

1. Grammar symbols: Used cross reference.

Reference of each grammar's symbol used within each rule's productions. The index uses the tripple: rule name, its subrule no, and the symbol's position within the symbol string.

2. NS_c_comments::TH_c_comments:.

Rws 2.3

3. NS_eol::TH_eol:.

Rws 3.3

4. NS_o2_lcl_opt::TH_o2_lcl_opt:.

Rspec_parm 1.3

5. NS_unq_str::TH_unq_str:.

Rfile 1.3

6. NS_ws::TH_ws:.

Rws 1.3

7. NS_xc_str::TH_xc_str:.

Rfile 4.3

8. NULL thread:.

Rws 4.3 Rfile 2.3 Rspec_parm 2.3 Rspec_parm 3.3 Rspec_parm 4.3

9. Reog:.

Ryacco2_options 1.6

10. Rfile:.

Ryacco2_options 1.4

11. Rparms:.

Rparms_epi 2.1 Rparms 2.1

12. Rparms_epi:.

Ryacco2_options 1.2

13. Rspec_parm:.

Rparms 1.1 Rparms 2.2

14. Rws:.

Rws_k_s 1.1 Rws_k_s 2.2

15. Rws_k:.

Ryacco2_options 1.1 Ryacco2_options 1.3 Ryacco2_options 1.5 Rparms 1.2 Rparms 2.3

16. Rws_k_s:.

Rws_k 2.1 Rws_k_s 2.1

17. ϵ :.

Rws_k 1.1 Rparms_epi 1.1

18. comment:.

Rws 2.2

19. eog:.

Reog 1.1

20. eol:.

Rws 3.2

21. option-err:.

Rspec_parm 2.2

22. option-p:.

Rspec_parm 3.2

23. option-t:.

Rspec_parm 1.2

24. unquoted-string:.

Rfile 1.2

25. ws:.

Rws 1.2

26. xc-str:.

Rfile 4.2

27. |?:.

Reog 2.1 Rws 4.2 Rfile 2.2 Rfile 3.1 Rspec_parm 4.2

28. |||.

Rws 1.1 Rws 2.1 Rws 3.1 Rws 4.1 Rfile 1.1 Rfile 2.1 Rfile 4.1 Rspec_parm 1.1 Rspec_parm 2.1
Rspec_parm 3.1 Rspec_parm 4.1

29. Grammar Rules's First Sets.

30. *Ryacco2_options* # in set: 2.
|?| |||

31. *Reog* # in set: 2.
eog |?|

32. *Rws.k^ε* # in set: 1.
|||

33. *Rws.k.s* # in set: 1.
|||

34. *Rws* # in set: 1.
|||

35. *Rfile* # in set: 2.
|?| |||

36. *Rparms.epi^ε* # in set: 1.
|||

37. *Rparms* # in set: 1.
|||

38. *Rspec_parm* # in set: 1.
|||

39. LR State Network.

List of productions with their derived LR state lists. Their subrule number and symbol string indicates the specific production being derived. The “▷” symbol indicates the production’s list of derived states from its closed state. Multiple lists within a production indicate 1 of 2 things:

- 1) derived string that could not be merged due to a lr(1) conflict
- 2) partially derived string merged into another derived lr states

A partially derived string is indicated by the “merged into” symbol \nearrow used as a superscript along with the merged into state number.

