

Bonus Homework Assignment
Due: March 28 at 2:30 p.m.

Although you may discuss the general approach to solving a problem on a homework assignment with other people, you should not discuss the solution in detail. You must not take any written notes away from such a discussion. Also, you must list on the cover page of your solutions any people with whom you have discussed the problems. The solutions you hand in should be your own work. While writing them, you may look at the course textbook and your own lecture notes but no other outside sources.

1. Let $L_1 = \{\langle M, w \rangle : M \text{ is a Turing machine that accepts string } w \text{ and does not accept string } \varepsilon\}$. Is L_1 recognizable? Prove your answer is correct.
2. Let $L_2 = \{\langle M, w \rangle : M \text{ is a Turing machine that accepts string } w \text{ and rejects string } \varepsilon\}$. Is L_2 recognizable? Prove your answer is correct.