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**ASSIGNMENT**

Differentiate between lexemes and tokens. Give examples to support your discussion

**ANSWER**

A lexeme is a sequence of characters in the source program that matches the pattern for a token and is identified by the lexical analyzer as an instance of that token.

A token is a sequence of characters that have a collective meaning.A token is a pair consisting of a token name and an optional attribute value. The token name is an abstract symbol representing a kind of lexical unit, e.g., a particular keyword, or sequence of input characters denoting an identifier. The token names are the input symbols that the parser processes.

Example 1:

[Token] [Informal Description] [Sample Lexemes]

if characters i, f if

else characters e, l, s, e else

comparison < or > or <= or >= or == or != <=, !=

id letter followed by letters and digits pi, score, D2

number any numeric constant 3.14159, 0, 6.02e23

literal anything but ", surrounded by "'s "core dumped"

Examples 2:

if(y<= t)

y=y-3;

Lexeme                      Token

if                     KEYWORD

( LEFT PARENTHESIS

y                   IDENTIFIER

<=               COMPARISON

t                   IDENTIFIER

)             RIGHT PARENTHESIS

y                 IDENTIFIER

= ASSIGNMENT

y IDENTIFIER

- ARITHMETIC

3 INTEGER

**;**             SEMICOLON