40. Ryacco2_options.

1 Rws.k Rparms.epi Rws.k Rfile Rws.k Reog
▷ 1 7 8 9 10 11 14

41. Reog.

1 eog
▷ 11 13
2 |?|
▷ 11 12

42. Rws_k.1 ϵ

- ▷ 1
- ▷ 8
- ▷ 10
- ▷ 24
- ▷ 26

2 Rws_k_s

- ▷ 1 15
- ▷ 8^{↗15}
- ▷ 10^{↗15}
- ▷ 24^{↗15}
- ▷ 26^{↗15}

43. Rws_k_s.

1 Rws

- ▷ 1 17
- ▷ 8^{↗17}
- ▷ 10^{↗17}
- ▷ 24^{↗17}
- ▷ 26^{↗17}

2 Rws_k_s Rws

- ▷ 1 15 16
- ▷ 8^{↗15}
- ▷ 10^{↗15}
- ▷ 24^{↗15}
- ▷ 26^{↗15}

44. Rws.

```

1 ||| ws NS_ws::TH_ws
  ▷ 1 2 6
  ▷ 8↗2
  ▷ 10↗2
  ▷ 15↗2
  ▷ 24↗2
  ▷ 26↗2
2 ||| comment NS_c.comments::TH_c_comments
  ▷ 1 2 5
  ▷ 8↗2
  ▷ 10↗2
  ▷ 15↗2
  ▷ 24↗2
  ▷ 26↗2
3 ||| eol NS_eol::TH_eol
  ▷ 1 2 4
  ▷ 8↗2
  ▷ 10↗2
  ▷ 15↗2
  ▷ 24↗2
  ▷ 26↗2
4 ||| |?| NULL
  ▷ 1 2 3
  ▷ 8↗2
  ▷ 10↗2
  ▷ 15↗2
  ▷ 24↗2
  ▷ 26↗2

```

45. Rfile.

```

1 ||| unquoted-string NS_unq_str::TH_unq_str
  ▷ 9 29 32
2 ||| |?| NULL
  ▷ 9 29 30
3 |?|
  ▷ 9 28
4 ||| xc-str NS_xc_str::TH_xc_str
  ▷ 9 29 31

```

46. Rparms_epi.

```

1 ε
  ▷ 7
2 Rparms
  ▷ 7 23

```

47. Rparms.

- 1 Rspec_parm Rws_k
 - ▷ 7 26 27
- 2 Rparms Rspec_parm Rws_k
 - ▷ 7 23 24 25

48. Rspec_parm.

- 1 ||| option-t NS_o2.lcl.opt::TH_o2.lcl.opt
 - ▷ 7 18 20
 - ▷ 23^{↗18}
- 2 ||| option-err NULL
 - ▷ 7 18 22
 - ▷ 23^{↗18}
- 3 ||| option-p NULL
 - ▷ 7 18 21
 - ▷ 23^{↗18}
- 4 ||| |?| NULL
 - ▷ 7 18 19
 - ▷ 23^{↗18}

49. List of reducing states.

The following legend indicates the type of reducing state.

Points 2–4 are states that must meet the lr(1) condition:

- 1) r — only 1 production reducing
- 2) r² — 2 or more reducing productions
- 3) s/r — shift and 1 reducing production
- 4) s/r² — shift and multiple reducing productions

\subset 1^{s/r} 3^r 4^r 5^r 6^r 7^{s/r} 8^{s/r} 10^{s/r} 12^r 13^r 14^r 15^{s/r} 16^r 17^r 19^r 20^r 21^r 22^r
 23^{s/r} 24^{s/r} 25^r 26^{s/r} 27^r 28^r 30^r 31^r 32^r

50. Lr1 State's Follow sets and reducing lookahead sets.

Notes on Follow set expressions:

1) The “follow set” for rule uses its literal name and tags its grammar rule rank number as a superscript. Due to space limitations, part of the follow set information uses the rule's literal name while the follow set expressions refers to the rule's rank number. This \langle rule name, rule rank number \rangle tuple allows you the reader to decipher the expressions. Transitions are represented by S_xR_z whereby S is the LR1 state identified by its “x” subscript where other transient calculations occur within the LR1 state network. R indicates the follow set rule with the subscript “z” as its grammar rank number that contributes to the follow set.

The \nearrow^x symbol indicates that a merge into state “x” has taken place. That is, the reduced subrule that depends on this follow set finds its follow set in 2 places: its birthing state that generated the sequence up to the merged into state, and the birthing state that generated the “merged into” state. So the rule's “follow set” calculation must also continue its calculation within the birth state generating the “x merged into” state.

```

State: 1      Follow Set contributors, merges, and transitions
← Follow set Rule → ←          follow set symbols contributors          →
Ryacco2_options1
Local follow set yield:
  eolr.
← Follow set Rule → ←          follow set symbols contributors          →
Rws_k3          R1.1.1 R1.1.2 R1.1.3  $\nearrow^{10}$   $\nearrow^8$   $\nearrow^{26}$   $\nearrow^{24}$ 
Local follow set yield:
  |?|, | | |.
← Follow set Rule → ←          follow set symbols contributors          →
Rws_k_s4        R3.2.1 R4.2.1  $\nearrow^{10}$   $\nearrow^8$   $\nearrow^{26}$   $\nearrow^{24}$  S1R3
Local follow set yield:
  | | |.
← Follow set Rule → ←          follow set symbols contributors          →
Rws5          R4.1.1  $\nearrow^{10}$   $\nearrow^8$   $\nearrow^{26}$   $\nearrow^{24}$   $\nearrow^{15}$  S1R4
Local follow set yield:

State: 7      Follow Set contributors, merges, and transitions
← Follow set Rule → ←          follow set symbols contributors          →
Rparms_epi7      R1.1.2 R1.1.3
Local follow set yield:
  |?|, | | |.
← Follow set Rule → ←          follow set symbols contributors          →
Rparms8        R8.2.1 R7.2.1 S7R7
Local follow set yield:
  | | |.
← Follow set Rule → ←          follow set symbols contributors          →
Rspec_parm9    R8.1.1 R8.1.2  $\nearrow^{23}$  S7R8
Local follow set yield:
  | | |.

