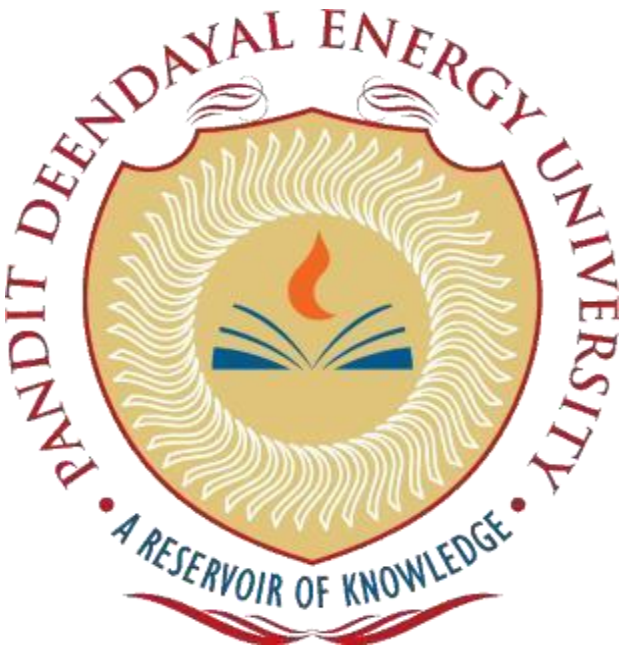
Pandit Deendayal Energy University, Gandhinagar

School of Technology

Department of Computer Science & Engineering

System Software & Compiler Design Lab (20CP302P)



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Enrolment No: **21BCP142**

Semester: **V**

Division: **3 (G5)**

Branch: **Computer Science Engineering**

Practical: 3

Aim:

a. Write a LEX program to eliminate comment lines (single line and multiline) in a high-level program and copy the comments in comments.txt file and copy the resulting program into a separate file input.c.

Code:

```
%option noyywrap

%{

#include <stdio.h>

FILE* output_file;

FILE* comment_file;

%}


%%

\/\/(.*)|\/\*([^]|[^*]|\*[^/])*\*\/ {

   comment_file = fopen("comments.txt", "a");

   if (comment_file) {

      fprintf(comment_file, "%s\n", yytext);

      fclose(comment_file);

   } else {

      fprintf(stderr, "Error opening the file for writing.\n");
```

```
    }
}
.|\n {
   output_file = fopen("output.c", "a");
    if (output_file) {
        fprintf(output_file, "%s", yytext);
        fclose(output_file);
    } else {
        fprintf(stderr, "Error opening the file for writing.\n");
    }
}

%%
int main() {
    yyin = fopen("input.c", "r");
    yylex();
    fclose(output_file);

    return 0;
}
```

Output:

```
PS D:\Sem-5\compiler> flex Lab3\3a\exp3a.l
PS D:\Sem-5\compiler> gcc lex.yy.c
PS D:\Sem-5\compiler> ./a
```

Lab3 > 3a > C input.c > main()

```c
void main() {
    float f1,f2;
    int a, b, total;
    total = f1 + f2 + a + b;
}

// flex fileName
/* gcc lex.yy.c
 ./a.exe */

```

Lab3 > 3a > C output.c > main()

```c
void main() {
    float f1,f2;
    int a, b, total;
    total = f1 + f2 + a + b;
}
```

Lab3 > 3a > comment.txt

```
// flex fileName
/* gcc lex.yy.c
 ./a.exe */

```

Aim:

b. Write a LEX program to count the number of characters, words and lines in the given input.

Code:

```
%option noyywrap


%{


#include <stdio.h>

int w,c,l;

%}


word [a-zA-Z]


%%

{word}{word}* {printf("%s\n ",yytext); w++; c+=yyleng;}


\n          {l++;}


. {}
```

```
%%


int main() {
    yyin = fopen("input.txt", "r");
    yylex();
    printf("\nWords: %d Chracters: %d Lines: %d",w,c,l+1);
    fclose(yyin);
    return 0;
}
```

Lab3 > 3b > ≡ input.txt

```
1  The sun sets behind the mountains, painting the sky with hues of orange and pink.
2  Birds return to their nests, chirping happily.
3  A gentle breeze rustles the leaves in the quiet forest.
4  Nature's symphony plays as day turns into night.
5  Peaceful moments like these are treasures.
6
```

Output:

```
Words: 47
Chracters: 223
Lines: 6
PS D:\Sem-5\compiler\Lab3\3b>
```

Aim:

c. Write a LEX program that read the numbers and add 3 to the numbers if the number is divisible by 7.

Code:

```
%option noyywrap


%{
#include<stdio.h>
FILE* number_file;
%}


digits [0-9]


%%
{digits}+ {
   int num = atoi(yytext); // Convert matched text to an integer
   if (num % 7 == 0) {
      num += 3;
   }
```

```
    printf("%d", num);


    number_file = fopen("number.txt", "a");
    if (number_file) {
        fprintf(number_file, "%d\n", num);
        fclose(number_file);
    } else {
        fprintf(stderr, "Error opening the file.\n");
    }
}




.|\n {
    printf(" ");
}
%%


int main()
{
```

```
    FILE* input = fopen("input.txt","r");
    if(!input)
    {
        printf(stderr, "Error opening the input file");
    }
    yyin = input;
    yylex();
    fclose(input);
}
```

Lab3 > 3c > input.txt

```
1    7 1 14 15 16 17 18 19 20 21
```

Output:

```
PS D:\Sem-5\compiler\Lab3\3c> ./a
10 1 17 15 16 17 18 19 20 24
PS D:\Sem-5\compiler\Lab3\3c>
```

Lab3 > 3c > number.txt

```
1    10
2    1
3    17
4    15
5    16
6    17
7    18
8    19
9    20
10   24
```