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descent word :

Permutations \longrightarrow Binary words

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Description

The descent positions of a permutation as a binary word.

For a permutation π of n letters and each $1 \leq i \leq n-1$ such that $\pi(i) > \pi(i+1)$ we set $w_i = 1$, otherwise $w_i = 0$. Thus, the length of the word is one less the size of the permutation.

Code

```
def descent_word(X):
    D = X.descents(from_zero=True)
    w = [1 if i in D else 0 for i in range(len(X)
        -1)]
    return Words([0,1])(w)
```