Names: _____

COMPSCI 250 Discussion #8: Boolean Expressions

Group Response Sheet
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15 November 2023

Writing Exercise:

Construct a regular expression for the set EE ("even-even") of strings in $\{a, b\}^*$ that have both an even number of a's and an even number of b's. Justify your answer carefully – explain why your expression generates only even-even strings and why it generates *all* even-even strings.

Note that all even-even strings have even length, so you may think of the whole string as being broken up into two-letter blocks.

Here are some more hints. You are not required to use them to solve the main problem, but they will probably be useful.

Define the language EEP ("even-even-primitive") of nonempty strings that are in EE and have *no proper prefix* in EE. (That is, if $w \in EEP$ and $w = uv$ with both u and v in EE, then either $u = \lambda$ or $v = \lambda$.) It turns out that while EEP is harder than EE to describe in English, it has a simpler regular expression.

- Explain why $EE = (EEP)^*$.

- Which strings of up to six letters are in EEP?

- Construct a regular expression for EEP, and explain why this solves the main problem.