#1 Write a regular expression that defines a C-like comment delimited by /* and */. Individual *’s and /’s may appear in the comment body, but the pair */ may not.

#2 Write a finite automaton that accepts non-empty strings of a’s, b’s and c’s with the property that each character must appear at least once. The following strings are allowed: abc, bacbb, cbaa, and aabccba. The following strings are not allowed: a, abb, λ, ccca, and bbcbb.

#3 Show an NFA that corresponds to the following regular expression:

\[(ab \mid ba \mid a)^*\]

Using MakeDeterministic, translate the NFA into a DFA. Optimize this DFA by merging states whenever possible.

#4 Is the set of binary strings (over 0 and 1) that represent even positive integers a regular set? Why? Is the set of binary strings (over 0 and 1) that represent positive integers evenly divisible by 3 a regular set? Why?

#5 Let Delete1 be the operator that systematically removes the last character from a set of non-null strings. For example, \(\text{Delete1}\{\text{abc, xy, a, b, bb}\}\) = \{ab, x, λ, b\}. Let \(R\) be any regular expression. Show that \(\text{Delete1}(R)\) is a regular set.