

Ordering of tags in ASN.1

There seems to be some confusion over the ordering of tags in the ASN.1 encoding of certain MHEG classes. This document seeks to clarify the situation and ensure that any future MHEG5 textual notation to ASN.1 encoders are compliant.

The confusion has arisen because the ASN.1 notation in ISO13522-5 Appendix A follows the same ordering as the textual notation in Appendix B, implying a one-to-one mapping between ASN.1 encoding and textual notation. However, the ASN.1 distinguished encoding rules mandate a certain ordering of elements in a “set”, which is an easily missed subtlety. There is no mistake in Appendix A because the ordering of elements in the ASN.1 *notation* is independent of the ordering in the ASN.1 *distinguished encoding rules*.

From ISO/IEC 8825-1 : 1995 (E) ASN.1 Encoding Rules

10.3 Set Components [for when using the Distinguished Encoding Rules]

The encodings of the component values of a set value shall appear in an order determined by their tags as specified in 6.4 of ITU-T Rec. X680 [ISO/IEC 8824-1].

ISO/IEC 8824-1 : 1995 (E) ASN.1: Specification of Basic Notation

6.4 The canonical order for tags is defined as follows:

- a) those elements or alternatives with universal class tags shall appear first, followed by those with application class tags, followed by those with context-specific tags, followed by those with private class tags.
- b) within each class of tags, the elements or alternatives shall appear in ascending order of their tag number.

Ordering of tags in MHEG

In relation to MHEG5, the order for encoding set components we are interested in will therefore be:

1. Universal Boolean
2. Universal Integer
3. Universal Octet String
4. Universal Null
5. Universal Enumerated
6. Universal Sequence
7. Universal Set
8. Context Tagged types (in ascending order of the tag number).

For the most part the specification for the MHEG5 textual notation obeys this ordering and hence no additional sorting is required by the textual to asn.1 encoder. However in the description of the following classes the textual notation deviates from this order.

Hotspot Class
 SwitchButton Class
 PushButton Class
 Text Class
 EntryField Class
 HyperTextClass

Slider Class

The correct ordering of these sets is detailed below:

HotSpot Class

- object-reference
- button-ref-colour [48]
- highlight-ref-colour [49]
- initially-active [56]
- shared [59]
- original-box-size [76]
- original-position [77]
- original-palette-ref [78]
- engine-resp [101]

SwitchButton Class

- object-reference
- character-set [38]
- button-ref-colour [48]
- highlight-ref-colour [49]
- initially-active [56]
- shared [59]
- original-box-size [76]
- original-position [77]
- original-palette-ref [78]
- engine-resp [101]
- original-label [113]
- button-style [114]

PushButton Class

- object-reference
- character-set [38]
- button-ref-colour [48]
- highlight-ref-colour [49]
- initially-active [56]
- shared [59]
- original-box-size [76]
- original-position [77]
- original-palette-ref [78]
- engine-resp [101]
- original-label [113]

Text Class

- object-reference
- character-set [38]

background-colour [39]
 text-colour [41]
 font-attributes [43]
 initially-active [56]
 content-hook [57]
 original-content [58]
 shared [59]
 original-box-size [76]
 original-position [77]
 original-palette-ref [78]
 original-font [86]
 horizontal-justification [87]
 vertical-justification [88]
 line-orientation [89]
 start-corner [90]
 text-wrapping [91]

EntryField Class

object-reference
 character-set [38]
 background-colour [39]
 text-colour [41]
 font-attributes [43]
 highlight-ref-colour [49]
 initially-active [56]
 content-hook [57]
 original-content [58]
 shared [59]
 original-box-size [76]
 original-position [77]
 original-palette-ref [78]
 original-font [86]
 horizontal-justification [87]
 vertical-justification [88]
 line-orientation [89]
 start-corner [90]
 text-wrapping [91]
 engine-resp [101]
 input-type [109]
 char-list [110]
 obscured-input [111]
 max-length [112]

HyperText Class

object-reference
 character-set [38]
 background-colour [39]

text-colour [41]
font-attributes [43]
highlight-ref-colour [49]
initially-active [56]
content-hook [57]
original-content [58]
shared [59]
original-box-size [76]
original-position [77]
original-palette-ref [78]
original-font [86]
horizontal-justification [87]
vertical-justification [88]
line-orientation [89]
start-corner [90]
text-wrapping [91]
engine-resp [101]

SliderClass

object-reference
highlight-ref-colour [49]
slider-ref-colour [50]
initially-active [56]
shared [59]
original-box-size [76]
original-position [77]
original-palette-ref [78]
engine-resp [101]
orientation [102]
max-value [103]
min-value [104]
initial-value [105]
initial-portion [106]
step-size [107]
slider-style [108]

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