Bottom-up

<<Bottom-up.ppt>>

	VAR	BEGIN	END	END.	INTEGER	FOR	READ	WRITE	TO	DO	;	:	,	:=	+	-	*	DIV	(	)	id	Int
PROGRAM	≐																				⋖	
VAR		≐									⋖	⋖	⋖								⋖	
BEGIN			≐	≐		⋖	⋖	⋖			⋖										⋖	
END			⋗	⋗							⋗											
INTEGER		⋗									⋗											
FOR										≐											⋖	
READ																			≐			
WRITE																			≐			
TO										⋗					⋖	⋖	⋖	⋖	⋖		⋖	⋖
DO		⋖	⋗	⋗		⋖	⋖	⋖			⋗										⋖	
;		⋗	⋗	⋗		⋖	⋖	⋖			⋗	⋖	⋖								⋖	
:		⋗			⋖						⋗											

FIGURE 5.7 Precedence matrix for the grammar from Fig. 5.2. (bottom up)

	VAR	BEGIN	END	END.	INTEGER	FOR	READ	WRITE	TO	DO	;	:	,	:=	+	-	*	DIV	(	)	id	Int
,																					≐	
:=			⋗	⋗					≐		⋗				⋖	⋖	⋖	⋖	⋖		⋖	⋖
+			⋗	⋗					⋗	⋗	⋗				⋗	⋗	⋖	⋖	⋖	⋗	⋖	⋖
-			⋗	⋗					⋗	⋗	⋗				⋗	⋗	⋖	⋖	⋖	⋗	⋖	⋖
*			⋗	⋗					⋗	⋗	⋗				⋗	⋗	⋗	⋗	⋖	⋗	⋖	⋖
DIV			⋗	⋗					⋗	⋗	⋗				⋗	⋗	⋗	⋗	⋖	⋗	⋖	⋖
(													⋖		⋖	⋖	⋖	⋖	⋖	≐	⋖	⋖
)			⋗	⋗					⋗	⋗	⋗				⋗	⋗	⋗	⋗		⋗		
id	⋗		⋗	⋗					⋗	⋗	⋗	⋗	⋗	≐	⋗	⋗	⋗	⋗		⋗		
int			⋗	⋗					⋗	⋗	⋗				⋗	⋗	⋗	⋗		⋗		

FIGURE 5.7 (cont.)

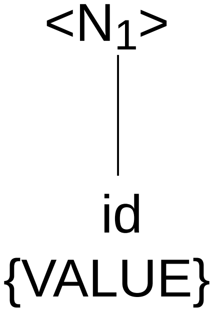
FIGURE 5.8 Operator-precedence parse of two statements from Fig. 5.1.

(i) … BEGIN READ (id)

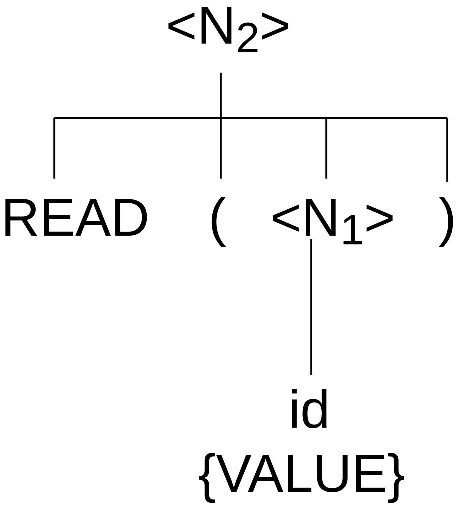
$\lessdot \quad \doteq \quad \lessdot \quad \gtrdot$

(ii) … BEGIN READ ($<N_1>$) ;

$\lessdot \quad \doteq \quad \doteq \quad \gtrdot$



(iii) … BEGIN $< N_2>$;

