

Definition 1 (Execution). *Let π be an error trace of length n . An execution of π is a sequence of states $s_0, s_1 \dots s_n$ such that $s_i, s_{i+1} \models T$, where T is the transition formula of $\pi[i]$.*

Definition 2 (Infeasible Execution). *An execution of a trace π of size n is called infeasible, if there exists a sequence of states $s_0, s_1 \dots s_j$ where $i < j \leq n$ such that $s_i, s_{i+1} \models T$ where T is the transition formula of $\pi[i]$ and there exists an assume statement in the trace π at position j such that $s_j \not\models \text{guard}(\pi[j])$*

Definition 3 (Relevant Statement). *Let π be an error trace of length n . Let there be an assignment statement at position i of the form $x := t$ where x is a variable and t is an expression. Let P and Q be two predicates such that for all possible executions of the trace π with $s_i, s_{i+1} \models T$, $s_i \in P$ and $s_{i+1} \in Q$. The assignment statement $\pi[i]$ is relevant if we replace it with a havoc statement of the form $\text{havoc}(x)$ to get a new trace π' and there exists an infeasible execution with $s'_i, s'_{i+1} \models T'$ such that T' is the transition formula for $\text{havoc}(x)$, $s'_i \in P$, $s'_{i+1} \in Q'$ where $Q \subsetneq Q'$.*