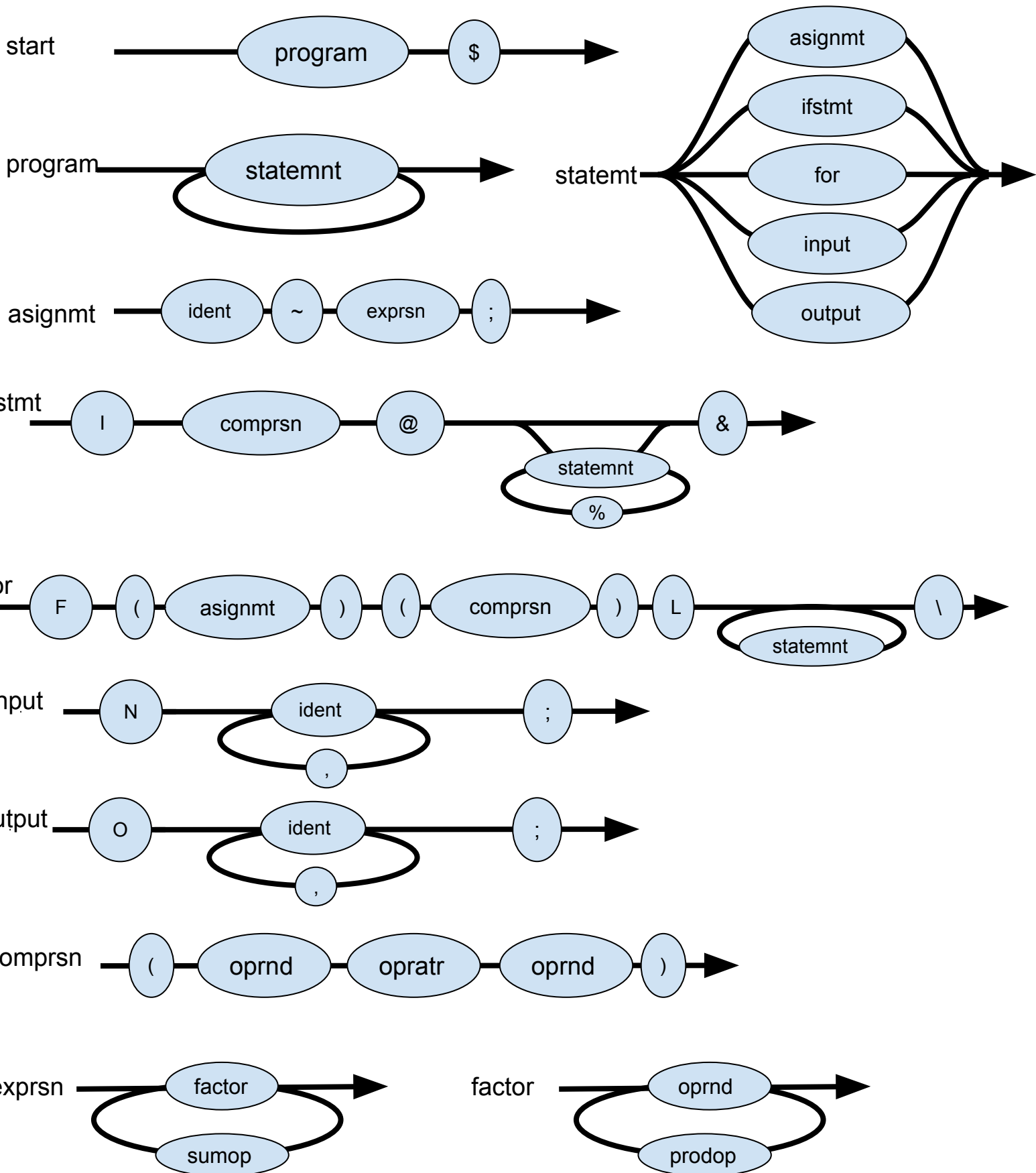