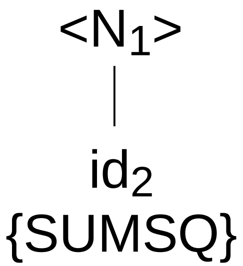


(i)… id_1 := id_2 DIV

$\lessdot \quad \doteq \quad \lessdot \quad \gtrdot$

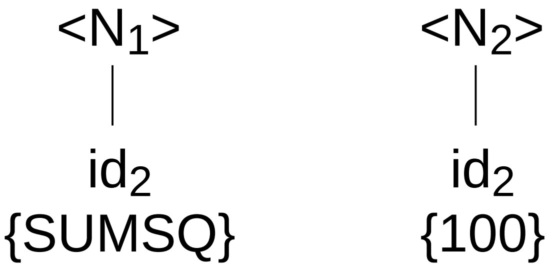
(ii)… id_1 := $<N_1>$ DIV **int** -

$\lessdot \quad \doteq \quad \lessdot \quad \lessdot \quad \gtrdot$



(iii) … id_1 := $<N_1>$ DIV $<N_2>$ -

$\lessdot \quad \doteq \quad \lessdot \quad \gtrdot$



(iv) … id_1 := $<N_3>$ - id_3 *

$\lessdot \quad \doteq \quad \lessdot \quad \underbrace{\lessdot \quad \gtrdot}$

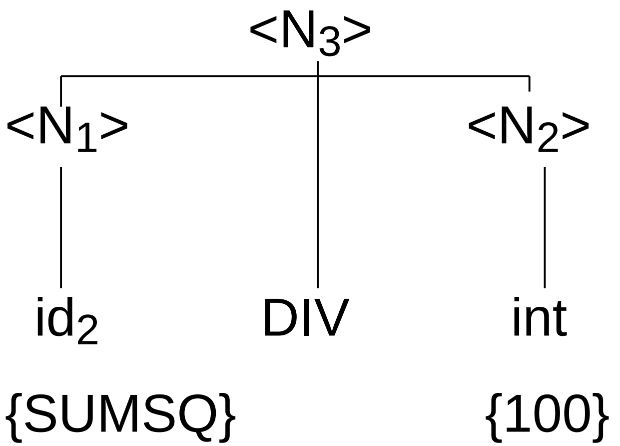
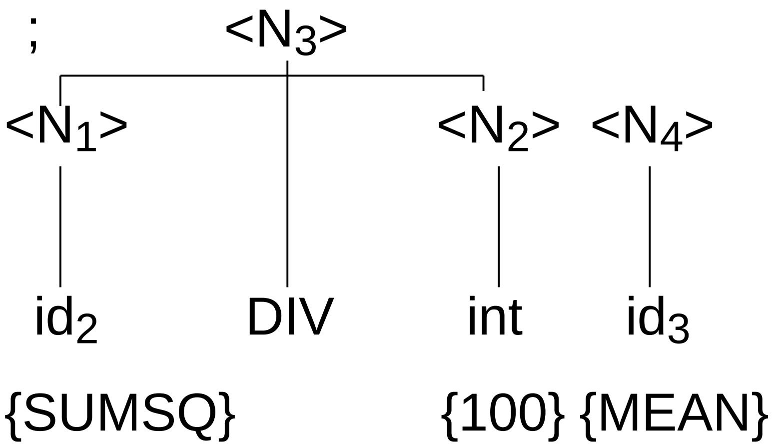


FIGURE 5.8 (b)

(v) … id_1 := $\langle N_3\rangle$ - $\langle N_4\rangle$ * id_4 ;

$\lessdot$ $\doteq$ $\lessdot$ $\lessdot$ $\lessdot$ $\gtrdot$



(vi) … id1 := $\langle N_3\rangle$ - $\langle N_4\rangle$ * $\langle N_5\rangle$;

