EXP:03

DATE:09/07/2025

LEX PROGRAMS

1. **Write a LEX program to recognize variables, keywords , special characters, digits, floating point numbers and exponents using files**

CODE:

```
%{
#include <stdio.h>
#include <string.h>
char* keywords[] = {"int", "float", "if", "else", "return", "while", "for", "void"};
int is_keyword(char* str) {
   for(int i = 0; i < sizeof(keywords)/sizeof(char*); i++) {
      if(strcmp(keywords[i], str) == 0)
         return 1;
   }
   return 0;
}
%}
DIGIT [0-9]
LETTER [a-zA-Z]
ID {LETTER}({LETTER}|{DIGIT})*
FLOAT {DIGIT}+"."{DIGIT}*([eE][+-]?{DIGIT}+)?
EXPONENT {DIGIT}+([eE][+-]?{DIGIT}+)
WS [ \t\n]+
SPECIAL [□□\{\};=+\-\*/%,<>!&|]
%%
{WS} ; // Skip whitespace
```

```
{ID} { if (is_keyword(yytext)) printf("<KEYWORD: %s>\n", yytext); else printf("<VARIABLE: %s>\n", yytext); }

{FLOAT} printf("<FLOAT: %s>\n", yytext);

{EXPONENT} printf("<EXPONENT: %s>\n", yytext);

{DIGIT}+ printf("<DIGIT: %s>\n", yytext);

{SPECIAL} printf("<SPECIAL CHAR: %s>\n", yytext);

. printf("<UNKNOWN: %s>\n", yytext);

%%

int main(int argc, char **argv) {
    if (argc > 1) {
        FILE *file = fopen(argv[1], "r");
        if (!file) {
            perror("Unable to open file");
            return 1;
        }
        yyin = file;
    }
    yylex();
    return 0;
}

int yywrap() { return 1; }
```

OUTPUT:

```
1 if
2         adi10=10;
3 else
4         void
```

```
ubuntu@unix-Veriton-M200-H610:~$ lex a1.l
ubuntu@unix-Veriton-M200-H610:~$ gcc lex.yy.c -o a1 -lfl
ubuntu@unix-Veriton-M200-H610:~$ ./a1 input.txt
<KEYWORD: if>
<VARIABLE: adi10>
<SPECIAL CHAR: =>
<DIGIT: 10>
<SPECIAL CHAR: ;>
<KEYWORD: else>
<KEYWORD: void>
```

2. **Write a LEX program to validate E-mail id given via input file**

CODE:

```
%{
#include <stdio.h>
%}
EMAIL [a-zA-Z0-9._%+-]+@[a-zA-Z0-9.-]+\.[a-zA-Z]{2,}
WS [ \t\n]+
%%
{WS} ; // skip
{EMAIL} printf("Valid Email: %s\n", yytext);
. printf("Invalid token: %s\n", yytext);
%%
int main(int argc, char **argv) {
    if (argc > 1) {
        FILE *file = fopen(argv[1], "r");
        if (!file) {
            perror("Unable to open file");
            return 1;
        }
        yyin = file;
    }
    yylex();
```

```
    return 0;
}
int yywrap() { return 1; }
```

OUTPUT:

```
1 hello@example.com
2 invalid-email
3 test123@domain.org
4 name@siteS
```

```
ubuntu@unix-Veriton-M200-H610:~$ lex a2.l
ubuntu@unix-Veriton-M200-H610:~$ gcc lex.yy.c -o a2 -lfl
ubuntu@unix-Veriton-M200-H610:~$ ./a2 input2.txt
Valid Email: hello@example.com
Invalid token: i
Invalid token: n
Invalid token: v
Invalid token: a
Invalid token: l
Invalid token: i
Invalid token: d
Invalid token: -
Invalid token: e
Invalid token: m
Invalid token: a
Invalid token: i
Invalid token: l
Valid Email: test123@domain.org
Invalid token: n
Invalid token: a
Invalid token: m
Invalid token: e
Invalid token: @
Invalid token: s
Invalid token: i
Invalid token: t
Invalid token: e
```

s

RESULT:

The code and outputs for the LEX program and have been executed and verified.