic symbol
A visual representation of a graphic character or of a control function.

3.3.1.6
repertoire
A specified set of characters that are each represented by one or more bit combinations of a coded character set.

3.3.2 This part of ISO/IEC ISP 11186 makes use of the following additional terms defined in ISO/IEC 2022:

a) control character;

b) control function;

c) to designate;

d) escape sequence;

e) to represent.

4 Abbreviations

For the purposes of this part of ISO/IEC ISP 11186, the following abbreviations apply.

ASN.1	Abstract Syntax Notation One
CCA	Conceptual Communication Area
CDS	Conceptual Data Store
DO	Display Object
DSD	Data Structure Definition
PDU	Protocol Data Unit
VT	Virtual Terminal
VTE	Virtual Terminal Environment

All other abbreviations used are defined in ISO/IEC TR 10000-1.

5 Principles of conformance to VT Profiles

Profiles with taxonomy identifiers of the form FVT3*nn* provide attribute assignment type definitions for reference as required by VTE-profile specifications given in FVT1*nn* Profiles, by control object type definitions given in FVT2*nn* Profiles and by VT Application Profiles given in AVT*nn* Profiles.

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There is no concept of conformance to an FVT3*nn* Profile in isolation. An FVT1*nn* Profile that references an FVT3*nn* Profile may place requirements on an implementation of the VT protocol to be able to negotiate the presence in the CCA of attribute assignments of the type concerned. An FVT2*nn* Profile may impose similar requirements concerning FVT31*n* Profiles if it permits negotiation of values for the CO-repertoire-assignment VTE-parameter.

NOTE The use of an attribute assignment type by a VTE-profile specification will have no effect on the operation of the VT protocol unless the attribute assignment concerned is subject to negotation during association establishment. Attribute assignments are referenced in display object update operations by their position in an ordered list, so that the PDUs carrying these operations are transparent to the specific assignments being referenced.

Such requirements of FVT1*nn* and FVT2*nn* Profiles reference the syntax of attribute assignment values as specified by the attribute assignment type concerned. A system that includes an implementation of the VT protocol may be claimed to conform also to an AVT*nn* Profile. Conformance to an AVT*nn* Profile may require that the image of the display object array presented by a real display device is in accordance with semantics specified by the attribute assignment type definitions referenced by the contents of the array elements. Conformance to attribute assignment type semantics is not within the scope of conformance to any FVT*nnn* Profile.

In accordance with these conformance principles, an FVT3*nn* Profile does not provide a Profile Requirements List as defined by ISO/IEC 9646-1.

6 Entry number

The remaining clauses of this part of ISO/IEC ISP 11186 provide the entry for the Repertoire Assignment Type for ISO/IEC 2022 Level 2 in the International Register of VT Attribute Assignment Type Definitions. This register complies with the requirements of ISO/IEC 9834-1 concerning registration authorities that operate in a technical role. This International Register is maintained as three sub-registers, one each for repertoire, font and colour assignment type definitions.

This entry is the second in the sub-register for repertoire assignment type definitions. This register assigns it the entry number:

REP-2.

7 Name of sponsoring authority

This entry is sponsored by the European Workshop for Open Systems (EWOS).

8 Date

The date of submission of this proposal was 1995-09-20.

9 Identifier

The name assigned to an information object by an International Register is required by ISO/IEC 9834-1 to be a registration-hierarchical-name. A registration-hierarchical-name may have more than one form. The permitted forms include an ASN.1 object identifier as defined in ISO/IEC 8824-1 and a distinguished name as defined in ISO/IEC 9594-2.

In accordance with annex A of ISO/IEC 9834-1, this register assigns the following object identifier form for the name of this register entry:

{ iso(1) standard(0) 11186 3 repertoire(2) iso2022-level2(2) }.

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In accordance with 18.3 of ISO/IEC 9040, this object identifier shall be used as the repertoire-assignment-type component of a value of the repertoire-assignment VTE-parameter to specify this register entry as providing the method used to designate the character-repertoire and to determine the form of the repertoire-assignment-value component.

This register does not assign any other form to the name of this entry.

NOTE By ISO/IEC 9834-1 a distinguished name for the purposes of the OSI Directory may only be assigned together with an object identifier when the object identifier form is generated under the arc { joint-iso-ccitt(2) country(16) country-name }.

10 Descriptor value

The value of the ASN.1 object descriptor type assigned to this register entry is:

"FVT312: Repertoire Assignment Type for ISO/IEC 2022 Level 2".

