**Kennesaw State University**

**College of Computing and Software Engineering**

**DEPARTMENT OF COMPUTER SCIENCE**

CS 4408 Section (01) Concepts of Programming Language – (Spring 18)

**Assignment No. 1**

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# Initial Problem Statement:

To create a Lexical Analyzer(scanner) for subset of LUA Language

# Detailed description of the solution:

Test program creates an object Lexical Analyzer. Lexical Analyzer requires LUA source file. Object scans through each line, get the token type, and store in a token array. If it gets an error, then it displays it when object getTokenList method is called.

# Output:

**NO ERRORS IN LUA SCRIPT:**

Line Number:1 Lexeme Value:function Token Type:FUNCTION\_STATEMENT\_TKN

Line Number:1 Lexeme Value:f Token Type:IDEN\_TKN

Line Number:1 Lexeme Value:( Token Type:LEFT\_PAREN\_TKN

Line Number:1 Lexeme Value:) Token Type:RIGHT\_PAREN\_TKN

Line Number:2 Lexeme Value:x Token Type:IDEN\_TKN

Line Number:2 Lexeme Value:= Token Type:ASSIGNMENT\_OP\_TKN

Line Number:2 Lexeme Value:2 Token Type:LITERAL\_INTEGAR\_TKN

Line Number:3 Lexeme Value:y Token Type:IDEN\_TKN

Line Number:3 Lexeme Value:= Token Type:ASSIGNMENT\_OP\_TKN

Line Number:3 Lexeme Value:3 Token Type:LITERAL\_INTEGAR\_TKN

Line Number:4 Lexeme Value:z Token Type:IDEN\_TKN

Line Number:4 Lexeme Value:= Token Type:ASSIGNMENT\_OP\_TKN

Line Number:4 Lexeme Value:5 Token Type:LITERAL\_INTEGAR\_TKN

Line Number:6 Lexeme Value:m Token Type:IDEN\_TKN

Line Number:6 Lexeme Value:= Token Type:ASSIGNMENT\_OP\_TKN

Line Number:6 Lexeme Value:x Token Type:IDEN\_TKN

Line Number:6 Lexeme Value:+ Token Type:ARITH\_OP\_TKN

Line Number:6 Lexeme Value:y Token Type:IDEN\_TKN

Line Number:7 Lexeme Value:print Token Type:PRINT\_STATEMENT\_TKN

Line Number:7 Lexeme Value:( Token Type:LEFT\_PAREN\_TKN

Line Number:7 Lexeme Value:m Token Type:IDEN\_TKN

Line Number:7 Lexeme Value:) Token Type:RIGHT\_PAREN\_TKN

Line Number:9 Lexeme Value:n Token Type:IDEN\_TKN

Line Number:9 Lexeme Value:= Token Type:ASSIGNMENT\_OP\_TKN

Line Number:9 Lexeme Value:x Token Type:IDEN\_TKN

Line Number:9 Lexeme Value:- Token Type:ARITH\_OP\_TKN

Line Number:9 Lexeme Value:y Token Type:IDEN\_TKN

Line Number:9 Lexeme Value:\* Token Type:ARITH\_OP\_TKN

Line Number:9 Lexeme Value:z Token Type:IDEN\_TKN

Line Number:10 Lexeme Value:print Token Type:PRINT\_STATEMENT\_TKN

Line Number:10 Lexeme Value:( Token Type:LEFT\_PAREN\_TKN

Line Number:10 Lexeme Value:x Token Type:IDEN\_TKN

Line Number:10 Lexeme Value:) Token Type:RIGHT\_PAREN\_TKN

Line Number:12 Lexeme Value:q Token Type:IDEN\_TKN

Line Number:12 Lexeme Value:= Token Type:ASSIGNMENT\_OP\_TKN

Line Number:12 Lexeme Value:x Token Type:IDEN\_TKN

Line Number:12 Lexeme Value:- Token Type:ARITH\_OP\_TKN

Line Number:12 Lexeme Value:y Token Type:IDEN\_TKN

Line Number:12 Lexeme Value:\* Token Type:ARITH\_OP\_TKN

Line Number:12 Lexeme Value:z Token Type:IDEN\_TKN

Line Number:13 Lexeme Value:print Token Type:PRINT\_STATEMENT\_TKN

Line Number:13 Lexeme Value:( Token Type:LEFT\_PAREN\_TKN

Line Number:13 Lexeme Value:y Token Type:IDEN\_TKN

Line Number:13 Lexeme Value:) Token Type:RIGHT\_PAREN\_TKN

Line Number:15 Lexeme Value:if Token Type:IF\_STATEMENT\_TKN

Line Number:15 Lexeme Value:( Token Type:LEFT\_PAREN\_TKN

