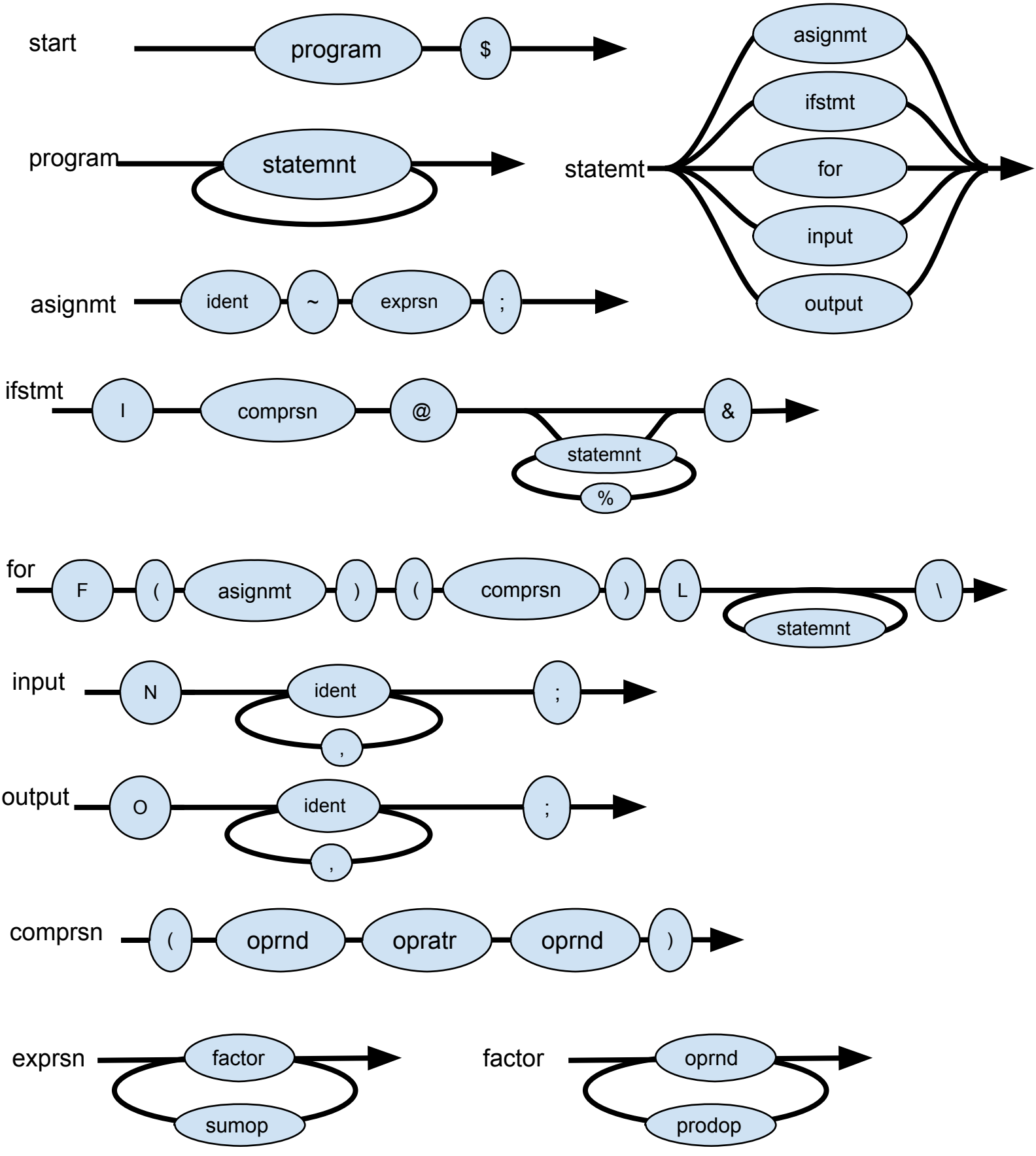