11 Character-repertoire designation

11.1 Principles of designation

11.1.1 This repertoire assignment type provides for separate identification of the following two components of a character-repertoire:

— the set of objects (i.e. the character-box graphic elements) which comprise the character-repertoire;

— the coding rules that determine the coded representation (i.e. the primary attribute value) of each object of the set.

11.1.2 The character-box graphic elements are required to be graphic characters as defined in ISO/IEC 2022. The set of such elements, as identified by the first of the above two components, specifies the repertoire of characters that has to be represented by the coding rules identified by the second element.

11.1.3 The coding rules are specified in terms of a version of the 8-bit code structure of ISO/IEC 2022 at implementation level 2. The coded graphic character sets of that version are restricted to be sets that are registered in accordance with ISO 2375.

11.1.4 By B.1.7 of ISO 2375, the register entry for a graphic character set does not specify the repertoire of characters which can be obtained by combining the characters of the set. Two combination methods are recognised in ISO/IEC 2022, as described in 6.3.3 of that International Standard, namely:

— combination of non-combining graphic characters by the use of the control character BACKSPACE or CARRIAGE RETURN;

— the use of combining characters in conjunction with a non-combining graphic character.

In this assignment type, the repertoire is separately identified in accordance with 11.1.2 above. This assignment type permits the use only of the second of these two methods of combination in the construction of the coded representation of a character of the repertoire. It places no restriction on the combinations of combining and non-combining characters that may be used in the construction of the coded representation of a character of the repertoire.

NOTE If the coded graphic character sets of the selected version of ISO/IEC 2022 contain, for example, each of the characters LATIN SMALL LETTER E, LATIN SMALL LETTER E WITH ACUTE and NON-SPACING ACUTE ACCENT then the character LATIN SMALL LETTER E WITH ACUTE may be coded either with or without the use of the combining diacritical mark. Both coded representations are permitted in this assignment type. If both are available in a particular instance of this assignment type then they provide alternative primary attribute values for the same character of the repertoire.

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11.1.5 It is a requirement of B.1.1 of ISO 2375 that non-spacing characters shall be explicitly identified as such in a register entry. For the purposes of this assignment type, all characters so identified shall be considered to be combining characters that combine with a following non-combining graphic character. All graphic characters of a register entry that are not so identified, or are not otherwise explicitly identified as combining characters, shall be considered to be non-combining characters.

11.1.6 This assignment type permits the repertoire to be determined implicitly by the coding rules. When this occurs then the repertoire is defined to consist of all characters that can be represented by the specified coding rules. When the coding rules do not make use of combining characters, this is expected to be the normal usage. The repertoire then consists precisely of the SPACE character together with the graphic characters of the coded character sets specified in the selected version of ISO/IEC 2022.

When the coding rules make use of combining characters, this implicit determination of the repertoire may result in ambiguity as to its content. Each character-box graphic element is intended to have a visual representation as a single graphic symbol corresponding to a `real' graphic character. However, there may be permitted encoding sequences that represent `artificial' graphic characters, e.g. PLUS SIGN WITH ACUTE, with a consequent ambiguity as to whether or not these form part of the repertoire. Care is therefore advised in the use of implicit repertoire designation when combining characters are used by the coding rules.

11.2 Character-box graphic elements

11.2.1 The repertoire that constitutes the set of character-box graphic elements may be determined either implicitly in accordance with 11.1.6 above, or by explicit designation. Explicit designation shall be by means of a triple consisting of:

— a character abstract syntax;

— a set of additional characters;

— a set of excluded characters.

There are no restrictions on the character abstract syntaxes that are permitted, nor on the characters that may be included in the sets of additional and excluded characters. In particular, there is no requirement that the character abstract syntax should be specified in accordance with ISO/IEC 2022.

NOTE It may well be convenient to specifiy all three components of this triple in accordance with ISO/IEC 10646-1.

11.2.2 The repertoire designated by such a triple shall consist of the non-combining graphic characters of the set formed from the characters of the specified character abstract syntax by first adding the additional characters and then removing the excluded characters. If the set so constructed contains graphic characters that are combining characters or characters that are not graphic characters then they are not included in the repertoire; by 6.2 of ISO/IEC 2022 the character SPACE is a graphic character but the character DELETE is not.