```

```

State: 8      Follow Set contributors, merges, and transitions
← Follow set Rule → ←          follow set symbols contributors          →
Rws_k3          R1.1.3
Local follow set yield:

```


|?|, |||.

← Follow set Rule → ← follow set symbols contributors →

Rws_k⁴ R_{3.2.1} R_{4.2.1} S₈R₃

Local follow set yield:

|||.

← Follow set Rule → ← follow set symbols contributors →

Rws⁵ R_{4.1.1} S₈R₄

Local follow set yield:

State: 9 Follow Set contributors, merges, and transitions

← Follow set Rule → ← follow set symbols contributors →

Rfile⁶ R_{1.1.4} R_{1.1.5}

Local follow set yield:

|?|, eog, |||.

State: 10 Follow Set contributors, merges, and transitions

← Follow set Rule → ← follow set symbols contributors →

Rws_k³ R_{1.1.5}

Local follow set yield:

|?|, eog.

← Follow set Rule → ← follow set symbols contributors →

Rws_k⁴ R_{3.2.1} R_{4.2.1} S₁₀R₃

Local follow set yield:

|||.

← Follow set Rule → ← follow set symbols contributors →

Rws⁵ R_{4.1.1} S₁₀R₄

Local follow set yield:

State: 11 Follow Set contributors, merges, and transitions

← Follow set Rule → ← follow set symbols contributors →

Reog² R_{1.1.6} S₁R₁

Local follow set yield:

State: 15 Follow Set contributors, merges, and transitions

← Follow set Rule → ← follow set symbols contributors →

Rws⁵ R_{4.2.2} S₁R₄

Local follow set yield:

State: 23 Follow Set contributors, merges, and transitions

← Follow set Rule → ← follow set symbols contributors →

Rspec_parm⁹ R_{8.2.2} R_{8.2.3} S₇R₈

Local follow set yield:

|||.

State: 24 Follow Set contributors, merges, and transitions

← Follow set Rule → ← follow set symbols contributors →

Rws_k³ R_{8.2.3} S₇R₈

Local follow set yield:

← Follow set Rule → ← follow set symbols contributors →
 $R_{3 \cdot 2 \cdot 1} R_{4 \cdot 2 \cdot 1} S_{24} R_3$

Local follow set yield:

|||.

← Follow set Rule → ← follow set symbols contributors →
 $R_{4 \cdot 1 \cdot 1} S_{24} R_4$

Local follow set yield:

State: 26 Follow Set contributors, merges, and transitions

← Follow set Rule → ← follow set symbols contributors →
 $R_{8 \cdot 1 \cdot 2} S_7 R_8$

Local follow set yield:

← Follow set Rule → ← follow set symbols contributors →
 $R_{3 \cdot 2 \cdot 1} R_{4 \cdot 2 \cdot 1} S_{26} R_3$

Local follow set yield:

|||.

← Follow set Rule → ← follow set symbols contributors →
 $R_{4 \cdot 1 \cdot 1} S_{26} R_4$

Local follow set yield:

51. Common Follow sets.

52. LA set: 1.

|?**|**, eog, |r|.

53. LA set: 2.

|?**|**, |r|.

54. LA set: 3.

|?**|**, eog.

55. LA set: 4.

eolr.

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o2_lcl_opts_idx.w

Date: January 14, 2015 at 15:40

File: o2_lcl_opts_idx.w

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