

Earley Example

Top \rightarrow NP	N \rightarrow milk
NP \rightarrow NP and NP	N \rightarrow sugar
NP \rightarrow N PP	N \rightarrow tea
NP \rightarrow N	
PP \rightarrow with NP	

.tea with milk and sugar
0 1 2 3 4 5

Chart[0]

s0	Top \rightarrow · NP	[0,0]	init
s1	NP \rightarrow · NP and NP	[0,0]	predict s0
s2	NP \rightarrow · N PP	[0,0]	predict s0
s3	NP \rightarrow · N	[0,0]	predict s0

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Top \rightarrow NP	N \rightarrow milk
NP \rightarrow NP and NP	N \rightarrow sugar
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Chart[0]

s0	Top \rightarrow · NP	[0,0]	init
s1	NP \rightarrow · NP and NP	[0,0]	predict s0
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s3	NP \rightarrow · N	[0,0]	predict s0

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Top \rightarrow NP	N \rightarrow milk
NP \rightarrow NP and NP	N \rightarrow sugar
NP \rightarrow N PP	N \rightarrow tea
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Chart[0]

s0	Top \rightarrow · NP	[0,0]	init
s1	NP \rightarrow · NP and NP	[0,0]	predict s0
s2	NP \rightarrow · N PP	[0,0]	predict s0
s3	NP \rightarrow · N	[0,0]	predict s0
s4	N \rightarrow · milk	[0,0]	predict s2
s5	N \rightarrow · sugar	[0,0]	predict s2
s6	N \rightarrow · tea	[0,0]	predict s2

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Top \rightarrow NP	N \rightarrow milk
NP \rightarrow NP and NP	N \rightarrow sugar
NP \rightarrow N PP	N \rightarrow tea
NP \rightarrow N	
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Chart[0]

s0	Top \rightarrow · NP	[0,0]	init
s1	NP \rightarrow · NP and NP	[0,0]	predict s0
s2	NP \rightarrow · N PP	[0,0]	predict s0
s3	NP \rightarrow · N	[0,0]	predict s0
s4	N \rightarrow · milk	[0,0]	predict s2
s5	N \rightarrow · sugar	[0,0]	predict s2
s6	N \rightarrow · tea	[0,0]	predict s2

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Chart[0]

s0	Top \rightarrow \cdot NP	[0,0]	init
s1	NP \rightarrow \cdot NP and NP	[0,0]	predict s0
s2	NP \rightarrow \cdot N PP	[0,0]	predict s0
s3	NP \rightarrow \cdot N	[0,0]	predict s0
s4	N \rightarrow \cdot milk	[0,0]	predict s2
s5	N \rightarrow \cdot sugar	[0,0]	predict s2
s6	N \rightarrow \cdot tea	[0,0]	predict s2

Chart[1]

s7	N \rightarrow tea \cdot	[0,1]	scan s6
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Chart[1]

s7	N → tea ·	[0,1]	scan s6
s8	NP → N · PP	[0,1]	complete s2 with s7
s9	NP → N ·	[0,1]	complete s3 with s7

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Chart[1]

s7	N → tea ·	[0,1]	scan s6
s8	NP → N · PP	[0,1]	complete s2 with s7
s9	NP → N ·	[0,1]	complete s3 with s7
s10	PP → · with NP	[1,1]	predict s8

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Chart[1]

s7	N → tea ·	[0,1]	scan s6
s8	NP → N · PP	[0,1]	complete s2 with s7
s9	NP → N ·	[0,1]	complete s3 with s7
s10	PP → · with NP	[1,1]	predict s8
s11	Top → NP ·	[0,1]	complete s0 with s9
s12	NP → NP · and NP	[0,1]	complete s1 with s9

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Chart[1]

s7	N → tea ·	[0,1]	scan s6
s8	NP → N · PP	[0,1]	complete s2 with s7
s9	NP → N ·	[0,1]	complete s3 with s7
s10	PP → · with NP	[1,1]	predict s8
s11	Top → NP ·	[0,1]	complete s0 with s9
s12	NP → NP · and NP	[0,1]	complete s1 with s9