NOTE 1 Combining characters are not used in explicit designation of the repertoire but they may be used in the coding rules in accordance with 11.1.4 above. Their use in explicit designation of the repertoire would lead to the ambiguities described in 11.1.6 above that can arise when the repertoire is determined implicitly.

NOTE 2 Although the sets of additional characters and of excluded characters should not normally have any characters in common, the specification is unambiguous; any common characters are excluded.

NOTE 3 The provision for additional and excluded characters enables adjustments to be made to achieve matching between different specification mechanisms. In particular it permits the set of characters to be specified in accordance with ISO/IEC 10646-1 and to be encoded in accordance with ISO/IEC 2022. There is seldom a complete match between the content of the character collections defined in ISO/IEC 10646-1 and the coded character sets registered in accordance with ISO 2375.

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11.3 Primary attribute values

11.3.1 The coding rules for a character-repertoire of this assignment type shall be designated by a character transfer syntax. If the repertoire is designated explicitly in accordance with 11.2 then this character transfer syntax shall be capable of representing every graphic character of the repertoire. The character transfer syntax shall also satisfy the following conditions:

— it shall be an 8-bit code in accordance with implementation level 2 of ISO/IEC 2022, or with one of the qualifications of this level as specified in 10.3.2 of that International Standard;

— the C0 code element shall be the coded set of control characters ISO-IR 104 in the ISO 2375 register;

— the C1 code element shall be the coded set of control characters ISO-IR 105 in the ISO 2375 register.

NOTE The control characters ESCAPE, SINGLE-SHIFT TWO and SINGLE-SHIFT THREE are all mandatory within a version of ISO/IEC 2022 at implementation level 2. The latter two of these are used to invoke single graphic characters from the G2 and G3 sets in accordance with 8.4 of ISO/IEC 2022. The C0-set ISO-IR 104 is named the “Minimum C0 set for ISO 4873” and consists solely of the ESCAPE character. The C1-set ISO-IR 105 is named the “Minimum C1 set for ISO 4873” and consists solely of the characters SINGLE-SHIFT TWO and SINGLE-SHIFT THREE.

11.3.2 The primary attribute value for a character-box graphic element shall be the coded representation of the corresponding graphic character in accordance with this character transfer syntax. The coded representation of the single-shift function required to invoke a character from the G2 and G3 code elements forms part of the primary attribute value for that character. Code-identification functions of ISO/IEC 2022 for announcement and designation shall not be included in this coded representation.

The same character may be present in more than one of the sets of graphic characters that are designated as the G0, G1, G2 and G3 code elements of a version of ISO/IEC 2022. By 7.5 of ISO/IEC 2022, an application of that International Standard may, but need not, impose a requirement for unique coding of each such character; when unique coding is imposed, such a character is required to be represented by the coded representation taken from the lowest numbered code element (in the sequence G0, G1, G2, G3) that contains the character. This assignment type does not impose this requirement. Alternative coded representations for such a character therefore give rise to alternative and equivalent primary attribute values for a single character-box graphic element.

NOTE 1 The creation of alternative primary attribute values in this way is in addition to alternatives created in accordance with 11.1.4 above.

NOTE 2 In contrast to the default repertoire assignment type defined in 18.2.4 of ISO/IEC 9040, the control characters of the repertoire assignment type defined in this part of ISO/IEC ISP 11186 perform control functions in accordance with the specification of the character transfer syntax. In the default repertoire assignment type, characters from C0 and C1 sets that appear in the text component of a VT-object-update service parameter have no control function. Instead, each such character occupies one array element in the display object.

12 VT abstract syntax

A value for the repertoire-assignment VTE-parameter is referenced in the VT protocol of ISO/IEC 9041-1 by a value of the ASN.1 sequence type CDS.RepertoireAssignment. This type is composed of two component types with identifiers `type' and `value'. When the optional `type' component is present and takes a value other than the object identifier value vt-b-rep-iso2022 defined in 18.2.4.1 of ISO/IEC 9040, the `value' component is specified by an ASN.1 any type; see annex I of ISO/IEC 8824-1.

This repertoire assignment type requires that when the `type' component takes the ASN.1 object identifier value specified herein in clause 9 then the value of this ASN.1 any type shall be a value of the type Rep2-value that is exported from the following ASN.1 module:

```
ISP11186-REP2 { 1 0 11186 3 2 2 }
DEFINITIONS
IMPLICIT TAGS ::= BEGIN
```

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```
EXPORTS
    Rep2-value, Repertoire;

Rep2-value ::= SEQUENCE {
    repertoire              Repertoire OPTIONAL,

    -- Omission of the repertoire component designates
    -- implicit repertoire designation in accordance with
    -- 11.1.6 of ISO/IEC ISP 11186-3.

    transfer-syntax     OBJECT IDENTIFIER }

    -- The value of the transfer-syntax component is
    -- constrained by the conditions specified in clause 12 of
    -- ISO/IEC ISP 11186-3.

