

Map-like

data

Tags for CBOR

Proposal

Knobs:

- Non-Ordered vs. Ordered
- Duplicate Keys Allowed
- Homogeneity of Key, of Key and Value

Tag	LSBs	Homogeneous Value	Homogeneous Key	Ordering	Duplicate Keys Allowed	Data Item	Related Tag
128	0000	No	No	Non-Ordered	No	map	259
129	0001	No	No	Non-Ordered	Yes	array	TDB280*
130	0010	No	No	Ordered	No	array	TBD279*
131	0011	No	No	Ordered	Yes	array	
132	0100	No	Yes	Non-Ordered	No	map	275
133	0101	No	Yes	Non-Ordered	Yes	array	
134	0110	No	Yes	Ordered	No	array	
135	0111	No	Yes	Ordered	Yes	array	
136	1000	Yes	Yes	Non-Ordered	No	map	
137	1001	Yes	Yes	Non-Ordered	Yes	array	
138	1010	Yes	Yes	Ordered	No	array	
139	1011	Yes	Yes	Ordered	Yes	array	

Representation

$AList<K, V> = [* [K, V]]$

$FAList<K, V> = [* (K, V)]$; $\leftarrow\leftarrow\leftarrow$ the chosen one

So $[[\text{“a”}, 1], [\text{“b”}, 2]]$ becomes $[\text{“a”}, 1, \text{“b”}, 2]$

If adjacent duplicate keys of non-trivial size are likely in an ordered multimap, a better version of the multimap is:

$MList<K, V> = [* (K, [* V])]$

So $[[\text{“aaa”}, 1], [\text{“aaa”}, 2], [\text{“bbb”}, 3]]$ becomes $[\text{“aaa”}, [1, 2], \text{“bbb”}, [3]]$

If V can never be an array ($*$), this can be further optimized into:

$$OMList<K, V> = [* (K, [2* V] / V)]$$
$$OEMList<K, V> = [* (K, [2* V] / [V .and [* any]] / V)]$$

So $[[\text{“aaa”}, 1], [\text{“aaa”}, 2], [\text{“bbb”}, 3], [\text{“ccc”}, [4]]]$
becomes

$$[\text{“aaa”}, [1, 2], \text{“bbb”}, 3, [\text{“ccc”}, [[4]]]]$$

Further refine by using delta coding for the keys (works best with sorted keys), etc.

Also, a map can be used for the outer structure if order preservation is not actually needed:

$$\text{MMap}\langle K, V \rangle = \{ * K \Rightarrow [* V] \}$$
$$\text{OMMap}\langle K, V \rangle = \{ * K \Rightarrow [2* V] / V \}$$
$$\text{OEMMap}\langle K, V \rangle = \{ * K \Rightarrow [2* V] / [V \text{ .and } [* \text{ any}]] / V \}$$

Which of these variants do we want to entertain?

- Duplicate keys allowed (non-unique) = Multimap
 - But are duplicate entries allowed ([`"a"`, `[1, 2]`, `"a"`, `3]`)?
- Ordering only makes sense wrt keys (or with duplicate entries)
- Homogeneities are orthogonal