Chart[2]

s13	PP → with · NP	[1,2]	scan s10
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Chart[2]

s13	PP → with · NP	[1,2]	scan s10
s14	NP → · NP and NP	[2,2]	predict s13
s15	NP → · N PP	[2,2]	predict s13
s16	NP → · N	[2,2]	predict s13

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Chart[2]

s13	PP → with · NP	[1,2]	scan s10
s14	NP → · NP and NP	[2,2]	predict s13
s15	NP → · N PP	[2,2]	predict s13
s16	NP → · N	[2,2]	predict s13
s17	N → · milk	[2,2]	predict s15
s18	N → · sugar	[2,2]	predict s15
s19	N → · tea	[2,2]	predict s15

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Chart[2]

s13	PP → with · NP	[1,2]	scan s10
s14	NP → · NP and NP	[2,2]	predict s13
s15	NP → · N PP	[2,2]	predict s13
s16	NP → · N	[2,2]	predict s13
s17	N → · milk	[2,2]	predict s15
s18	N → · sugar	[2,2]	predict s15
s19	N → · tea	[2,2]	predict s15

Chart[3]

s20	N → milk ·	[2,3]	scan s17
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Chart[3]

s20	N → milk ·	[2,3]	scan s17
s21	NP → N · PP	[2,3]	complete s15 with s20
s22	NP → N·	[2,3]	complete s16 with s20

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Chart[3]

s20	N → milk ·	[2,3]	scan s17
s21	NP → N · PP	[2,3]	complete s15 with s20
s22	NP → N ·	[2,3]	complete s16 with s20
s23	PP → · with NP	[3,3]	predict s21

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Chart[3]

s20	N → milk ·	[2,3]	scan s17
s21	NP → N · PP	[2,3]	complete s15 with s20
s22	NP → N·	[2,3]	complete s16 with s20
s23	PP → · with NP	[3,3]	predict s21
s24	PP → with NP ·	[1,3]	complete s13 with s22
s25	NP → NP · and NP	[2,3]	complete s14 with s22

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Chart[3]

s20	N → milk ·	[2,3]	scan s17
s21	NP → N · PP	[2,3]	complete s15 with s20
s22	NP → N ·	[2,3]	complete s16 with s20
s23	PP → · with NP	[3,3]	predict s21
s24	PP → with NP ·	[1,3]	complete s13 with s22
s25	NP → NP · and NP	[2,3]	complete s14 with s22
s26	NP → N PP ·	[0,3]	complete s8 with s24

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Chart[3]

s20	N → milk ·	[2,3]	scan s17
s21	NP → N · PP	[2,3]	complete s15 with s20
s22	NP → N ·	[2,3]	complete s16 with s20
s23	PP → · with NP	[3,3]	predict s21
s24	PP → with NP ·	[1,3]	complete s13 with s22
s25	NP → NP · and NP	[2,3]	complete s14 with s22
s26	NP → N PP ·	[0,3]	complete s8 with s24

Chart[4]

s27	NP → NP and · NP	[2,4]	scan s25
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Chart[3]

s20	N → milk ·	[2,3]	scan s17
s21	NP → N · PP	[2,3]	complete s15 with s20
s22	NP → N ·	[2,3]	complete s16 with s20
s23	PP → · with NP	[3,3]	predict s21
s24	PP → with NP ·	[1,3]	complete s13 with s22
s25	NP → NP · and NP	[2,3]	complete s14 with s22
s26	NP → N PP ·	[0,3]	complete s8 with s24
s28	Top → NP ·	[0,0]	complete s0 with s26

Chart[4]

s27	NP → NP and · NP	[2,4]	scan s25
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Earley Example

*tea with milk and***·sugar**
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Chart[4]

s27	NP → NP and · NP	[2,4]	scan s25
s29	NP → · NP and NP	[4,4]	predict s27
s30	NP → · N PP	[4,4]	predict s27
s31	NP → · N	[4,4]	predict s27

