Define language \( \text{lang} \) by the fixed-point construction axiom
\[
\text{lang} = \text{nil}, \text{"\((\); lang; \")\"}, \text{lang;lang}
\]
and associated fixed-point induction axiom.

(a) Informally, what is the language described?
§ The language of matching brackets.

(b) Write an equivalent, nonrecursive definition of the language. Hint: start with § and use a predicate that counts occurrences of characters in a text.
§ Define
\[
\begin{align*}
\text{brackets} &= \text{"(","\")"} \\
\text{strings} &= \ast\text{brackets} \\
\text{occ} &= \langle c: \text{brackets} \rightarrow \langle s: \text{strings} \rightarrow \varphi \xi:0..\rightarrow s: s=c \rangle \rangle
\end{align*}
\]
Then the language is
\[
\begin{align*}
\forall s: \text{strings} \quad \text{occ \"(\" s = \text{occ \"\")\" s} & \land \forall i:0..\rightarrow s: \text{occ \"(\" s0..i \geq \text{occ \"\")\" s0..i}
\end{align*}
\]