TOC : Practice Problems 7

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August 21, 2025

1. Consider the language of all binary strings that are 3 mod 11 or 2 mod 5.
   (a) Construct an NFA accepting this language with atmost 16 states.
   (b) Construct a fooling set for this language of size atleast 55. Thus, show that any DFA accepting this language will have atleast 55 states.
2. Construct an infinite fooling set for the following languages, thus showing that they are not regular
   (a) $\{w \in \{0,1\}^* | w = (10)^p 1^q, p, q \in \mathbb{N}, p \geq q\}$
   (b) $\{w \in \{0,1\}^* | w = 0^a 1^b, a \neq b\}$
   (c) $\{w \in \{0,1\}^* | w$ is a palindrome $\}$