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. # NULL:.
RNULL 1.2

3. # op:.
Rmust_directive 1.2 Rdirective 1.2

4. - > :.
Rvector 1.2

5. :::.
Rdbl_colon 1.2

6. NS_cweb_or_c_k::TH_cweb_or_c_k:.
Rdirective_cweb_k_epi 2.3 Rcweb_k_epi 1.3

7. NS_dbl_colon::TH_dbl_colon:.
Rdbl_colon 1.3

8. NS_identifier::TH_identifier:.
RNULL 1.3 Rth_name 1.3 Rmust_directive 1.3 Rdirective 1.3

9. NS_lint_balls::TH_lint_balls:.
Rlint_epi 1.3

10. NS_o2_sdc::TH_o2_sdc:.
Rsyntax_code 1.3

11. NS_parallel_oper::TH_parallel_oper:.
Rstart_thread 1.3

12. NS_rhs_bnd::TH_rhs_bnd:.
Rmust_eos 1.3 Rcalled_thd_eos 1.3 Rcalled_proc_eos 1.3

13. NS_rhs_component::TH_rhs_component:.
RTorRcomponent 1.3 Rchained_dispatcher 1.3

14. NS_rtn_component::TH_rtn_component:.
Rrtned_T 1.3

15. NS_subrule_vector::TH_subrule_vector:.
Rvector 1.3

16. NULL thread:.
Rrtned_T 2.3 Rrtned_T 4.3 Rns 1.3 Rns 2.3 Rdbl_colon 2.3 Rth_name 2.3 Rcalled_proc_op 1.3 RTorRcomponent 2.3 RTorRcomponent 3.3 Rchained_dispatcher 2.3 Rchained_dispatcher 3.3 Rmust_eos 3.3 Rmust_directive 2.3 Rdirective 2.3 Rsyntax_code 2.3 Rdirective_cweb_k_epi 3.3 Rdirective_cweb_k_epi 4.3 Rcweb_k_epi 2.3 Rcweb_k_epi 3.3

17. RNULL:.
Rcalled_thread 2.1 Rcalled_proc_name 2.1

18. RTorRcomponent:.
RTorRcomponents 1.1 RTorRcomponents 2.2

19. RTorRcomponents:.
RTorRcomponents_epi 2.1 RTorRcomponents 2.1

20. RTorRcomponents_epi:.
Rrhs_expr 1.1

21. Rbal_called_proc_expr:.
Rrhs_expr 4.3 Rrhs_expr 5.3

22. Rbal_thread_expr:.
Rrhs_expr 2.3 Rrhs_expr 3.3

23. Rcalled_proc_eos:.
Rrhs_expr 4.6 Rrhs_expr 5.8

24. Rcalled_proc_name:.
Rbal_called_proc_expr 1.3

25. Rcalled_proc_op:.
Rrhs_expr 4.1 Rrhs_expr 5.1

26. Rcalled_thd_eos:.
Rrhs_expr 2.6 Rrhs_expr 3.8

27. Rcalled_thread:.
Rbal_thread_expr 1.3

28. Rchained_dispatcher:.
Rrhs_expr 3.6 Rrhs_expr 5.6

29. Rclose_brace:.
Rpotential_directives 2.5

30. Rcommon_comments:.
Rsubrule_def 1.3

31. Rcweb_k_epi:.
Rcommon_comments 1.2

32. Rdbl_colon:.
Rcalled_thread 1.2 Rcalled_proc_name 1.2

33. Rdirective:.
Rmaybe_directive_phrase 1.3 Rmaybe_directive_phrase 2.1 Rdirective_phrase 1.4

34. Rdirective_cweb_k_epi:.
Rmust_directive_phrase 1.1 Rmaybe_directive_phrase 1.1 Rdirective_phrase 1.2

35. Rlint_epi:.
Rcommon_comments 1.1 Rcommon_comments 1.3 Rrhs_expr 1.5 Rrhs_expr 2.2 Rrhs_expr 2.4 Rrhs_expr 2.7 Rrhs_expr 2.9 Rrhs_expr 3.2 Rrhs_expr 3.4 Rrhs_expr 3.7 Rrhs_expr 3.9 Rrhs_expr 3.11 Rrhs_expr 4.2 Rrhs_expr 4.4 Rrhs_expr 4.7 Rrhs_expr 4.9 Rrhs_expr 5.2 Rrhs_expr 5.4 Rrhs_expr 5.7 Rrhs_expr 5.9 Rrhs_expr 5.11 Rbal_thread_expr 1.2 Rbal_called_proc_expr 1.2 RTorRcomponents 1.2 RTorRcomponents 2.3 Rpotential_directives 2.2 Rpotential_directives 2.6 Rmust_directive_phrase 1.2 Rmust_directive_phrase 1.5 Rmaybe_directive_phrase 1.2 Rmaybe_directive_phrase 1.5 Rmaybe_directive_phrase 2.3 Rdirective_phrase 1.1 Rdirective_phrase 1.3 Rdirective_phrase 1.6

36. Rmaybe_directive_phrase:.
Rmaybe_directive_phrases 1.1 Rmaybe_directive_phrases 2.2

37. Rmaybe_directive_phrases:.
Rmaybe_more_directives 2.1 Rmaybe_directive_phrases 2.1

38. Rmaybe_more_directives:.
Rpotential_directives 2.4

39. Rmust_directive:.
Rmust_directive_phrase 1.3

40. Rmust_directive_phrase:.
Rpotential_directives 2.3

41. Rmust_eos:.
Rrhs_expr 1.3

42. Rns:.
Rcalled_thread 1.1 Rcalled_proc_name 1.1

43. Rpotential_codeblk:.
Rrhs_expr 1.4 Rrhs_expr 2.8 Rrhs_expr 3.10 Rrhs_expr 4.8 Rrhs_expr 5.10

44. Rpotential_directives:.
Rpotential_codeblk 1.1

45. Rrhs_expr:.
Rsubrule_def 1.4

46. Rrtned_T:.
Rbal_thread_expr 1.1 Rbal_called_proc_expr 1.1

47. Rstart_thread:.
Rrhs_expr 2.1 Rrhs_expr 3.1

48. Rsyntax_code:.
Rmust_directive_phrase 1.4 Rmaybe_directive_phrase 1.4 Rmaybe_directive_phrase 2.2 Rdirective_phrase 1.5

49. Rth_name:.
Rcalled_thread 1.3 Rcalled_proc_name 1.3

50. Rvector:.
Rsubrule_def 1.1

51. T-in-stbl:.
Rrtned_T 1.2 RTorRcomponent 2.2 Rchained_dispatcher 2.2

52. ϵ :.
RTorRcomponents_epi 1.1 Rpotential_directives 1.1 Rmaybe_more_directives 1.1 Rdirective_cweb_k_epi 1.1 Rcweb_k_epi 4.1

53. comment:.
Rdirective_cweb_k_epi 4.2 Rcweb_k_epi 3.2

54. comment-overrun:.
Rdirective_cweb_k_epi 3.2 Rcweb_k_epi 2.2

55. cweb-comment:.
Rdirective_cweb_k_epi 2.2 Rcweb_k_epi 1.2

56. eosubrule:.
Rmust_eos 1.2 Rcalled_thd_eos 1.2 Rcalled_proc_eos 1.2

57. identifier:.
Rns 1.2 Rth_name 1.2

58. lint:.
Rlint_epi 1.2

59. rule-in-stbl:.
RTorRcomponent 1.2 Rchained_dispatcher 1.2

60. syntax-code:.
Rsyntax_code 1.2

61. `{:.`
Rpotential_directives 2.1

62. `|.|:.`
Rsubrule_def 1.2 Rrhs_expr 1.2 Rrhs_expr 2.5 Rrhs_expr 3.5 Rrhs_expr 4.5 Rrhs_expr 5.5 Rlint_epi 2.1

