Mohamed Khider University – Biskra.
Faculty of Exact Sciences
Computer Science department

3rd year License
Compilers
2025/2026

Work No. 4

Exercise 01: Let G({S,L},{a,b,c},S) be the grammar:

S→ aLb |ab | c
L→ S | L S

1. Construct the SLR(1) analysis table for G. Is G SLR(1)? Justify your answer.
2. Construct the LR(0) analysis table for G. Is G LR(0)? Justify your answer.

Exercise 02: Let G be the grammar:

T →X B
X →a X b| ε
B →b B|b

1. Construct the LR(0) item automata.
2. Construct the SLR(1) analysis table. Is this grammar SLR(1)?
3. What is the language generated by the grammar?
4. Use the table to analyze the word abb$.

Exercise 03: Let G be a grammar:

S→ BAb
A→ BA| ε
B→a

1. Show that the grammar G is SLR(1), LR(1) and LALR(1).
2. Analyse the following string: aab$?

Exercise 04: Let G be a grammar defined by:

S → cS | T
T→ aCa | bCb | aDb | bDa
C → z
D→ e

1. Give the canonical LR(1) automata for the grammar G.
2. Is this grammar LR(0)? Is it LALR(1)?
3. Provide the LR(1) parser tables for this grammar and simulate its operation on the string cccazb.

Exercise 05: Let G be the following Yacc grammar:

```
%start E

F: '(' E ')' | 'id';
RF: '*' F RF | ;
T: F RF;
RT: '+' T RT |;
E: 'id' ':=' E | T RT;
```

How many LALR(1) conflicts does G have? List them.