$\lessdot$ $\doteq$ $\lessdot$ $\lessdot$ $\gtrdot$

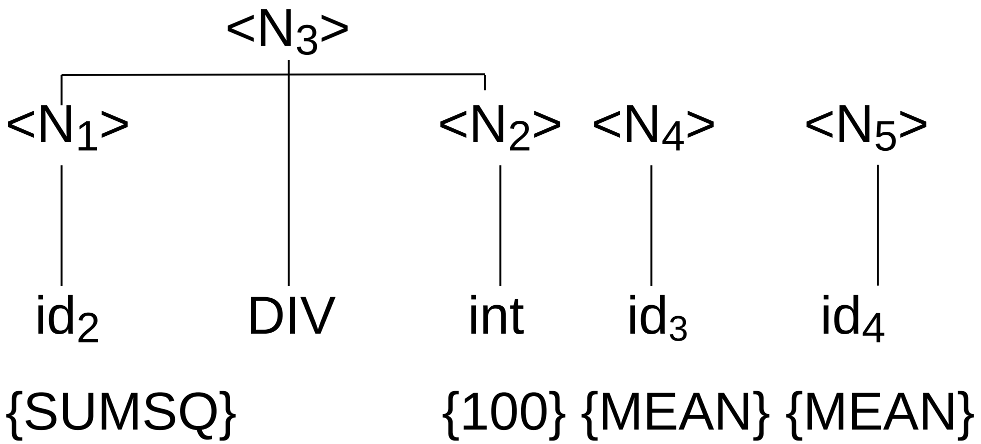
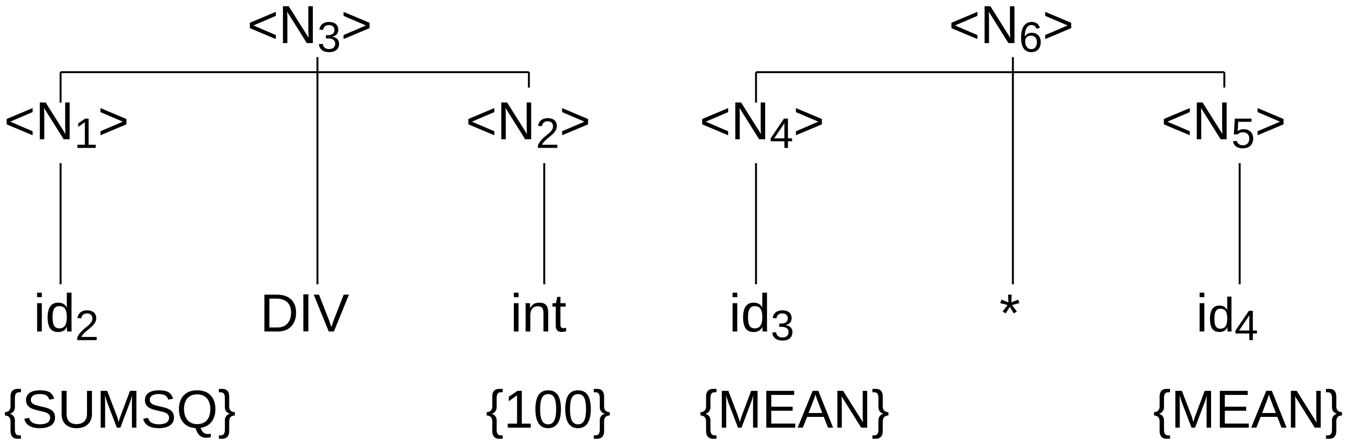


FIGURE 5.8 (b) (*cont'd*)

(vii) … id1 : = <N3> - <N6> ;

$\lessdot \quad \doteq \quad \lessdot \quad \gtrdot$



$\langle N_3 \rangle$ $\langle N_6 \rangle$

$\langle N_1 \rangle$ $\langle N_2 \rangle$ $\langle N_4 \rangle$ $\langle N_5 \rangle$

