



Ma2201/CS2022
Quiz 0101

Foundations of C.S.

Spring, 2021

PRINT NAME: _____

SIGN: _____

1. (4 pts) Write a regular expression for all strings on $\{a, b, c\}$ which contain a^2 , b^2 and c^2 as substrings.
Give a short explanation why your solution is correct.

2. (6 pts) Consider the grammar given by

$$\begin{aligned} G : S &\rightarrow ABC \mid BCA \mid CAB \mid CBA \mid BAC \mid ACB \\ A &\rightarrow DaaD \\ B &\rightarrow DbbD \\ C &\rightarrow DccD \\ D &\rightarrow DD \mid ab \mid ac \mid ba \mid bc \mid ca \mid cb \mid aa \mid bb \mid cc \mid \lambda \end{aligned}$$

- a) Find a derivation of $abbbaabbbacc$.

- b) Draw the derivation tree of $abbbaabbbacc$.

- c) Give your best description of the language $L(G)$ and specify, according to your description, the role played by variable D .