

# 基本算符

- $\langle \text{digit} \rangle \rightarrow 0 \mid 1 \mid 2 \mid 3 \mid 4 \mid 5 \mid 6 \mid 7 \mid 8 \mid 9$
- $\langle \text{letter} \rangle \rightarrow a \mid b \mid c \mid d \mid e \mid f \mid g \mid h \mid i \mid j \mid k \mid l \mid m \mid n \mid o \mid p \mid q \mid r \mid s \mid t \mid u \mid v \mid w \mid x \mid y \mid z \mid A \mid B \mid C \mid D \mid E \mid F \mid G \mid H \mid I \mid J \mid K \mid L \mid M \mid N \mid O \mid P \mid Q \mid R \mid S \mid T \mid U \mid V \mid W \mid X \mid Y \mid Z$
- $\langle \text{identifier} \rangle \rightarrow \langle \text{letter} \rangle \langle \text{identifier\_suffix} \rangle$
- $\langle \text{identifier\_suffix} \rangle \rightarrow \langle \text{letter} \rangle \mid \langle \text{digit} \rangle \mid \langle \text{identifier\_suffix} \rangle \langle \text{letter} \rangle \mid \langle \text{identifier\_suffix} \rangle \langle \text{digit} \rangle$
- $\langle \text{data\_type} \rangle \rightarrow \text{int} \mid \text{float}$
- $\langle \text{assign\_value} \rangle \rightarrow \langle \text{int} \rangle \mid \langle \text{float} \rangle$
- $\langle \text{int} \rangle \rightarrow \langle \text{digit} \rangle \mid \langle \text{int\_prefix} \rangle \langle \text{int\_suffix} \rangle$
- $\langle \text{int\_prefix} \rangle \rightarrow 1 \mid 2 \mid 3 \mid 4 \mid 5 \mid 6 \mid 7 \mid 8 \mid 9$
- $\langle \text{int\_suffix} \rangle \rightarrow \langle \text{digit} \rangle \mid \langle \text{int\_suffix} \rangle \langle \text{digit} \rangle$
- $\langle \text{float} \rangle \rightarrow \langle \text{int} \rangle . \langle \text{int\_suffix} \rangle$
- $\langle \text{operator} \rangle \rightarrow + \mid - \mid * \mid /$
- $\langle \text{boolean\_op} \rangle \rightarrow \geq \mid == \mid \leq$
- $\langle \text{empty} \rangle \rightarrow$

# 程序主体

- $\langle \text{program} \rangle \rightarrow \langle \text{return\_type} \rangle \langle \text{entry} \rangle \langle \text{block} \rangle$
- $\langle \text{return\_type} \rangle \rightarrow \text{void} \mid \langle \text{data\_type} \rangle$
- $\langle \text{entry} \rangle \rightarrow \text{main}$
- $\langle \text{block} \rangle \rightarrow \{ \langle \text{statement\_list} \rangle \}$
- $\langle \text{statement\_list} \rangle \rightarrow \langle \text{statement} \rangle ; \mid * \langle \text{statement\_list} \rangle \langle \text{statement} \rangle$
- $\langle \text{statement} \rangle \rightarrow \langle \text{declaration} \rangle \mid \langle \text{assignment} \rangle \mid \langle \text{condition} \rangle \mid \langle \text{loop} \rangle \mid \langle \text{trap} \rangle \mid \langle \text{return} \rangle$
- $\langle \text{declaration} \rangle \rightarrow \langle \text{data\_type} \rangle \langle \text{identifier} \rangle \mid \langle \text{declaration} \rangle = \langle \text{assign\_value} \rangle \mid \langle \text{declaration} \rangle , \langle \text{identifier} \rangle$
- $\langle \text{assign} \rangle \rightarrow \langle \text{identifier} \rangle = \langle \text{expression} \rangle \mid \langle \text{assign} \rangle = \langle \text{expression} \rangle$
- $\langle \text{expression} \rangle \rightarrow \langle \text{assign\_value} \rangle \mid \langle \text{expression} \rangle \langle \text{operator} \rangle \langle \text{assign\_value} \rangle$
- $\langle \text{condition} \rangle \rightarrow \text{if} (\langle \text{boolean} \rangle) \langle \text{block} \rangle \mid \langle \text{condition} \rangle \text{ else if } \langle \text{block} \rangle \mid \langle \text{condition} \rangle \text{ else } \langle \text{block} \rangle$
- $\langle \text{loop} \rangle \rightarrow \langle \text{while} \rangle \mid \langle \text{for} \rangle$
- $\langle \text{while} \rangle \rightarrow \text{while}(\langle \text{boolean} \rangle) \langle \text{block} \rangle$
- $\langle \text{for} \rangle \rightarrow \text{for} (\langle \text{for\_pre} \rangle ; \langle \text{boolean} \rangle ; \langle \text{assign} \rangle) \langle \text{block} \rangle$
- $\langle \text{for\_pre} \rangle \rightarrow \langle \text{declaration} \rangle \mid \langle \text{assign} \rangle \mid \langle \text{empty} \rangle$
- $\langle \text{trap} \rangle \rightarrow \text{continue} \mid \text{break}$
- $\langle \text{boolean} \rangle \rightarrow \langle \text{bool\_agent} \rangle \langle \text{boolean\_op} \rangle \langle \text{bool\_agent} \rangle$
- $\langle \text{bool\_agent} \rangle \rightarrow \langle \text{identifier} \rangle \mid \langle \text{assign\_value} \rangle$
- $\langle \text{return} \rangle \rightarrow \text{return } \langle \text{return\_value} \rangle$
- $\langle \text{return\_value} \rangle \rightarrow \langle \text{identifier} \rangle \mid \langle \text{assign\_value} \rangle \mid \langle \text{empty} \rangle$