

Steps to convert a given CFG to Chomsky Normal Form:

- Step 1: If the Start Symbol S occurs on some right side, create a new Start Symbol S' and a new Production $S' \rightarrow S$.
- Step 2: Remove Null Productions. (Using the Null Production Removal discussed in previous Lecture)
- Step 3: Remove Unit Productions. (Using the Unit Production Removal discussed in previous Lecture)
- Step 4: Replace each Production $A \rightarrow B_1 \dots B_n$ where $n > 2$, with $A \rightarrow B_1 C$ where $C \rightarrow B_2 \dots B_n$. Repeat this step for all Productions having two or more Symbols on the right side.
- Step 5: If the right side of any Production is in the form $A \rightarrow aB$ where 'a' is a terminal and A and B are non-terminals, then the Production is replaced by $A \rightarrow XB$ and $X \rightarrow a$. Repeat this step for every Production which is of the form $A \rightarrow aB$.