Preparation Activity PA09 – Properties of CFLs

1. Consider the following grammar G:

   S → aZbVc | T | U
   T→ aZb
   U → bVc
   Z→ aZb | ε
   V → bVc | ε

   a) Transform the grammar G into CNF (Chomsky Normal Form) showing the steps needed;
   b) Using the grammar in CNF, show a syntax tree for the string "abc";
   c) Using the Cocke-Younger-Kasami (CYK) algorithm, show how to test if the string "abc" belongs to the language of the grammar in CNF.

2. Why do you think that the intersection of a CFL with an RL is always a CFL?