

Department of Computer Science and Engineering
SVNIT, Surat
Lab Assignment Test 1

U20CS005
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1. Write a Lex Program.

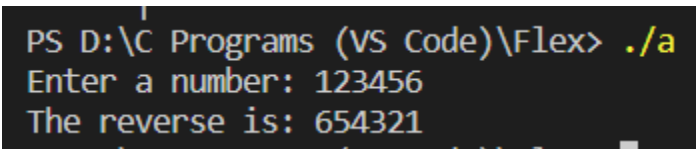
Input: 1234 Output: 4321

```
%{
int rev = 0, i = 0;
}%

%%
[0-9] {reverse();}
\n {return 0;}
%%

int reverse()
{
    rev += (atoi(yytext))*power(i);
    i++;
}
int power(int n)
{
    int res=1;
    for(int j=0;j<i;j++)
        res=res*10;
    return res;
}

int main()
{
    printf("Enter a number: ");
    yylex();
    printf("The reverse is: %d", rev);
}
int yywrap()
{
    return 1;
}
```



```
PS D:\C Programs (VS Code)\Flex> ./a
Enter a number: 123456
The reverse is: 654321
```

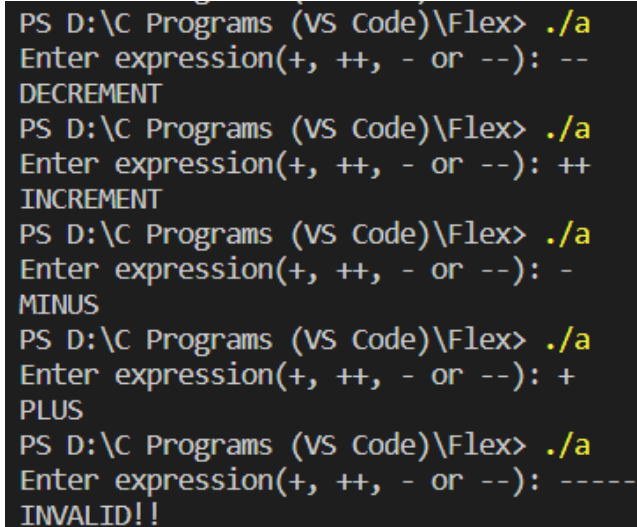
2. Write a Lex Program.

Input: -, -- Output: MINUS, DECREMENT

Input: +, ++ Output: PLUS, INCREMENT

```
%%  
[+] {printf("PLUS");}  
[+]{2} {printf("INCREMENT");}  
[+]{2}[+]+ {printf("INVALID!!");}  
[-] {printf("MINUS");}  
[-]{2} {printf("DECREMENT");}  
[-]{2}[-]+ {printf("INVALID!!");}  
. {printf("INVALID!!");}  
\n {return 0;}  
%%
```

```
int main()  
{  
    printf("Enter expression(+, ++, - or --): ");  
    yylex();  
    return 0;  
}  
int yywrap()  
{  
    return 1;  
}
```



```
PS D:\C Programs (VS Code)\Flex> ./a  
Enter expression(+, ++, - or --): --  
DECREMENT  
PS D:\C Programs (VS Code)\Flex> ./a  
Enter expression(+, ++, - or --): ++  
INCREMENT  
PS D:\C Programs (VS Code)\Flex> ./a  
Enter expression(+, ++, - or --): -  
MINUS  
PS D:\C Programs (VS Code)\Flex> ./a  
Enter expression(+, ++, - or --): +  
PLUS  
PS D:\C Programs (VS Code)\Flex> ./a  
Enter expression(+, ++, - or --): ----  
INVALID!!
```

3. Program to recognize a valid arithmetic expression and identify the identifiers and operators present. Print them separately.

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

```

int flag = 0, i = 0, j, k = 0;
char operands[50][50], operators[50][50];
%}

%%
[A-Za-z0-9]+ {flag++; strcpy(operands[i],yytext); i++;}
[-+*/] {flag--; strcpy(operators[k],yytext); k++;}
\n {return 0;}
%%

int main()
{
    printf("Enter arithmetic expression: ");
    yylex();
    if(flag!=1)
        printf("Invalid expression!!\n");
    else
    {
        printf("Valid expression!!\n");
        printf("\tIdentifiers are : ");
        for(j=0;j<i;j++)
            printf("%s ",operands[j]);
        printf("\n\tOperators are : ");
        for(j = 0; j < k; j++)
            printf("%s ",operators[j]);
        printf("\n");
    }
}

int yywrap()
{
    return 1;
}

```

```

PS D:\C Programs (VS Code)\Flex> flex 13.1
PS D:\C Programs (VS Code)\Flex> gcc lex.yy.c
PS D:\C Programs (VS Code)\Flex> ./a
Enter arithmetic expression: a+b*c-d
Valid expression!!
        Identifiers are : a b c d
        Operators are : + * -

```