LEXICALANALYZER

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EXPT NO:1

AIM: To write a program to implement a lexical analyzer.

ALGORITHM:

1. Start.

2. Get the input program from the file add.txt.

3. Read the program line by line and check if each word in a line is a keyword, identifier, constant or an operator.

4. If the word read is an identifier, assign a number to the identifier and make an entry into the symbol table stored in sybol.txt.

5. For each lexeme read, generate a token as follows:

a. If the lexeme is an identifier, then the token generated is of the form <id, number>

b. If the lexeme is an operator, then the token generated is <op, operator>. c. If the

lexeme is a constant, then the token generated is <const, value>. d. If the lexeme is a

keyword, then the token is the keyword itself.

6. The stream of tokens generated are displayed in the console output.

7. Stop.

PROGRAM:

lexical.py > ...

```python
file  = open("./exp2.cpp", 'r')
lines = file.readlines()

keywords    = ["void", "main", "int", "float", "bool", "if", "for", "else", "while", "char", "return"]
operators   = ["=", "==", "+", "-", "*", "/", "++", "--", "+=", "-=", "!=", "||", "&&"]
punctuations= [";", "(", ")", "{", "}", "[", "]"]

def is_int(x):
    try:
        int(x)
        return True
    except:
        return False

for line in lines:
    for i in line.strip().split(" "):
        if i in keywords:
            print (i, " is a keyword")
        elif i in operators:
            print (i, " is an operator")
        elif i in punctuations:
            print (i, " is a punctuation")
        elif is_int(i):
            print (i, " is a number")
        else:
            print (i, " is an identifier")
```

INPUT:

lexical.py exp2.cpp

exp2.cpp > main()

```cpp
#include<iostream>
#include<vector>
using namespace std;

int main ( ) {
    vector < int > a;
    int b = 10 ;
    if( b == 10 ){
        cout << " YES " ;
    }
    else{
        cout << " NO " ;
    }
    return 0 ;
}
```

OUTPUT:

```
#include<iostream>  is an identifier
#include<vector>  is an identifier
using  is an identifier
namespace  is an identifier
std;  is an identifier
  is an identifier
int  is a keyword
main  is a keyword
(  is a punctuation
)  is a punctuation
{  is a punctuation
vector  is an identifier
<  is an identifier
int  is a keyword
>  is an identifier
a;  is an identifier
int  is a keyword
b  is an identifier
=  is an operator
10  is a number
;  is a punctuation
if(  is an identifier
b  is an identifier
==  is an operator
10  is a number
){  is an identifier
cout  is an identifier
<<  is an identifier
"  is an identifier
YES  is an identifier
"  is an identifier
;  is a punctuation
}  is a punctuation
else{  is an identifier
cout  is an identifier
<<  is an identifier
"  is an identifier
```