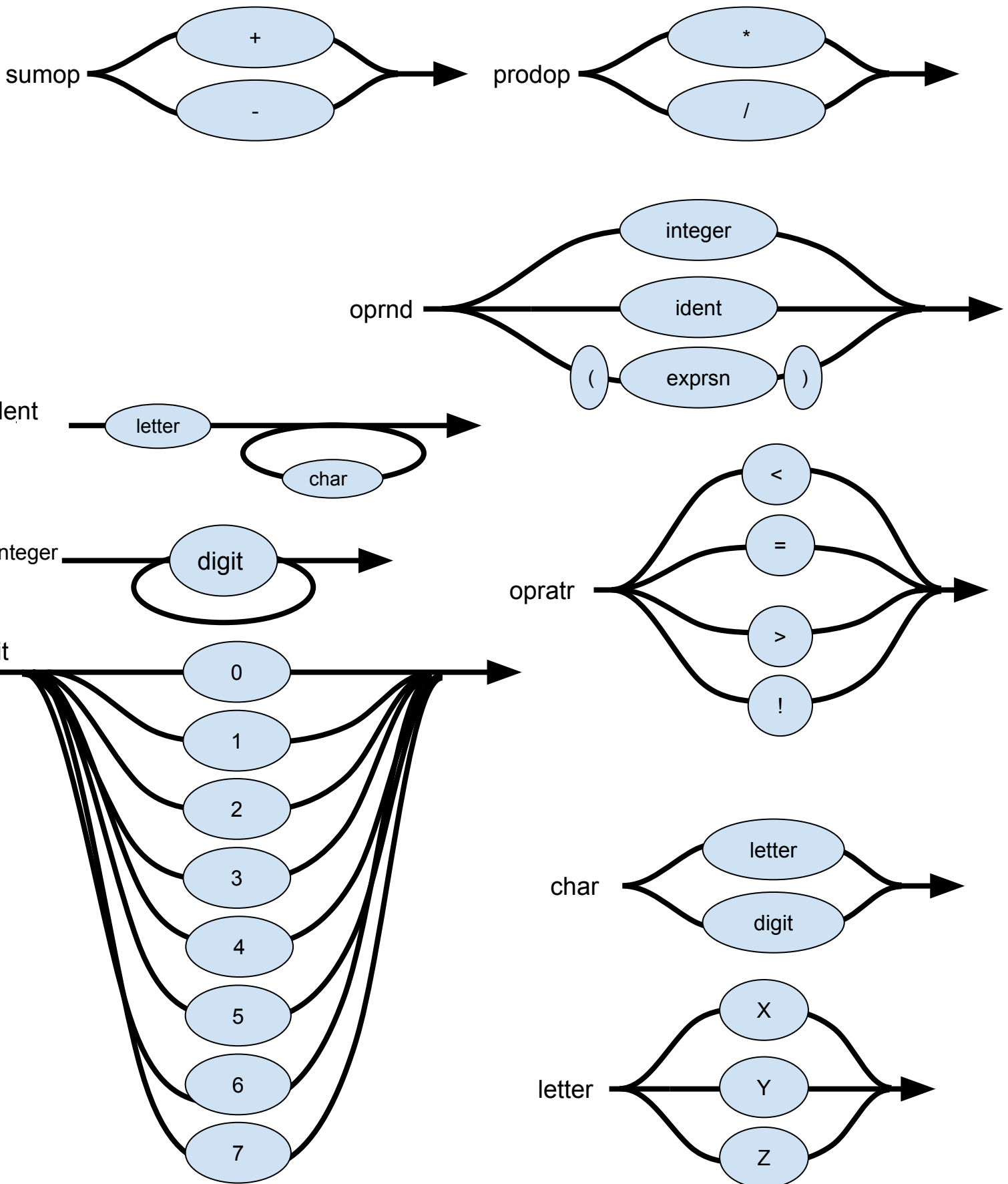