63. `|?|`**:.**
Rrtned_T 2.2 Rrtned_T 3.1 Rns 2.2 Rns 3.1 Rdbl_colon 2.2 Rdbl_colon 3.1 Rth_name 2.2 Rth_name 3.1 RTorRcomponent 3.2 Rchained_dispatcher 3.2 Rmust_eos 2.1 Rmust_eos 3.2 Rcalled_thd_eos 2.1 Rcalled_proc_eos 2.1 Rmust_directive 2.2 Rmust_directive 3.1 Rclose_brace 1.1 Rdirective 2.2 Rsyntax_code 2.2

64. `|t|`**:.**
Rcalled_proc_op 1.2

65. `|||`**:.**
Rvector 1.1 Rstart_thread 1.1 Rstart_thread 1.2 Rrtned_T 1.1 Rrtned_T 2.1 Rrtned_T 4.1 Rrtned_T 4.2 RNULL 1.1 Rns 1.1 Rns 2.1 Rdbl_colon 1.1 Rdbl_colon 2.1 Rth_name 1.1 Rth_name 2.1 Rcalled_proc_op 1.1 RTorRcomponent 1.1 RTorRcomponent 2.1 RTorRcomponent 3.1 Rchained_dispatcher 1.1 Rchained_dispatcher 2.1 Rchained_dispatcher 3.1 Rmust_eos 1.1 Rmust_eos 3.1 Rcalled_thd_eos 1.1 Rcalled_proc_eos 1.1 Rmust_directive 1.1 Rmust_directive 2.1 Rdirective 1.1 Rdirective 2.1 Rsyntax_code 1.1 Rsyntax_code 2.1 Rlint_epi 1.1 Rdirective_cweb_k_epi 2.1 Rdirective_cweb_k_epi 3.1 Rdirective_cweb_k_epi 4.1 Rcweb_k_epi 1.1 Rcweb_k_epi 2.1 Rcweb_k_epi 3.1

66. `}:.`
Rclose_brace 2.1

67. Grammar Rules's First Sets.

68. *Rsubrule_def* **# in set: 1.**
|||

69. *Rvector* **# in set: 1.**
|||

70. *Rcommon_comments* **# in set: 2.**
|.| |||

71. *Rrhs_expr* **# in set: 2.**
|.| |||

72. *Rstart_thread* **# in set: 1.**
|||

73. *Rbal_thread_expr* **# in set: 2.**
|?| |||

74. *Rrtned_T* **# in set: 2.**
|?| |||

75. *Rcalled_thread* **# in set: 2.**
|?| |||

76. RNULL **# in set: 1.**
|||

77. *Rns* **# in set: 2.**
|?| |||

78. *Rdbl_colon* **# in set: 2.**
|?| |||

79. *Rth_name* **# in set: 2.**
|?| |||

80. *Rcalled_proc_op* **# in set: 1.**
|||

81. *Rbal_called_proc_expr* **# in set: 2.**
|?| |||

82. *Rcalled_proc_name* **# in set: 2.**
|?| |||

83. *RTorRcomponents_epi*$^{\epsilon}$ **# in set: 1.**
|||

84. *RTorRcomponents* **# in set: 1.**
|||

85. *RTorRcomponent* **# in set: 1.**
|||

86. *Rchained_dispatcher* **# in set: 1.**
|||

87. *Rmust_eos* **# in set: 2.**
|?| |||

88. *Rcalled_thd_eos* **# in set: 2.**
|?| |||

89. *Rcalled_proc_eos* **# in set: 2.**
|?| |||

90. *Rpotential_codeblk*$^{\epsilon}$ **# in set: 1.**
{

91. *Rpotential_directives*$^{\epsilon}$ **# in set: 1.**
{

92. *Rmust_directive_phrase* **# in set: 2.**
|.| |||

93. *Rmust_directive* **# in set: 2.**
|?| |||

94. *Rclose_brace* **# in set: 2.**
|?| }

95. *Rmaybe_more_directives*$^{\epsilon}$ **# in set: 2.**
|.| |||

96. *Rmaybe_directive_phrases* **# in set: 2.**
|.| |||

97. *Rmaybe_directive_phrase* **# in set: 2.**
|.| |||

98. *Rdirective_phrase* **# in set: 2.**
|.| |||

99. *Rdirective* **# in set: 1.**
|||

100. *Rsyntax_code* **# in set: 1.**
|||

101. *Rlint_epi* **# in set: 2.**
|.| |||

102. *Rdirective_cweb_k_epi*$^{\epsilon}$ **# in set: 1.**
|||

103. *Rcweb_k_epi$^{\epsilon}$* **# in set: 1.**
|||

104. 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 closured 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 ↗used as a superscript along with the merged into state number.

105. Rsubrule_def.

```
1 Rvector |.| Rcommon_comments Rrhs_expr
  ▷ 1 4 5 6 13
```

106. Rvector.

```
1 ||| - > NS_subrule_vector::TH_subrule_vector
  ▷ 1 2 3
```

107. Rcommon_comments.

```
1 Rlint_epi Rcweb_k_epi Rlint_epi
  ▷ 5 57 58 59
```

108. Rrhs_expr.

```
1 RTorRcomponents_epi |.| Rmust_eos Rpotential_codeblk Rlint_epi
  ▷ 6 47 48 49 50 51
2 Rstart_thread Rlint_epi Rbal_thread_expr Rlint_epi |.| Rcalled_thd_eos Rlint_epi
  Rpotential_codeblk Rlint_epi
  ▷ 6 14 15 16 17 18 28 29 30 31
3 Rstart_thread Rlint_epi Rbal_thread_expr Rlint_epi |.| Rchained_dispatcher
  Rlint_epi Rcalled_thd_eos Rlint_epi Rpotential_codeblk Rlint_epi
  ▷ 6 14 15 16 17 18 19 20 21 22 23 27
4 Rcalled_proc_op Rlint_epi Rbal_called_proc_expr Rlint_epi |.| Rcalled_proc_eos
  Rlint_epi Rpotential_codeblk Rlint_epi
  ▷ 6 32 33 34 35 36 43 44 45 46
5 Rcalled_proc_op Rlint_epi Rbal_called_proc_expr Rlint_epi |.| Rchained_dispatcher
  Rlint_epi Rcalled_proc_eos Rlint_epi Rpotential_codeblk Rlint_epi
  ▷ 6 32 33 34 35 36 37 38 39 40 41 42
```

109. Rstart_thread.

```
1 ||| ||| NS_parallel_oper::TH_parallel_oper
  ▷ 6 7 9
```

110. Rbal_thread_expr.

```
1 Rrtned_T  Rlint_epi  Rcalled_thread
  ▷ 15  65  66  72
```

111. Rrtned_T.

```
1 |||  T-in-stbl  NS_rtn_component::TH_rtn_component
  ▷ 15  61  64
  ▷ 33↗61
2 |||  |?|  NULL
  ▷ 15  61  62
  ▷ 33↗61
3 |?|
  ▷ 15  60
  ▷ 33↗60
4 |||  |||  NULL
  ▷ 15  61  63
  ▷ 33↗61
```

112. Rcalled_thread.

```
1 Rns  Rdbl_colon  Rth_name
  ▷ 66  74  75  80
2 RNULL
  ▷ 66  73
```

113. RNULL.

```
1 |||   # NULL  NS_identifier::TH_identifier
  ▷ 66  68  71
  ▷ 96↗68
```

114. Rns.

```
1 |||  identifier  NULL
  ▷ 66  68  70
  ▷ 96↗68
2 |||  |?|  NULL
  ▷ 66  68  69
  ▷ 96↗68
3 |?|
  ▷ 66  67
  ▷ 96↗67
```

115. Rdbl_colon.

```
1 |||  ::  NS_dbl_colon::TH_dbl_colon
  ▷ 74  116  118
  ▷ 98↗116
2 |||  |?|  NULL
  ▷ 74  116  117
  ▷ 98↗116
3 |?|
  ▷ 74  115
  ▷ 98↗115
```

116. Rth_name.

```
1 |||  identifier  NS_identifier::TH_identifier
  ▷ 75  77  79
  ▷ 99↗77
2 |||  |?|  NULL
  ▷ 75  77  78
  ▷ 99↗77
3 |?|
  ▷ 75  76
  ▷ 99↗76
```