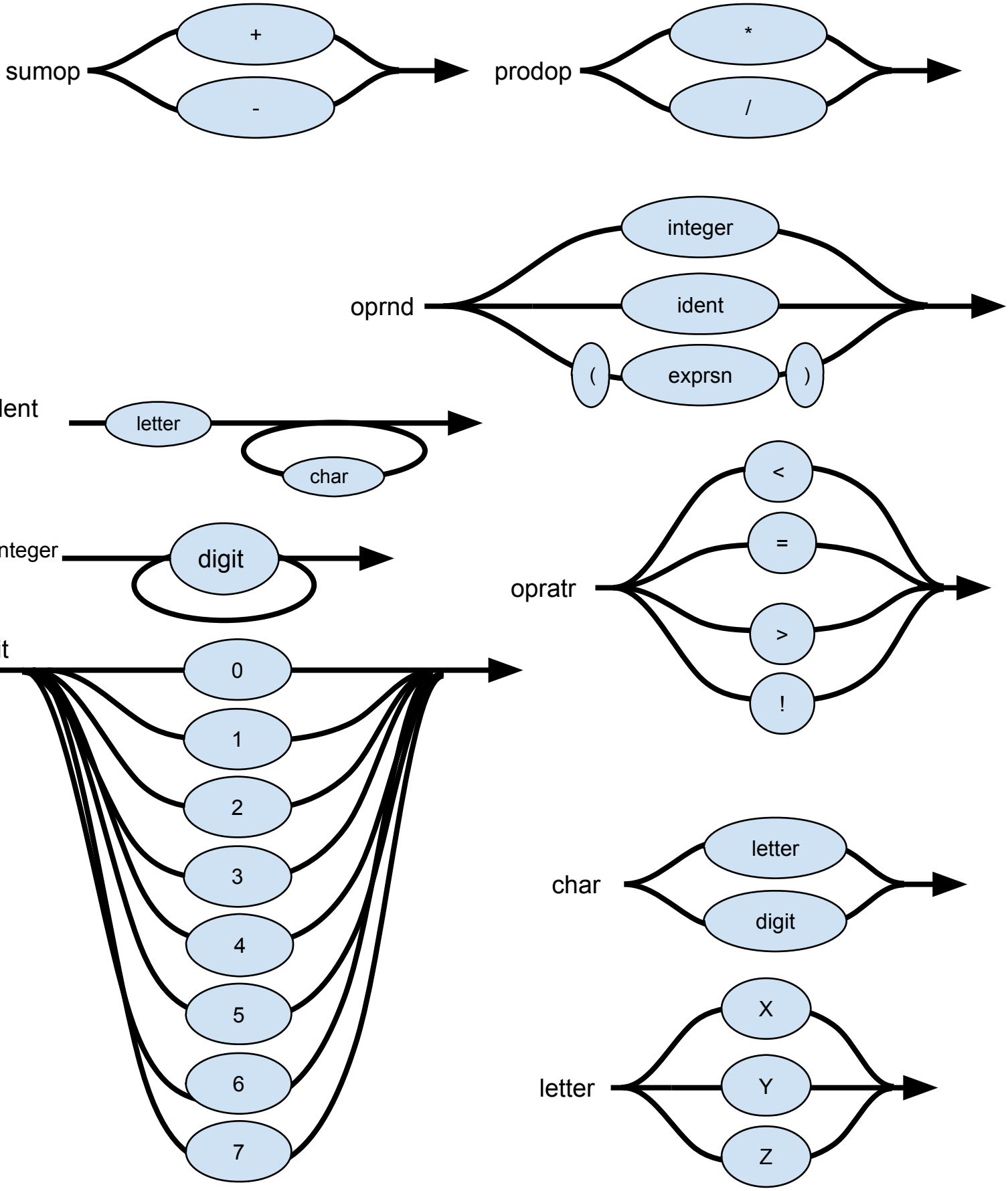
Recursive Descent Syntax Diagrams

