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Roll number: TCOD40

Exam seat no: T150244362

D3-batch

EXPERIMENT NO: 05

1. Title:

Write a program using Lex specifications to implement lexical analysis phase of compiler to generate tokens of subset of “Java“ program

CODE:

```
%{

FILE* yyin;
%}

DIGIT [0-9]
NUMBER {DIGIT}+
REAL {DIGIT}*[.]{NUMBER}
TEXT [A-Za-z]
KEYWORDS "class"|"static"|"main"
DATATYPE "int"|"float"|"double"|"long"|"void"|"String"
CONDITIONAL "if"|"else"|"else if"|"switch"|"case"
ITERATIVE "for"|"while"|"do"
PREPROCESSOR "import"[^\n]*";"
SC ";"
IDENTIFIER {TEXT}({DIGIT}|{TEXT}|"_")*
NONIDENTIFIER {DIGIT}({TEXT}|{DIGIT}|"_")*
ARITH_OP "+"|"-"|"/"|"%"|"*";
```

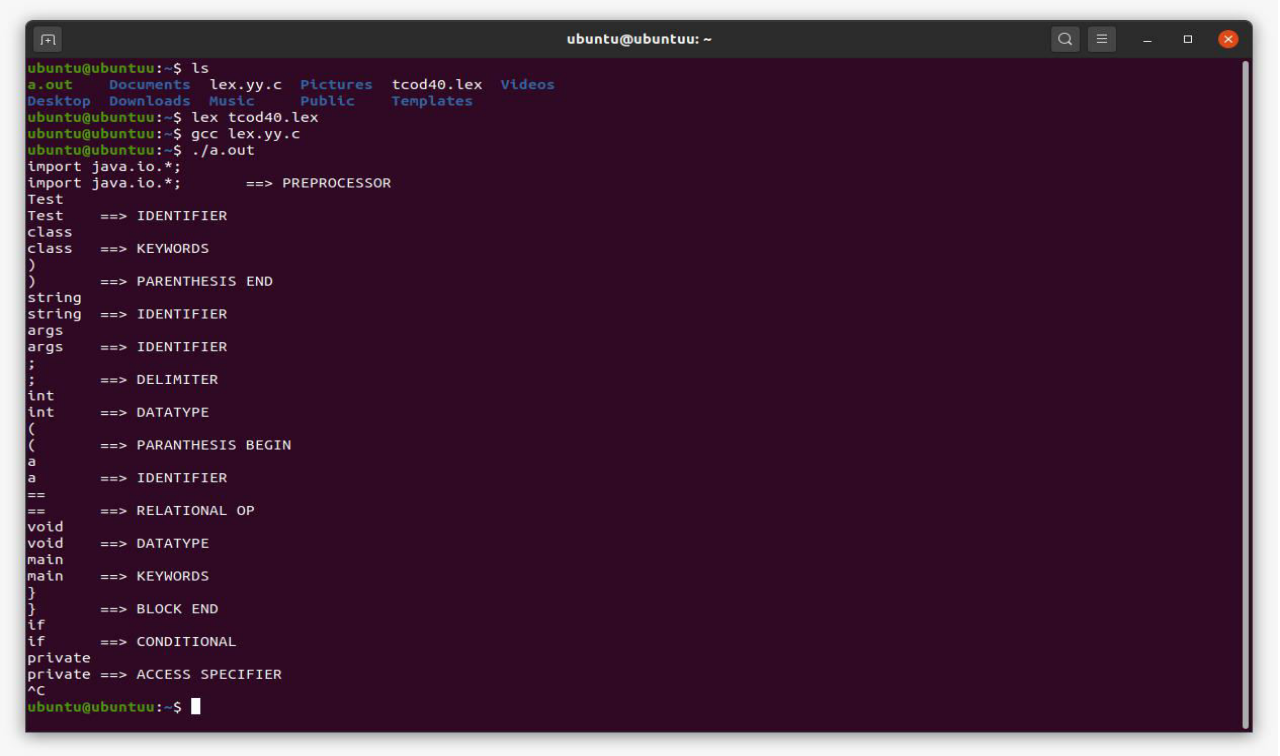
```
LOGICAL_OP "&&"|"||"|"!"|"!="
REL_OP "<"|">"|"<="|">="|"=="
UNARY "++"|"--"
ACCESS "public"|"private"|"protected"|""
FUNCTION {ACCESS}{DATATYPE}{IDENTIFER}"("({DATATYPE}{IDENTIFIER})*")"

%%
[ \n\t]+ ;
{PREPROCESSOR} {printf("%s\t==> PREPROCESSOR\n",yytext);}
{CONDITIONAL} { printf("%s\t==> CONDITIONAL\n",yytext);}
{ITERATIVE} {printf("%s\t==> ITERATIVE CONSTRUCT\n",yytext);}
{DATATYPE}  {printf("%s\t==> DATATYPE\n",yytext);}
{ACCESS} {printf("%s\t==> ACCESS SPECIFIER\n",yytext);}
{KEYWORDS} {printf("%s\t==> KEYWORDS\n",yytext);}
{IDENTIFIER} {printf("%s\t==> IDENTIFIER\n",yytext);}
{REAL} {printf("%s\t==> REAL CONSTANT\n",yytext);}
{NUMBER} {printf("%s\t==> CONSTAINT INTEGER\n",yytext);}
{NONIDENTIFIER} {printf("%s\t==> NONIDENTIFIER\n",yytext);}
{SC} {printf("%s\t==> DELIMITER\n",yytext);}
{UNARY} {printf("%s\t==> UNARY OP\n",yytext);}
{ARITH_OP} {printf("%s\t==> ARITHMETIC OPERATOR\n",yytext);}
{LOGICAL_OP} {printf("%s\t==> LOGICAL OP\n",yytext);}
{REL_OP} {printf("%s\t==> RELATIONAL OP\n",yytext);}
"=" {printf("%s\t==> ASSIGNMENT OP\n",yytext);}
"{"  {printf("%s\t==> BLOCK BEGIN\n",yytext);}
"}"  {printf("%s\t==> BLOCK END\n",yytext);}
"("  {printf("%s\t==> PARANTHESIS BEGIN\n",yytext);}
")"  {printf("%s\t==> PARENTHESIS END\n",yytext);}
. ;


%%
int yywrap()
{
        return 1;
}

int main()
{
        yyin=fopen("ip1","r");
        yylex();
        fclose(yyin);
return 0;
}
```

OUTPUT:


ubuntu@ubuntuu: ~
ubuntu@ubuntuu:~$ ls
a.out Documents lex.yy.c Pictures tcod40.lex Videos
Desktop Downloads Music Public Templates
ubuntu@ubuntuu:~$ lex tcod40.lex
ubuntu@ubuntuu:~$ gcc lex.yy.c
ubuntu@ubuntuu:~$ ./a.out
import java.io.*;
import java.io.*; ==> PREPROCESSOR
Test
Test ==> IDENTIFIER
class
class ==> KEYWORDS
)
) ==> PARENTHESIS END
string
string ==> IDENTIFIER
args
args ==> IDENTIFIER
;
; ==> DELIMITER
int
int ==> DATATYPE
(
(==> PARANTHESIS BEGIN
a
a ==> IDENTIFIER
==
== ==> RELATIONAL OP
void
void ==> DATATYPE
main
main ==> KEYWORDS
}
} ==> BLOCK END
if
if ==> CONDITIONAL
private
private ==> ACCESS SPECIFIER
^C
ubuntu@ubuntuu:~$