

first(SST4) = {id, func}

follow(SST4) = {ln}

selection set = same as first set

first(SST5) = {func}

follow(SST5) = {ln}

selection set = same as first set

first(OE) = {int-const, char-const, str-const, float-const, (, !, inc-dec, id}

follow(OE) = {ln, :,], , }, ., [, inc-dec, assign-op, (}

selection set = same as first set.

first(list) = { , ^{→ same as first set} , ε }

follow(list) = Follow(list) ∪ follow(dec)
= { : }

selection set = first(list) - ε ∪ follow(list)
= { ε } - ε ∪ { : }
= { } ∪ { : }
= { : }

first(dec) = { dt, id }

follow(dec) = { : }

selection set = same as first set

Selection set of CFG:

✓ first (SST) = { while, do, if, for, return, break,
continue, inc-dec, id, dt, void }
follow (SST) = { $\backslash n$ }

selection set = same as first set.

✓ first (SST1) = { ., [, id, func }
follow (SST1) = { $\backslash n$ }
selection set = same as first set

✓ first (SST2) = { id, [, func }
follow (SST2) = { $\backslash n$ }
selection set = same as first set

✓ first (SST') = {], , }
first (SST') = { $\backslash n$ }
selection set = same as first set.

✓ first (SST3) = { = }
follow (SST3) = { $\backslash n$ }
selection set = same as first set

✓ first (SST3') = { new, (, !, inc-dec, id, float-const,
int-const, char-const, str-const }
follow (SST3') = { $\backslash n$ }
selection set = same as first set

first(v_1) \rightarrow {, ϵ } ^{same as first set}

follow(v_1) \rightarrow { $\backslash n$ }

selection set = first(v_1) - ϵ \cup follow(v_1)
= { ϵ } - ϵ \cup { $\backslash n$ }
= { $\backslash n$ } .

first(π) \rightarrow {id}

follow(π) \Rightarrow { $\backslash n$, inc-dec, assign-op}

selection set = same as first set

$\langle PL \rangle \rightarrow ?$

$\text{first}(\text{init}) = \{ =, \epsilon \}$ ^{same as first set}

$$\begin{aligned}\text{follow}(\text{init}) &= \text{first}(\text{list}) = \{ , , \epsilon \} \\ &= \{ , , \epsilon \} - \{ \epsilon \} \cup \text{follow}(\text{dec}) \\ &= \{ , , : \} \cup \{ , , \text{ln} \}\end{aligned}$$

$$\begin{aligned}\text{selection set} &= \text{first}(\text{init}) - \{ \epsilon \} \cup \text{follow}(\text{init}) \\ &= \{ =, \epsilon \} - \{ \epsilon \} \cup \{ , , : \} \\ &= \{ = \} \cup \{ , , : \} \\ &= \{ =, , , : \}\end{aligned}$$

$$\text{first}(\text{Assign-st}) = \{ \text{id} \}$$

$$\text{follow}\{\text{Assign-st}\} = \{ \text{ln} \}$$

selection set = same as first set

$$\text{first}(w) = \{ ., [, \text{inc-dec}, \overset{\text{assign-op}}{\uparrow}, | \}$$

$$\text{follow}(w) = \{ \text{ln} \}$$

selection set = same as first set

$$\text{first}(w1) = \{ |, , \}$$

$$\text{follow}(w1) = \{ ., \text{inc-dec}, \text{assign-op}, \text{ln} \}$$

selection set = same as first set

production rule	First set	Follow set	Selection set.
$\langle \pi \rangle \rightarrow id \langle \pi_1 \rangle$	$\{id\}$	$\{ln, inc-dec, assign-dec\}$	same as first set
$\langle \pi_1 \rangle \rightarrow id \langle \pi_2 \rangle $ $\epsilon $ $\langle \pi_3 \rangle$	$\{.\}$ $\{\epsilon\}$ $\{[\}$	$\{ln\}$	same as first set $first(\pi_1) = \epsilon \cup follow(\pi_1)$ $\{ln\}$
$\langle \pi_2 \rangle \rightarrow \langle \pi_4 \rangle $ $\langle \pi_1 \rangle $ ϵ	$\{[\}$ $\{.\}$ $\{\epsilon\}$	$\{ln\}$	same as first set same as first set $first(\pi_2) = \epsilon \cup follow(\pi_2)$ $\{ln\}$
$\langle \pi_3 \rangle \rightarrow [\langle oe \rangle$ $\langle w_1 \rangle \langle \pi_1 \rangle$	$\{[\}$	$\{ln\}$	same as first set
$\langle \pi_4 \rangle \rightarrow (\langle P \rangle)$ $\langle \pi_4 \rangle$	$\{ (\}$	$\{ln\}$	same as first set
$\langle \pi_4 \rangle \rightarrow \langle \pi_3 \rangle $ $\langle \pi \rangle$	$\{[\}$ $\{id\}$	$\{ln\}$	same as first set same as first set
$\langle break-st \rangle \rightarrow break$ ϵ	$\{break\}$ $\{\epsilon\}$	$\{ln\}$	same as first set $first(break-st) = \epsilon \cup follow(break-st) = \{ln\}$
$\langle continue-st \rangle \rightarrow continue$ ϵ	$\{continue\}$ $\{\epsilon\}$	$\{ln\}$	same as first set $first(continue-st) = \epsilon \cup follow(continue-st) = \{ln\}$
$\langle return-st \rangle \rightarrow return$	$\{return\}$	$\{int-const, float-const, str-const, char-const, !, inc-dec, id\}$	same as first set

