Théorie des Langages

TD2

Analyse Syntaxique et Grammaires $LR(k)$

Elana Courtines
courtines.e@gmail.com
https://github.com/irinacake

Séance 3 - 27 septembre 2022

Emmanuel Rio - emmanuel.rio@univ-tlse3.fr

Exercice 1 :
Grammaire G_0 :

(0) - $S' \to S\$^k$

(1) - $S \to CC$

(2) - $C \to aC$

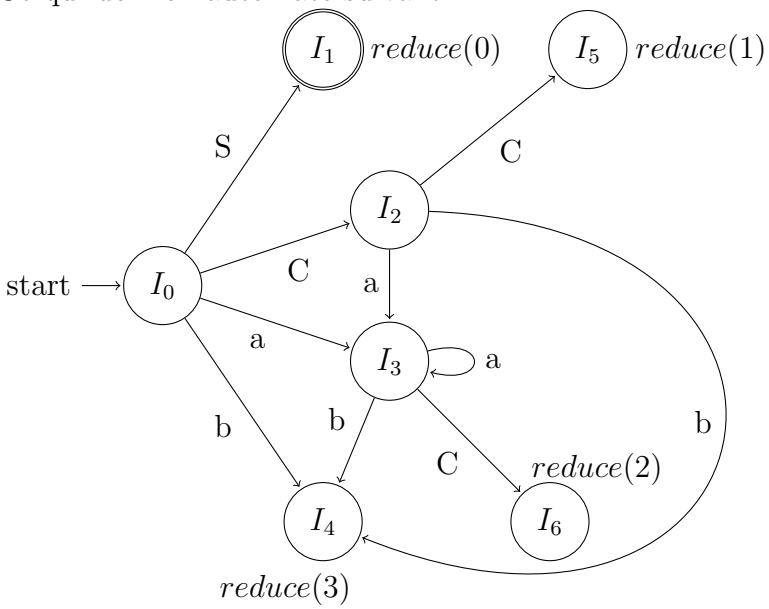
(3) - $C \to b$

Fermetures :

- I_0 :
  $S' \to \bullet\, S\$^k$
  $S \to \bullet\, CC$
  $C \to \bullet\, aC$
  $C \to \bullet\, b$
- $goto(I_0, S) = I_1$
  $S' \to S \bullet \$^k$
  (reduce 0)
- $goto(I_0, C) = I_2$
  $S \to C \bullet C$
  $C \to \bullet\, aC$
  $C \to \bullet\, b$
- $goto(I_0, a) = I_3$
  $C \to a \bullet C$
  $C \to \bullet\, aC$
  $C \to \bullet\, b$
- $goto(I_0, b) = I_4$
  $C \to b \bullet$
  (reduce 3)
- $goto(I_2, C) = I_5$
  $S \to CC \bullet$
  (reduce 1)
- $goto(I_2, a) = I_3$
  $C \to a \bullet C$
  $C \to \bullet\, aC$
  $C \to \bullet\, b$
- $goto(I_2, b) = I_4$
  $C \to b \bullet$
- $goto(I_3, C) = I_6$
  $C \to aC \bullet$
  (reduce 2)
- $goto(I_3, a) = I_3$
  $C \to a \bullet C$
  $C \to \bullet\, aC$
  $C \to \bullet\, b$

- $goto(I_3, b) = I_4$
  $C \to b \bullet$

Ce qui donne l'automate suivant :



D'où la table d'analyse :

	a	b	S	C	λ
I_0	shI_3	shI_4	shI_1	shI_2	*err*
I_1	*err*	*err*	*err*	*err*	reduce(0)
I_2	shI_3	shI_4	*err*	shI_5	*err*
I_3	shI_3	shI_4	*err*	shI_6	*err*
I_4	*err*	*err*	*err*	*err*	reduce(3)
I_5	*err*	*err*	*err*	*err*	reduce(1)
I_6	*err*	*err*	*err*	*err*	reduce(2)

Parse du mot *abaab*\$:

pile	mot	action
λ	abaab	shift
a	baab	shift
ab	aab	reduce 3
aC	aab	reduce 2
C	aab	shift
Ca	ab	shift
Caa	b	shift
Caab	λ	reduce 3
CaaC	λ	reduce 2
CaC	λ	reduce 2
CC	λ	reduce 1
S	λ	reduce 0
S'	λ	accept