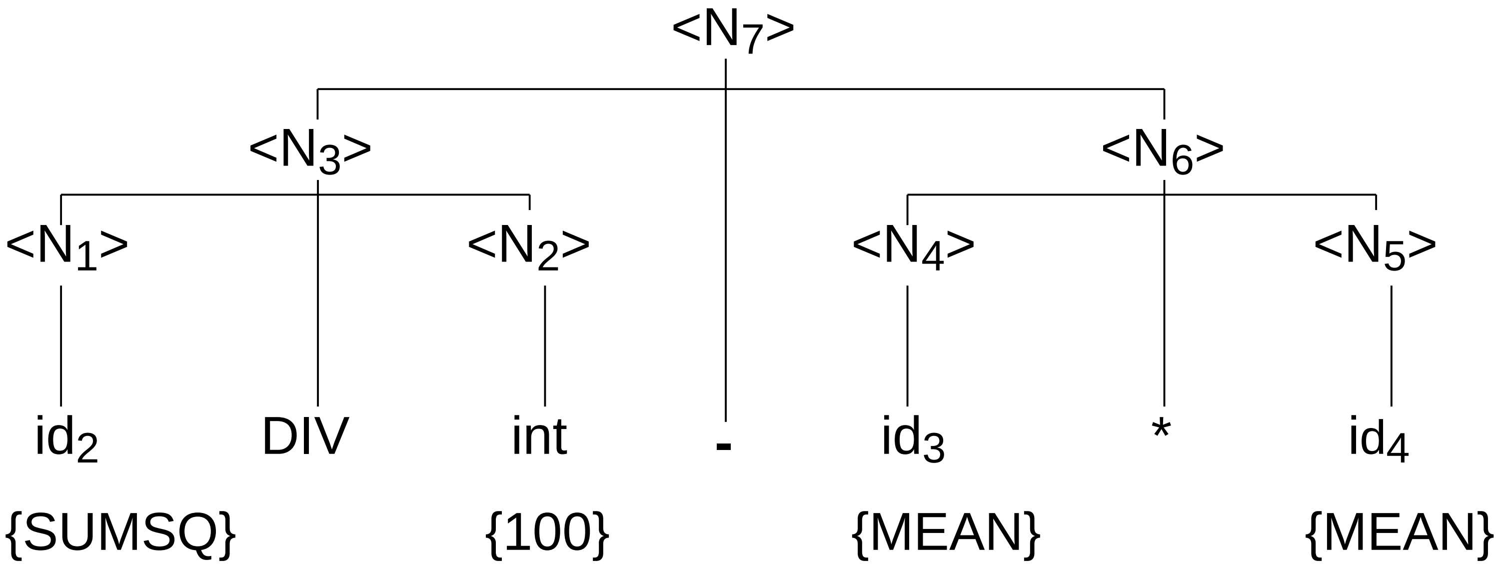
id_2 DIV int id_3 * id_4

{SUMSQ} {100} {MEAN} {MEAN}

FIGURE 5.8 (b) (*cont’d*)

(viii) … id1 := <N7> ;

$\lessdot$ $\doteq$ $\gtrdot$



$\langle N_7 \rangle$

$\langle N_3 \rangle$ $\langle N_6 \rangle$

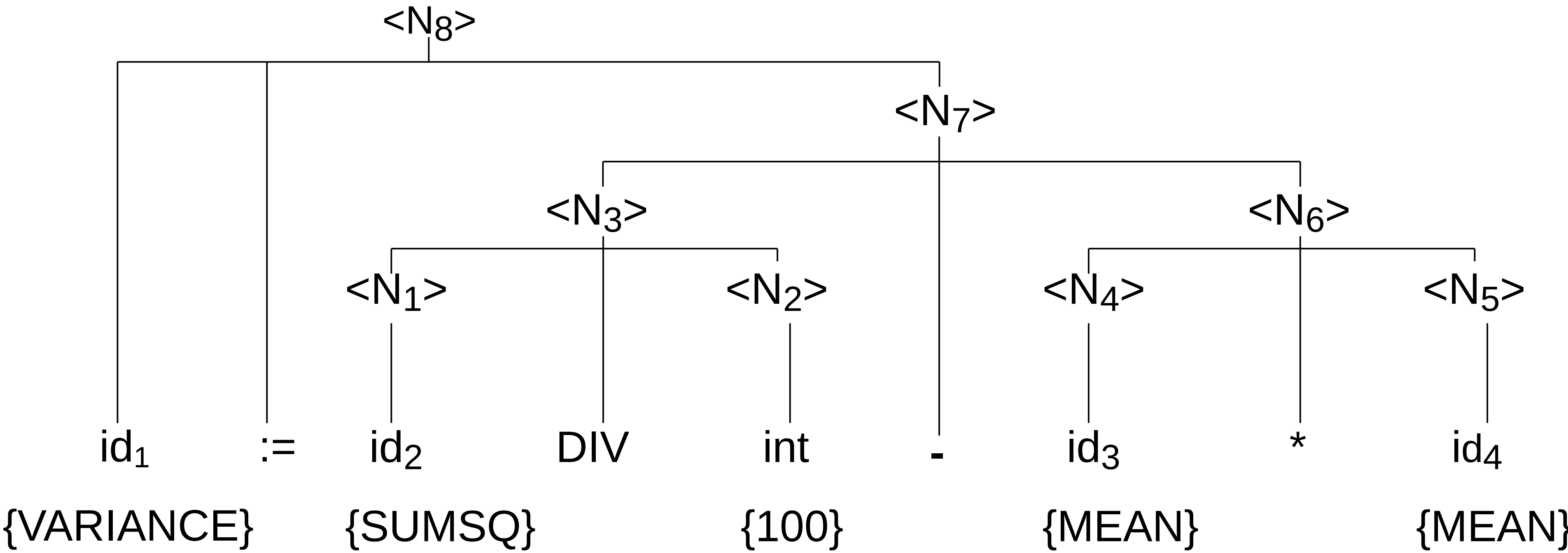
$\langle N_1 \rangle$ $\langle N_2 \rangle$ $\langle N_4 \rangle$ $\langle N_5 \rangle$

id_2 DIV int - id_3 * id_4

{SUMSQ} {100} {MEAN} {MEAN}

FIGURE 5.8 (b) (*cont'd*)

(ix) …. <N8> ;



$\langle N_8 \rangle$

$\langle N_7 \rangle$

$\langle N_3 \rangle$ $\langle N_6 \rangle$

$\langle N_1 \rangle$ $\langle N_2 \rangle$ $\langle N_4 \rangle$ $\langle N_5 \rangle$

id_1 := id_2 DIV int - id_3 * id_4

{VARIANCE} {SUMSQ} {100} {MEAN} {MEAN

FIGURE 5.8 (b) (*cont'd*)