117. Rcalled_proc_op.

```
1 |||  |t|  NULL
  ▷ 6  7  10
```

118. Rbal_called_proc_expr.

```
1 Rrtned_T  Rlint_epi  Rcalled_proc_name
  ▷ 33  95  96  101
```

119. Rcalled_proc_name.

```
1 Rns  Rdbl_colon  Rth_name
  ▷ 96  98  99  100
2 RNULL
  ▷ 96  97
```

120. RTorRcomponents_epi.

```
1 ϵ
  ▷ 6
2 RTorRcomponents
  ▷ 6  52
```

121. RTorRcomponents.

```
1 RTorRcomponent  Rlint_epi
  ▷ 6  55  56
2 RTorRcomponents  RTorRcomponent  Rlint_epi
  ▷ 6  52  53  54
```

122. RTorRcomponent.

```
1 |||  rule-in-stbl  NS_rhs_component::TH_rhs_component
  ▷ 6  7  12
  ▷ 52  110↗12
2 |||  T-in-stbl  NULL
  ▷ 6  7  11
  ▷ 52  110↗11
3 |||  |?|  NULL
  ▷ 6  7  8
  ▷ 52  110↗8
```

123. Rchained_dispatcher.

```
1 |||  rule-in-stbl  NS_rhs_component::TH_rhs_component
  ▷ 18  82  85
  ▷ 36  103↗85
2 |||  T-in-stbl  NULL
  ▷ 18  82  84
  ▷ 36  103↗84
3 |||  |?|  NULL
  ▷ 18  82  83
  ▷ 36  103↗83
```

124. Rmust_eos.

```
1 |||  eosubrule  NS_rhs_bnd::TH_rhs_bnd
  ▷ 48  107  109
2 |?|
  ▷ 48  106
3 |||  |?|  NULL
  ▷ 48  107  108
```

125. Rcalled_thd_eos.

```
1 |||  eosubrule  NS_rhs_bnd::TH_rhs_bnd
  ▷ 18  82  86
  ▷ 20  87↗86
2 |?|
  ▷ 18  81
  ▷ 20↗81
```

126. Rcalled_proc_eos.

```
1 |||  eosubrule  NS_rhs_bnd::TH_rhs_bnd
  ▷ 36  103  104
  ▷ 38  105↗104
2 |?|
  ▷ 36  102
  ▷ 38↗102
```

127. Rpotential_codeblk.

```
1 Rpotential_directives
  ▷ 22  94
  ▷ 29↗94
  ▷ 40↗94
  ▷ 44↗94
  ▷ 49↗94
```

128. Rpotential_directives.

```
1 ϵ
  ▷ 22
  ▷ 29
  ▷ 40
  ▷ 44
  ▷ 49
2 {  Rlint_epi  Rmust_directive_phrase  Rmaybe_more_directives  Rclose_brace  Rlint_epi
  ▷ 22  88  89  90  91  92  93
  ▷ 29↗88
  ▷ 40↗88
  ▷ 44↗88
  ▷ 49↗88
```

129. Rmust_directive_phrase.

```
1 Rdirective_cweb_k_epi  Rlint_epi  Rmust_directive  Rsyntax_code  Rlint_epi
  ▷ 89  123  124  125  126  127
```

130. Rmust_directive.

```
1 |||   # op  NS_identifier::TH_identifier
  ▷ 124  145  147
2 |||  |?|  NULL
  ▷ 124  145  146
3 |?|
  ▷ 124  144
```

131. Rclose_brace.

```
1 |?|
  ▷ 91  142
2 }
  ▷ 91  143
```

132. Rmaybe_more_directives.

```
1 ϵ
  ▷ 90
2 Rmaybe_directive_phrases
  ▷ 90  131
```

133. Rmaybe_directive_phrases.

```
1 Rmaybe_directive_phrase
  ▷ 90  141
2 Rmaybe_directive_phrases  Rmaybe_directive_phrase
  ▷ 90  131  132
```

134. Rmaybe_directive_phrase.

```
1 Rdirective_cweb_k_epi  Rlint_epi  Rdirective  Rsyntax_code  Rlint_epi
  ▷ 90  136  137  138  139  140
  ▷ 131↗136
2 Rdirective  Rsyntax_code  Rlint_epi
  ▷ 90  133  134  135
  ▷ 131↗133
```

135. Rdirective.

```
1 |||   # op  NS_identifier::TH_identifier
  ▷ 90  128  130
  ▷ 131↗128
  ▷ 137  151↗130
2 |||  |?|  NULL
  ▷ 90  128  129
  ▷ 131↗128
  ▷ 137  151↗129
```

136. Rsyntax_code.

```
1 |||  syntax-code  NS_o2_sdc::TH_o2_sdc
  ▷ 125  148  150
  ▷ 133↗148
  ▷ 138↗148
2 |||  |?|  NULL
  ▷ 125  148  149
  ▷ 133↗148
  ▷ 138↗148
```

137. Rlint_epi.

```
1 |||  lint  NS_lint_balls::TH_lint_balls
  ▷ 5  24  25
  ▷ 14↗24
  ▷ 16↗24
  ▷ 19↗24
  ▷ 21↗24
  ▷ 23↗24
  ▷ 28↗24
  ▷ 30↗24
  ▷ 32↗24
  ▷ 34↗24
  ▷ 37↗24
  ▷ 39↗24
  ▷ 41↗24
  ▷ 43↗24
  ▷ 45↗24
  ▷ 50↗24
  ▷ 53↗24
  ▷ 55↗24
  ▷ 58↗24
  ▷ 65↗24
  ▷ 88↗24
  ▷ 92↗24
  ▷ 95↗24
  ▷ 123↗24
  ▷ 126↗24
  ▷ 134↗24
  ▷ 136↗24
  ▷ 139↗24
2 |.|
  ▷ 5  26
  ▷ 14↗26
  ▷ 16↗26
  ▷ 19↗26
  ▷ 21↗26
  ▷ 23↗26
  ▷ 28↗26
  ▷ 30↗26
  ▷ 32↗26
  ▷ 34↗26
  ▷ 37↗26
  ▷ 39↗26
  ▷ 41↗26
  ▷ 43↗26
  ▷ 45↗26
  ▷ 50↗26
  ▷ 53↗26
  ▷ 55↗26
  ▷ 58↗26
  ▷ 65↗26
```

▷ 88↗26
▷ 92↗26
▷ 95↗26
▷ 123↗26
▷ 126↗26
▷ 134↗26
▷ 136↗26
▷ 139↗26

138. Rdirective_cweb_k_epi.

```
1 ϵ
  ▷ 89
  ▷ 90
  ▷ 131
2 |||  cweb-comment  NS_cweb_or_c_k::TH_cweb_or_c_k
  ▷ 89  119  121
  ▷ 90  128↗121
  ▷ 131  128↗121
3 |||  comment-overrun  NULL
  ▷ 89  119  122
  ▷ 90  128↗122
  ▷ 131  128↗122
4 |||  comment  NULL
  ▷ 89  119  120
  ▷ 90  128↗120
  ▷ 131  128↗120
```

139. Rcweb_k_epi.

```
1 |||  cweb-comment  NS_cweb_or_c_k::TH_cweb_or_c_k
  ▷ 57  111  113
2 |||  comment-overrun  NULL
  ▷ 57  111  114
3 |||  comment  NULL
  ▷ 57  111  112
4 ϵ
  ▷ 57
```

