



Ma2201/CS2022
Quiz 0110

Foundations of C.S.

Spring, 2021

PRINT NAME: _____

SIGN: _____

1. (4 pts) Write a **regular** grammar for the set of all strings on $\{a, b, c\}$ which either contain c^2 or are of even length.

2. (6 pts) Consider the grammar given by

$$\begin{aligned} G : S &\rightarrow BABCB \mid BCBAB \mid \lambda \\ A &\rightarrow a \mid \lambda \\ B &\rightarrow BABCB \mid BCBAB \mid \lambda \\ C &\rightarrow b \mid c \end{aligned}$$

a) Prove by induction on the number of rules applied that all sentential forms w satisfy $n_b(w) + n_c(w) + n_C(w) \geq n_a(w) + n_A(w)$.

b) What does this allow us to conclude about $L(G)$?