#1 Write a regular expression that defines a C-like comment whose body is 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 and b’s with the property that each character must appear at least twice. The following strings are allowed: abab, baabb, bbbaa, and aabbaba. The following strings are not allowed: a, abb, λ, bbba, and bbabb.

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

\[( a \mid aa \mid ba )^+ \]

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 first character from a set of non-null strings. For example, Delete1({abc,xy,a,b,bb}) = {bc,y,λ,b}. Let R be any regular expression that does not generate λ. Show that Delete1(R) is a regular set.