## Recursive Descent Syntax Diagrams

# Syntax Diagrams



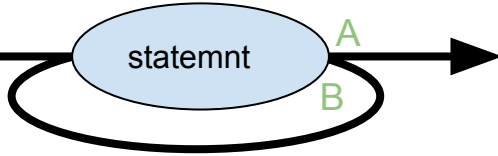
# Syntax Diagrams



## Recursive Descent Proofs

## Recursive Descent Proofs

program



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

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

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

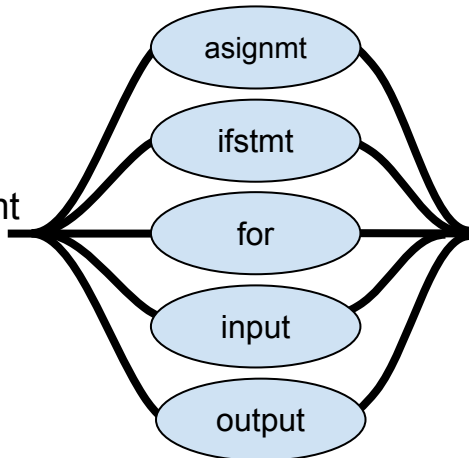
$$(first(ident) \cup \{I\} \cup \{F\} \cup \{N\} \cup \{O\}) \cap \{\$ \}$$

