

COSC 312
Homework Assignment 4
Submission Format: docx, tex or pdf to
Canvas Points: 10 per proof; total = 40

Name: _____ Netid: _____

1. Prove that $C = \{w \mid w \text{ has an equal number of 0s and 1s}\}$ is not regular. Consider the string $s=0^p1^p$.

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2. Prove that $F = \{ww \mid w \text{ is a string from } \{0,1\}^*\}$ is not regular. Consider the string $s=0^p10^p1$. Note that $\{0,1\}^*$ is any string (including the empty string) containing any number of 0s and 1s (in any order).

3. Prove that $A = \{www \mid w \text{ is a string from } \{a,b\}^*\}$ is not regular. Consider the string $s = a^p b a^p b a^p b$.

4. Prove that $L = \{0^n 1^m 0^n \mid m, n \geq 0\}$ is not regular. Consider the string $s = 0^p 1 0^p$.