Syntax Diagrams

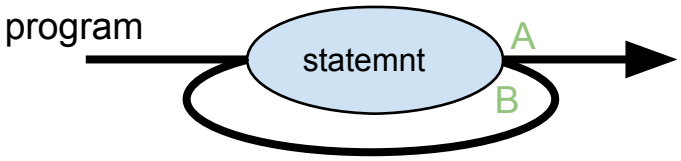


Syntax Diagrams



Recursive Descent Proofs

Recursive Descent Proofs



$first(\text{B}) \cap follow(A) = \mathbf{0}$

$first(statement) \cap follow(program)$

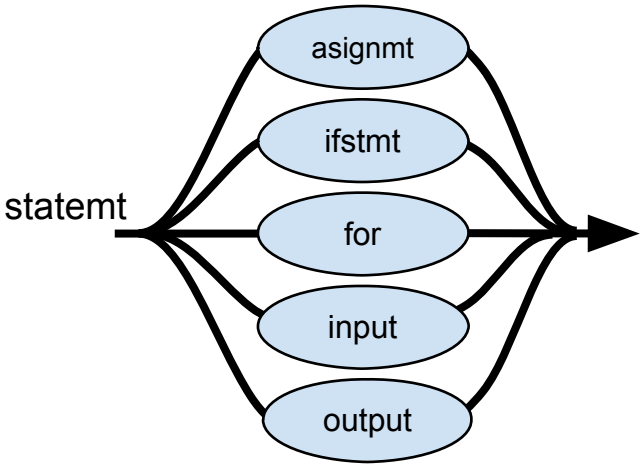
$(first(asignmnt) \cup first(ifstmt) \cup first(for) \cup first(input) \cup first(output)) \cap \{\$\}$

$(first(ident) \cup \{I\} \cup \{F\} \cup \{N\} \cup \{O\}) \cap \{\$\}$

$(first(letter) \cup \{I, F, N, O\}) \cap \{\$\}$

$(\{X, Y, Z\} \cup \{I, F, N, O\}) \cap \{\$\}$

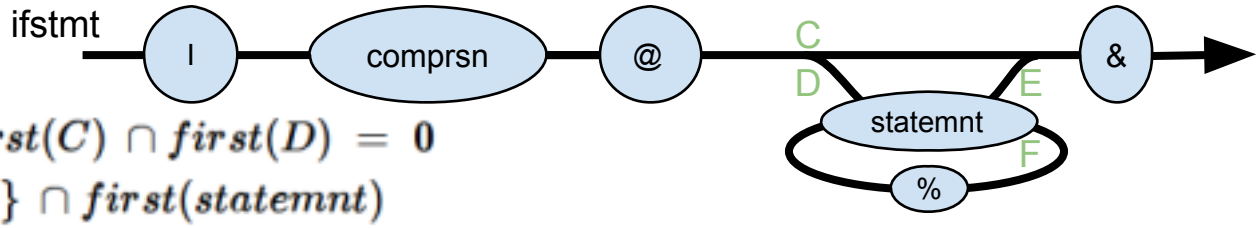
$\{X, Y, Z, I, F, N, O\} \cap \{\$\} = \mathbf{0}$ ✓



Each Branch Clearly Leads to a different Token

$first(asignmt) \cap first\ (ifstmt) \cap first(for) \cap first(input) \cap first(output)$

$\{X, Y, Z\} \cap \{I\} \cap \{F\} \cap \{N\} \cap \{O\} = \mathbf{0}$ ✓



$first(C) \cap first(D) = \mathbf{0}$

$\{\&\} \cap first(statemnt)$

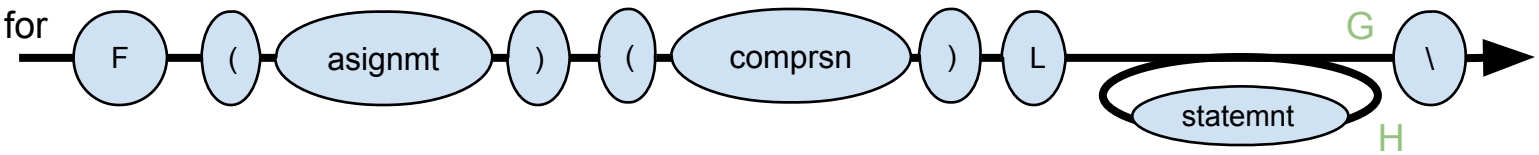
$\{\&\} \cap \{X, Y, Z, I, F, N, O\} = \mathbf{0}$ ✓

