

Problem Set 1

NOTE: All problems are from the 2nd edition of the textbook.

- 0.1 Read and solve, but do not turn in: Book, 2.18 . [CFL \cap regular = CFL]
You can check your solution with the one in the book.
- 0.2 Read and solve, but do not turn in: Book, 2.26 . [Chomsky normal form]
1. Book, 1.32 . [parallel addition]
 2. Book, 1.41 . [regular closure under perfect shuffle]
 3. Book, 1.53 . [sequential addition]
 4. Book, 1.60 . [small NFA for: $\{w \mid w \text{ contains an } a \text{ which is exactly } k \text{ places from the end}\}$]
 5. Book, 1.61 . [any DFA for above language must be large]
 6. Book, 2.24 . [very tricky CFL]
Think about this language in a different way.
 7. Book, 2.27 . [if-then-else ambiguous grammar]
You do not need to prove your grammar works, but adding a few comments about why it does work might help the grader.
 - 8.* (optional) Book, 1.59 . [synchronizing sequence]

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