

Products - General Version

The product operation takes an indexed set of sets, and gives a set of indexed sets.

It is all the indexed sets with the i -thing from the i -set, for each i in the index set.

$$\prod_{i \in I} A_i = \{\text{sets } \alpha \text{ indexed by } I \text{ where each } \alpha_i \in A_i\}$$

eg. Let $A_{\text{city}} = \{\text{Sydney, Paris}\}$ and $A_{\text{custID}} = \{2, 4, 11\}$, then

$$\prod_{(i \in \{\text{city, custID}\})} A_i =$$
$$\{\{\text{city} = \text{Sydney, custID} = 2\}, \{\text{city} = \text{Sydney, custID} = 4\},$$
$$\{\text{city} = \text{Sydney, custID} = 11\}, \{\text{city} = \text{Paris, custID} = 2\},$$
$$\{\text{city} = \text{Paris, custID} = 4\}, \{\text{city} = \text{Paris, custID} = 11\}\}$$