Q LANGUAGE - VERB & ADVERBS

Kdb+ has nouns, verbs, and adverbs. All data objects and functions are **nouns**. **Verbs** enhance the readability by reducing the number of square brackets and parentheses in expressions. **Adverbs** modify dyadic *2arguments* functions and verbs to produce new, related verbs. The functions produced by adverbs are called **derived functions** or **derived verbs**.

Each

The adverb **each**, denoted by ‘, modifies dyadic functions and verbs to apply to the items of lists instead of the lists themselves. Take a look at the following example −

```
q)1, (2 3 5)       / Join
1 2 3 5

q)1, '( 2 3 4)     / Join each
1 2
1 3
1 4
```

There is a form of **Each** for monadic functions that uses the keyword “each”. For example,

```
q)reverse ( 1 2 3; "abc")           /Reverse
a b c
1 2 3

q)each [reverse] (1 2 3; "abc")     /Reverse-Each
3 2 1
c b a

q)'[reverse] ( 1 2 3; "abc")
3 2 1
c b a
```

Each-Left and Each-Right

There are two variants of Each for dyadic functions called **Each-Left** and **Each-Right** /:. The following example explains how to use them.

```
q)x: 9 18 27 36

q)y:10 20 30 40

q)x,y             / join
9 18 27 36 10 20 30 40

q)x,'y            / each

9   10
18  20
27  30
36  40

q)x: 9 18 27 36

q)y:10 20 30 40

q)x,y             / join
9 18 27 36 10 20 30 40

q)x,'y            / each, will return a list of pairs

9   10
```

```
18  20
27  30
36  40

q)x, \:y          / each left, returns a list of each element
                  / from x with all of y

9   10  20  30  40
18  10  20  30  40
27  10  20  30  40
36  10  20  30  40

q)x,/:y           / each right, returns a list of all the x with
                  / each element of y

9  18  27  36  10
9  18  27  36  20
9  18  27  36  30
9  18  27  36  40

q)1 _x            / drop the first element
18 27 36

q)-2_y            / drop the last two element
10 20

q)                / Combine each left and each right to be a
                  / cross-product (cartesian product)

q)x,/:\:y

9   10  9   20  9   30  9   40
18  10  18  20  18  30  18  40
27  10  27  20  27  30  27  40
36  10  36  20  36  30  36  40
```