Technical report

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February 24, 2019

1 Semantics

1.1 pWhile

Defined for some context {ident : eqType} {mem : memType ident}. We have:

$$
\begin{aligned}
\texttt{cmd} := \ & \texttt{abort} \\
| \ & \texttt{skip} \\
| \ & \texttt{assign \{t\} name expr} \\
| \ & \texttt{random \{t\} distr} \\
| \ & \texttt{cond boolexp cmd cmd} \\
| \ & \texttt{while expr cmd} \\
| \ & \texttt{seqc cmd cmd}
\end{aligned}
$$

$$
\begin{aligned}
(\texttt{expr} : \texttt{T}) := \ & \texttt{var \{T\} vars} && \texttt{expr T} \\
| \ & \texttt{cst \{T\} value} && \texttt{expr T} \\
| \ & \texttt{prp m} && \texttt{expr bool} \\
| \ & \texttt{app \{T U\} (expr : T} \to \texttt{U) (expr : T)} && \texttt{expr U}
\end{aligned}
$$

$$
\begin{aligned}
\texttt{vars} &\subseteq \Sigma^* \\
\texttt{value} &\in V
\end{aligned}
$$

1.2 Rml

$$
\texttt{expr : type} := \texttt{var vars} \mid \texttt{fun (vars : type)} \Rightarrow \texttt{expr}
$$

$$
\begin{aligned}
\texttt{vars} &\in \mathbb{N} \\
\texttt{value} &\in V
\end{aligned}
$$

2 Translation

Example translation:

```
if (4 > 2) then 1 else 0
```

```
if (> 4 2) then 1 else 0
```

Another example

```
x := 3 ; x
```

```
let x := 3 in x
```