SC205- Discrete Mathematics

Home Work 4

Tutorial Discussion Week: February 10, 2020

(1) Find a context free grammar that generates the language

$$L = \{\, 0^m 1^n \mid m \neq n,\ m,\ n \geq 0 \,\}.$$

(2) Consider the CFG

$$G = (\ \{\ S\ \},\ \{\ a,\ b\ \},\ P,\ S\ )$$

with the rules $S \rightarrow \epsilon \mid aSbS \mid bSaS$. Find the language $L(G)$?

(3) Give regular expressions for generating the languages of SC205/Home Work 3, Q2.

(4) Construct a PDA for the language in Q1 of SC205/Home Work 4 (see above).

(5) Construct a Turing Machine for subtracting two natural numbers m and n. You can assume that $m > n$.

(6) Construct a Turing Machine for finding maxima of two natural numbers m and n.