$$\langle prog \rangle \quad ::= \quad \{\, stat.next = newlabel()\,\} \;\langle stat \rangle \;\{\, emitlabel(stat.next)\,\} \;\texttt{EOF}$$

$$\langle statlist \rangle \quad ::= \quad \langle stat \rangle \;\; \langle statlistp \rangle$$

$$\langle statlistp \rangle \quad ::= \quad \langle stat \rangle \;\; \langle statlistp \rangle$$
$$\mid \quad \varepsilon$$

$$\langle stat \rangle \quad ::= \quad (\; \langle statp \rangle \;)$$

$$\langle statp \rangle \quad ::= \quad \texttt{=} \;\texttt{ID} \;\langle expr \rangle \;\{\, emit(istore(id.addr))\,\}$$
$$\mid \quad \texttt{cond} \;\langle bexpr \rangle \;\langle stat \rangle \;\langle elseopt \rangle$$
$$\mid \quad \texttt{while} \;\langle bexpr \rangle \;\langle stat \rangle$$
$$\mid \quad \texttt{do} \;\langle statlist \rangle$$
$$\mid \quad \texttt{print} \;\langle exprlist \rangle \;\{\, emit(invokestatic(print))\,\}$$
$$\mid \quad \texttt{read} \;\texttt{ID} \;\{\, emit(invokestatic(read))\,\} \;\{\, emit(istore(id.addr))\,\}$$

$$\langle elseopt \rangle \quad ::= \quad (\; \texttt{else} \;\langle stat \rangle \;)$$
$$\mid \quad \varepsilon$$

$$\langle bexpr \rangle \quad ::= \quad (\; \langle bexprp \rangle \;)$$

$$\langle bexprp \rangle \quad ::= \quad \texttt{RELOP} \;\langle expr \rangle \;\langle expr \rangle$$

$$\langle expr \rangle \quad ::= \quad \texttt{NUM} \;\{\, emit(ldc(num.value))\,\}$$
$$\mid \quad \texttt{ID} \;\{\, emit(iload(id.addr))\,\}$$
$$\mid \quad (\; \langle exprp \rangle \;)$$

$$\langle exprp \rangle \quad ::= \quad \texttt{+} \;\langle exprlist \rangle \;\{\, emit(iadd)\,\}$$
$$\mid \quad \texttt{-} \;\langle expr \rangle \;\langle expr \rangle \;\{\, emit(isub)\,\}$$
$$\mid \quad \texttt{*} \;\langle exprlist \rangle \;\{\, emit(imul)\,\}$$
$$\mid \quad \texttt{/} \;\langle expr \rangle \;\langle expr \rangle \;\{\, emit(idiv)\,\}$$

$$\langle exprlist \rangle \quad ::= \quad \langle expr \rangle \;\langle exprlistp \rangle$$

$$\langle exprlistp \rangle \quad ::= \quad \langle expr \rangle \;\langle exprlistp \rangle$$
$$\mid \quad \varepsilon$$