140. 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) r^2 --- 2 or more reducing productions
       3) s/r --- shift and 1 reducing production
       4) s/r^2 --- shift and multiple reducing productions
```

$\subset$ 3^{r} $6^{s/r}$ 8^{r} 9^{r} 10^{r} 11^{r} 12^{r} 13^{r} $22^{s/r}$ 25^{r} 26^{r} 27^{r} $29^{s/r}$ 31^{r}
$40^{s/r}$ 42^{r} $44^{s/r}$ 46^{r} $49^{s/r}$ 51^{r} $52^{s/r}$ 54^{r} 56^{r} $57^{s/r}$ 59^{r} 60^{r} 62^{r} 63^{r}
64^{r} 67^{r} 69^{r} 70^{r} 71^{r} 72^{r} 73^{r} 76^{r} 78^{r} 79^{r} 80^{r} 81^{r} 83^{r} 84^{r} 85^{r}
86^{r} $89^{s/r}$ $90^{s/r^2}$ 93^{r} 94^{r} 97^{r} 100^{r} 101^{r} 102^{r} 104^{r} 106^{r} 108^{r} 109^{r}
112^{r} 113^{r} 114^{r} 115^{r} 117^{r} 118^{r} 120^{r} 121^{r} 122^{r} 127^{r} 129^{r} 130^{r}
$131^{s/r^2}$ 132^{r} 135^{r} 140^{r} 141^{r} 142^{r} 143^{r} 144^{r} 146^{r} 147^{r} 149^{r} 150^{r}

141. 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 $<$ rule name, rule rank number $>$ tupple allows you the reader to decifer 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 →
Rsubrule_def[1]
Local follow set yield:
eog, x00, x01, x02, x03, x04, x05, x06, x07, x08, x09, x0a, x0b, x0c, x0d, x0e, x0f, x10, x11, x12, x13, x14, x15, x16, x17, x18, x19, x1a, x1b, x1c, x1d, x1e, x1f, , !, ", # , $, %, &, ', (,), *, +, ,, -, ., /, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, :, ;, < , =, > , ?, @, A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, [, \ ,], ^, _, ‘, a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z, {, |, }, , x7f, x80, x81, x82, x83, x84, x85, x86, x87, x88, x89, x8a, x8b, x8c, x8d, x8e, x8f, x90, x91, x92, x93, x94, x95, x96, x97, x98, x99, x9a, x9b, x9c, x9d, x9e, x9f, xa0, xa1, xa2, xa3, xa4, xa5, xa6, xa7, xa8, xa9, xaa, xab, xac, xad, xae, xaf, xb0, xb1, xb2, xb3, xb4, xb5, xb6, xb7, xb8, xb9, xba, xbb, xbc, xbd, xbe, xbf, xc0, xc1, xc2, xc3, xc4, xc5, xc6, xc7, xc8, xc9, xca, xcb, xcc, xcd, xce, xcf, xd0, xd1, xd2, xd3, xd4, xd5, xd6, xd7, xd8, xd9, xda, xdb, xdc, xdd, xde, xdf, xe0, xe1, xe2, xe3, xe4, xe5, xe6, xe7, xe8, xe9, xea, xeb, xec, xed, xee, xef, xf0, xf1, xf2, xf3, xf4, xf5, xf6, xf7, xf8, xf9, xfa, xfb, xfc, xfd, xfe, xff, option-t, option-p, option-err, esc-seq, eol, basic-char, raw-char, comment, ws, angled-string, c-literal, c-string, xc-str, unquoted-string, file-inclusion, identifier, int-no, # raw-characters, # lr1-constant-symbols, # error-symbols, # ***, # AD, # AB, # parallel-laboundary, # arbitrator-code, # parallel-parser, # parallel-thread-function, # parallel-control-monitor, # fsm, # fsm-id, # fsm-filename, # fsm-namespace, # fsm-class, # fsm-version, # fsm-date, # fsm-debug, # fsm-comments, # terminals, # T-enumeration, # file-name, # name-space, # sym-class, # rules, # lhs, # user-declaration, # user-prefix-declaration, # user-suffix-declaration, # constructor, # destructor, # op, # failed, # user-implementation, # user-imp-tbl, # user-imp-sym, # constant-defs, # terminals-refs, # terminals-sufx, # lrk-sufx, - > , # NULL, ::, block, syntax-code, fsm-class-phrase, fsm-phrase, parallel-parser-phrase, T-enum-phrase, terminal-def, table-entry, sym-tbl-report-card, terminals-phrase, error-symbols-phrase, lr1-k-phrase, rc-phrase, rule-lhs-phrase, parallel-monitor-phrase, rule-def, rules-phrase, subrule-def, subrules-phrase, T-in-stbl, refered-T, rule-in-stbl, refered-rule, transitive, grammar-name, thread-name, monolithic, no-of-T, list-of-native-first-set-terminals, end-list-of-native-first-set-terminals, list-of-transitive-threads, end-list-of-transitive-threads, emitfile, preamble, end-preamble, T-alphabet, end-T-alphabet, file-of-T-alphabet, T-attributes, tth-in-stbl,

thread-attributes, th-in-stbl, kw-in-stbl, la-express-source, eosubrule, called thread eosubrule, null call thread eosubrule, cweb-comment, grammar-phrase, cweb-marker, lint, list-of-used-threads, end-list-of-used-threads, nested files exceeded, no end-of-code, no cmd-lne-data, no filename, bad filename, bad filename to output grammar header, bad filename to output cpp, bad filename to output sym, bad filename to output tbl, bad filename to output enumeration header, bad filename for Errors vocabulary header, bad filename for Errors vocabulary implementation, bad cmd-opt, bad int-no, bad int-no range, no int present, bad eos, bad esc, comment-overrun, bad char, bad univ-seq, improper closing of rules construct, no identifier present, no directive present, duplicate directive, no syntax-code present, no open-parenthesis, no close-parenthesis, no fsm-id-present, no fsm-id-string present, no fsm-filename present, no fsm-filename id present, no comma present, no key-value present in definition, no fsm-namespace present, no fsm-namespace id present, no fsm-class present, no fsm-version present, no fsm-version string present, no fsm-date present, no fsm-date string present, no fsm-debug present, no fsm-debug string present, no fsm-comments present, no fsm-comments string present, invalid fsm-debug value, no parallel-thread-function, no parallel-control-monitor, no parallel thread function, no parallel-la-boundary, no parallel-la-boundary-expr, no ***, no parallel-code, no parallel-code-syntax-code, not an arbitration-code keyword, no open-brace, no close-brace, no constant-defs-directive present, no file-name present, no file-name-id present, no name-space present, no name-space-id present, no constant-defs-code present, no constant-defs keyword present, no terminal-def-code present, no symbol definition present, duplicate-entry in alphabet, already defined AB tag, already defined AD tag, improper directive, no sym-class present, no sym-class id present, zero len symbol, stbl full, stbl char-pool full, dup-entry in sym-table, subscript out-of-range, stbl scope-stk overflow, stbl scope-stk underflow, stbl context-buf-overflow, report-card-ptr-0, bad pos of t def, dup ? sufx directive, bad pos of terminals-refs, terminals-refs duplicate, no rule name present, no sub rule present, undefined terminal in subrule, unknown symbol type in stbl, subrule overrun, stbl has entry but not a rule, no file-of-T-alphabet, emitfile kw not present, preamble kw not present, no preamble source code, no end-preamble present, command line chaffe, T-alphabet kw not present, T-alphabet file not present, no end-T-alphabet present, no T in T-alphabet list, rotten chr in T-alphabet, no transitive present, no grammar-name present, no name-space, no file-name kw present, no thread-name present, no monolithic present, no no-of-T present, no list-of-native-terminals, no list-of-transit..., no Ts in T-alphabet, linker's transitive value not n or y, linker's monolithic value not n or y, no grammar-name value, no name-space value, no thread-name value, no file-name value, no-of-T value not present, no # in list-of-native-term..., no end-list-of-native..., no end-list-of-trans..., # T in list not eq, # threads in list not eq, thread xrefed, but not defed, T in list not defined in T-alphabet, transitive list thread not defined by fsc files, thread defined by another fsc file, thread in stbl but subscript badly set, token found in stbl but not a kw, no # in list-of-trans..., re-compile grammar: bad T-alphabet, fsc file does not exist, file-name file does not exist, T-alphabet file does not exist, emitfile file does not exist, emitfile file not present, fsc file not present, file of T-alphabet not present, O2 epsilon badly gened: 0 items in fsc lists, O2 epsilon: T present, but no T list, rule not found in stbl, T not found in stbl, bad directive, bad term in la expr, removal of term against empty set in la expr, bad operator la expr: not a + or -, not a lhs kw, no parallel-la-bndary expr, duplicate fsm phrase, duplicate parallel-parse phrase, duplicate T_enum phrase, duplicate error phrase, duplicate raw character phrase, duplicate lrk phrase, duplicate terminal phrase, duplicate rule phrase, T not returned from a thread, not a namespace id in thread expr, not a thread name id in expr, bad thread expr, not :: in thread expr, bad term in subrule expr, ? ended subrule expr, not an eosr in subrule expr, invalid logical name, invalid logical value, duplicate logical name, missing terminals-refs kw, missing terminals-sufx kw, not a terminal definition, missing lrk-sufx kw, rule does not gen T strings - sick grammar, misplaced

or missing fsm phrase, misplaced or missing T enumeration phrase, misplaced or missing lrk phrase, misplaced or missing rc phrase, misplaced or missing errors phrase, misplaced or missing terminals phrase, misplaced or missing rules phrase, rule used but undefined, rule already defined, la expression calculates an empty set, no closing brace ending rules defs, use of T outside Rules's construct, not a kw to start the top/down parse construct, use of Non-terminal (rule) outside Rules's construct, misplaced or misspelt Rule or T outside of Rules defs, not a Rule in chained dispatcher expr, Empty file no grammar constructs present, term not a lhs or parallel-control-monitor kw.

← Follow set Rule → ← follow set symbols contributors →
Rvector[2] $R_{1\cdot1\cdot1}$
Local follow set yield:
|.|.

State: 5 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rcommon_comments[3] $R_{1\cdot1\cdot3}$
Local follow set yield:
|||, |.|.
← Follow set Rule → ← follow set symbols contributors →
Rlint_epi[34] $R_{3\cdot1\cdot1}$ $R_{3\cdot1\cdot2}$
Local follow set yield:
|||, |.|.

State: 6 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rrhs_expr[4] $R_{1\cdot1\cdot4}$ S_1R_1
Local follow set yield:

← Follow set Rule → ← follow set symbols contributors →
Rstart_thread[5] $R_{4\cdot3\cdot1}$ $R_{4\cdot2\cdot1}$
Local follow set yield:
|||, |.|.
← Follow set Rule → ← follow set symbols contributors →
Rcalled_proc_op[13] $R_{4\cdot4\cdot1}$ $R_{4\cdot5\cdot1}$
Local follow set yield:
|||, |.|.
← Follow set Rule → ← follow set symbols contributors →
RTorRcomponents_epi[16] $R_{4\cdot1\cdot1}$
Local follow set yield:
|.|.
← Follow set Rule → ← follow set symbols contributors →
RTorRcomponents[17] $R_{17\cdot2\cdot1}$ $R_{16\cdot2\cdot1}$ S_6R_{16}
Local follow set yield:
|||.
← Follow set Rule → ← follow set symbols contributors →
RTorRcomponent[18] $R_{17\cdot1\cdot1}$ $\nearrow^{52}$
Local follow set yield:
|||, |.|.

State: 14 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rlint_epi[34] $R_{4\cdot3\cdot2}$ $R_{4\cdot2\cdot2}$

