MANICK VISHAL C (220701158)

EXP NO: 03 **DATE:**

DEVELOP A LEXICAL ANALYSER TO RECOGNIZE A FEW PATTERNS IN C. (EX.IDENTIFIERS, CONSTANTS, COMMENTS, AND OPERATORS, ETC.) USING LEX TOOL.

AIM:

To develop a Lexical Analyzer using the LEX tool that recognizes different tokens in a given C program snippet, including Identifier, Constants, Comments, Operators, Keywords, Special Symbols.

ALGORITHM:

- **Start**
- Define token patterns in **LEX** for:
  - **Keywords** (e.g., `int`, `float`, `if`, `else`)
  - **Identifiers** (variable/function names)
  - **Constants** (integer and floating-point numbers)
  - **Operators** (`+`, `-`, `=`, `==`, `!=`, `*`, `/`)
  - **Comments** (`// single-line`, `/* multi-line */`)
  - **Special Symbols** (`{`, `}`, `(`, `)`, `;`, `,`)
- Read input source code.
- Match the code tokens using LEX rules.
- Print each recognized token with its type.
- **End**

PROGRAM:

```
%{
    #include <stdio.h>
    #include <stdlib.h>
    #include <string.h>
    #include <stddef.h>
%}
```

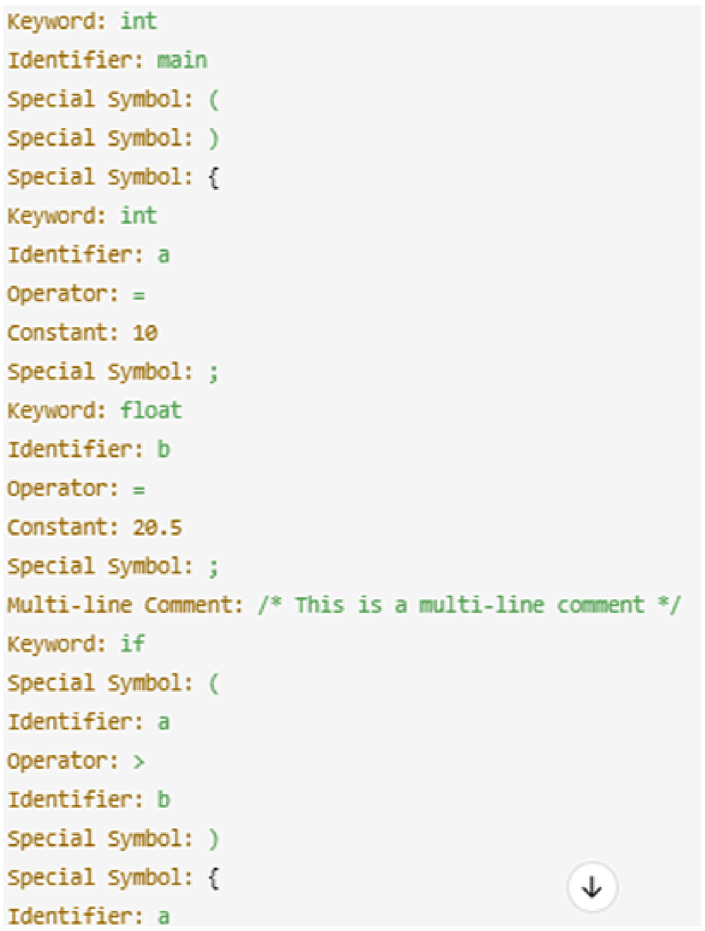
MANICK VISHAL C (220701158)

```
%%
"int"|"float"|"if"|"else"    { printf("KEYWORD: %s\n", yytext); }
[a-zA-Z_][a-zA-Z0-9_]*       { printf("IDENTIFIER: %s\n", yytext); }
[0-9]+                      { printf("INTEGER CONSTANT: %s\n", yytext); }
[0-9]*\.[0-9]+              { printf("FLOAT CONSTANT: %s\n", yytext); }
\/\/.*                      { printf("SINGLE-LINE COMMENT\n"); }
\/\*([^*]|\*+[^/*])*\*\/     { printf("MULTI-LINE COMMENT\n"); }
\+|\-|\*|\/|\%|=|==|!=       { printf("OPERATOR: %s\n", yytext); }
[\{\}\(\)\;\,]              { printf("SPECIAL SYMBOL: %s\n", yytext); }
[ \t\n]                     {  }

%%
int yywrap() {
   return 1;
}

int main() {
   yylex();
   return 0;
}
```

MANICK VISHAL C (220701158)

OUTPUT:

```
lex lexer.l
cc lex.yy.c -o lexer
./a.out
Sample Input
int main() {
int a = 10;
float b = 20.5;
/* This is a multi-line comment */
if (a > b) {
 a = a + b;
}
 return 0;
}
```



```
Keyword: int
Identifier: main
Special Symbol: (
Special Symbol: )
Special Symbol: {
Keyword: int
Identifier: a
Operator: =
Constant: 10
Special Symbol: ;
Keyword: float
Identifier: b
Operator: =
Constant: 20.5
Special Symbol: ;
Multi-line Comment: /* This is a multi-line comment */
Keyword: if
Special Symbol: (
Identifier: a
Operator: >
Identifier: b
Special Symbol: )
Special Symbol: {
Identifier: a
```

RESULT:

Thus the above program reads a C code snippet, tokenizes it using LEX rules, recognizes and categorizes keywords, identifiers, constants, operators, comments, and special symbols, and then displays each token along with its type.