$first(E) \cap follow(F) = \mathbf{0}$

$\{\&\} \cap follow(\%)$

$\{\&\} \cap follow(statemnt)$

$\{\&\} \cap \{\%, \backslash\} = 0$ ✓

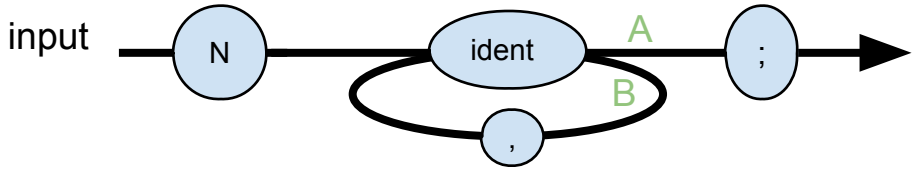


$first(G) \cap first(H) = \mathbf{0}$

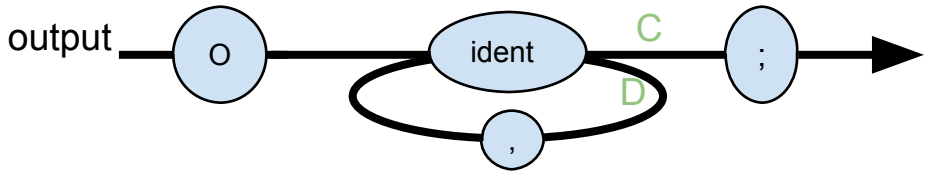
$\{\backslash\} \cap first(statemnt)$

$\{\backslash\} \cap \{X, Y, Z, I, F, N, O\} = \mathbf{0}$ ✓

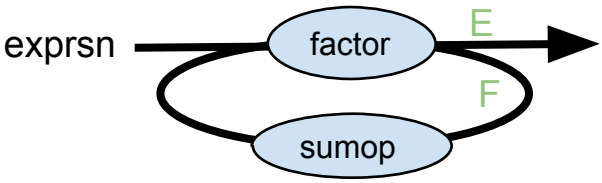
Recursive Descent Proofs



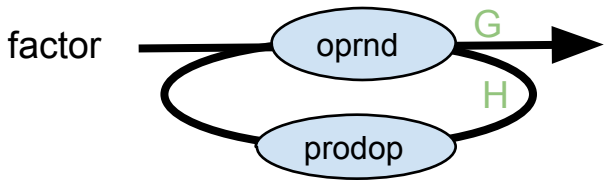
$$first(A) \cap first(B) = 0$$
$$\{;\} \cap \{,\} = 0 \checkmark$$



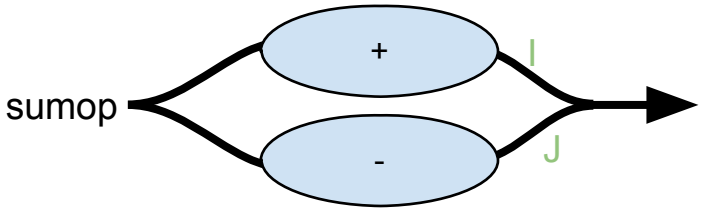
$$first(C) \cap first(D) = 0$$
$$\{;\} \cap \{,\} = 0 \checkmark$$



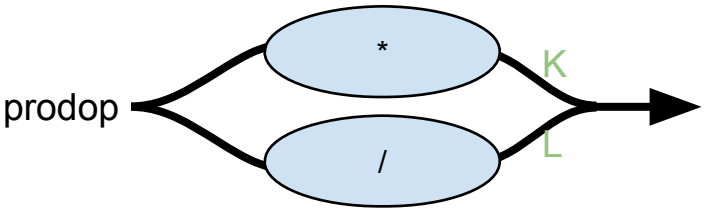
$$first(F) \cap follow(E) = 0$$
$$first(sumop) \cap follow(exprsn)$$
$$\{+,-\} \cap (\{;\} \cup \{)\})$$
$$\{+,-\} \cap \{;,)\} = 0 \checkmark$$



$$first(H) \cap follow(G) = 0$$
$$first(prodop) \cap follow(factor)$$
$$\{*,/\} \cap follow(exprsn)$$
$$\{*,/\} \cap \{;,)\} = 0 \checkmark$$

