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ordered tuple

Canonical name	OrderedTuplet
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Entry type	Definition
Classification	msc 03-00
Synonym	tuplet
Synonym	n -tuplet
Synonym	n -tuplets
Synonym	ordered n -tuplet
Synonym	-tuplet
Synonym	-tuplets
Synonym	tuple
Synonym	n -tuple
Synonym	ordered n -tupule
Synonym	-tuple
Synonym	finite sequence
Related topic	OrderedPair
Related topic	GeneralizedCartesianProduct
Defines	triplet
Defines	quadruplet
Defines	quintuplet
Defines	sextuplet
Defines	septuplet
Defines	octuplet
Defines	nonuplet
Defines	decuplet

The concept of ordered n -tuple is the generalization of ordered pair to n items. For small values of n , the following are used:

n	name	example
3	triplet	(a, b, c)
4	quadruplet	(a, b, c, d)
5	quintuplet	(a, b, c, d, e)
6	sextuplet	(a, b, c, d, e, f)
7	septuplet	(a, b, c, d, e, f, g)
8	octuplet	(a, b, c, d, e, f, g, h)
9	nonuplet	$(a, b, c, d, e, f, g, h, i)$
10	decuplet	$(a, b, c, d, e, f, g, h, i, j)$

This notion can be defined set-theoretically in a number of ways. For convenience, we shall express two of these definitions for quintuplets — it is perfectly easy to generalize them to any other value of n .

One possibility is to build n -tuples out of nested ordered pairs. In the case of our example (a, b, c, d, e) , the as a nested ordered pair looks like

$$(a, (b, (c, (d, e)))).$$

This form of is used in the programming language LISP.

Another possibility is to define n -tuples as maps. In this way of thinking, a quintuplet is a function whose domain is the set $\{1, 2, 3, 4, 5\}$. In the case of our example, the function f in question is defined as

$$\begin{aligned} f(1) &= a \\ f(2) &= b \\ f(3) &= c \\ f(4) &= d \\ f(5) &= e \end{aligned}$$

Especially with the second interpretation, one sees that a synonym for "ordered tuple" is "finite sequence" or "list". For instance, a quintuplet can also be regarded as a sequence of five items or a list of five items.