Repertoire ::= SEQUENCE {

    abstract-syntax     OBJECT IDENTIFIER,
    additions           CHARACTER STRING OPTIONAL,
    exclusions          CHARACTER STRING OPTIONAL }

END -- OF ISP11186-REP2 DEFINITIONS
```

In this module definition, the object identifier for the transfer-syntax component of a value of type Rep2-value shall identify a vertex below the node {iso standard 2022 transfer-syntaxes(0) }, in accordance with clause A.3 of ISO/IEC 2022. The sequence of arcs below this node shall be as follows:

— the next arc below this node shall be one of

  — 8bit-level2 (12);
  — 8bit-level2a (15);
  — 8bit-level2c (22);
  — 8bit-level2ac (25);

— this shall be followed by four arcs that specify the ISO 2375 Registration Numbers of the coded character sets designated as the G0, G1, G2 and G3 sets, with the value 0 designating the absence from the character transfer syntax of the G-set concerned;

— these shall be followed by the arc with number-form 104 (the Registration Number of the mandatory C0-set);

— this shall be followed by the arc with number-form 105 (the Registration Number of the mandatory C1-set);

— this may optionally be followed by the arc with name-and-number-form g0(0) which designates that the G0 code element initially has GL shift status;

— finally, and only if the preceding optional arc is present, this may optionally be followed by the arc with name-and-number-form g1(1) which designates that the G1 code element initially has GR shift status.

NOTE By default the G0 code element initially has GL shift status and the G1 code element initially has GR shift status; see A.3.1 of ISO/IEC 2022. The presence or absence of these last two arcs therefore has no significance for the transfer syntax.

When the `repertoire' component is present in a value of the type Rep2-value, the sets of additional characters and excluded characters referenced in 11.2.1 shall be the characters of the character strings specified by the `additional' and `excluded' components of the `repertoire' component. These character strings are specified in terms of the ASN.1 unrestricted character string type; see annex B. The usage of this type in a value of the type Rep2-value shall satisfy the following conditions:

— the presentation-context-id and context-negotiation alternatives for the identification component shall not be used;

— the fixed alternative of the identification component shall only be used if the value is not required to be conveyed by the VT protocol, for example if it is specified within a VTE-profile specification.

Annex C gives illustrative examples of the use of this abstract syntax.

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Annex A
(informative)

The different interpretations of repertoire in character set standards

This part of ISO/IEC ISP 11186 makes reference to the 1994 revisions of the character set standards ISO/IEC 2022 and ISO/IEC 6937 and to the first (1993) edition of ISO/IEC 10646-1. Since these standards have different definitions and interpretations of the concept of repertoire, there is a possibility of confusion when this term is used herein. This annex describes differences between the usage of this term in these various character set standards and clarifies which usage is intended in the present document.

There are other differences in definition between these standards, but in most cases they result from the greater generality of ISO/IEC 2022 over ISO/IEC 10646-1. For example, ISO/IEC 2022 recognises combining characters that combine with either the preceding or following graphic character while ISO/IEC 10646-1 only recognises those that combine with a preceding graphic character. There are no significant differences between ISO/IEC 2022 and ISO/IEC 6937.

The definitions of repertoire in the various standards are as follows:

repertoire: A specified set of characters that are each represented by one or more bit combinations of a coded character set. [ISO/IEC 2022]

repertoire: A specified set of characters that are represented by one or more bit combinations of a coded character set. [ISO/IEC 6937]

repertoire: A specified set of characters that are represented in a coded character set. [ISO/IEC 10646-1]

The definition in ISO/IEC 6937 is almost identical to that of ISO/IEC 2022; the only difference is the presence or absence of the word “each”. It is the distinction between `represented by' (ISO/IEC 2022 and ISO/IEC 6937) and `represented in' (ISO/IEC 10646-1) that has significant consequences in the way that the term is used. The following definition and notes are given in 4.13 of ISO/IEC 10646-1:

> **composite sequence**: A sequence of graphic characters consisting of a non-combining character followed by one or more combining characters.
>
> NOTE 1 A graphic symbol for a composite sequence generally consists of the combination of the graphic symbols of each character in the sequence.
>
> NOTE 2 A composite sequence is not a character and therefore is not a member of the repertoire of ISO/IEC 10646-1.

The use of composite sequences in the representation of text is illustrated by the following note from 23.3 of ISO/IEC 10646-1:

> NOTE Where combining characters are used for the generation of composite sequences in implementation level 3, this facility may be used to provide an alternative coded representation of text. For example, in implementation level 3 the French word “là” may be represented by the characters LATIN SMALL LETTER L followed by LATIN SMALL LETTER A WITH GRAVE, or may be represented by the characters LATIN SMALL LETTER L followed by LATIN SMALL LETTER A followed by COMBINING GRAVE ACCENT.

These extracts show clearly that the character LATIN SMALL LETTER A WITH GRAVE both is represented *in* the coded character set and is represented *by* the specified composite sequence. This character is in the repertoire of ISO/IEC 10646-1 because it is represented *in* the coded character set. In contrast a character which can *only* be represented *by* a composite sequence is not in the repertoire of ISO/IEC 10646-1 since it is not represented *in* the coded character set as a character in its own right.

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That the view of ISO/IEC 2022 is different is best illustrated by ISO/IEC 6937, in which the relevant definitions are technically aligned. The repertoire of the graphic characters of ISO/IEC 6937 is specified in clause 7 of that standard. It consists of 333 characters including the SPACE character. The coded representations of these characters are specified in clause 8 of that standard in terms of the SPACE character and both a primary and supplementary coded character set containing respectively 94 and 86 coded characters. The manner of representation is illustrated by the following extract from that clause:

> Each accented letter is represented by a sequence of bit combinations consisting of the coded representation of the relevant non-spacing diacritical mark (an element of the supplementary set), followed by the coded representation of the relevant basic Latin letter (an element of the primary set).

The combining characters (non-spacing diacritical marks) used in the representation of the repertoire are not themselves characters of the repertoire of ISO/IEC 6937. As an example, the primary and supplementary coded character sets taken together contain both GRAVE ACCENT and NON-SPACING GRAVE ACCENT but only the former character is in the repertoire. This contrasts with ISO/IEC 10646-1, in which the characters GRAVE ACCENT and COMBINING GRAVE ACCENT are both represented in the coded character set of that standard and are therefore distinct characters that are both present in the repertoire of that standard.

The repertoire assignment type specified in this part of ISO/IEC ISP 11186 follows the usage of ISO/IEC 2022 and ISO/IEC 6937. In particular, the repertoire specified by a value of this assignment type does not contain combining characters but the coding rules (transfer syntax) may make use of combining characters in the construction of the coded representation of the characters of the repertoire.

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Annex B
(informative)

ASN.1 Character String Types

B.1 Introduction

The third edition of the ASN.1 specification introduced several new character string types. One of these is an unrestricted character string type whose values are the values of any character abstract syntax. The abstract syntax may be part of the defined context set in an instance of communication, or may be referenced directly for each instance of use of the unrestricted character string type. There are also two types based on ISO/IEC 10646-1. This annex summarises the main features of these types as far as they are relevant to this part of ISO/IEC ISP 11186, to assist those who are unfamiliar with this revision of the ASN.1 specification.

B.2 Unrestricted character string type

The unrestricted character string type is referenced by the notation

CHARACTER STRING

but it has an associated sequence type that is provided solely for the purpose of specifying the value and subtype notations for this type. This sequence type is specified in 37.4 of ISO/IEC 8824-1 to be:

