

Theory of Computation, CSCI 438 spring 2022
Ambiguity in grammars and more examples, pg. 107-108, Feb. 16

Exercises 2.6b, 2.15, 2.16 and 2.17

2.6 b The complement of the language $\{a^n b^n \mid n \geq 0\}$.

2.15 Give a counterexample to show that the following construction fails to prove that the class of context-free languages is closed under star. Let A be a CFL that is generated by the CFG $G = (V, \Sigma, R, S)$. Add the new rule $S \rightarrow SS$ and call the resulting grammar G' . This grammar is supposed to generate A^* .

2.16 Show that the class of context-free languages is closed under the regular operations, union, concatenation, and star.

2.17 Use the results of Exercise 2.16 to give another proof that every regular language is context-free, by showing how to convert a regular expression directly to an equivalent context-free grammar.