CS3133

HW#1

DUE: Tuesday, August 27

1. (6 points) Let $L_{\overline{001}}$ be the set of all binary strings which do not contain 001 as a substring, and let L_{001} be the set of all binary strings which do contain 001 as a substring. Show that $L_{\overline{001}}$ and L_{001} are regular.

2. (5 points) Let L be the set of all strings over $\{0, 1, 2, 3\}$ such that the sum of the characters in the string is evenly divisible by 5. That is, $\left\{a_1 \ldots a_n \mid \sum_{1 \le i \le n} a_i \equiv 0 \pmod 5\right\}$. For example, $e \in L$, $132211 \in L$ but $13221 \notin L$. Show that L is regular.

3. (6 points) Do **Exercise 2.2.8** of our text.