```
SEQUENCE {
   identification              CHOICE {
      syntaxes                    SEQUENCE {
         abstract                    OBJECT IDENTIFIER,
         transfer                    OBJECT IDENTIFIER }
      syntax                      OBJECT IDENTIFIER,
      presentation-context-id     INTEGER,
      context-negotiation         SEQUENCE {
         presentation-context-id     INTEGER,
         transfer-syntax             OBJECT IDENTIFIER },
      transfer-syntax             OBJECT IDENTIFIER,
      fixed                       NULL }
   data-value-descriptor       ObjectDescriptor OPTIONAL,
   string-value                CHOICE {
      notation                    ABSTRACT-SYNTAX.&Type,
      encoded                     OCTET STRING } }
   (WITH COMPONENTS {
      ...,
      data-value-descriptor    ABSENT })
```

NOTE The reason for the inclusion of the data-value-descriptor together with a constraint that this component of the sequence be absent is that the same sequence type is also used, with different constraints, for the value and subtype notations of the embedded-pdv and external types.

The ASN.1 specification describes the usage of the various alternatives in the choice types. The alternatives for the identification component are used as follows:

— the syntaxes alternative is used to specify separate character abstract and transfer syntaxes;

— the syntax alternative is used when a single object identifier identifies both abstract and transfer syntaxes;

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— the presentation-context-id alternative is used in an OSI environment when the abstract and transfer syntaxes have been negotiated by the presentation layer;

— the context-negotiation alternative is used only when presentation context negotiation is in progress;

— the transfer-syntax alternative is used when the abstract syntax has been specified in advance;

— the fixed alternative is used when the data value is of a fixed ASN.1 type.

The first alternative for the string-value component makes use of an ASN.1 open type (the replacement in the third edition of ASN.1 for the any type of the earlier editions). These alternatives are used as follows:

— the notation alternative is permitted only when the character abstract syntax is defined as a restricted character string type or a subset of such a type;

— the encoded alternative is an octet string value representation of the character string value using the character transfer syntax specified by the identification component; it is provided to enable the specification of data values that are not values of a restricted character string type.

In specifying a value in terms of the associated sequence type, the following features should be noted that are new to the third edition of the ASN.1 specification:

— the value notation for an open type consists of an ASN.1 type definition, followed by a colon, followed by the value notation for that type;

— the value notation for a choice type consists of the identifier for the chosen alternative, followed by a colon, followed by the value notation for the chosen alternative (the colon was not used in the notation of earlier editions).

B.3 UniversalString type

The UniversalString type is an addition to the restricted character string types of ASN.1. A value of this type may contain any of the characters allowed by ISO/IEC 10646-1. To permit values of this type to be specified using only characters of the PrintableString type, an alternative form for a value definition has been introduced. This consists of a list of elements enclosed in braces “{“ and “}” and separated by commas, each element of the list being either a “cstring” (the usual ASN.1 specification of a character string as zero or more graphic symbols enclosed in double quotes) or a defined value.

The ASN.1 specification further defines a module with reference ASN1-CHARACTER-MODULE and object identifier

{ joint-iso-ccitt asn1(1) specification(0) modules(0) iso10646(0) }

which contains, among other things, defined values for all the characters in the repertoire of ISO/IEC 10646-1. The identifiers for these defined values are obtained from the names of the characters in ISO/IEC 10646-1 by applying the following algorithm:

— each upper-case letter of the ISO/IEC 10646-1 name is transformed into the corresponding lower-case letter, unless the upper-case letter is preceded by a SPACE, in which case the upper-case letter is kept unchanged;

— each digit and each HYPHEN-MINUS is kept unchanged;

— each SPACE is deleted.

These defined values are all available for export from this module.

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B.4 BMPString type

The BMPString type is a built-in type that is defined as a subtype of the UniversalString type. Its characters are constrained to be characters of the collection with name “BMP” as defined in annex A of ISO/IEC 10646-1, i.e. the characters of the Basic Multilingual Plane.

The identifiers assigned in the module ASN1-CHARACTER-MODULE for characters of the Basic Multilingual Plane are defined as values of type BMPString, so they are available for both the types BMPString and UniversalString.

The relevance of this type to the repertoire assignment type specified in this part of ISO/IEC ISP 11186 is its use in specifying values of an open type. A value for the `notation' alternative of the string-value component of a CHARACTER STRING value, see annex A, could for example be:

BMPString: { latinCapitalLetterA, greekCapitalLetterAlpha, cyrillicCapitalLetterA }

This string consists of three distinct characters, all of which have the same printed representation “A”.

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Annex C
(informative)

Illustrative examples

The following examples illustrate a number of the features of the repertoire assignment type defined in this part of ISO/IEC ISP 11186. They also demonstrate some of the problems that can arise from the changes in character naming guidelines that have occurred as character set standards have evolved.

C.1 Latin with extended Japanese

The repertoire assignment value

