

State	Transitions
0. <u>program</u> $\rightarrow \bullet$ <i>stmt_list</i> \$\$ <i>stmt_list</i> $\rightarrow \bullet$ <i>stmt_list</i> <i>stmt</i> <i>stmt_list</i> $\rightarrow \bullet$ <i>stmt</i> <i>stmt</i> $\rightarrow \bullet$ <i>id</i> := <i>expr</i> <i>stmt</i> $\rightarrow \bullet$ read <i>id</i> <i>stmt</i> $\rightarrow \bullet$ write <i>expr</i>	on <i>stmt_list</i> shift and goto 2 on <i>stmt</i> shift and reduce (pop 1 state, push <i>stmt_list</i> on input) on <i>id</i> shift and goto 3 on read shift and goto 1 on write shift and goto 4
1. <i>stmt</i> $\rightarrow$ read $\bullet$ <i>id</i>	on <i>id</i> shift and reduce (pop 2 states, push <i>stmt</i> on input)
2. <u>program</u> $\rightarrow$ <i>stmt_list</i> $\bullet$ \$\$ <u><i>stmt_list</i></u> $\rightarrow$ <i>stmt_list</i> $\bullet$ <i>stmt</i> <i>stmt</i> $\rightarrow \bullet$ <i>id</i> := <i>expr</i> <i>stmt</i> $\rightarrow \bullet$ read <i>id</i> <i>stmt</i> $\rightarrow \bullet$ write <i>expr</i>	on \$\$ shift and reduce (pop 2 states, push <i>program</i> on input) on <i>stmt</i> shift and reduce (pop 2 states, push <i>stmt_list</i> on input) on <i>id</i> shift and goto 3 on read shift and goto 1 on write shift and goto 4
3. <i>stmt</i> $\rightarrow$ <i>id</i> $\bullet$ := <i>expr</i>	on := shift and goto 5
4. <u><i>stmt</i></u> $\rightarrow$ write $\bullet$ <i>expr</i> <i>expr</i> $\rightarrow \bullet$ <i>term</i> <i>expr</i> $\rightarrow \bullet$ <i>expr</i> <i>add_op</i> <i>term</i> <i>term</i> $\rightarrow \bullet$ <i>factor</i> <i>term</i> $\rightarrow \bullet$ <i>term</i> <i>mult_op</i> <i>factor</i> <i>factor</i> $\rightarrow \bullet$ ( <i>expr</i> ) <i>factor</i> $\rightarrow \bullet$ <i>id</i> <i>factor</i> $\rightarrow \bullet$ <i>number</i>	on <i>expr</i> shift and goto 6 on <i>term</i> shift and goto 7 on <i>factor</i> shift and reduce (pop 1 state, push <i>term</i> on input) on ( shift and goto 8 on <i>id</i> shift and reduce (pop 1 state, push <i>factor</i> on input) on <i>number</i> shift and reduce (pop 1 state, push <i>factor</i> on input)
5. <u><i>stmt</i></u> $\rightarrow$ <i>id</i> := $\bullet$ <i>expr</i> <i>expr</i> $\rightarrow \bullet$ <i>term</i> <i>expr</i> $\rightarrow \bullet$ <i>expr</i> <i>add_op</i> <i>term</i> <i>term</i> $\rightarrow \bullet$ <i>factor</i> <i>term</i> $\rightarrow \bullet$ <i>term</i> <i>mult_op</i> <i>factor</i> <i>factor</i> $\rightarrow \bullet$ ( <i>expr</i> ) <i>factor</i> $\rightarrow \bullet$ <i>id</i> <i>factor</i> $\rightarrow \bullet$ <i>number</i>	on <i>expr</i> shift and goto 9 on <i>term</i> shift and goto 7 on <i>factor</i> shift and reduce (pop 1 state, push <i>term</i> on input) on ( shift and goto 8 on <i>id</i> shift and reduce (pop 1 state, push <i>factor</i> on input) on <i>number</i> shift and reduce (pop 1 state, push <i>factor</i> on input)
6. <i>stmt</i> $\rightarrow$ write <i>expr</i> $\bullet$ <i>expr</i> $\rightarrow$ <i>expr</i> $\bullet$ <i>add_op</i> <i>term</i> <u><i>add_op</i></u> $\rightarrow \bullet$ + <u><i>add_op</i></u> $\rightarrow \bullet$ -	on FOLLOW( <i>stmt</i> ) = { <i>id</i> , <i>read</i> , <i>write</i> , \$\$} reduce (pop 2 states, push <i>stmt</i> on input) on <i>add_op</i> shift and goto 10 on + shift and reduce (pop 1 state, push <i>add_op</i> on input) on - shift and reduce (pop 1 state, push <i>add_op</i> on input)

