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complement :

Integer compositions  $\longrightarrow$  Integer compositions

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### Description

The complement of a composition.

The complement of a composition  $I$  is defined as follows:

If  $I$  is the empty composition, then the complement is also the empty composition. Otherwise, let  $S$  be the descent set corresponding to  $I = (i_1, \dots, i_k)$ , that is, the subset

$$\{i_1, i_1 + i_2, \dots, i_1 + i_2 + \dots + i_{k-1}\}$$

of  $\{1, 2, \dots, |I| - 1\}$ . Then, the complement of  $I$  is the composition of the same size as  $I$ , whose descent set is  $\{1, 2, \dots, |I| - 1\} \setminus S$ .

The complement of a composition  $I$  coincides with the reversal ([newwww.findstat.org/MapsDatabase/Mp00038/](http://newwww.findstat.org/MapsDatabase/Mp00038/)) of the composition conjugate ([newwww.findstat.org/MapsDatabase/Mp00041/](http://newwww.findstat.org/MapsDatabase/Mp00041/)) to  $I$ .

### Code

```
def complement(elt):  
    return elt.conjugate().reversed()
```