```
my-example-1 Rep2-value ::= {
    transfer-syntax     { iso standard 2022
                transfer-syntaxes(0) 8bit-level2(12)
                6 87 13 159 104 105 } }
```

designates a character-repertoire that includes the following graphic character sets:

ISO-IR 6	G0-set	US ASCII graphic character set (also IRV of ISO/IEC 646:1991).
ISO-IR 87	G1-set	Japanese Kanji character set JIS C 6226-1983 (now JIS X 0208).
ISO-IR 13	G2-set	Japanese Katakana character set JIS C 6220-1969.
ISO-IR 159	G3-set	Japanese Supplemental Kanji character set JIS X 0212-1990.

These sets have the following classifications:

ISO-IR 6	94-character graphic character set
ISO-IR 87	94^2-character graphic character set
ISO-IR 13	94-character graphic character set
ISO-IR 159	94^2-character graphic character set

where ISO-IR *nnn* denotes Registration Number *nnn* in the *ISO International Register of Coded Character Sets to be used with Escape Sequences*.

There are no combining characters in these coded character sets. The repertoire is determined implicitly and consists precisely of the graphic characters coded in the code tables of these register entries.

In this character-repertoire, the Latin characters of ISO-IR 6 and the Japanese Kanji characters of ISO-IR 87 are coded without the use of shift codes. Such codings are identical to those of the character-repertoire that has the VT default repertoire assignment type and a value representing the escape sequences:

ESC 2/8 4/2, ESC 2/4 2/9 4/2.

The difference is that the present repertoire assignment permits also characters from ISO-IR 13 and ISO-IR 159 to be accessed by the use of escape sequences. A character from ISO-IR 13 is coded by the shift character SS2, represented by the bit combination 08/14, followed by a single bit combination in the range 02/01 to 07/14 of the 8-bit code table. A character from ISO-IR 159 is coded by the shift character SS3, represented by the bit combination 08/15, followed by a two bit combinations each in the range 02/01 to 07/14 of the 8-bit code table.

The same character-repertoire is identified if the component *8bit-level2(12)* of the transfer syntax object identifier is replaced by any of *8bit-level2a(15)*, *8bit-level2c(22)* or *8bit-level2ac(25)*. With *8bit-level2a(15)* the bit combinations that follow the SS2 or SS3 shift characters are required to be in the range 10/01 to 15/14, i.e. the single-shift area is the GR area instead of the GL area of the code table. With *8bit-level2c(22)* the SS2 and SS3 characters are represented by the bit combinations ESC 04/14 and ESC 04/15 instead of 08/14 and 08/15 respectively. With *8bit-level2ac(25)*, both of these changes are made.

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C.2 Latin alphabet of ISO/IEC 6937

The repertoire assignment value

