1. For the alphabet \{a, b, c\}, let \(L\) be the language of all nonempty strings \(x\) such that:
   if \(x\) starts with the symbol \(a\), then it ends with the symbol \(b\),
   if \(x\) starts with the symbol \(b\), then it contains no \(c\), and
   if \(x\) starts with the symbol \(c\), then it has even length
Give an RE for \(L\).

2. Give both a DFA and an RE for the following language. The alphabet is \{0, 1\}. The empty string is in the language. If a string starts with a 0, then the number of 1’s is odd. If a string starts with a 1, then it does not contain 01 as a substring.

3. Give a regular expression for the complement of the RE 111 with respect to the alphabet \{0, 1\}. That is, the RE should allow every possible binary string except for the string 111.

4. For the alphabet \{a, b, c\}, draw an FA that accept all nonempty strings such that the last character of the string does not appear anywhere else in the string. For example, accab and bbc should be accepted, but babba should not.

5. Consider the following NFA with language \(W\).

(a) Give two examples of strings in \(W\).
(b) Give two examples of strings not in \(W\).
(c) Describe in English \(W\). Be precise.

Due: Monday January 27