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

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

$$\{X, Y, Z, I, F, N, O\} \cap \{\$ \} = 0 \quad \checkmark$$

statemnt

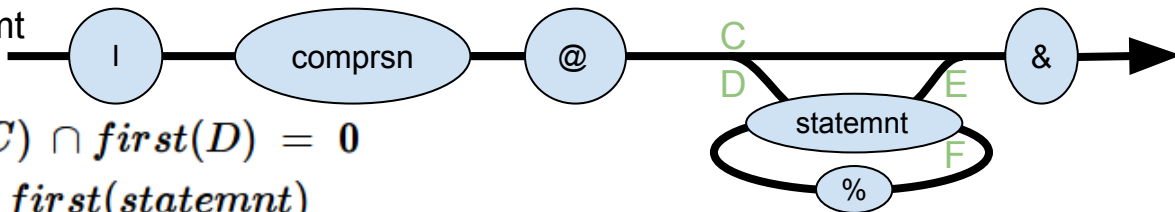


Each Branch Clearly Leads to a different Token

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

$$\{X, Y, Z\} \cap \{I\} \cap \{F\} \cap \{N\} \cap \{O\} = 0 \quad \checkmark$$

ifstmt



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

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

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

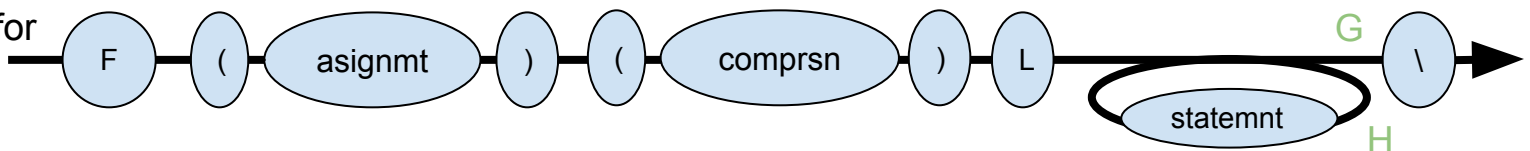
$$first(E) \cap follow(F) = 0$$

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

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

$$\{\&\} \cap \{\%, \backslash\} = 0 \quad \checkmark$$

for

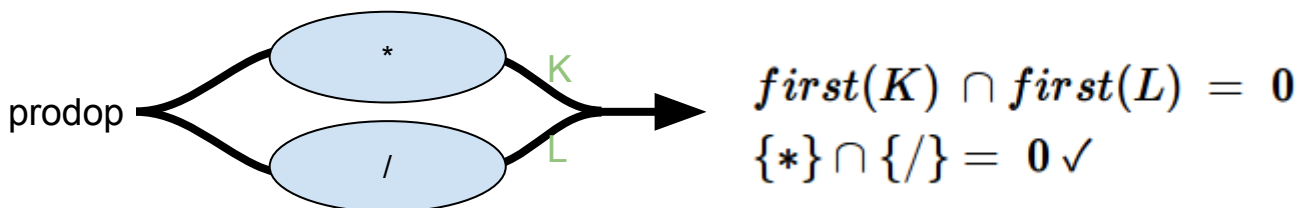
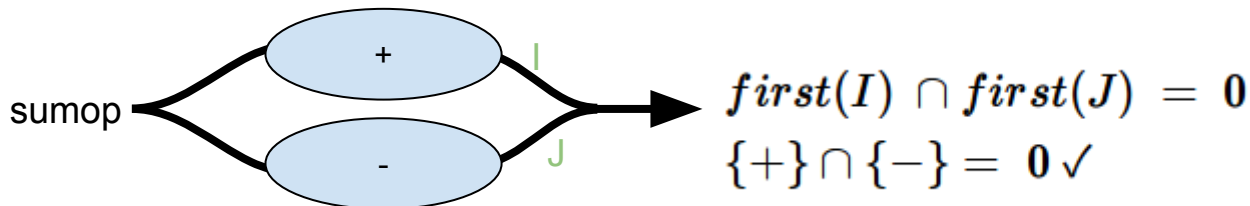
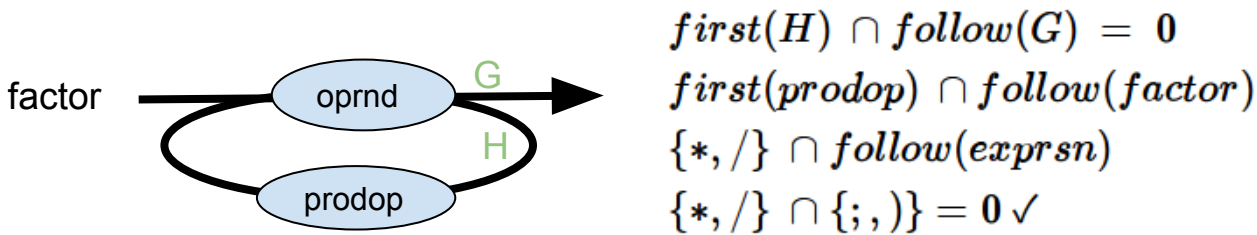
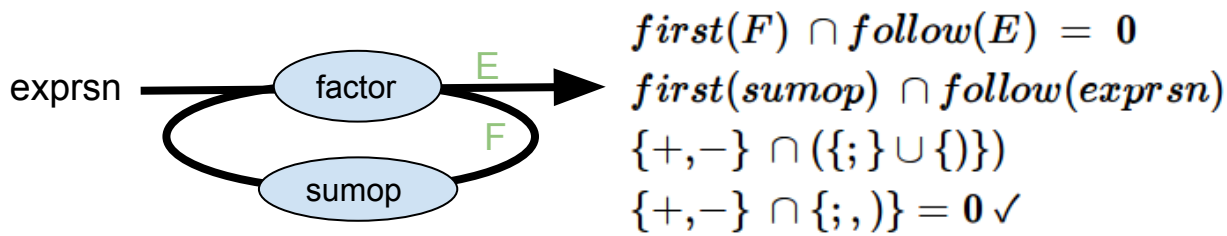
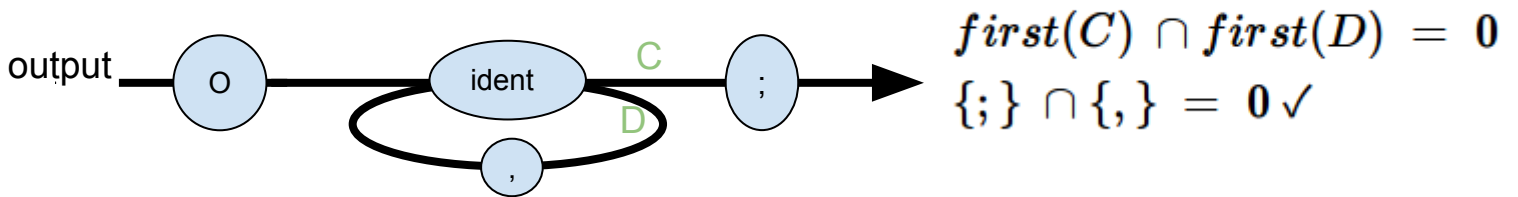
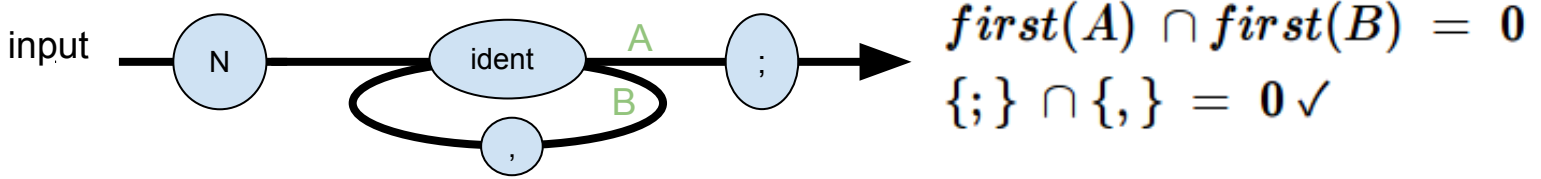