```
my-example-2 Rep2-value ::= {
    transfer-syntax    { iso standard 2022
                         transfer-syntaxes(0) 8bit-level2(12)
                         6 156 0 0 104 105 } }
```

designates a character-repertoire that includes the following graphic character sets:

ISO-IR 6	G0-set	US ASCII graphic character set (also primary set of ISO/IEC 6937:1994).
ISO-IR 156	G1-set	Supplementary set of ISO/IEC 6937:1994.

These sets have the following classifications:

ISO-IR 6	94-character graphic character set
ISO-IR 156	96-character graphic character set

NOTE 1 There is one character that has a different coded representation according to ISO/IEC 6937 from that provided by the above transfer syntax. This is the character LATIN SMALL LETTER G WITH CEDILLA, since for historical reasons ISO/IEC 6937 specifies that this character should be coded as if it were LATIN SMALL LETTER G WITH ACUTE. This anomalous coding is not present when the coded character sets of ISO/IEC 6937 are referenced in accordance with ISO/IEC 2022.

The repertoire determined by this value is larger than the repertoire of ISO/IEC 6937 since, within this assignment type, the repertoire is determined implicitly in accordance with 11.1.6. Since ISO-IR 156 contains combining (non-spacing) characters, all characters that can be represented by combinations of the combining and non-combining characters are included in the repertoire.

The repertoire may be reduced to be precisely that of ISO/IEC 6937 by the explicit inclusion of a repertoire component in the value, as follows:

```
my-example-3 Rep2-value ::= {
    repertoire         iso6937,
    transfer-syntax    { iso standard 2022
                         transfer-syntaxes(0) 8bit-level2(12)
                         6 156 0 0 104 105 } }
```

According to annex E of ISO/IEC 6937 the repertoire of that standard consists of the characters that are coded in the sets ISO-IR 6, ISO-IR 100, ISO-IR 101 and ISO-IR 154. This repertoire may be specified as follows:

