ASSIGNMENT - 3

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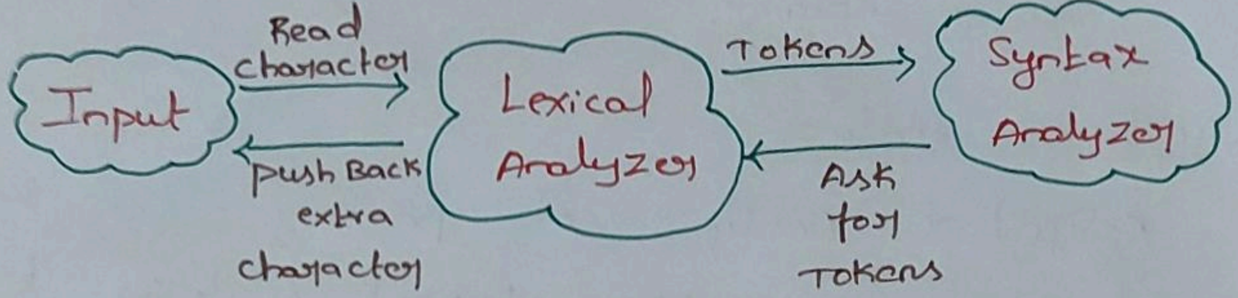
## Lexical Analysis:

* Lexical Analysis is the first phase of the compiler also known as a scanner.

* It converts the High level input program into a sequences of Tokens

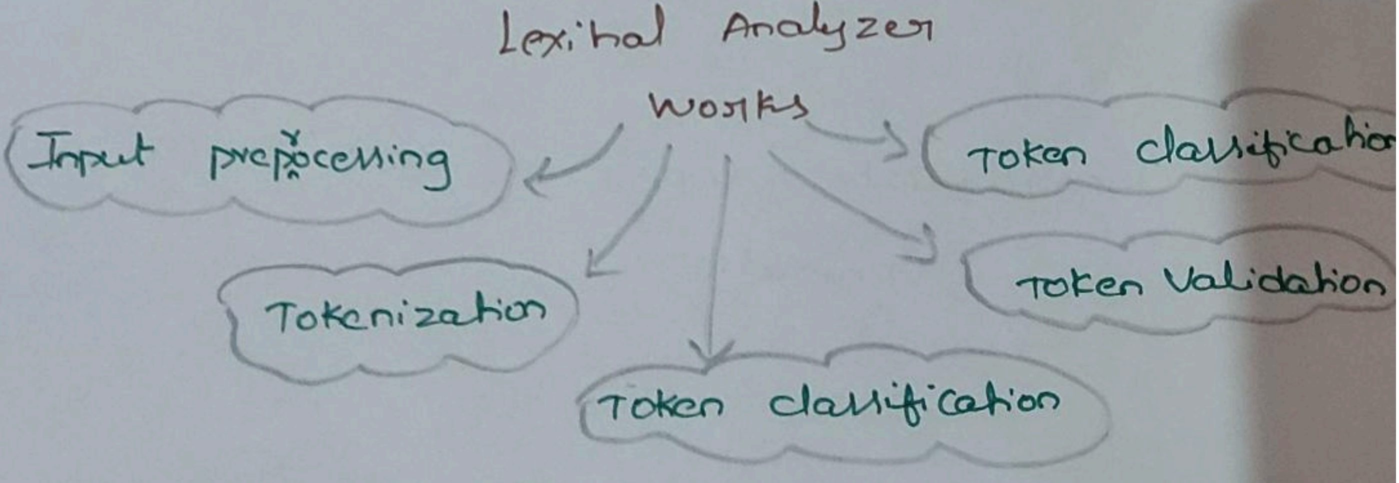


## Token:

A lexical token is a sequence of character that can be treated as a unit in the grammer of the programming language.

Ex of tokens:

* Type token (id, number, real, ...)
* punctuation tokens (if, void, return, ...)
* Alphabetic tokens (Keywords)



Ex:

a = b + c + 20

a, b, c = identifier

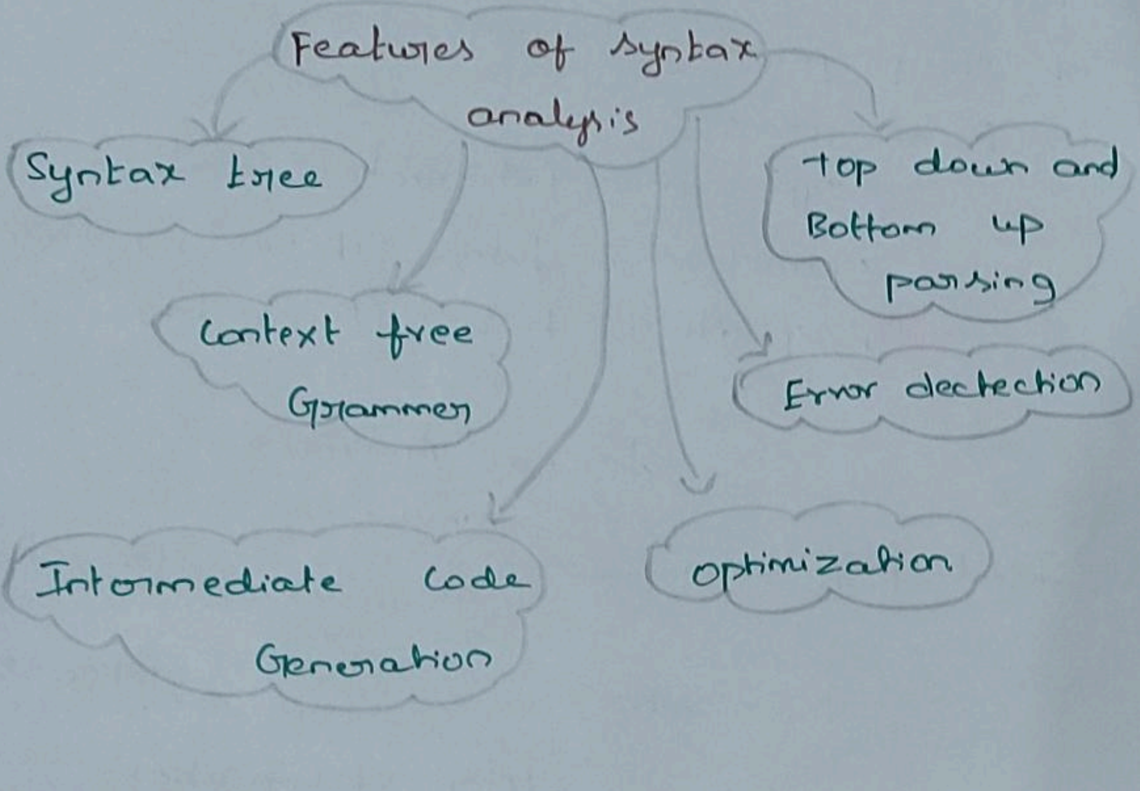
( = ) = Assignment operator

( + ) = operator

20 = Integer.

## Syntax Analyzer:

* Syntax Analysis or parsing is the Second phase, i.e. after lexical Analysis. it check the syntactical structure of given input.


Features of syntax analysis
Syntax tree
top down and Bottom up parsing
Context free Grammer
Error dectection
Intermediate code Generation
optimization

## Advantage:

* Advantage of using syntax analysis in compiler design include.

* Structural validation: Syntax analysis allow the compiler to check if the source code follow the grammatical rules of the programming.

* Easier semantic analysis: once the parse tree or AST is constructed, the compiler can perform semantic analysis

## Disadvantage:

* complexity * Reduced performance

* Limited error recovery * inability to handle all languag.

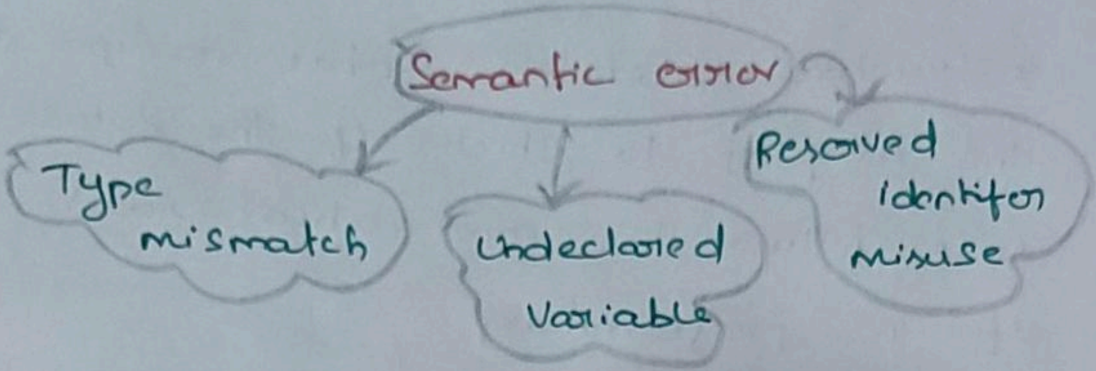
## Semantic Analysis:

* Semantic Analysis is the third phase of compiler.

* Semantic Analysis makes sure that declarations and statement of program are semantically correct.

* Type checking is an important part

of semantic analysis where compiler makes sure that each operator has matching operands.



Static semantic:

* It is named so because of the fact that these are checked at compile time.

* The static semantics and meanings of program during execution, are indirectly related.

Dynamic Semantic:

* It defined the meaning of different units of program like expression and statements.

* These are checked at runtime unlike static semantics.