Compiler Design 19CSE401
Exercise-1

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CSE-A

1. Number of Capital Letter

```
// Amudhan K 22027

%{
#include <stdio.h>
int count = 0;
%}

%%
[A-Z] { printf("%s capital letter\n", yytext); count++; }
.     { printf("%s not a capital letter\n", yytext); }
\n    { return 0; }
%%

int yywrap() { return 1; }

int main() {
    yylex();
    printf("\nNumber of Capital letters in the given input - %d\n", count);
    return 0;
}
```

Output:

```
amudhan@amudhan:~/Downloads/temp$ lex Capital.l
amudhan@amudhan:~/Downloads/temp$ gcc lex.yy.c
amudhan@amudhan:~/Downloads/temp$ ./a.out
Hello Amudhan
H capital letter
e not a capital letter
l not a capital letter
l not a capital letter
o not a capital letter
  not a capital letter
A capital letter
m not a capital letter
u not a capital letter
d not a capital letter
h not a capital letter
a not a capital letter
n not a capital letter

Number of Capital letters in the given input - 2
```

2. Count Vowel and Consonants

```
// Amudhan K 22027

%{
#include <stdio.h>
int vowels = 0, consonants = 0;
%}

%%
[aAeEiIoOuU]    { vowels++; }
[a-zA-Z]        { consonants++; }
.|\n            ;
%%

int yywrap() { return 1; }

int main() {
    yylex();
    printf("Vowels: %d, Consonants: %d\n", vowels, consonants);
    return 0;
}
```

Output:

```
amudhan@amudhan:~/Downloads/temp$ lex CountVowelsConsonants.l
amudhan@amudhan:~/Downloads/temp$ gcc lex.yy.c
amudhan@amudhan:~/Downloads/temp$ ./a.out
Hello bro how are you ? I am fine
Vowels: 12, Consonants: 12
```

3. Line word Count

```
// Amudhan K 22027

%{
#include <stdio.h>
int words = 0, digits = 0, specials = 0, lines = 0;
%}

%%
[ \t]+          ;               // Ignore whitespace
[a-zA-Z]+       { words++; }
[0-9]+          { digits++; }
\n              { lines++; }
.               { specials++; }
%%

int yywrap() { return 1; }

int main() {
    yylex();
    printf("\nWords: %d\nDigits: %d\nSpecial Characters: %d\nLines: %d\n",
  words, digits, specials, lines);
    return 0;
}

```

Output:

```
amudhan@amudhan:~/Downloads/temp$ lex LWC.l
amudhan@amudhan:~/Downloads/temp$ gcc lex.yy.c
amudhan@amudhan:~/Downloads/temp$ ./a.out
Hello
How are you
I am Amudhan

Words: 7
Digits: 0
Special Characters: 0
Lines: 3
```

4. Number of lines

```
1 // Amudhan K 22027
2
3 %{
4 #include <stdio.h>
5 int no_of_lines = 0;
6 int no_of_chars = 0;
7 %}
8
9 %%
10 \n      { ++no_of_lines; }
11 .       { ++no_of_chars; }
12 end     { return 0; }
13 %%
14
15 int yywrap() { return 1; }
16
17 int main(int argc, char **argv)
18 {
19     yylex();
20     printf("number of lines = %d, number of chars = %d\n", no_of_lines,
   no_of_chars);
21     return 0;
22 }
23
```

Output:

```
amudhan@amudhan:~/Downloads/temp$ lex NumberofLines.l
amudhan@amudhan:~/Downloads/temp$ gcc lex.yy.c
amudhan@amudhan:~/Downloads/temp$ ./a.out
H
E
L
L
O

A
M
U
D
H
A
N
number of lines = 13, number of chars = 12
```

5. Number count

```
// Amudhan K 22027

%{
#include <stdio.h>
int number_count = 0;
%}

%%
[0-9]+    { number_count++; }
.|\n      ;
%%

int yywrap() { return 1; }

int main() {
    yylex();
    printf("Total numbers: %d\n", number_count);
    return 0;
}
```

Output:

```
amudhan@amudhan:~/Downloads/temp$ ./a.out
1
2
3
4
Amudhan
Ams

5
Total numbers: 5
```