```
iso6937 Repertoire ::= {
    abstract-syntax {iso standard 2022
        abstract-syntaxes(1) 6 100 101 154 } }
```

NOTE 2 Annex E of ISO/IEC 6937 appears to be in error since the character RING ABOVE is in the repertoire of ISO/IEC 6937 but is not coded in any of the four coded character sets listed.

NOTE 3 The characters LATIN CAPITAL LETTER ETH and LATIN CAPITAL LETTER D WITH STROKE are both represented by the same graphic symbol, but they are distinct characters in the code tables of ISO/IEC 10646-1 and of ISO/IEC 10367. According to ISO/IEC 10367 they are both coded in the registered sets listed above, both with bit combination 05/00 but in ISO-IR 100 and ISO-IR 101 respectively. If this is taken as correct then LATIN CAPITAL LETTER ETH needs to be excluded from the above repertoire as it is not present in the repertoire of ISO/IEC 6937. However, in the actual ISO 2375 register the character with bit combination 05/00 is specified to be CAPITAL LETTER D WITH STROKE in both ISO-IR 100 and ISO-IR 101.

NOTE 4 The above example may be augmented by the addition of G2 and G3 code elements to the transfer syntax. In contrast to the transfer syntax, the number of register entries referenced by the abstract syntax is not restricted to a maximum of four.

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C.3 Latin collections from ISO/IEC 10646-1

The value my-example-2 defined in clause C.2 may also be used to code almost all of the characters of the following collections defined in annex A of ISO/IEC 10646-1:

1	BASIC LATIN	0020 – 007E
2	LATIN-1 SUPPLEMENT	00A0 – 00FF
3	LATIN EXTENDED-A	0100 – 017F

The collections are here listed by their number, name and the code positions of the Basic Multilingual Plane of ISO/IEC 10646-1 that comprise them.

There are just two characters of these collections that cannot be represented by the transfer syntax of that example, namely LATIN CAPITAL LETTER ETH from LATIN-1 SUPPLEMENT and LATIN SMALL LETTER LONG S from LATIN EXTENDED-A; see note 3 of C.2 concerning the former of these characters. The repertoire with these exclusions can be defined as:

```
my-latin-repertoire Repertoire ::= {
    abstract-syntax{ iso standard 10646 1
            level-1(1) collections(1) 1 2 3 },
    exclusions      {
        identification    fixed: NULL,
        string-value      notation: BMPString: {
            latinCapitalLetterEth,
            latinSmallLetterLongS } } }
```

This definition makes use of defined values imported from the module ASN1-CHARACTER-MODULE; see annex A of this part of ISO/IEC ISP 11186.

This repertoire contains six characters that are not present in the repertoire of ISO/IEC 6937 but omits 22 characters that are present in that repertoire. The precise repertoire of ISO/IEC 6937 can be specified in terms of ISO/IEC 10646-1 by the following definitions:

```
iso6937 Repertoire ::= {
    abstract-syntax   { iso standard 10646 1
        level-1(1) collections(1) 1 2 3 },
    additions         iso6937additions,
    exclusions        iso6937exclusions }

iso6937additions CHARACTER STRING ::= {
    identification fixed: NULL,
    string-value  notation: BMPString: {
        breve, caron, dotAbove, doubleAcuteAccent,
            ogonek, ringAbove, horizontalBar,
        downwardsArrow, leftwardsArrow,
            rightwardsArrow, upwardsArrow,
        leftDoubleQuotationMark,
            rightDoubleQuotationMark,
        leftSingleQuotationMark,
            rightSingleQuotationMark,
        vulgarFractionOneEighth,
            vulgarFractionThreeEighths,
            vulgarFractionFiveEighths,
            vulgarFractionSevenEighths,
        ohmSign,
        quarterNote,
        tradeMarkSign } }
```


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```
iso6937exclusions CHARACTER STRING ::= {
    identification fixed: NULL,
    string-value  notation: BMPString: {
        latinCapitalLetterEth,
        latinSmallLetterLongS,
        latinCapitalLetterEWithBreve
        latinSmallLetterEWithBreve
        latinCapitalLetterIWithBreve
        latinSmallLetterIWithBreve
        latinCapitalLetterOWithBreve
        latinSmallLetterOWithBreve } }
```

which again makes use of defined values imported from the module ASN1-CHARACTER-MODULE.

NOTE In the list of additions, the character QUARTER NOTE in the repertoire of ISO/IEC 10646-1 is taken to correspond to the character MUSIC NOTE in the repertoire of ISO/IEC 6937.

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