Grammaire G_1 :

(0) - $S' \to S\$^k$

(1) - $S \to aAc$

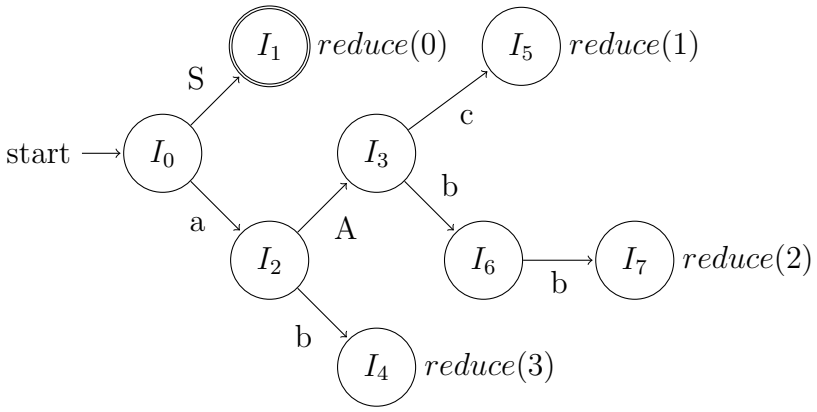
(2) - $A \to Abb$

(3) - $A \to b$

Fermetures :

- I_0 :
  $S' \to \ \bullet\, S\$^k$
  $S \to \ \bullet\, aAc$
- $goto(I_0, S) = I_1$
  $S' \to S \ \bullet\ \$^k$
  (reduce 0)
- $goto(I_0, a) = I_2$
  $S \to a \ \bullet\ Ac$
  $A \to \ \bullet\, Abb$
  $A \to \ \bullet\, b$
- $goto(I_2, A) = I_3$
  $S \to aA \ \bullet\ c$
  $A \to A \ \bullet\ bb$
- $goto(I_2, b) = I_4$
  $S \to b\,\bullet$
  reduce(3)
- $goto(I_3, c) = I_5$
  $S \to aAc\,\bullet$
  reduce(1)
- $goto(I_3, b) = I_6$
  $A \to Ab \ \bullet\ b$
- $goto(I_6, b) = I_7$
  $A \to Abb\,\bullet$
  reduce(2)

Ce qui donne l'automate suivant :



D'où la table d'analyse :

	a	b	c	S	A	λ
I_0	shI_2	err	err	shI_1	err	err
I_1	err	err	err	err	err	reduce(0)
I_2	shI_4	err	err	err	shI_3	err
I_3	err	shI_6	shI_5	err	err	err
I_4	err	err	err	err	err	reduce(3)
I_5	err	err	err	err	err	reduce(1)
I_6	err	shI_7	err	err	err	err
I_7	err	err	err	err	err	reduce(2)

Grammaire G_3 :

(0) - $S' \to S\$^k$

(1) - $S \to aAc$

(2) - $A \to bbA$

(3) - $A \to b$

Fermetures :

- I_0 :
  $S' \to \bullet\, S, \$^k$
  $S \to \bullet\, aAc, \$$
- $goto(I_0, S) = I_1$
  $S' \to S \bullet \$^k$
  (reduce 0)
- $goto(I_0, a) = I_2$
  $S \to a \bullet Ac$
  $A \to \bullet\, bbA, c$
  $A \to \bullet\, b, c$
- $goto(I_2, A) = I_3$
  $S \to aA \bullet c$
- $goto(I_2, b) = I_4$
  $A \to b \bullet bA, c$ shift on b
  $A \to b \bullet , c$ reduce(3) on c
- $goto(I_3, c) = I_5$
  $S \to aAc \bullet$
  reduce(1)
- $goto(I_4, b) = I_6$
  $A \to bb \bullet A$
  $A \to \bullet\, bbA, c$
  $A \to \bullet\, b, c$

- $goto(I_6, A) = I_7$
  $A \to bbA \bullet$
  reduce(2)
- $goto(I_6, b) = I_4$

Ce qui donne l'automate suivant :