$\langle \text{struct_def} \rangle \rightarrow \langle \text{ac} \rangle$	$\{ \text{public, private} \}$	$\{ 1n \}$	$\{ \text{public, private} \}$
$\text{struct id} \langle n \rangle$	$\text{struct} \{$		$\text{struct} \}$
$\{ \langle n \rangle \langle \text{sbody} \rangle \}$			
$\langle \text{sbody} \rangle \rightarrow \langle \text{ac} \rangle$	$\{ \text{public, private} \}$	$\{ \}$	same as first set
$\langle \text{static} \rangle \langle \text{sbody} \rangle$	static, void,		
$\langle n \rangle \langle \text{sbody} \rangle$	$\text{dt, id} \}$		
$\langle \text{sbody} \rangle \rightarrow \text{void}$	$\{ \text{void} \}$	$\{ 1n \}$	same as first set
$\text{func id} (\langle P \rangle) \langle n \rangle$			same as first set
$\{ \langle n \rangle \langle \text{MST} \rangle \}$	$\{ \text{dt} \}$		same as first set
$\text{dt} \langle \text{sb} \rangle / \text{id} \langle \text{sb} \rangle$	$\{ \text{id} \}$		same as first set
$\langle \text{sb} \rangle \rightarrow \langle \text{type}' \rangle \text{func}$	$\{ [\}$	$\{ 1n \}$	same as first set
$\text{id} (\langle P \rangle) \langle n \rangle \}$			
$\langle n \rangle \langle \text{MST} \rangle \}$			
$\langle \text{arr} \rangle /$	$\{ [\}$		same as first set
$\text{id} \langle \text{init} \rangle \langle \text{init} \rangle$	$\{ \text{id} \}$		same as first set
$\langle \text{sb} \rangle \rightarrow \langle \text{arr} \rangle /$	$\{ [\}$	$\{ 1n \}$	same as first set
$(\langle P \rangle) \{ \langle n \rangle$	$\{ [\}$		same as first set
$\langle \text{wonsbody} \rangle \}$			
$\langle \text{type}' \rangle \text{func id}$	$\{ [\}$		same as first set
$(\langle P \rangle) \langle n \rangle \{ \langle n \rangle$			
$\langle \text{MST} \rangle \}$			
$\langle \text{ac} \rangle \rightarrow \text{public}$	$\{ \text{public} \}$	$\{ \text{struct,}$	same as first set
private	$\{ \text{private} \}$	static,	same as first set
ϵ	$\{ \epsilon \}$	void, dt,	first (ac) - $\epsilon \cup \text{follow}$
		$\text{id} \}$	$\{ \text{struct, static, void,}$
			$\text{dt, id} \}$

$\langle n \rangle \rightarrow \langle oe \rangle \epsilon$	{int, const, char, const, str, const, float, const, !, !, inc, dec, id}	{ $\mid n$ }	same as first
$\langle n \rangle \rightarrow \mid n \langle n' \rangle$	{ $\mid n$ }	{ $\mid n$ }	same as first
$\langle n' \rangle \rightarrow \langle n \rangle \epsilon$	{ $\mid n$ }, { ϵ }	{ $\mid n$ }	same as first first($\langle n' \rangle$) = $\epsilon \cup \text{follow} = \{\mid n\}$
$\langle MST \rangle \rightarrow \epsilon \langle st \rangle \langle n \rangle \langle MST \rangle$	{ ϵ }, {while, do, if, for, return, break, continue, inc, dec}	{ ϵ }	first(MST) = $\epsilon \cup \text{follow}$ same as first set
$\langle \text{if_else} \rangle \rightarrow \text{if} \langle oe \rangle : \langle n \rangle \text{body} \langle \text{op_else} \rangle$	{if}	{ $\mid n$ }	same as first set
$\langle \text{while_st} \rangle \rightarrow \text{while} \langle oe \rangle : \langle n \rangle \langle \text{body} \rangle$	{while}	{ $\mid n$ }	same as first set
$\langle \text{body} \rangle \rightarrow \epsilon \langle st \rangle \langle n \rangle \{ \langle n \rangle \langle MST \rangle \} \langle n \rangle$	{ ϵ }, {while, do, if, for, return, break, continue, inc, dec, {}}	{ $\mid n, \text{else}$ }	first(body) = $\epsilon \cup \text{follow}$ Same as first set

