

61 (string replacement) Let S and T be strings. Let n and m be such that
 $n, m: 0, \dots \leftrightarrow S+1 \wedge n \leq m$

Design a notation and axiom for a string expression that means a string like S except that the substring of S from index n to index m is replaced by string T . If $n=m$ then it is insertion of T at index n . If $T=nil$ then it is deletion of the substring from n to m . If $n=m \leftrightarrow S$ then it is appending T to the end of S . If $n=m=0$ then it is prepending T to the front of S .

After trying the question, scroll down to the solution.

§ This is a generalization of $S \langle n \rangle i$, so I'll use the notation $S \langle n; ..m \rangle T$. The axiom could be

$$S;T;U \triangleleft \Leftrightarrow S ; .. \Leftrightarrow S + \Leftrightarrow T \triangleright V = S;V;U$$

or it could be

$$0 \leq n \leq m \leq \Leftrightarrow S \Rightarrow S \langle n; ..m \rangle T = S_{0;..n}; T; S_{m;..\Leftrightarrow S}$$