0.0.1 Count

the *count* operation accepts the following arguments

- A Scalar
  - An Object
  - An Array
  - A String
- A Collection of Scalar(s)
- A Collection of Key Value pair(s)

and returns the corresponding number of items

$$count(arg) = \mathbb{R}$$

Such that

$$count(arg) \equiv count(< arg_i..arg_n..arg_j >) = j + 1$$

and with consideration to accepted argument types

- when arg is a Scalar String

$$x = abc$$

$$count(x) \equiv count(< x_i..x_n..x_j >) \equiv count(< a, b, c >)$$

$$count(x) = 3$$

$$\Rightarrow$$

$$index_a = 0 \ \wedge \ index_b = 1 \ \wedge \ index_c = 2$$

$$\Rightarrow$$

$$count(x) \equiv index_c + 1 = 3$$

- when arg is a Scalar Object or Collection of Key Value pair(s), only the Key(s) are counted

$$KV =< abc \mapsto < ABC \mapsto 123, \ cba \mapsto 321 >, xyz \mapsto 789 >$$

$$count(KV) \equiv count(< KV_{k_i}..KV_{k_n}..KV_{k_j} >) \equiv count(< abc, xyz >)$$

$$count(KV) = 2$$

$$\Rightarrow$$

$$index_{abc} = 0 \ \wedge \ index_{xyz} = 1$$

$$\Rightarrow$$

$$count(KV) \equiv index_{xyz} + 1 = 2$$

- when arg is a Scalar Array or a Collection of Scalar(s), only the members are counted

$$X = < foo, baz, 10, < 1, 2, 3 >, true >$$

$$count(X) \equiv count(< X_i..X_n..X_j >) \equiv count(< foo, baz, 10, < 1, 2, 3 >, true >)$$

$$count(X) = 5$$

$$\Rightarrow$$

$$index_{foo} = 0 \wedge index_{baz} = 1 \wedge index_{10} = 2 \wedge index_{<1,2,3>} = 3 \wedge index_{true} = 4$$

$$\Rightarrow$$

$$count(X) \equiv index_{true} + 1 = 5$$