

CS 311: Computational Structures

Problem Set 1

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1. Sipser 0.7, all three parts (relations that have two but not three of the characteristic properties of equivalence relations). Note: part c is significantly more subtle than parts a and b.
2. Sipser 1.6, parts b, c, f, k. Construction of DFAs.
3. Sipser 1.31. Regular languages closed under reverse.
4. Sipser 1.34. Greater than is regular given specified representation.
5. Construct a DFA that accepts binary strings that represent numbers congruent to 2 mod 3, that is $\{n | n = k * 3 + 2 \text{ for some integer } k\}$. For example: 2, 5, 8, ..., which are represented in binary as 10, 101, 1000, ... You may assume that ϵ represents 0.