

School of Computer Science and Software Engineering

CS3322 Programming Languages and Implementation

Assignment 4

Due 5pm Friday 22nd of October

The purpose of this assignment is to practice LR parsing.

Consider the following grammar with terminal symbols

$a \ b \ c$

non-terminal symbols S, X, Y where S is the start symbol and with the productions

Number	Produktion
1	$S \rightarrow X \ c \ Y$
2	$Y \rightarrow X \ Y$
3	$Y \rightarrow b \ X$
4	$X \rightarrow a \ X$
5	$X \rightarrow a$

- Is the language defined by this grammar regular? If so, give an equivalent regular expression that defines the same language. [1 marks]
- Give the canonical collection of LR(0) items for this grammar. (Note: to do this apply exactly the algorithm given in the lecture notes and use the grammar symbols in the following order: $\{S, X, Y, a, b, c\}$) [1 marks]
- Fill in the **SLR parsing table** for this grammar in the table below. *Note that you may not need all rows, i.e. there may be less than 15 canonical items.* [2 marks]

STATE	ACTION				GOTO		
	a	b	c	$\$$	S	X	Y
0							
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

