

Sample Assignment # 6.1

1. Write a CFG for the following languages:
 $L = \{ c^k a^n b^m \mid n < m, \text{ if } k=0; n > k+m, \text{ if } k>0 \}$.
2. Convert the following grammar to a CNF equivalent grammar. Show all steps.
 $G = (\{S, B, L, P, E\}, \{i, t, s, e, \{, \}, ;, 0, 1\}, R, S)$, where R is
 $S \rightarrow i P t S E \mid s \mid B$
 $B \rightarrow \{ s L \}$
 $L \rightarrow \lambda \mid ; s L$
 $P \rightarrow 0 \mid 1$
 $E \rightarrow \lambda \mid e S$
3. Present the CKY recognition matrix for the string babba assuming the Chomsky Normal Form grammar, $G = (\{S,A,B,C,D\}, \{a,b\}, R, S)$, specified by the rules R:
 $S \rightarrow AB \mid BA \mid SC$
 $A \rightarrow CS \mid CD \mid a$
 $B \rightarrow DS \mid b$
 $C \rightarrow a$
 $D \rightarrow b$