$\langle \text{op-else} \rangle \rightarrow \text{else} \langle n \rangle$ $\langle \text{body} \rangle$ ϵ	$\{ \text{else} \}$ $\{ \epsilon \}$	$\{ \backslash n \}$	same as first set $\text{first}(\text{op-else}) - \epsilon \cup \text{follow}(\text{op-else}) = \{ \backslash n \}$
$\langle \text{do-while} \rangle \rightarrow \text{do} \langle n \rangle$ $\{ \langle n \rangle \langle \text{MST} \rangle \} \langle n \rangle$ $\text{while} \langle \text{oe} \rangle : \langle n \rangle$	$\{ \text{do} \}$	$\{ \backslash n \}$	same as first set
$\langle \text{for-st} \rangle \rightarrow \text{for}$ $e_1 : e_2 : e_3 \langle n \rangle$ $\langle \text{body} \rangle$	$\{ \text{for} \}$	$\{ \backslash n \}$	same as first set
$\langle e_1 \rangle \rightarrow \langle \text{dec} \rangle$ $\langle \text{Assign-st} \rangle$ ϵ	$\{ \text{dt}, \text{id} \}$ $\{ \text{id} \}$ $\{ \epsilon \}$	$\{ : \}$	same as first set same as first set $\text{first}(e_1) - \epsilon \cup \text{follow}(e_1) = \{ : \}$
$\langle e_2 \rangle \rightarrow \langle \text{oe} \rangle$ ϵ $\{ \epsilon \}$ $\{ \text{inc-const, char-const, str-const, float-const, (, !, inc-dec, id} \}$	$\{ : \}$		same as first set $\{ \epsilon \}$
$\langle e_3 \rangle \text{id} \langle e_3' \rangle$ $\text{inc-dec} \langle n \rangle$ ϵ	$\{ \text{id} \}$ $\{ \text{inc-dec} \}$ $\{ \epsilon \}$	$\{ \backslash n \}$	same as first set same as first set $\text{first}(e_3) - \epsilon \cup \text{follow}(e_3) = \{ \backslash n \}$
$\langle e_3' \rangle \rightarrow \langle \text{assign-op} \rangle$ inc-dec	$\{ = \}$ $\{ \text{inc-dec} \}$	$\{ \backslash n \}$	same as first set same as first set
$\langle \text{assign-st} \rangle \rightarrow x \langle n \rangle$ $\langle \text{assign-op} \rangle \langle \text{oe} \rangle$	$\{ \text{id} \}$	$\{ \text{assign-op} \}$	same as first set
$\langle \text{arr-def} \rangle \rightarrow \text{id}$ $\langle \text{arr} \rangle \text{dt} \langle \text{arr} \rangle$	$\{ \text{id} \}$ $\{ \text{dt} \}$	$\{ \backslash n \}$	same as first set same as first set

$\langle \text{cons-body} \rangle \rightarrow$ $\langle \text{Assign-st} \rangle \langle n \rangle$ $\langle \text{cons-body} \rangle \mid$ ϵ	$\{id\}$	$\{ln, \}\}$	same as first set
	$\{\epsilon\}$		$\text{first}(\text{cons-body}) = \epsilon \cup \text{follow}(\text{cons-body}) = \{ln, \}\}$
$\langle s \rangle \rightarrow \langle \text{defs} \rangle \text{class}$ $id \langle \text{inh} \rangle \{ \langle n \rangle$ $\langle \text{-body} \rangle \text{public}$ $\text{static void Main()}$ $\{ \langle n \rangle \langle \text{MST} \rangle \}$ $\langle n \rangle \langle \text{-body} \rangle \}$ $\langle n \rangle \langle \text{defs} \rangle$	$\{ \text{Access-modifiers,}$ static, class, public, private, $\text{struct, ab-sealed} \}$	$\{ln\}$	same as first set