Instruction Graph Statics

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1 Validity

$$\frac{}{\emptyset\ \textit{valid}} \qquad \frac{(\texttt{vs},\ \texttt{U})\ \textit{defined} \qquad (\texttt{vs},\ \emptyset,\ \texttt{s},\ \texttt{U})\ \textit{connected}}{\mathbf{P}(\texttt{vs}, \texttt{s})\ \textit{valid}}$$

2 Defined

$$\frac{}{(\mathbf{S}(\mathbf{V}(\texttt{n}, \texttt{cont})),\ \{\texttt{n}\})\ \textit{defined}} \qquad \frac{(\texttt{vs},\ \texttt{U})\ \textit{defined} \qquad \texttt{n} \notin \texttt{U}}{(\mathbf{Cons}(\mathbf{V}(\texttt{n}, \texttt{cont}), \texttt{vs}),\ \texttt{U} \cup \{\texttt{n}\})\ \textit{defined}}$$

3 Match

$$\frac{}{(\mathbf{S}(\mathbf{V}(\texttt{n}, \texttt{cont})),\ \texttt{n},\ \mathbf{V}(\texttt{n}, \texttt{cont}))\ \textit{match}}$$

$$\frac{(\texttt{vs},\ \texttt{n},\ \mathbf{V}(\texttt{n}, \texttt{cont}))\ \textit{match}}{(\mathbf{Cons}(\texttt{v}, \texttt{vs}),\ \texttt{n},\ \mathbf{V}(\texttt{n}, \texttt{cont}))\ \textit{match}}$$

$$\frac{}{(\mathbf{Cons}(\mathbf{V}(\texttt{n}, \texttt{cont}), \texttt{vs}),\ \texttt{n},\ \mathbf{V}(\texttt{n}, \texttt{cont}))\ \textit{match}}$$

4 Connected

$$\frac{\mathtt{n} \in \mathtt{U_v}}{(\mathtt{vs},\ \mathtt{U_v},\ \mathtt{n},\ \emptyset)\ \textit{connected}} \qquad \frac{(\mathtt{vs},\ \mathtt{n},\ \mathbf{V}(\mathtt{n}, \mathbf{End}))\ \textit{match} \qquad \mathtt{n} \notin \mathtt{U_v}}{(\mathtt{vs},\ \mathtt{U_v},\ \mathtt{n},\ \{\mathtt{n}\})\ \textit{connected}}$$

$$\frac{\begin{array}{c}(\mathtt{vs},\ \mathtt{n},\ \mathbf{V}(\mathtt{n}, \mathbf{Do}(\mathtt{act}, \mathtt{n}')))\ \textit{match} \\ (\mathtt{vs},\ \mathtt{U_v} \cup \{\mathtt{n}\},\ \mathtt{n}',\ \mathtt{U})\ \textit{connected} \qquad \mathtt{n} \notin \mathtt{U_v}\end{array}}{(\mathtt{vs},\ \mathtt{U_v},\ \mathtt{n},\ \mathtt{U} \cup \{\mathtt{n}\})\ \textit{connected}}$$

$$\frac{\begin{array}{c}(\mathtt{vs},\ \mathtt{n},\ \mathbf{V}(\mathtt{n}, \mathbf{DoU}(\mathtt{act}, \mathtt{cond}, \mathtt{n}')))\ \textit{match} \\ (\mathtt{vs},\ \mathtt{U_v} \cup \{\mathtt{n}\},\ \mathtt{n}',\ \mathtt{U})\ \textit{connected} \qquad \mathtt{n} \notin \mathtt{U_v}\end{array}}{(\mathtt{vs},\ \mathtt{U_v},\ \mathtt{n},\ \mathtt{U} \cup \{\mathtt{n}\})\ \textit{connected}}$$

$$\frac{\begin{array}{c}(\mathtt{vs},\ \mathtt{n},\ \mathbf{V}(\mathtt{n}, \mathbf{Cond}(\mathtt{cond}, \mathtt{n}', \mathtt{n}''))) \ \textit{match} \\ (\mathtt{vs},\ \mathtt{U_v} \cup \{\mathtt{n}\},\ \mathtt{n}',\ \mathtt{U})\ \textit{connected} \\ (\mathtt{vs},\ \mathtt{U_v} \cup \mathtt{U} \cup \{\mathtt{n}\},\ \mathtt{n}'',\ \mathtt{U}')\ \textit{connected} \qquad \mathtt{n} \notin \mathtt{U_v}\end{array}}{(\mathtt{vs},\ \mathtt{U_v},\ \mathtt{n},\ \mathtt{U} \cup \mathtt{U}' \cup \{\mathtt{n}\})\ \textit{connected}}$$

$$\frac{\begin{array}{c}(\mathtt{vs},\ \mathtt{n},\ \mathbf{V}(\mathtt{n}, \mathbf{GoTo}(\mathtt{n}')))\ \textit{match} \\ (\mathtt{vs},\ \mathtt{U_v} \cup \{\mathtt{n}\},\ \mathtt{n}',\ \mathtt{U})\ \textit{connected} \qquad \mathtt{n} \notin \mathtt{U_v}\end{array}}{(\mathtt{vs},\ \mathtt{U_v},\ \mathtt{n},\ \mathtt{U} \cup \{\mathtt{n}\})\ \textit{connected}}$$