Assignment #4

Due Date: Friday Dec 6, 2024

Question # 1: Design the 2PDA and Turing Machine for the following languages:

a) 3EQUAL as all strings that have as many total a's as total b's as total c's.
   3EQUAL = {abc, acb, bac, bca, cab, cba, aabbcc, aabcbc, . . . }
a) End with double a’s
b) DOUBLEWORD, the set of all words of the form ww where w is a nonnull string in {a, b}*. DOUBLEWORD = {aa, bb, aaaa, abab, baba, bbbb, aaaaaa, aabaab, . . }
c) PARENTHESIS = { ∆, (), (()), ((())), (())(), ()(()), ()()() }
d) a^{2^n} hint (chop the input into half at every iteration)

Question # 2: Convert the following CFG to PDA, using the method of CFG=PDA

a) S → YX | SY |^
   X → 1
   Y → 0
b) S → SS | AA
   A → a