CS 3100, Spring 2020, Assignment 8 – 100 pts total – Due Dates on Syllabus

1. (SV)
   (a) (20%) The CFG at the bottom of Page 158 is for the complement of L_{ww}. Draw a parse-tree for the string 01011101 using this CFG.
   (b) **NOTE: The rule for `GrowXMiddle` was forgotten in the book. It is below.**
   (c) `GrowXmMiddle -> B GrowXmMiddle B | 1`.
   (d) (5%) Analyze why the string 0101 fails to have a parse tree under this grammar. Discuss in neat bulletted steps.
2. (LT, 25%) Do Problem 4 of Page 159. Write your answer in neat bulletted steps.
3. (XL, 25%) Do 11.9.1, 3(c), Page 157 (the "prove that" part). Write the PL steps in neat bulletted steps.
4. (AR) In `17_DTM/`, I have provided a notebook for simulating TMs. Run all the examples with these specifics:
   (a) (5%) Run the flipper for input 001001, computing the amount fuel consumed.
   (b) (5%) Run the DTM `wpw` for input 001#001 initially, noting the amount of fuel consumed, and how "acceptance" is announced.
   (c) (5%) Then run it for input 001#010, and describe the state transitions leading to this TM's reject verdict. How does this TM announce "rejection?"
   (d) (5%) Run the NDTM `wwndtm` for input 001001 initially, noting the amount of fuel consumed, and how "acceptance" is announced.
   (e) (5%) Then run it for input 001010, and describe the state transitions leading to this TM's reject verdict. How does this TM announce "rejection?"