Line Number:15 Lexeme Value:q Token Type:IDEN\_TKN

Line Number:15 Lexeme Value:>= Token Type:RELATIVE\_OP\_TKN

Line Number:15 Lexeme Value:n Token Type:IDEN\_TKN

Line Number:15 Lexeme Value:) Token Type:RIGHT\_PAREN\_TKN

Line Number:15 Lexeme Value:then Token Type:THEN\_STATEMENT\_TKN

Line Number:16 Lexeme Value:n Token Type:IDEN\_TKN

Line Number:16 Lexeme Value:= Token Type:ASSIGNMENT\_OP\_TKN

Line Number:16 Lexeme Value:n Token Type:IDEN\_TKN

Line Number:16 Lexeme Value:- Token Type:ARITH\_OP\_TKN

Line Number:16 Lexeme Value:1 Token Type:LITERAL\_INTEGAR\_TKN

Line Number:17 Lexeme Value:end Token Type:END\_STATEMENT\_TKN

Line Number:18 Lexeme Value:if Token Type:IF\_STATEMENT\_TKN

Line Number:18 Lexeme Value:( Token Type:LEFT\_PAREN\_TKN

Line Number:18 Lexeme Value:q Token Type:IDEN\_TKN

Line Number:18 Lexeme Value:<= Token Type:RELATIVE\_OP\_TKN

Line Number:18 Lexeme Value:n Token Type:IDEN\_TKN

Line Number:18 Lexeme Value:) Token Type:RIGHT\_PAREN\_TKN

Line Number:18 Lexeme Value:then Token Type:THEN\_STATEMENT\_TKN

Line Number:19 Lexeme Value:n Token Type:IDEN\_TKN

Line Number:19 Lexeme Value:= Token Type:ASSIGNMENT\_OP\_TKN

Line Number:19 Lexeme Value:n Token Type:IDEN\_TKN

Line Number:19 Lexeme Value:- Token Type:ARITH\_OP\_TKN

Line Number:19 Lexeme Value:1 Token Type:LITERAL\_INTEGAR\_TKN

Line Number:20 Lexeme Value:end Token Type:END\_STATEMENT\_TKN

Line Number:21 Lexeme Value:if Token Type:IF\_STATEMENT\_TKN

Line Number:21 Lexeme Value:( Token Type:LEFT\_PAREN\_TKN

Line Number:21 Lexeme Value:q Token Type:IDEN\_TKN

Line Number:21 Lexeme Value:== Token Type:RELATIVE\_OP\_TKN

Line Number:21 Lexeme Value:n Token Type:IDEN\_TKN

Line Number:21 Lexeme Value:) Token Type:RIGHT\_PAREN\_TKN

Line Number:21 Lexeme Value:then Token Type:THEN\_STATEMENT\_TKN

Line Number:22 Lexeme Value:n Token Type:IDEN\_TKN

Line Number:22 Lexeme Value:= Token Type:ASSIGNMENT\_OP\_TKN

Line Number:22 Lexeme Value:n Token Type:IDEN\_TKN

Line Number:22 Lexeme Value:- Token Type:ARITH\_OP\_TKN

Line Number:22 Lexeme Value:1 Token Type:LITERAL\_INTEGAR\_TKN

Line Number:23 Lexeme Value:end Token Type:END\_STATEMENT\_TKN

Line Number:24 Lexeme Value:if Token Type:IF\_STATEMENT\_TKN

Line Number:24 Lexeme Value:( Token Type:LEFT\_PAREN\_TKN

Line Number:24 Lexeme Value:q Token Type:IDEN\_TKN

Line Number:24 Lexeme Value:~= Token Type:RELATIVE\_OP\_TKN

Line Number:24 Lexeme Value:n Token Type:IDEN\_TKN

Line Number:24 Lexeme Value:) Token Type:RIGHT\_PAREN\_TKN

Line Number:24 Lexeme Value:then Token Type:THEN\_STATEMENT\_TKN

Line Number:25 Lexeme Value:n Token Type:IDEN\_TKN

Line Number:25 Lexeme Value:= Token Type:ASSIGNMENT\_OP\_TKN

Line Number:25 Lexeme Value:n Token Type:IDEN\_TKN

Line Number:25 Lexeme Value:- Token Type:ARITH\_OP\_TKN

Line Number:25 Lexeme Value:1 Token Type:LITERAL\_INTEGAR\_TKN

Line Number:26 Lexeme Value:end Token Type:END\_STATEMENT\_TKN

Line Number:28 Lexeme Value:end Token Type:END\_STATEMENT\_TKN

**ERRORS IN LUA SCRIPT: (n1 on line 25 and 26) – Off by 1 since program line starts at 0**

Invalid lexeme:n1 on line 24

Invalid lexeme:n1 on line 25

Exception in thread "main" java.lang.IllegalArgumentException: Invalid Lexeme

at LexicalAnalyzer.getTokenList(LexicalAnalyzer.java:200)

at test.main(test.java:7)