German University in Cairo
Department of Computer Science
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CSEN1002 Compilers Lab, Spring Term 2020
Task 8: ANTLR Parsing 1

Due: 05.05.2020 by 23:59

1 Objective

For this task you will use ANTLR to implement an SDD for a variant of Exercise 9-5 of CSEN1003's Practice Assignment 9. A presentation for semantic analysis in ANTLR is available on the course web site.

2 Requirements

- Use ANTLR to implement the following SDD which converts an input binary number to the equivalent decimal number.

S	$\longrightarrow$	$L \cdot R$	$S.val = L.val + R.val$
L	$\longrightarrow$	BL_1	$L.n = L_1.n + 1$
			$L.val = B.val \times 2^{L.n} + L_1.val$
L	$\longrightarrow$	B	$L.n = 0$
			$L.val = B.val$
R	$\longrightarrow$	BR_1	$R.val = (R_1.val \times 0.5) + (B.val \times 0.5)$
R	$\longrightarrow$	B	$R.val = B.val \times 0.5$
B	$\longrightarrow$	`0`	$B.val = 0$
B	$\longrightarrow$	`1`	$B.val = 1$

- For example, here are some inputs and the corresponding correct outputs.

Input	**Output**
101.101	5.625
100.11	4.75
0.10	0.5

3 Evaluation

Your SDD will be tested using ten inputs. Each correct output is worth one point, hence a total of ten points.

4 Submission Instructions

- The submission deadline is May 5, 2020 by 23:59. Late submissions will receive zero credit; thus, make sure that you do not submit at the last moment to avoid delays due to any unpleasant technical surprises.
- Please submit only one grammar file named after your tutorial number, ID, and name (with the extension "`.g4`") using the following format.

  $$\texttt{T}XX\_YY\_ZZZZ\_Name\texttt{.g4}$$

  For example, the following is a possible file name.

  `T07_37_0000_John_Smith.g4`

- Use the template file posted with this description to the course web site.
- Submissions which are not in the required format will not be considered.
- You will receive an e-mail containing the submission link.