$$first(G) \cap first(H) = 0$$

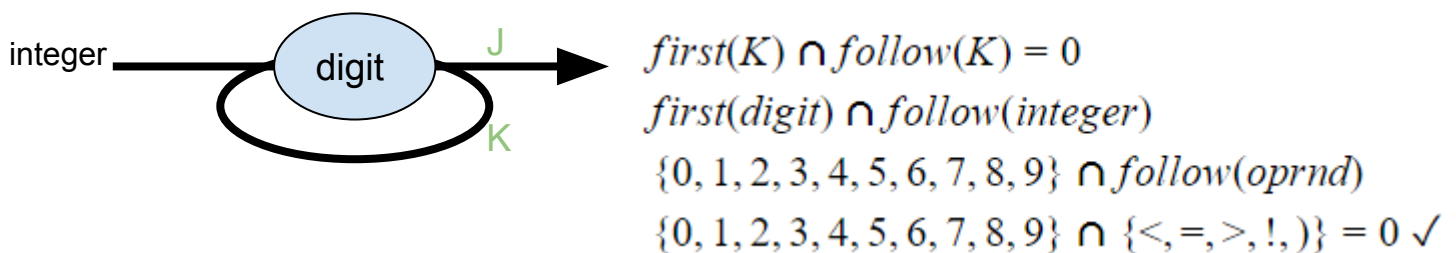
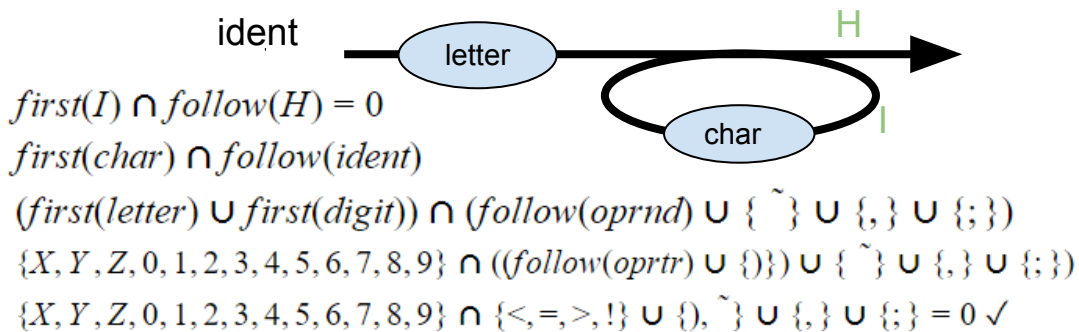
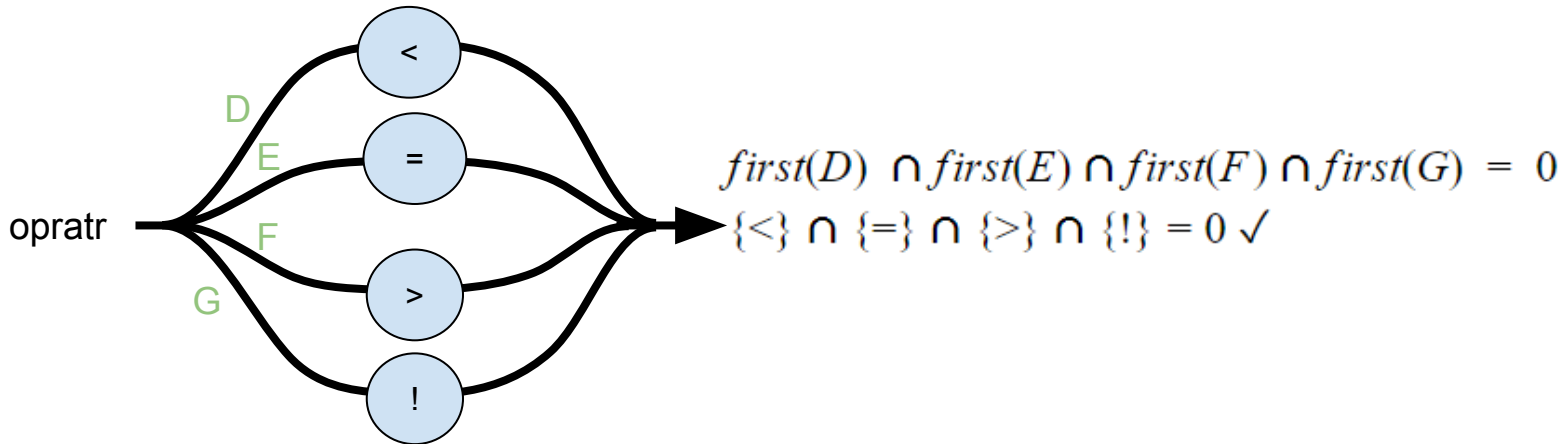
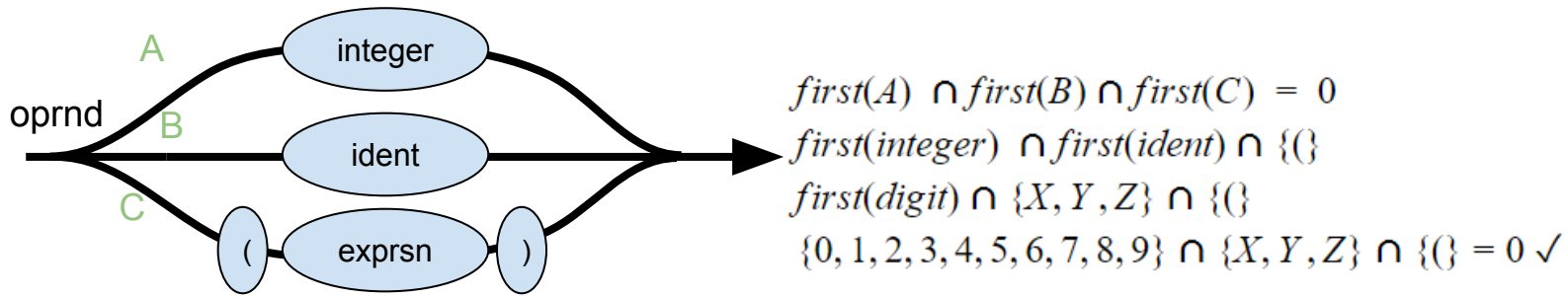
$$\{\backslash\} \cap first(statement)$$

