

CSE 725 - Problem Set 1

Due lecture on January 27th

Problem numbers are from the second edition of Sipser's book. If unsure about which problem to solve, ask.

1. Give an implementation-level description and a formal description (i.e. including the state diagram of the transition function) of a TM that recognizes

$$\{u\#v : u, v \in \{0, 1\}^* \text{ and } u \text{ is } v \text{ reversed}\}$$

2. * Show that a language is decidable iff there is an enumerator that prints it out in lexicographic order.
3. 3.15 d e
4. (extra credit) 3.16 b d
5. Prove that the union of countably many countable sets is countable.
6. (extra credit) * 3.13
7. (extra credit) * 4.17
8. 4.18
9. * 4.28