

Definition: The length of a linked list of natural numbers L , $length : L \rightarrow \mathbb{N}$ is defined by

$$\begin{array}{ll} \text{Basis Step:} & length([]) = 0 \\ \text{Recursive Step:} & \text{If } l \in L \text{ and } n \in \mathbb{N}, \text{ then } length((n, l)) = 1 + length(l) \end{array}$$