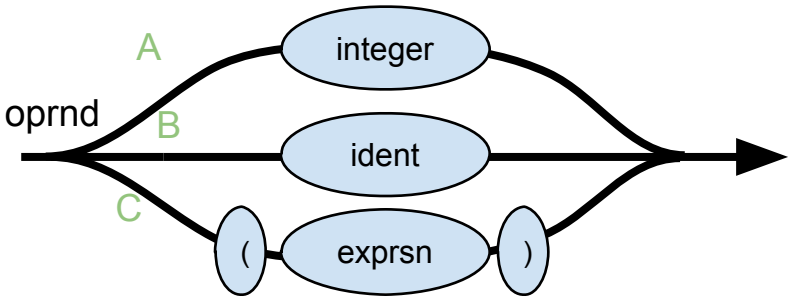


$$first(I) \cap first(J) = 0$$
$$\{+\} \cap \{-\} = 0 \checkmark$$



$$first(K) \cap first(L) = 0$$
$$\{*\} \cap \{/\} = 0 \checkmark$$

Recursive Descent Proofs

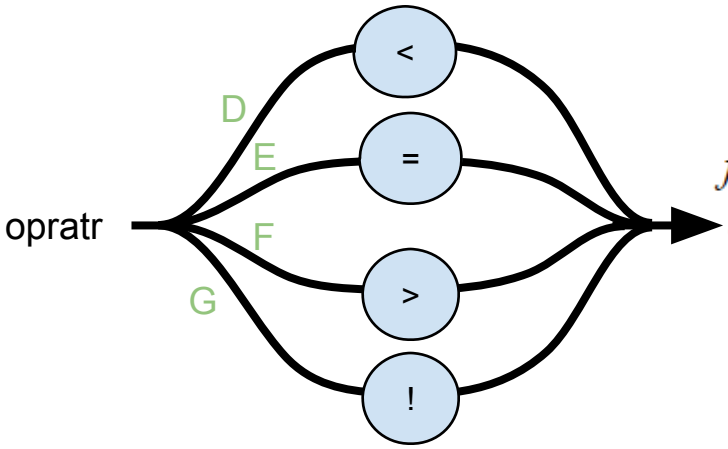


$first(A) \cap first(B) \cap first(C) = 0$

$first(integer) \cap first(ident) \cap \{(\}$

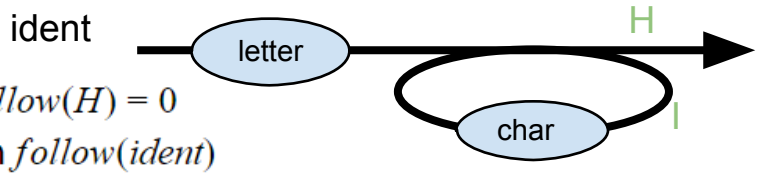
$first(digit) \cap \{X, Y, Z\} \cap \{(\}$

$\{0,1,2,3,4,5,6,7,8,9\} \cap \{X, Y, Z\} \cap \{(\} = 0$ ✓



$first(D) \cap first(E) \cap first(F) \cap first(G) = 0$

$\{<\} \cap \{=\} \cap \{>\} \cap \{!\} = 0$ ✓



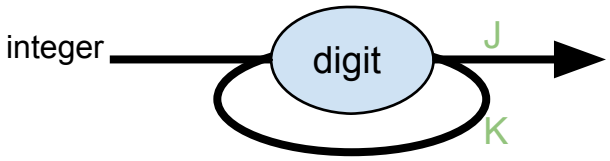
$first(I) \cap follow(H) = 0$

$first(char) \cap follow(ident)$

$(first(letter) \cup first(digit)) \cap (follow(oprnd) \cup \{\ \tilde{}\ \} \cup \{,\} \cup \{;\})$

$\{X, Y, Z, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9\} \cap ((follow(oprtr) \cup \{)\}) \cup \{\ \tilde{}\ \} \cup \{,\} \cup \{;\})$

$\{X, Y, Z, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9\} \cap \{<, =, >, !\} \cup \{), \tilde{}\} \cup \{,\} \cup \{;\} = 0$ ✓



