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IT250 Lab Assignment

Q1) Lex Program to count the number of words in a given sentence.

CODE

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

%%

[0-9]+ {
    printf("Invalid Input\n");
}

([a-zA-Z][a-zA-Z0-9]*) {
    count++;
}

"\n" {
    if(count>0) printf("%d\n", count);
    count = 0;
    fflush(stdin);  //flush input buffer
    return 0;  //exit program after one input
}

%%



int main()
{
    printf("Enter a sentence:\n");
    yylex();
    return 0;
}
```

OUTPUT

```
student@HP-Elite600G9-08:~/Desktop/assgn$ lex 1_CountWords.l
student@HP-Elite600G9-08:~/Desktop/assgn$ cc lex.yy.c -ll
student@HP-Elite600G9-08:~/Desktop/assgn$ ./a.out
Enter a sentence:
Nitk surathkal mlore
  3
```

```
student@HP-Elite600G9-08:~/Desktop/assgn$ lex 1_CountWords.l
student@HP-Elite600G9-08:~/Desktop/assgn$ cc lex.yy.c -ll
student@HP-Elite600G9-08:~/Desktop/assgn$ ./a.out
Enter a sentence:
this so tiring
  3
```

```
student@HP-Elite600G9-08:~/Desktop/assgn$ lex 1_CountWords.l
student@HP-Elite600G9-08:~/Desktop/assgn$ cc lex.yy.c -ll
student@HP-Elite600G9-08:~/Desktop/assgn$ ./a.out
Enter a sentence:
783583
Invalid Input
```

```
student@HP-Elite600G9-08:~/Desktop/assgn$ lex 1_CountWords.l
student@HP-Elite600G9-08:~/Desktop/assgn$ cc lex.yy.c -ll
student@HP-Elite600G9-08:~/Desktop/assgn$ ./a.out
Enter a sentence:
manunited cr7
 2
```

Q2) Lex program to check whether given number is prime number or not

CODE

```
%{

#include<stdio.h>
#include<stdlib.h>
int flag,num,j;
int validNum=0;
%}


%%

([a-zA-Z][a-zA-Z0-9]*) {
    printf("Invalid Input\n");
    return 0;
}

^[-]?[0-9]*[.][0-9]+$ {     //to check for decimmal inputs
    validNum++;
    if(validNum>0)
        {
                printf("Invalid Input\n");
                return 0;
        }
}


[0-9]+ {num=atoi(yytext);   //accepts valid input

        if(num<0)    //to check for negative inputs
        {
                printf("Invalid Input\n");
                return 0;
        }
        if(num==2)
                {
                printf("Prime number\n");
                }
        else if(num==0 || num==1)
                {
                printf("Not a Prime number\n");
                }
        else
```

```
        { //logic to check prime
        for(j=2;j<num;j++)
        {
                if(num%j==0)
                flag=1;
        }
                if(flag==1)
                printf("Not a prime number\n");
                else if(flag==0)
                printf("Prime number\n");
        }
        flag=0; //reset flag
        fflush(stdin);  //flush input buffer
        return 0;  //exit program after one input
        }
%%


int main()
{
printf("Enter a number:\n");
yylex();
return 0;
}
```

OUTPUT

```
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_1$ lex 2_PrimeCheck.l
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_1$ cc lex.yy.c -ll
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_1$ ./a.out
Enter a number:
97
Prime number
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_1$ ./a.out
Enter a number:
862
Not a prime number
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_1$ ./a.out
Enter a number:
67.55
Invalid Input
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_1$ ./a.out
Enter a number:
nithin
Invalid Input
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_1$ ./a.out
Enter a number:
7
Prime number
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_1$ ./a.out
Enter a number:
5
Prime number
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_1$
```

Q3) Lex program to check whether given number is armstrong number or not

CODE

```
%{
#include<stdio.h>
#include<stdlib.h>
#include<math.h>
int flag,num,j;
int validNum=0;
%}


%%

([a-zA-Z][a-zA-Z0-9]*) {
    printf("Invalid Input\n");
    return 0;
}

^[-]?[0-9]*[.][0-9]+$ {     //to check for decimmal inputs
    validNum++;
    if(validNum>0)
        {
                printf("Invalid Input\n");
                return 0;
        }
}

[0-9]+ {num=atoi(yytext);
        int original = num;
        int num_digits = 0;
        int sum = 0;


    while (original != 0) {
        original /= 10;
        num_digits++;
    }

    original = num;


    while (original != 0) {
        int digit = original % 10;
        sum += pow(digit, num_digits);
        original /= 10;
    }
```

```
    if (sum == num) printf("Its a armstrong Number\n");
    else printf("Not a Armstrong Number\n");
    flag=0;
    fflush(stdin);
    return 0;
}
%%


int main()
{
printf("Enter a number:\n");
yylex();
return 0;
}
```

OUTPUT

```
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_1$ lex 3_ArmstrongCheck.l
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_1$ cc lex.yy.c -ll -lm
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_1$ ./a.out
Enter a number:
54748
Its a armstrong Number
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_1$ ./a.out
Enter a number:
154
Not a Armstrong Number
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_1$ ./a.out
Enter a number:
89.98
Invalid Input
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_1$ ./a.out
Enter a number:
nithin
Invalid Input
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_1$ ./a.out
Enter a number:
100
Not a Armstrong Number
```

PS: Use -lm as a flag to use math.h header file