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tea with milk and·*sugar*
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Chart[4]

s27	NP → NP and · NP	[2,4]	scan s25
s29	NP → · NP and NP	[4,4]	predict s27
s30	NP → · N PP	[4,4]	predict s27
s31	NP → · N	[4,4]	predict s30
s32	N → · milk	[4,4]	predict s30
s33	N → · sugar	[4,4]	predict s30
s34	N → · tea	[4,4]	predict s30

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tea with milk and·*sugar*
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Chart[4]

s27	NP → NP and · NP	[2,4]	scan s25
s29	NP → · NP and NP	[4,4]	predict s27
s30	NP → · N PP	[4,4]	predict s27
s31	NP → · N	[4,4]	predict s30
s32	N → · milk	[4,4]	predict s30
s33	N → · sugar	[4,4]	predict s30
s34	N → · tea	[4,4]	predict s30

Chart[5]

s35	N → sugar ·	[4,5]	scan s33
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tea with milk and sugar.
0 1 2 3 4 5

Chart[5]

s35	N → sugar ·	[4,5]	scan s33
s36	NP → N · PP	[4,5]	complete s30 with s35
s47	NP → N ·	[4,5]	complete s31 with s35

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tea with milk and sugar.
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Chart[5]

s35	$N \rightarrow \text{sugar} \cdot$	[4,5]	scan s33
s36	$NP \rightarrow N \cdot PP$	[4,5]	complete s30 with s35
s37	$NP \rightarrow N \cdot$	[4,5]	complete s31 with s35
s38	$PP \rightarrow \cdot \text{with } NP$	[5,5]	predict s36

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Chart[5]

s35	N → sugar ·	[4,5]	scan s33
s36	NP → N · PP	[4,5]	complete s30 with s35
s37	NP → N ·	[4,5]	complete s31 with s35
s38	PP → · with NP	[5,5]	predict s36
s39	NP → NP and NP ·	[2,5]	complete s27 with s37
s40	NP → NP · and NP	[4,5]	predict s29 with s37

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Chart[5]

s35	N → sugar ·	[4,5]	scan s33
s36	NP → N · PP	[4,5]	complete s30 with s35
s37	NP → N ·	[4,5]	complete s31 with s35
s38	PP → · with NP	[5,5]	predict s36
s39	NP → NP and NP ·	[2,5]	complete s27 with s37
s40	NP → NP · and NP	[4,5]	predict s29 with s37
s41	PP → with NP ·	[1,5]	complete s13 with s39
s42	NP → NP · and NP	[2,5]	complete s14 with s39

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tea with milk and sugar.
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Chart[5]

s35	N → sugar ·	[4,5]	scan s33
s36	NP → N · PP	[4,5]	complete s30 with s35
s37	NP → N ·	[4,5]	complete s31 with s35
s38	PP → · with NP	[5,5]	predict s36
s39	NP → NP and NP ·	[2,5]	complete s27 with s37
s40	NP → NP · and NP	[4,5]	predict s29 with s37
s41	PP → with NP·	[1,5]	complete s13 with s39
s42	NP → NP · and NP	[2,5]	complete s14 with s39
s43	NP → N PP ·	[0,5]	complete s8 with s41

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Chart[5]

s35	N → sugar ·	[4,5]	scan s33
s36	NP → N · PP	[4,5]	complete s30 with s35
s37	NP → N ·	[4,5]	complete s31 with s35
s38	PP → · with NP	[5,5]	predict s36
s39	NP → NP and NP ·	[2,5]	complete s27 with s37
s40	NP → NP · and NP	[4,5]	predict s29 with s37
s41	PP → with NP ·	[1,5]	complete s13 with s39
s42	NP → NP · and NP	[2,5]	complete s14 with s39
s43	NP → N PP ·	[0,5]	complete s8 with s41
s44	Top → NP ·	[0,5]	complete s0 with s43
s45	NP → NP · and NP	[0,5]	complete s1 with s43