1. Prove that for any CFL $L$ there is a PDA $M = (Q, \Sigma, \Gamma, \delta, q_0, Z_0, F)$ such that $L(M) = L$ and for any $p, q \in Q$, $a \in \Sigma \cup \{\epsilon\}$, $X \in \Gamma$, and $\gamma \in \Gamma^*$, if $(p, \gamma) \in \delta(q, a, X)$, then $|\gamma| \leq 2$.

2. A CFG $G = (V, T, P, S)$ is said to be right-linear if each production is of one of the following forms:
   - $A \rightarrow w$, where $A \in V$, $w \in T^*$; or
   - $A \rightarrow wB$, where $A, B \in V$, $w \in T^*$.

   Prove that a language $L$ is regular iff there is a right-linear grammar $G$ such that $L(G) = L$.

3. Prove that every CFL not containing $\epsilon$ is generated by a CFG $G = (V, T, P, S)$, all of whose productions are of one of the following forms:
   - $A \rightarrow a$, where $A \in V$, $a \in T$; or
   - $A \rightarrow BC$, where $A, B, C \in V$, $B \neq C$.

   Furthermore, the productions of $G$ must satisfy the property that if $A \rightarrow \alpha_1 B \alpha_2$ and $A \rightarrow \gamma_1 B \gamma_2$ are productions, then either $\alpha_1 = \gamma_1 = \epsilon$ or $\alpha_2 = \gamma_2 = \epsilon$. 