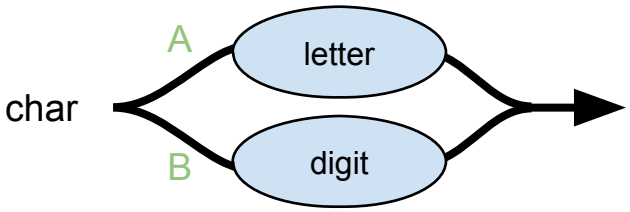
$first(K) \cap follow(K) = 0$

$first(digit) \cap follow(integer)$

$\{0,1,2,3,4,5,6,7,8,9\} \cap follow(oprnd)$

$\{0,1,2,3,4,5,6,7,8,9\} \cap \{<, =, >, !,)\} = 0$ ✓

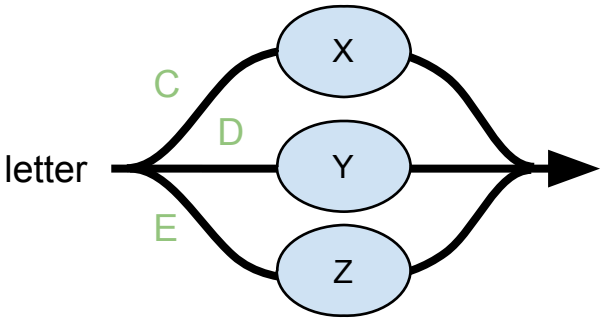
Recursive Descent Proofs



$first(A) \cap first(B) = 0$

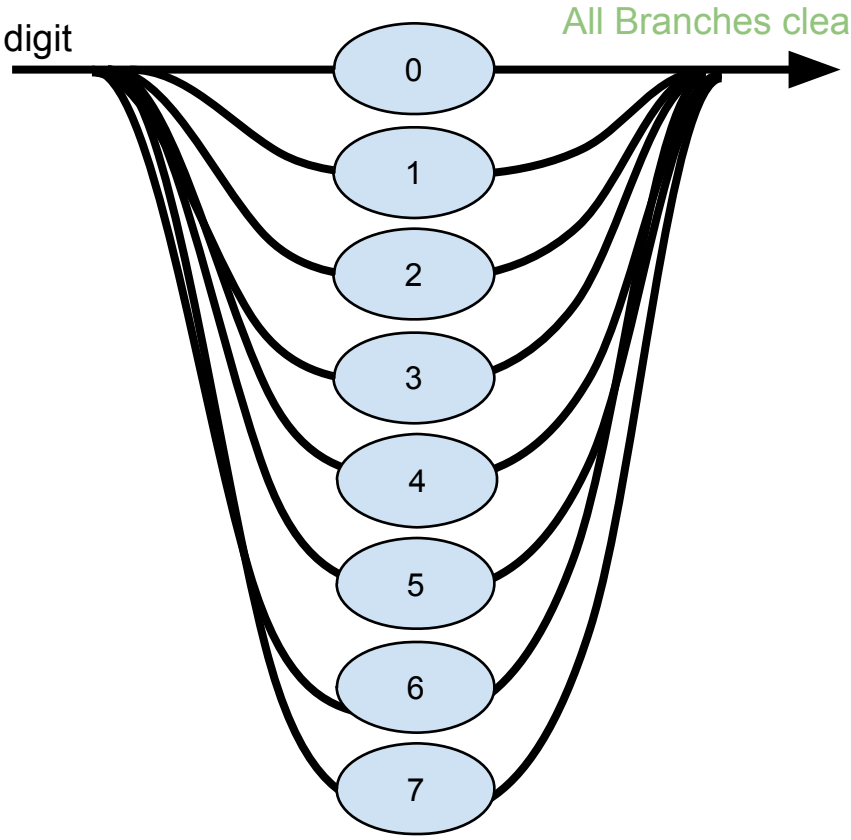
$first(letter) \cap first(digit)$

$\{X, Y, Z\} \cap \{0, 1, 2, 3, 4, 5, 6, 7, 8, 9\} = 0$ ✓



$first(C) \cap first(D) \cap first(E) = 0$

$\{X\} \cap \{Y\} \cap \{Z\} = 0$ ✓



$first(F) \cap first(G) \cap first(H) \cap first(I) \cap first(J) \cap first(K) \cap first(L) \cap first(M) \cap first(N) \cap first(O) = 0$

$\{0\} \cap \{1\} \cap \{2\} \cap \{3\} \cap \{4\} \cap \{5\} \cap \{6\} \cap \{7\} \cap \{8\} \cap \{9\} = 0$ ✓