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CSC 312 assignment 6

**Question**
Define Grammar Write on the following: I. Derivation ii. Production iii. Sentence iv. Null Symbol

**Answers**

Grammars are finite set of rules used to describe languages. Grammar is a generator of language. Language is a set of strings generated by grammar. Grammar also describes how to form strings from a language's alphabet that are valid according to the language's syntax.

**(i) Derivation:**- Derivation is used to find whether the string belongs to a given grammar

**Types**

• Leftmost derivation.

• Rightmost derivation.

In leftmost derivation, at each and every step the leftmost non-terminal is expanded by substituting its corresponding production to derive a string.

In rightmost derivation, at each and every step the rightmost non-terminal is expanded by substituting its corresponding production to derive a string.

(ii) **Production:-** The productions of a grammar specify the manner in which the terminals and non-terminals can be combined to form strings. Each production consists of a non-terminal called the left side of the production, an arrow, and a sequence of tokens and/or on- terminals, called the right side of the production.

(iii) **Sentence:-** A sentence is a sentential form consisting only of terminals such as a + a \* a. A sentence can be derived using the following algorithm: Algorithm Derive String String := Start Symbol REPEAT Choose any nonterminal in String.

(iv) **Null Symbol:-** a control character representing nothing, with the value of binary zero, but having special meaning when interpreted as text, as in marking the end of character strings.