

CS 3800, Fall 2017 (Clinger's section)

Homework 3 (60 points)

Assigned: Wednesday, 20 September 2017

Due: Wednesday, 27 September 2017

1. [6 pts] Prove $\{01^j1^k0 \mid 0 \leq j = 2k\}$ is a regular language.
2. [6 pts] Prove $\{01^j01^k0 \mid 0 \leq j = 2k\}$ is not a regular language.
3. [6 pts] Prove $\{1^j01^k \mid j + k \geq 2\}$ is a regular language.
4. [6 pts] Prove $\{01^j1^k0 \mid j \geq k\}$ is a regular language.
5. [6 pts] Prove $\{0^i1^j0^k \mid i + j = k\}$ is not a regular language.
6. [30 pts] For each of the languages described by the previous five questions, give a context-free grammar that generates the language.