CS 3800, Spring 2016
Homework 3 (60 points)
Assigned: Friday, 29 January 2016
Due: Friday, 5 February 2016

1. [6 pts] Prove $\left\{1^j 0 1^k \mid j + k \geq 3\right\}$ is a regular language.

2. [6 pts] Prove $\left\{01^j 1^k 0 \mid 0 \leq j < k\right\}$ is a regular language.

3. [6 pts] Prove $\left\{01^j 1^k 0 \mid j = k\right\}$ is a regular language.

4. [6 pts] Prove $\left\{01^j 0 1^k 0 \mid j = k\right\}$ is not a regular language.

5. [6 pts] Prove $\left\{0^i 1^j 0^k \mid i + j = k\right\}$ 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.