```
Local follow set yield:
  |?|, |||.

State: 15  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors              →
Rbal_thread_expr[6]       R4·3·3 R4·2·3
Local follow set yield:
  |||, |.|.
← Follow set Rule  → ←              follow set symbols contributors              →
Rrtned_T[7]               R6·1·1 ↗33
Local follow set yield:
  |||, |.|.

State: 16  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors              →
Rlint_epi[34]             R4·3·4 R4·2·4
Local follow set yield:
  |.|.

State: 18  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors              →
Rchained_dispatcher[19]   R4·3·6 ↗36
Local follow set yield:
  |||, |.|.
← Follow set Rule  → ←              follow set symbols contributors              →
Rcalled_thd_eos[21]       R4·2·6 ↗20
Local follow set yield:
  |||, |.|.

State: 19  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors              →
Rlint_epi[34]             R4·3·7
Local follow set yield:
  |?|, |||.

State: 20  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors              →
Rcalled_thd_eos[21]       R4·3·8
Local follow set yield:
  |||, |.|.

State: 21  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors              →
Rlint_epi[34]             R4·3·9 R4·3·10
Local follow set yield:
  |||, |.|, {.

State: 22  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors              →
Rpotential_codeblk[23]    R4·3·10 ↗49 ↗44 ↗40 ↗29
Local follow set yield:
  |||, |.|.
```

```
← Follow set Rule  → ←            follow set symbols contributors          →
Rpotential_directives[24] R_{23·1·1} ↗49 ↗44 ↗40 ↗29 S_{22}R_{23}
Local follow set yield:


State: 23  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←            follow set symbols contributors          →
Rlint_epi[34]            R_{4·3·11} ↗136 ↗123 ↗95 ↗139 ↗134 ↗126 ↗88 ↗65 ↗43 ↗39
                         ↗37 ↗34 ↗32 ↗28 ↗92 ↗21 ↗19 ↗16 ↗14 ↗58
                         ↗5 ↗55 ↗53 ↗50 ↗45 ↗41 ↗30 S_6R_4
Local follow set yield:


State: 28  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←            follow set symbols contributors          →
Rlint_epi[34]            R_{4·2·7} R_{4·2·8}
Local follow set yield:
  |||, |.|, {.

State: 29  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←            follow set symbols contributors          →
Rpotential_codeblk[23]   R_{4·2·8}
Local follow set yield:
  |||, |.|.
← Follow set Rule  → ←            follow set symbols contributors          →
Rpotential_directives[24] R_{23·1·1} S_{29}R_{23}
Local follow set yield:


State: 30  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←            follow set symbols contributors          →
Rlint_epi[34]            R_{4·2·9} S_6R_4
Local follow set yield:


State: 32  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←            follow set symbols contributors          →
Rlint_epi[34]            R_{4·4·2} R_{4·5·2}
Local follow set yield:
  |?|, |||.

State: 33  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←            follow set symbols contributors          →
Rrtned_T[7]              R_{14·1·1}
Local follow set yield:
  |||, |.|.
← Follow set Rule  → ←            follow set symbols contributors          →
Rbal_called_proc_expr[14] R_{4·4·3} R_{4·5·3}
Local follow set yield:
  |||, |.|.

State: 34  Follow Set contributors, merges, and transitions
```

```
← Follow set Rule  → ←            follow set symbols contributors          →
Rlint_epi[34]            R4·4·4 R4·5·4
Local follow set yield:
  |.|.

State: 36  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←            follow set symbols contributors          →
Rchained_dispatcher[19]  R4·5·6
Local follow set yield:
  |||, |.|.
← Follow set Rule  → ←            follow set symbols contributors          →
Rcalled_proc_eos[22]     R4·4·6 ↗[38]
Local follow set yield:
  |||, |.|.

State: 37  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←            follow set symbols contributors          →
Rlint_epi[34]            R4·5·7
Local follow set yield:
  |?|, |||.

State: 38  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←            follow set symbols contributors          →
Rcalled_proc_eos[22]     R4·5·8
Local follow set yield:
  |||, |.|.

State: 39  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←            follow set symbols contributors          →
Rlint_epi[34]            R4·5·9 R4·5·10
Local follow set yield:
  |||, |.|, {.

State: 40  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←            follow set symbols contributors          →
Rpotential_codeblk[23]   R4·5·10
Local follow set yield:
  |||, |.|.
← Follow set Rule  → ←            follow set symbols contributors          →
Rpotential_directives[24] R23·1·1 S40R23
Local follow set yield:


State: 41  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←            follow set symbols contributors          →
Rlint_epi[34]            R4·5·11 S6R4
Local follow set yield:


State: 43  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←            follow set symbols contributors          →
Rlint_epi[34]            R4·4·7 R4·4·8
```

```
Local follow set yield:
  |||, |.|, {.

State: 44  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors              →
Rpotential_codeblk[23]    R4·4·8
Local follow set yield:
  |||, |.|.
← Follow set Rule  → ←              follow set symbols contributors              →
Rpotential_directives[24] R23·1·1 S44R23
Local follow set yield:


State: 45  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors              →
Rlint_epi[34]             R4·4·9 S6R4
Local follow set yield:


State: 48  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors              →
Rmust_eos[20]             R4·1·3 R4·1·4
Local follow set yield:
  |||, |.|, {.

