CIT 596 Homework 4

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1 Exercise 2.1

TODO

2 Exercise 2.2

TODO

3 Exercise 2.4b

Given $\Sigma = \{0, 1\}$, give a CFG that generates the language $\{w \mid w$ starts and ends with the same symbol$\}$.
TODO

4 Exercise 2.4c

Given $\Sigma = \{0, 1\}$, give a CFG that generates the language $\{w \mid w$ the length of w is odd$\}$.
TODO

5 Exercise 2.4e

Given $\Sigma = \{0, 1\}$, give a CFG that generates the language $\{w \mid w = w^R$, that is$w$is a palindrome$\}$.
TODO

6 Exercise 2.5b

Give a formal description and state diagram for the language describe by Exercise 2.4b.
TODO

7 Exercise 2.5c

Give a formal description and state diagram for the language describe by Exercise 2.4c.
TODO

8 Exercise 2.5e

Give a formal description and state diagram for the language describe by Exercise 2.4e.

TODO

9 Exercise 2.9

Give a CFG that generates the langage $A = \{a^i b^j c^k \mid i = j \text{ or } j = k \text{ where } i, j, k \geq 0\}$. Is this CFG ambiguous?

TODO

10 Exercise 2.13

TODO

11 Exercise 2.14

TODO

12 Exercise 2.20

Let $A/B = \{w | wx \in A \text{ for some } x \text{ in } B$. Show that, if A is context free and B is regular, than A/B is context free.

TODO

13 Exercise 2.26

Show that, if G is a CFG in Chomsky normal form, then for any string $w \in L(G)$ of length $n \geq 1$, exactly $2n - 1$ steps are required for any derivation of w.

TODO

14 Exercise 2.30a

Use the pumping lemma to show the langauge $\{0^n 1^n 0^n 1^n \mid n \geq 0\}$ is not context free.

TODO