IT250 – AUTOMATA & COMPILER DESIGN

ASSIGNMENT 3

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1)

Code Written:

```
%{
#include <stdio.h>
int n;
int accepted = 0;
int rejected = 0;
%}

%%

[01]+ {
    int zeroCount = 0, oneCount = 0;
    for (int i = 0; i < yyleng; i++) {
        if (yytext[i] == '0') {
            zeroCount++;
        }
        else oneCount++;
    }
    if (oneCount % 2 == 1 && zeroCount % 2 == 0) {
        printf("A ");
        accepted++;
    }
    else {
```

```
            printf("R ");
            rejected++;
        }
}

.* {printf("I ");}

%%


int yywrap(void){
    return 1;
}

int main(){
    scanf("%d", &n);
    for (int i = 0; i < n; i++) {
        char input[100];
        scanf("%s", input);
        yy_scan_string(input);
        yylex();
    }
    printf("\n");
    printf("%d %d", accepted, rejected);
    printf("\n");
    return 0;
}
```

Outputs:

```
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ lex exercise1.l
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ cc lex.yy.c -ll
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ ./a.out
4
10001 10011 asdf 1010100
R A I A
2 1
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$
```

(In the following output screenshot, n = 5 is a mistake in the question and has been changed to 4 since there are only 4 input strings)

```
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ lex exercise1.l
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ cc lex.yy.c -ll
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ ./a.out
4
10110 1100 1000100 zrx
A R R I
1 2
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$
```

2)

Code Written:

```
%{
#include <stdio.h>
int mini = -1;
%}

%%
([a-b]*[^a-b \n\t]+[a-b]*)+  {
    printf("-1 ");
}

(b(ab)*a?|a(ba)*b?) {
    if(mini == -1) mini = yyleng;
    else if (yyleng < mini) {
        mini = yyleng;
    }
    printf("valid ");
}

[ab]+ {
    if(mini == -1) mini = yyleng;
    else if (yyleng < mini) {
        mini = yyleng;
    }
    printf("invalid ");
}
```

```
[\n] {
    if(mini==-1)
        printf("\n");
    else
        printf("\n%d\n", mini);

    return 0;
}


%%
int yywrap(){
    return 1;
}

int main(){

    yylex();
    return 0;
}
```

Outputs:

```
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ lex exercise2.l
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ cc lex.yy.c -ll
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ ./a.out
abaaba baba ababa ababaa
invalid  valid  valid  invalid
4
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$
```

```
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ lex exercise2.l
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ cc lex.yy.c -ll
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ ./a.out
10110
-1
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$
```

```
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ lex exercise2.l
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ cc lex.yy.c -ll
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ ./a.out
bba abaaa abbab babab ababababaab
invalid  invalid  invalid  valid  invalid
3
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$
```

```
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ lex exercise2.l
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ cc lex.yy.c -ll
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$ ./a.out
babb abababa aababaaabb bababab aabbba
invalid  valid  invalid  valid  invalid
4
sachinprasanna@LAPTOP-740CVK81:/mnt/c/Users/91900/Desktop/Computer/Semester 4/IT250 - Automata and Compiler Design/Labs/Assignment 3$
```

****