ST -> P

ST -> P

P -> p id B .

B -> VS BL

VS -> ''

VS -> v VD VD’

VD -> ''

VD -> id ID : t

VD’ -> ''

VD’ -> ; VD VD’

ID -> ''

ID -> id ID

BL -> b S S’ e

S’ -> ''

S’ -> ; S S’

S -> RS

S -> WS

S -> AS

S -> IF

S -> W

S -> BL

AS -> id := E

RS -> r id

WS -> wr id

WS -> wr int

WS -> wr bool

IF -> f BE th S ES

ES -> ''

ES -> el S

W -> w BE d S

E -> AE

E -> BE

AE -> AE + T

AE -> AE – T

AE -> T

T -> T \* F

T -> F

F -> id

F -> int

BE -> bool

BE -> AE > AE

BE -> AE >= AE

BE -> AE = AE

BE -> AE <= AE

BE -> AE < AE

P -> p id B .

B -> VS BL

VS -> ''

VS -> v VD VD’

VD -> ''

VD -> id ID : t

VD’ -> ''

VD’ -> ; VD VD’

ID -> ''

ID -> id ID

BL -> b S S’ e

S’ -> ''

S’ -> ; S S’

S -> RS

S -> WS

S -> AS

S -> IF

S -> W

S -> BL

AS -> id := E

RS -> r id

WS -> wr id

WS -> wr int

WS -> wr bool

IF -> f BE th S ES

ES -> ''

ES -> el S

W -> w BE d S

E -> AE

E -> BE

AE -> AE + T

AE -> AE – T

AE -> T

T -> T \* F

T -> F

F -> id

F -> int

BE -> bool

BE -> AE > AE

BE -> AE >= AE

BE -> AE = AE

BE -> AE <= AE

BE -> AE < AE

Tests:

p id v id id id : t b r id ; r id; id := id + id ; wr id e .

p id v id : t ; id : t ; id : t b r id ; id := int ; w id <= id d b id := id + id ; id := id + id e e .

p id v id : t ; id : t ; id : t b r id ; r id ; f id > id th id := bool el id := bool ; wr id e .