NITHIN S
221IT085

IT250 Lab Assignment 3

Q1) Mainu's friend Maithili gave him a bag with N strings. All the strings are binary which are made up of 0's and 1's only. Maithili decides to consider the strings in the bag which have an odd number of 1’s and even number of 0’s as Accepted otherwise Rejected. Maithili wants to know the Accepted and Rejected strings from the bag and their count also. Mainu got very confused by all this, so he asked for your help.

CODE

```
%{
#include <stdio.h>
#include<math.h>
#include<ctype.h>
#include<stdbool.h>
float n;
int track=0;
int accepted = 0;
int rejected = 0;
char array[100];
%}

%%

[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) {
        array[track++]='A';
        //printf("A ");
        accepted++;
    }
    else {
        array[track++]='R';
        //printf("R ");
        rejected++;
    }
}

[0-9]+\.[0-9]+ {printf("-2\n"); exit(0);}

.* {//printf("I ");
    array[track++]='I';}

%%


int yywrap(void){
    return 1;
}

bool hasDecimal(float f) {
    return (f-(int)f != 0);
}
```

```c
int main(){
    scanf("%f", &n);
    if(hasDecimal(n))
    {
        printf("-1\n");
        return 0;
    }
    for (int i = 0; i < n; i++) {
        char input[100];
        scanf("%s", input);
        yy_scan_string(input);
        yylex();
    }
    for(int i=0;i<track;i++)
    {
        printf("%c ",array[i]);
    }
    printf("\n");
    printf("%d %d", accepted, rejected);
    printf("\n");
    return 0;
}
```

OUTPUT

```
student@HP-Elite600G9-08:~/Desktop/assgn$ lex 1.l
student@HP-Elite600G9-08:~/Desktop/assgn$ cc lex.yy.c
student@HP-Elite600G9-08:~/Desktop/assgn$ ./a.out
4
10001 10011 asdf 1010100
R A I A
2 1
```

```
student@HP-Elite600G9-08:~/Desktop/assgn$ ./a.out
4
10110 1100 1000100 zrx
A R R I
1 2
student@HP-Elite600G9-08:~/Desktop/assgn$
```

```
student@HP-Elite600G9-08:~/Desktop/assgn$ ./a.out
2
0101010 001110001
A R
1 1
student@HP-Elite600G9-08:~/Desktop/assgn$
```

```
student@HP-Elite600G9-08:~/Desktop/assgn$ ./a.out
5.5
-1
student@HP-Elite600G9-08:~/Desktop/assgn$
```

```
student@HP-Elite600G9-08:~/Desktop/assgn$ ./a.out
3
11 00.11 0101
-2
student@HP-Elite600G9-08:~/Desktop/assgn$
```

Q2) Ehan has a set of strings S consisting of a’s and b’s, as only characters. Ehan is a sorted person, he does
not like randomness, so when he looks at the string and finds that symbols in the strings are in random
order. He wishes to check for the valid and invalid strings, based on the condition : valid string - the
string consists of alternate a's and b's, otherwise it is invalid. And also he finds String S1 with a
minimum number of symbols from the string set S.

CODE

```
%{
#include <stdio.h>
#include<string.h>
int mini = -1;
char shortest[100];
int track=0;
%}

%%
([a-b]*[^a-b \n\t]+[a-b]*)+  {
    printf("-2 ");
}

(b(ab)*a?|a(ba)*b?) {
    if(mini == -1) mini = yyleng;
    else if (yyleng < mini) {
        mini = yyleng;
        strncpy(shortest,yytext,yyleng);
        shortest[yyleng]='\0';

    }
    printf("1");
}

[ab]+ {
    if(mini == -1||yyleng<mini)
    {
        mini = yyleng;
        strncpy(shortest,yytext,yyleng);
        shortest[yyleng]='\0';
    }

    printf("-1");
}


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


    }


    return 0;
}

%%
```

```c
int yywrap(){
    return 1;
}

int main(){

    yylex();

    return 0;
}
```

OUTPUT

```
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_3$ lex 2.l
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_3$ cc lex.yy.c
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_3$ ./a.out
abaaba baba ababa ababaa
-1 1 1 -1
baba 4
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_3$ ./a.out
10110
-2
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_3$ ./a.out
mptn
-2
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_3$ ./a.out
bba abaaa abbab babab abababababaab
-1 -1 -1 1 -1
bba 3
nithin@nithin1729s:~/Codes/Sem4/IT250/Lab/Lab_3$
```