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10.5.3 Zip

The **Zip operation** is a special case of the gather pattern where **two (or more) arrays are combined by interleaving their elements**. It functions like a zipper, **taking one element from each array in sequence to form a new combined array**. It is important to note that it **works with different types**, so we can zip elements of different types, like integers and floats, or even complex objects.

How does it work?

The operation **takes an element from the first array**, then **one from the second** array, another from the third, and so on, and **repeats the process**. The **output is the combined sequence**.

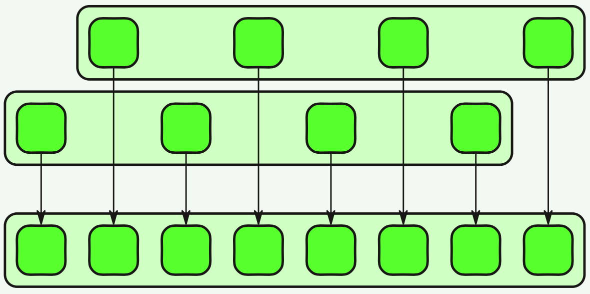
Example 46: zip operation

Consider two arrays:

1. Real Parts: contains real numbers.
2. Imaginary Parts: contains imaginary numbers.

The output is a combined sequence like:

```
[Real0, Imag0, Real1, Imag1, Real2, Imag2, ...]
```



Parallelism

Each pair of elements (one from each array) can be **combined independently**. This independence allows **parallel execution since there's no dependency between the operations for different pairs**.