State: 49  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors              →
Rpotential_codeblk[23]    R4·1·4
Local follow set yield:
  |||, |.|.
← Follow set Rule  → ←              follow set symbols contributors              →
Rpotential_directives[24] R23·1·1 S49R23
Local follow set yield:


State: 50  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors              →
Rlint_epi[34]             R4·1·5 S6R4
Local follow set yield:


State: 52  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors              →
RTorRcomponent[18]        R17·2·2
Local follow set yield:
  |||, |.|.

State: 53  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors              →
Rlint_epi[34]             R17·2·3 S6R17
Local follow set yield:
```

State: 55 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rlint_epi[34] $\mathtt{R}_{17\cdot1\cdot2}$ $\mathtt{S}_6 R_{17}$
Local follow set yield:

State: 57 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rcweb_k_epi[36] $\mathtt{R}_{3\cdot1\cdot2}$
Local follow set yield:
|||, |.|.

State: 58 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rlint_epi[34] $\mathtt{R}_{3\cdot1\cdot3}$ $\mathtt{S}_5 R_3$
Local follow set yield:

State: 65 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rlint_epi[34] $\mathtt{R}_{6\cdot1\cdot2}$
Local follow set yield:
|?|, |||.

State: 66 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rcalled_thread[8] $\mathtt{R}_{6\cdot1\cdot3}$ $\mathtt{S}_{15} R_6$
Local follow set yield:

← Follow set Rule → ← follow set symbols contributors →
RNULL[9] $\mathtt{R}_{8\cdot2\cdot1}$ $\nearrow^{96}$ $\mathtt{S}_{66} R_8$
Local follow set yield:

← Follow set Rule → ← follow set symbols contributors →
Rns[10] $\mathtt{R}_{8\cdot1\cdot1}$ $\nearrow^{96}$
Local follow set yield:
|?|, |||.

State: 74 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rdbl_colon[11] $\mathtt{R}_{8\cdot1\cdot2}$ $\nearrow^{98}$
Local follow set yield:
|?|, |||.

State: 75 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rth_name[12] $\mathtt{R}_{8\cdot1\cdot3}$ $\nearrow^{99}$ $\mathtt{S}_{66} R_8$
Local follow set yield:

State: 88 Follow Set contributors, merges, and transitions

← Follow set Rule → ← follow set symbols contributors →
Rlint_epi[34] $R_{24\cdot2\cdot2}$
Local follow set yield:
|||, |.|.

State: 89 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rmust_directive_phrase[25] $R_{24\cdot2\cdot3}$ $R_{24\cdot2\cdot4}$
Local follow set yield:
|?|, |||, |.|, }.
← Follow set Rule → ← follow set symbols contributors →
Rdirective_cweb_k_epi[35] $R_{25\cdot1\cdot1}$ ↗90
Local follow set yield:
|||, |.|.

State: 90 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rmaybe_more_directives[28] $R_{24\cdot2\cdot4}$
Local follow set yield:
|?|, }.
← Follow set Rule → ← follow set symbols contributors →
Rmaybe_directive_phrases[29] $R_{28\cdot2\cdot1}$ $R_{29\cdot2\cdot1}$ $S_{90}R_{28}$
Local follow set yield:
|||, |.|.
← Follow set Rule → ← follow set symbols contributors →
Rmaybe_directive_phrase[30] $R_{29\cdot1\cdot1}$ $S_{90}R_{29}$
Local follow set yield:

← Follow set Rule → ← follow set symbols contributors →
Rdirective[32] $R_{30\cdot2\cdot1}$ ↗137 ↗131
Local follow set yield:
|||.
← Follow set Rule → ← follow set symbols contributors →
Rdirective_cweb_k_epi[35] $R_{30\cdot1\cdot1}$ ↗131
Local follow set yield:
|||, |.|.

State: 91 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rclose_brace[27] $R_{24\cdot2\cdot5}$
Local follow set yield:
|||, |.|.

State: 92 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rlint_epi[34] $R_{24\cdot2\cdot6}$ $S_{22}R_{24}$
Local follow set yield:

State: 95 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rlint_epi[34] $R_{14\cdot1\cdot2}$

```
Local follow set yield:
  |?|, |||.

State: 96  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors            →
RNULL[9]                  R15·2·1 S96R15
Local follow set yield:

← Follow set Rule  → ←              follow set symbols contributors            →
Rns[10]                   R15·1·1
Local follow set yield:
  |?|, |||.
← Follow set Rule  → ←              follow set symbols contributors            →
Rcalled_proc_name[15]     R14·1·3 S33R14
Local follow set yield:


State: 98  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors            →
Rdbl_colon[11]            R15·1·2
Local follow set yield:
  |?|, |||.

State: 99  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors            →
Rth_name[12]              R15·1·3 S96R15
Local follow set yield:


State: 123  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors            →
Rlint_epi[34]             R25·1·2
Local follow set yield:
  |?|, |||.

State: 124  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors            →
Rmust_directive[26]       R25·1·3
Local follow set yield:
  |||.

State: 125  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors            →
Rsyntax_code[33]          R25·1·4 ↗138 ↗133
Local follow set yield:
  |||, |.|.

State: 126  Follow Set contributors, merges, and transitions
← Follow set Rule  → ←              follow set symbols contributors            →
Rlint_epi[34]             R25·1·5 S89R25
Local follow set yield:
```

State: 131 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rmaybe_directive_phrase[30] $\mathrm{R}_{29\cdot2\cdot2}$ $\nearrow^{90}$ $\mathrm{S}_{90}R_{29}$
Local follow set yield:

← Follow set Rule → ← follow set symbols contributors →
Rdirective[32] $\mathrm{R}_{30\cdot2\cdot1}$
Local follow set yield:
|||.
← Follow set Rule → ← follow set symbols contributors →
Rdirective_cweb_k_epi[35] $\mathrm{R}_{30\cdot1\cdot1}$
Local follow set yield:
|||, |.|.

State: 133 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rsyntax_code[33] $\mathrm{R}_{30\cdot2\cdot2}$
Local follow set yield:
|||, |.|.

State: 134 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rlint_epi[34] $\mathrm{R}_{30\cdot2\cdot3}$ $\mathrm{S}_{131}R_{30}$
Local follow set yield:

State: 136 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rlint_epi[34] $\mathrm{R}_{30\cdot1\cdot2}$
Local follow set yield:
|||.

State: 137 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rdirective[32] $\mathrm{R}_{30\cdot1\cdot3}$
Local follow set yield:
|||.

State: 138 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rsyntax_code[33] $\mathrm{R}_{30\cdot1\cdot4}$
Local follow set yield:
|||, |.|.

State: 139 Follow Set contributors, merges, and transitions
← Follow set Rule → ← follow set symbols contributors →
Rlint_epi[34] $\mathrm{R}_{30\cdot1\cdot5}$ $\mathrm{S}_{131}R_{30}$
Local follow set yield:

142. Common Follow sets.

143. LA set: 1.

