(P-list) Given a non-empty list \( S \) of natural numbers, define a \( P \)-list as a non-empty list \( P \) of natural numbers such that each item of \( P \) is an index of \( S \), and
\[
\forall i: 1, \ldots, \#P 
\end{align*}
Write a program to find the length of a longest \( P \)-list for a given list \( S \).