

Length Comparison

Spenser Truex

Purpose

Provide *short-circuit* length comparisons.

Usage

The only external function is 'len'.

```
(len <integer or list> <list> &optional (<predicate> #'=))  
(len 3 '(1 2 3)) ;=> T  
(len '(a b c) '(1 2 3)) ;=> T  
(len 3 '(1 2 3) #'/=) ;=> NIL
```

Complexity

Comparing the length of some lists with lengths n_i in \mathbf{N} requires going across all of their elements.

```
\begin{equation}  
\cal{\sum_{n=0}^{n-1}n_i}  
\end{equation}
```

With a short-circuit length comparison, the worst case scenario is the same, with the best case $O(1)$ and average case $O(\min(N))$.