

Homework 3: Context-Free Languages

Theory of Computation (CSCI 3500)

Write the solution to each question on its own page.

All questions must be in order.

Your name must be on each page.

All assignments not adhering to this will not be graded.

0. Consider the following language:

$$L_0 = \{w_1 \# w_2 \in \{0, 1\}^* \mid |w_1|_0 = 2 * |w_2|_1\}$$

i. Define a PDA for L_0 .

ii. Define a CFG for L_0 .

1. Convert the following grammar into Chomsky Normal Form:

$$\begin{aligned} S &\rightarrow aSa \mid R \\ R &\rightarrow b \mid bb \mid SbR \mid \epsilon \end{aligned}$$