CFG stands for context free grammar. It is a set of recursive rules which are used to create a string pattern.

• A CFG contains set of terminals and no-terminals.

• Generally, Non terminals or variables are represented with capital alphabets whereas terminals are represented with small alphabets.

• The languages which use context free grammar are called as context free language.

• Machines which recognize the context free language are called as **push down automata**. It is used to provide additional power to CFG.

Conversion of CFG to PDA:

Consider the following context free grammar:

$$R \rightarrow XRX \mid S$$
$$S \rightarrow aTb \mid bTa$$
$$T \rightarrow XTX \mid X \mid \varepsilon$$
$$X \rightarrow a \mid b$$

Consider the following diagram to represent the equivalent PDA of the above CFG:
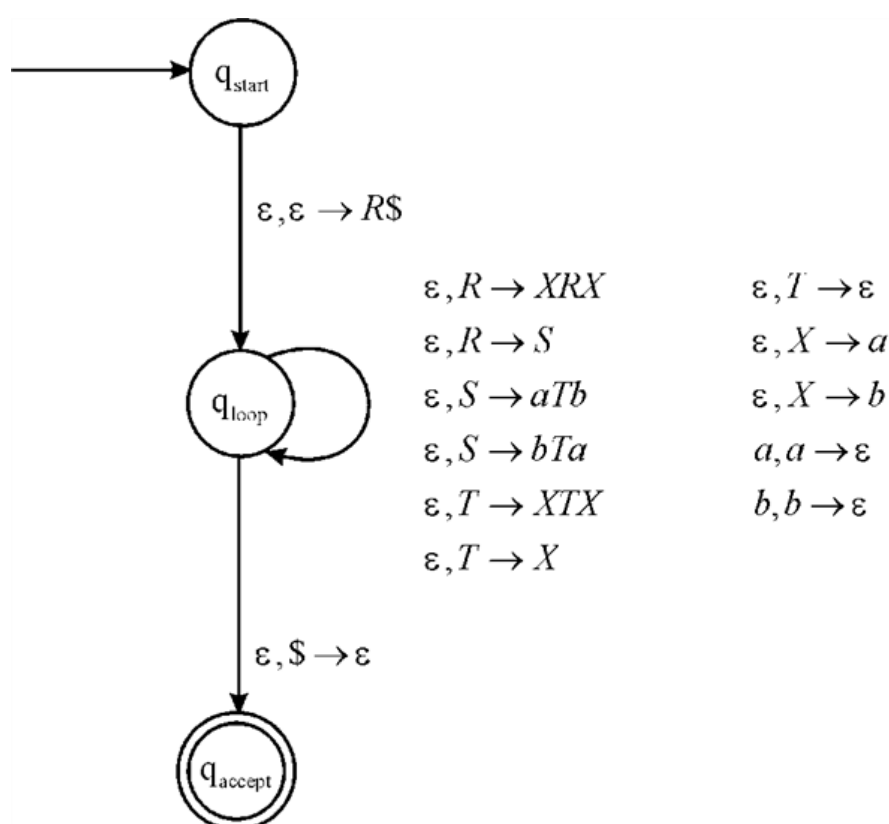
• The above transition rule allows someone to reduce the grammar that is to replace non-terminals or variables to the right-hand side terminals.

• Transition for the terminal symbols such as (a,b) permits someone for matching the input symbol to the terminal symbol.

• A path of PDA of string *w* can only be accepted if an input string *w* can only be generated by grammar *G*.