```
|.|.
```

144. LA set: 2.

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|r|, |.|.
```

145. LA set: 3.

eog, x00, x01, x02, x03, x04, x05, x06, x07, x08, x09, x0a, x0b, x0c, x0d, x0e, x0f, x10, x11, x12, x13, x14, x15, x16, x17, x18, x19, x1a, x1b, x1c, x1d, x1e, x1f, , !, ", # , $, %, &, ', (,), *, +, ,, -, ., /, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, :, ;, < , =, > , ?, @, A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, [, \ ,], ^, _, `, a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z, {, |, }, ~, x7f, x80, x81, x82, x83, x84, x85, x86, x87, x88, x89, x8a, x8b, x8c, x8d, x8e, x8f, x90, x91, x92, x93, x94, x95, x96, x97, x98, x99, x9a, x9b, x9c, x9d, x9e, x9f, xa0, xa1, xa2, xa3, xa4, xa5, xa6, xa7, xa8, xa9, xaa, xab, xac, xad, xae, xaf, xb0, xb1, xb2, xb3, xb4, xb5, xb6, xb7, xb8, xb9, xba, xbb, xbc, xbd, xbe, xbf, xc0, xc1, xc2, xc3, xc4, xc5, xc6, xc7, xc8, xc9, xca, xcb, xcc, xcd, xce, xcf, xd0, xd1, xd2, xd3, xd4, xd5, xd6, xd7, xd8, xd9, xda, xdb, xdc, xdd, xde, xdf, xe0, xe1, xe2, xe3, xe4, xe5, xe6, xe7, xe8, xe9, xea, xeb, xec, xed, xee, xef, xf0, xf1, xf2, xf3, xf4, xf5, xf6, xf7, xf8, xf9, xfa, xfb, xfc, xfd, xfe, xff, option-t, option-p, option-err, esc-seq, eol, basic-char, raw-char, comment, ws, angled-string, c-literal, c-string, xc-str, unquoted-string, file-inclusion, identifier, int-no, # raw-characters, # lr1-constant-symbols, # error-symbols, # ***, # AD, # AB, # parallel-la-boundary, # arbitrator-code, # parallel-parser, # parallel-thread-function, # parallel-control-monitor, # fsm, # fsm-id, # fsm-filename, # fsm-namespace, # fsm-class, # fsm-version, # fsm-date, # fsm-debug, # fsm-comments, # terminals, # T-enumeration, # file-name, # name-space, # sym-class, # rules, # lhs, # user-declaration, # user-prefix-declaration, # user-suffix-declaration, # constructor, # destructor, # op, # failed, # user-implementation, # user-imp-tbl, # user-imp-sym, # constant-defs, # terminals-refs, # terminals-sufx, # lrk-sufx, - > , # NULL, ::, block, syntax-code, fsm-class-phrase, fsm-phrase, parallel-parser-phrase, T-enum-phrase, terminal-def, table-entry, sym-tbl-report-card, terminals-phrase, error-symbols-phrase, lr1-k-phrase, rc-phrase, rule-lhs-phrase, parallel-monitor-phrase, rule-def, rules-phrase, subrule-def, subrules-phrase, T-in-stbl, refered-T, rule-in-stbl, refered-rule, transitive, grammar-name, thread-name, monolithic, no-of-T, list-of-native-first-set-terminals, end-list-of-native-first-set-terminals, list-of-transitive-threads, end-list-of-transitive-threads, emitfile, preamble, end-preamble, T-alphabet, end-T-alphabet, file-of-T-alphabet, T-attributes, tth-in-stbl, thread-attributes, th-in-stbl, kw-in-stbl, la-express-source, eosubrule, called thread eosubrule, null call thread eosubrule, cweb-comment, grammar-phrase, cweb-marker, lint, list-of-used-threads, end-list-of-used-threads, nested files exceeded, no end-of-code, no cmd-lne-data, no filename, bad filename, bad filename to output grammar header, bad filename to output cpp, bad filename to output sym, bad filename to output tbl, bad filename to output enumeration header, bad filename for Errors vocabulary header, bad filename for Errors vocabulary implementation, bad cmd-opt, bad int-no, bad int-no range, no int present, bad eos, bad esc, comment-overrun, bad char, bad univ-seq, improper closing of rules construct, no identifier present, no directive present, duplicate directive, no syntax-code present, no open-parenthesis, no close-parenthesis, no fsm-id-present, no fsm-id-string present, no fsm-filename present, no fsm-filename id present, no comma present, no key-value present in definition, no fsm-namespace present, no fsm-namespace id present, no fsm-class present, no fsm-version present, no fsm-version string present, no fsm-date present, no fsm-date string present, no fsm-debug present, no fsm-debug string present, no fsm-comments present, no fsm-comments string present, invalid fsm-debug value, no parallel-thread-function, no parallel-control-monitor, no parallel thread function, no parallel-la-boundary, no parallel-la-boundary-expr, no ***, no parallel-code, no parallel-code-syntax-code, not an arbitration-code keyword, no open-brace, no close-brace, no constant-defs-directive present, no file-name present, no file-name-id present, no name-space present, no name-space-id present, no constant-defs-code present, no constant-defs keyword present, no

terminal-def-code present, no symbol definition present, duplicate-entry in alphabet, already defined AB tag, already defined AD tag, improper directive, no sym-class present, no sym-class id present, zero len symbol, stbl full, stbl char-pool full, dup-entry in sym-table, subscript out-of-range, stbl scope-stk overflow, stbl scope-stk underflow, stbl context-buf-overflow, report-card-ptr-0, bad pos of t def, dup ? sufx directive, bad pos of terminals-refs, terminals-refs duplicate, no rule name present, no sub rule present, undefined terminal in subrule, unknown symbol type in stbl, subrule overrun, stbl has entry but not a rule, no file-of-T-alphabet, emitfile kw not present, preamble kw not present, no preamble source code, no end-preamble present, command line chaffe, T-alphabet kw not present, T-alphabet file not present, no end-T-alphabet present, no T in T-alphabet list, rotten chr in T-alphabet, no transitive present, no grammar-name present, no name-space, no file-name kw present, no thread-name present, no monolithic present, no no-of-T present, no list-of-native-terminals, no list-of-transit..., no Ts in T-alphabet, linker's transitive value not n or y, linker's monolithic value not n or y, no grammar-name value, no name-space value, no thread-name value, no file-name value, no-of-T value not present, no # in list-of-native-term..., no end-list-of-native..., no end-list-of-trans..., # T in list not eq, # threads in list not eq, thread xrefed, but not defed, T in list not defined in T-alphabet, transitive list thread not defined by fsc files, thread defined by another fsc file, thread in stbl but subscript badly set, token found in stbl but not a kw, no # in list-of-trans..., re-compile grammar: bad T-alphabet, fsc file does not exist, file-name file does not exist, T-alphabet file does not exist, emitfile file does not exist, emitfile file not present, fsc file not present, file of T-alphabet not present, 02 epsilon badly gened: 0 items in fsc lists, 02 epsilon: T present, but no T list, rule not found in stbl, T not found in stbl, bad directive, bad term in la expr, removal of term against empty set in la expr, bad operator la expr: not a + or -, not a lhs kw, no parallel-la-bndary expr, duplicate fsm phrase, duplicate parallel-parse phrase, duplicate T_enum phrase, duplicate error phrase, duplicate raw character phrase, duplicate lrk phrase, duplicate terminal phrase, duplicate rule phrase, T not returned from a thread, not a namespace id in thread expr, not a thread name id in expr, bad thread expr, not :: in thread expr, bad term in subrule expr, ? ended subrule expr, not an eosr in subrule expr, invalid logical name, invalid logical value, duplicate logical name, missing terminals-refs kw, missing terminals-sufx kw, not a terminal definition, missing lrk-sufx kw, rule does not gen T strings - sick grammar, misplaced or missing fsm phrase, misplaced or missing T enumeration phrase, misplaced or missing lrk phrase, misplaced or missing rc phrase, misplaced or missing errors phrase, misplaced or missing terminals phrase, misplaced or missing rules phrase, rule used but undefined, rule already defined, la expression calculates an empty set, no closing brace ending rules defs, use of T outside Rules's construct, not a kw to start the top/down parse construct, use of Non-terminal (rule) outside Rules's construct, misplaced or misspelt Rule or T outside of Rules defs, not a Rule in chained dispatcher expr, Empty file no grammar constructs present, term not a lhs or parallel-control-monitor kw.

