LAB REPORT

CSE232: Compiler Design Lab

01
[Report Number]

Topic: Write a Flex program to recognize the following types of strings.

Submitted To

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Experiment No: 01	Mapping: CO1 and CO2
Experiment Name	Write a Flex program to recognize the following types of strings.

Experiment Details:

Lexer.l:

```
%{
#include <stdio.h>
%}

%option noyywrap

%%
^[a-zA-Z_][a-zA-Z0-9_]*[0-9]$  { printf("Matched: %s\n", yytext); }
.|\n                           { /* Ignore any other characters or newlines */ }
%%

int main(int argc, char **argv) {
    if (argc > 1) {
        FILE *f = fopen(argv[1], "r");
        if (!f) { perror(argv[1]); return 1; }
        yyin = f;
    }
    yylex();    // Start the lexical analysis
    return 0;
}
```

tests.txt:

```
test_456
_123test
123abc
a1
_var9
abc_123
a_bc
1abc9
Z0
_9
a0
A_1b
__0
abc123
```

```
abc_
_
a
a9_
```

Command:

```
flex lexer.l
clang lex.yy.c -o lexer
./lexer tests.txt
```

Obtained Output:

Shaharias-MacBook-Air:Lap_Report shahariar13$ flex lexer.l Shaharias-MacBook-Air:Lap_Report shahariar13$ clang lex.yy.c -o lexer Shaharias-MacBook-Air:Lap_Report shahariar13$ ./lexer tests.txt Matched: test_456 Matched: a1 Matched: _var9 Matched: abc_123 Matched: Z0 Matched: _9 Matched: a0 Matched: __0 Matched: abc123 Shaharias-MacBook-Air:Lap_Report shahariar13$	Desired Output? YES

Alternative Steps/Solution (If any):

```
%option noyywrap
```

❖ Solution to Missing libfl Library on macOS:

On macOS, if the libfl library is missing, a suitable solution is to add the %option noyywrap directive in the Flex file. This directive disables the default yywrap() function, which is typically part of the libfl library. By using %option noyywrap, the program no longer requires libfl to run, thereby resolving the issue when the library is unavailable.

Observation/ Comments:

The addition of the `%option noyywrap` directive resolves the issue of missing `libfl` on macOS by disabling the `yywrap()` function, which eliminates the need for the Flex library during compilation.

Appendix A: Course Outcomes, Complex Engineering Problems (EP) and Complex Engineering Activities (EA) Addressing.

Table: CSE312 Course Outcomes (COs) with Mappings

COs	CO Statements	POs	Learning Domains	Knowledge Profile	Complex Engineering Problem	Complex Engineering Activities
CO1	Demonstrate a comprehensive understanding of fundamental database management concepts, including the relational data model, normalization techniques, and SQL basics.	PO1	C2 A2 P2	K2 K3 K4 K8	EP1 EP4	
CO2	Design, implement and optimize relational databases, incorporating advanced SQL queries, indexing techniques and query optimization strategies.	PO3	C3 A3 P3	K2 K3 K4 K6 K8	EP1 EP2 EP7	EA3
CO3	Understand and Analyze security measures, distributed database architectures and emerging trends in database management, demonstrating an understanding of the broader context and challenges in the field.	PO5	C4 A4 P3	K6	EP4	

Table: Addressing CO (1 to 3), Knowledge Profile (K), Attainment of Complex Engineering Problems (EP):

SN	Engineering Problem (EP) Definition	Attain Ment	CO	Justification (with Knowledge Profile)
01	EP1: Depth of Knowledge required	Yes/No	CO1, CO2	
02	EP2: Range of Conflicting Requirements	Yes/No	CO2	
03	EP4: Familiarity of Issues	Yes/No	CO1, CO3	

04	EP7: Interdependence	Yes/No	CO2	

Table: Addressing COs

SN	COs	Attainment	Justification
01	CO1	Yes/No	These Lab activities attain CO1 by.
02	CO2	Yes/No	N/A
03	CO3	Yes/No	These Lab activities attain CO3 by.

Table: Lab-Wise Recommended Topics

Lab Class No.	**Proposed Activity**
Lab 1	Write a Flex program to recognize the following types of strings.
Lab 2	Write a Flex program to recognize the following types of strings.
Lab 3	Write a calculator using Flex and Bison that supports