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

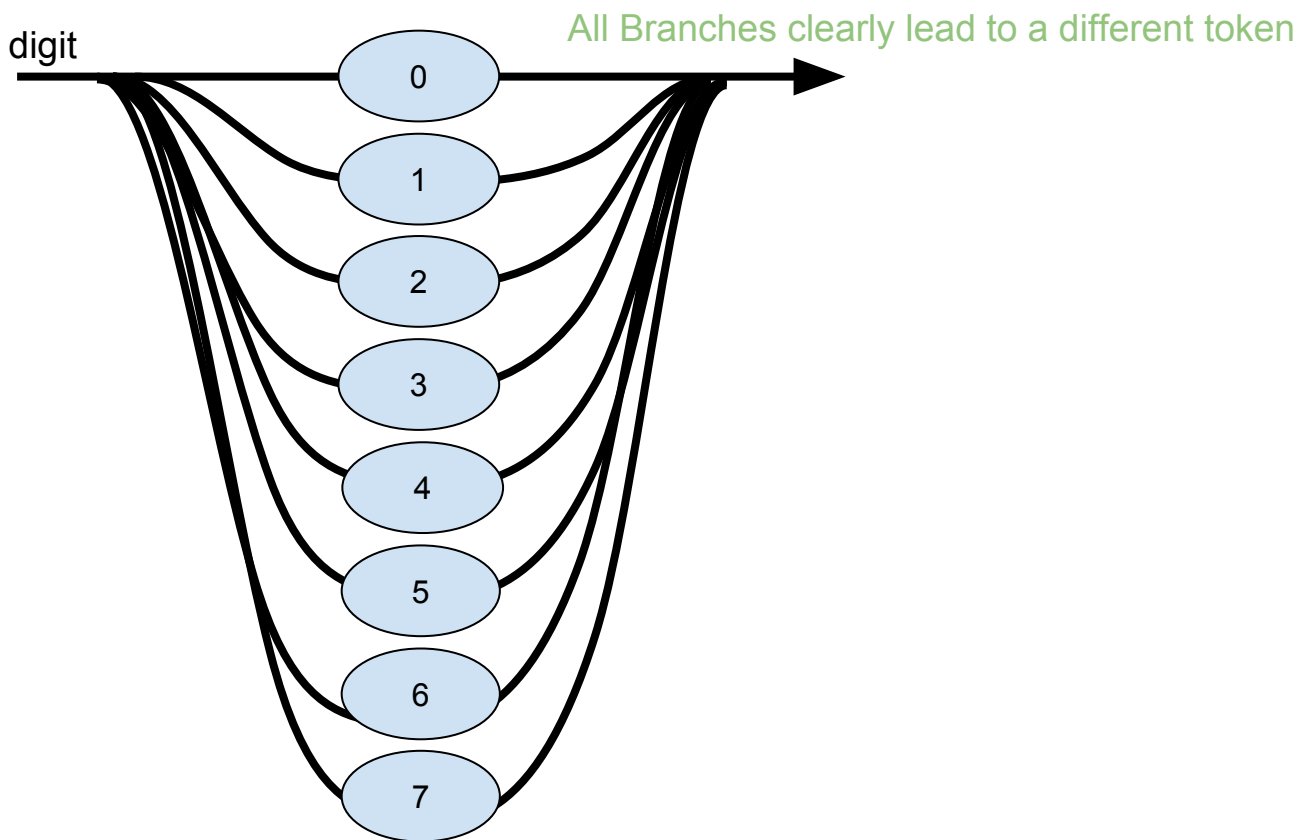
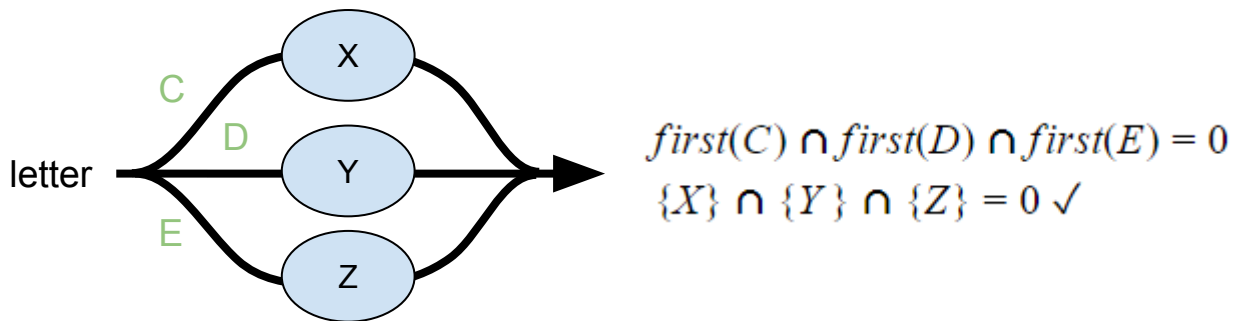
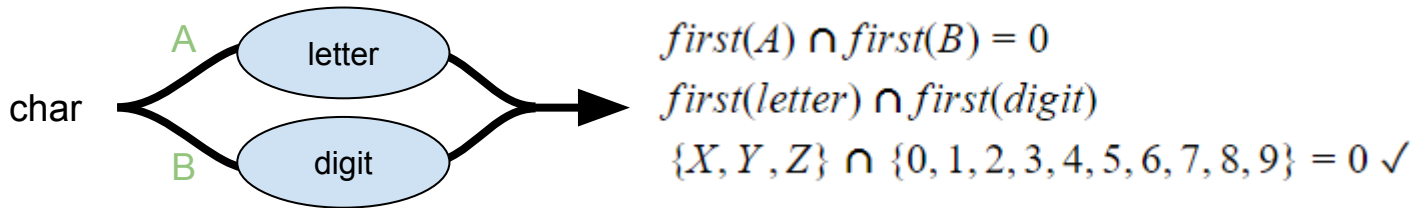
## Recursive Descent Proofs



## Recursive Descent Proofs



## Recursive Descent Proofs



$$\begin{aligned} &first(F) \cap first(G) \cap first(H) \cap first(I) \cap first(J) \cap first(K) \cap first(L) \cap first(M) \cap first(N) \cap first(O) = 0 \\ &\{0\} \cap \{1\} \cap \{2\} \cap \{3\} \cap \{4\} \cap \{5\} \cap \{6\} \cap \{7\} \cap \{8\} \cap \{9\} = 0 \checkmark \end{aligned}$$