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ASSIGNMENT 3

Title : Lexical Analysis

Problem Statement : Write a code to implement a lexical analyser for C language.

Objective :
- To understand the basic principles in compilers
- To study lexical analysis phase of compilers

Theory : Compiler takes input as a source program and produces output as an equivalent sequence of machine instructions. This process consists of two-step processing of source program.
1) Analysis of source program
2) Synthesis of target program

Analysis Step
1) Lexical analysis : Determine the lexical constituents in source program
2) Syntax analysis : Determine structure of source string
3) Semantic analysis : Determine meaning of source string

Lexical Analysis

The action of scanning the source program into proper syntatic classes is known as lexical analysis

Task of Lexical Analyzer
1) To scan the program into basic elements / token of the language.
2) To build the uniform symbol table
3) To build symbol and literal table
4) To remove white spaces and comments.

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5) To detect errors such as invalid identifier or constant.

Data Structures:

1) Source Program
2) Terminal Table
3) Literal Table
4) Identifier Table
5) Uniform Symbol Of Table
6) Buffer

Algorithm:

1) Initialize line no to 1
2) Read the source program line by line
3) For each line seperate the token such as
   - identifier / function main / keyword
   - integer constant
   - All type of operators
   - Remove the comments
   - Remove all white spaces
4) Assign a line no and increment line no.
5) Repeat steps 2-4 until end of file

Conclusion: I learnt about compilers and implemented lexical analyzer.