State	Transitions
7. $expr \rightarrow term \bullet$ $term \rightarrow term \bullet mult\_op factor$ <hr/> $mult\_op \rightarrow \bullet *$ $mult\_op \rightarrow \bullet /$	on FOLLOW( $expr$ ) = {id, read, write, \$\$, }, +, -} reduce (pop 1 state, push $expr$ on input) on $mult\_op$ shift and goto 11 on * shift and reduce (pop 1 state, push $mult\_op$ on input) on / shift and reduce (pop 1 state, push $mult\_op$ on input)
8. $factor \rightarrow ( \bullet expr )$ <hr/> $expr \rightarrow \bullet term$ $expr \rightarrow \bullet expr add\_op term$ $term \rightarrow \bullet factor$ $term \rightarrow \bullet term mult\_op factor$ $factor \rightarrow \bullet ( expr )$ $factor \rightarrow \bullet id$ $factor \rightarrow \bullet number$	on $expr$ shift and goto 12 on $term$ shift and goto 7 on $factor$ shift and reduce (pop 1 state, push $term$ on input) on ( shift and goto 8 on id shift and reduce (pop 1 state, push $factor$ on input) on number shift and reduce (pop 1 state, push $factor$ on input)
9. $stmt \rightarrow id := expr \bullet$ $expr \rightarrow expr \bullet add\_op term$ <hr/> $add\_op \rightarrow \bullet +$ $add\_op \rightarrow \bullet -$	on FOLLOW( $stmt$ ) = {id, read, write, \$\$} reduce (pop 3 states, push $stmt$ on input) on $add\_op$ shift and goto 10 on + shift and reduce (pop 1 state, push $add\_op$ on input) on - shift and reduce (pop 1 state, push $add\_op$ on input)
10. $expr \rightarrow expr add\_op \bullet term$ <hr/> $term \rightarrow \bullet factor$ $term \rightarrow \bullet term mult\_op factor$ $factor \rightarrow \bullet ( expr )$ $factor \rightarrow \bullet id$ $factor \rightarrow \bullet number$	on $term$ shift and goto 13 on $factor$ shift and reduce (pop 1 state, push $term$ on input) on ( shift and goto 8 on id shift and reduce (pop 1 state, push $factor$ on input) on number shift and reduce (pop 1 state, push $factor$ on input)
11. $term \rightarrow term mult\_op \bullet factor$ <hr/> $factor \rightarrow \bullet ( expr )$ $factor \rightarrow \bullet id$ $factor \rightarrow \bullet number$	on $factor$ shift and reduce (pop 3 states, push $term$ on input) on ( shift and goto 8 on id shift and reduce (pop 1 state, push $factor$ on input) on number shift and reduce (pop 1 state, push $factor$ on input)
12. $factor \rightarrow ( expr \bullet )$ $expr \rightarrow expr \bullet add\_op term$ <hr/> $add\_op \rightarrow \bullet +$ $add\_op \rightarrow \bullet -$	on ) shift and reduce (pop 3 states, push $factor$ on input) on $add\_op$ shift and goto 10 on + shift and reduce (pop 1 state, push $add\_op$ on input) on - shift and reduce (pop 1 state, push $add\_op$ on input)
13. $expr \rightarrow expr add\_op term \bullet$ $term \rightarrow term \bullet mult\_op factor$ <hr/> $mult\_op \rightarrow \bullet *$ $mult\_op \rightarrow \bullet /$	on FOLLOW( $expr$ ) = {id, read, write, \$\$, }, +, -} reduce (pop 3 states, push $expr$ on input) on $mult\_op$ shift and goto 11 on * shift and reduce (pop 1 state, push $mult\_op$ on input) on / shift and reduce (pop 1 state, push $mult\_op$ on input)