146. LA set: 4.

|?|, eog, |r|, |.|, x00, x01, x02, x03, x04, x05, x06, x07, x08, x09, x0a, x0b, x0c, x0d, x0e, x0f, x10, x11, x12, x13, x14, x15, x16, x17, x18, x19, x1a, x1b, x1c, x1d, x1e, x1f, , !, ", # , $, %, &, ', (,), *, +, ,, -, ., /, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, :, ;, < , =, > , ?, @, A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, [, \ ,], ^, _, ‘, a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z, {, |, }, , x7f, x80, x81, x82, x83, x84, x85, x86, x87, x88, x89, x8a, x8b, x8c, x8d, x8e, x8f, x90, x91, x92, x93, x94, x95, x96, x97, x98, x99, x9a, x9b, x9c, x9d, x9e, x9f, xa0, xa1, xa2, xa3, xa4, xa5, xa6, xa7, xa8, xa9, xaa, xab, xac, xad, xae, xaf, xb0, xb1, xb2, xb3, xb4, xb5, xb6, xb7, xb8, xb9, xba, xbb, xbc, xbd, xbe, xbf, xc0, xc1, xc2, xc3, xc4, xc5, xc6, xc7, xc8, xc9, xca, xcb, xcc, xcd, xce, xcf, xd0, xd1, xd2, xd3, xd4, xd5, xd6, xd7, xd8, xd9, xda, xdb, xdc, xdd, xde, xdf, xe0, xe1, xe2, xe3, xe4, xe5, xe6, xe7, xe8, xe9, xea, xeb, xec, xed, xee, xef, xf0, xf1, xf2, xf3, xf4, xf5, xf6, xf7, xf8, xf9, xfa, xfb, xfc, xfd, xfe, xff, option-t, option-p, option-err, esc-seq, eol, basic-char, raw-char, comment, ws, angled-string, c-literal, c-string, xc-str, unquoted-string, file-inclusion, identifier, int-no, # raw-characters, # lr1-constant-symbols, # error-symbols, # ***, # AD, # AB, # parallel-la-boundary, # arbitrator-code, # parallel-parser, # parallel-thread-function, # parallel-control-monitor, # fsm, # fsm-id, # fsm-filename, # fsm-namespace, # fsm-class, # fsm-version, # fsm-date, # fsm-debug, # fsm-comments, # terminals, # T-enumeration, # file-name, # name-space, # sym-class, # rules, # lhs, # user-declaration, # user-prefix-declaration, # user-suffix-declaration, # constructor, # destructor, # op, # failed, # user-implementation, # user-imp-tbl, # user-imp-sym, # constant-defs, # terminals-refs, # terminals-sufx, # lrk-sufx, - > , # NULL, ::, block, syntax-code, fsm-class-phrase, fsm-phrase, parallel-parser-phrase, T-enum-phrase, terminal-def, table-entry, sym-tbl-report-card, terminals-phrase, error-symbols-phrase, lr1-k-phrase, rc-phrase, rule-lhs-phrase, parallel-monitor-phrase, rule-def, rules-phrase, subrule-def, subrules-phrase, T-in-stbl, refered-T, rule-in-stbl, refered-rule, transitive, grammar-name, thread-name, monolithic, no-of-T, list-of-native-first-set-terminals, end-list-of-native-first-set-terminals, list-of-transitive-threads, end-list-of-transitive-threads, emitfile, preamble, end-preamble, T-alphabet, end-T-alphabet, file-of-T-alphabet, T-attributes, tth-in-stbl, thread-attributes, th-in-stbl, kw-in-stbl, la-express-source, eosubrule, called thread eosubrule, null call thread eosubrule, cweb-comment, grammar-phrase, cweb-marker, lint, list-of-used-threads, end-list-of-used-threads, nested files exceeded, no end-of-code, no cmd-lne-data, no file-name, bad filename, bad filename to output grammar header, bad filename to output cpp, bad filename to output sym, bad filename to output tbl, bad filename to output enumeration header, bad filename for Errors vocabulary header, bad filename for Errors vocabulary implementation, bad cmd-opt, bad int-no, bad int-no range, no int present, bad eos, bad esc, comment-overrun, bad char, bad univ-seq, improper closing of rules construct, no identifier present, no directive present, duplicate directive, no syntax-code present, no open-parenthesis, no close-parenthesis, no fsm-id-present, no fsm-id-string present, no fsm-filename present, no fsm-filename id present, no comma present, no key-value present in definition, no fsm-namespace present, no fsm-namespace id present, no fsm-class present, no fsm-version present, no fsm-version string present, no fsm-date present, no fsm-date string present, no fsm-debug present, no fsm-debug string present, no fsm-comments present, no fsm-comments string present, invalid fsm-debug value, no parallel-thread-function, no parallel-control-monitor, no parallel thread function, no parallel-la-boundary, no parallel-la-boundary-expr, no ***, no parallel-code, no parallel-code-syntax-code, not an arbitration-code keyword, no open-brace, no close-brace, no constant-defs-directive present, no file-name present, no file-name-id present, no name-space present, no name-space-id present, no constant-defs-code present, no constant-defs keyword present, no

terminal-def-code present, no symbol definition present, duplicate-entry in alphabet, already defined AB tag, already defined AD tag, improper directive, no sym-class present, no sym-class id present, zero len symbol, stbl full, stbl char-pool full, dup-entry in sym-table, subscript out-of-range, stbl scope-stk overflow, stbl scope-stk underflow, stbl context-buf-overflow, report-card-ptr-0, bad pos of t def, dup ? sufx directive, bad pos of terminals-refs, terminals-refs duplicate, no rule name present, no sub rule present, undefined terminal in subrule, unknown symbol type in stbl, subrule overrun, stbl has entry but not a rule, no file-of-T-alphabet, emitfile kw not present, preamble kw not present, no preamble source code, no end-preamble present, command line chaffe, T-alphabet kw not present, T-alphabet file not present, no end-T-alphabet present, no T in T-alphabet list, rotten chr in T-alphabet, no transitive present, no grammar-name present, no name-space, no file-name kw present, no thread-name present, no monolithic present, no no-of-T present, no list-of-native-terminals, no list-of-transit..., no Ts in T-alphabet, linker's transitive value not n or y, linker's monolithic value not n or y, no grammar-name value, no name-space value, no thread-name value, no file-name value, no-of-T value not present, no # in list-of-native-term..., no end-list-of-native..., no end-list-of-trans..., # T in list not eq, # threads in list not eq, thread xrefed, but not defed, T in list not defined in T-alphabet, transitive list thread not defined by fsc files, thread defined by another fsc file, thread in stbl but subscript badly set, token found in stbl but not a kw, no # in list-of-trans..., re-compile grammar: bad T-alphabet, fsc file does not exist, file-name file does not exist, T-alphabet file does not exist, emitfile file does not exist, emitfile file not present, fsc file not present, file of T-alphabet not present, 02 epsilon badly gened: 0 items in fsc lists, 02 epsilon: T present, but no T list, rule not found in stbl, T not found in stbl, bad directive, bad term in la expr, removal of term against empty set in la expr, bad operator la expr: not a + or -, not a lhs kw, no parallel-la-bndary expr, duplicate fsm phrase, duplicate parallel-parse phrase, duplicate T_enum phrase, duplicate error phrase, duplicate raw character phrase, duplicate lrk phrase, duplicate terminal phrase, duplicate rule phrase, T not returned from a thread, not a namespace id in thread expr, not a thread name id in expr, bad thread expr, not :: in thread expr, bad term in subrule expr, ? ended subrule expr, not an eosr in subrule expr, invalid logical name, invalid logical value, duplicate logical name, missing terminals-refs kw, missing terminals-sufx kw, not a terminal definition, missing lrk-sufx kw, rule does not gen T strings - sick grammar, misplaced or missing fsm phrase, misplaced or missing T enumeration phrase, misplaced or missing lrk phrase, misplaced or missing rc phrase, misplaced or missing errors phrase, misplaced or missing terminals phrase, misplaced or missing rules phrase, rule used but undefined, rule already defined, la expression calculates an empty set, no closing brace ending rules defs, use of T outside Rules's construct, not a kw to start the top/down parse construct, use of Non-terminal (rule) outside Rules's construct, misplaced or misspelt Rule or T outside of Rules defs, not a Rule in chained dispatcher expr, Empty file no grammar constructs present, term not a lhs or parallel-control-monitor kw.

147. LA set: 5.

|?|, |r|.

148. LA set: 6.

|?|, }.

149. LA set: 7.

|r|, |.|, {.

150. LA set: 8.

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|?|, |r|, |.|, }.
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151. LA set: 9.

```
|r|.
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152. Index.

subrule_def_idx.w

Date: January 14, 2015 at 15:42

File: subrule_def_idx.w