Many programming languages require a variable for input, with a syntax such as \texttt{read \( x \)}. Define this form of input formally. When is it more convenient than the input described in Section 9.1? When is it less convenient?

§

I suppose it means to read on a specific channel, say \texttt{key}.

\begin{verbatim}
read \( x \) \equiv \texttt{key?}. \( x := \texttt{key} \)
\end{verbatim}

It is more convenient if we always read from that one particular channel; the \texttt{read \( x \)} syntax saves us from having to say what channel. But it complicates the frame rule because we can read from a channel without saying the name of the channel. If we say \texttt{frame \( x \)} so that channel \texttt{key} is not visible, what does \texttt{read \( x \)} mean? And it requires a variable in addition to the channel; the syntax \texttt{key?} doesn't require a variable.