

CS3240 Homework 5
Due: Tue, April 24 In Class

Guidelines:

1. Work on the homework individually. Do not collaborate or copy from others
2. The homework is due on Tuesday, April 24 In Class. No late submissions will be entertained
3. Do not email your answers to either the Professor or the TA. Emailed answers will not be considered for evaluation

Question 1. (50 Points)

Consider the following grammar. Construct LR(0) items, DFA for this grammar showing LR(0) shift-reduce table. Is this grammar LR(0)? Indicate all possible shift-reduce as well as reduce-reduce conflicts. Using the concept of look-ahead, generate SLR(1) table – which LR(0) conflicts get eliminated? Using the input $(ID + ID) * ID$ show the SLR(1) parse - show the stack states and shifts and reductions as shown in the examples in the Louden book.

Grammar:

$E' \rightarrow E$
 $E \rightarrow E + T$
 $E \rightarrow T$
 $T \rightarrow T * ID$
 $T \rightarrow ID$
 $T \rightarrow (E)$

Question 2. (50 Points)

Construct a pushdown automaton for the following language:

$L = \{ a^i b^j c^k \mid i, j, k \geq 0, \text{ either } i = j \text{ or } j = k \}$