Instruction Graph Grammar

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\begin{array}{rcl}
\langle \text{program} \rangle & ::= & \emptyset \;\mid\; \mathbf{P}(\langle \text{vertices} \rangle,\ \mathbf{int}) \\
\langle \text{vertices} \rangle & ::= & \mathbf{S}(\langle \text{vertex} \rangle) \;\mid\; \mathbf{Cons}(\langle \text{vertex} \rangle,\ \langle \text{vertices} \rangle) \\
\langle \text{vertex} \rangle & ::= & \mathbf{V}(\mathbf{int},\ \langle \text{content} \rangle) \\
\langle \text{content} \rangle & ::= & \mathbf{Do}(\langle \text{action} \rangle,\ \mathbf{int}) \\
& \mid & \mathbf{DoU}(\langle \text{action} \rangle,\ \langle \text{cond} \rangle,\ \mathbf{int}) \\
& \mid & \mathbf{Cond}(\langle \text{cond} \rangle,\ \mathbf{int},\ \mathbf{int}) \\
& \mid & \mathbf{GoTo}(\mathbf{int}) \\
& \mid & \mathbf{End}
\end{array}
$$

An **int** is any integer.

An ⟨action⟩ represents the kinds of actions (like movement) a specific robot may be able to perform. We assume a grammar defining ⟨action⟩ exists.

A ⟨cond⟩ represents the kinds of conditions (like whether an object is some distance ahead) a specific robot may be able to sense. We assume a grammar defining ⟨cond⟩ exists.