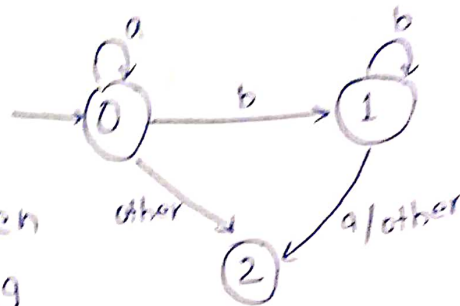Objective : Write a c program to recognize strings
under 'a*' , 'a * b+' , 'abb'.

Resource : Online GDB, gcc/g++

Program logic :

- By using transition diagram
we verify input of the state

- If the state recognize the given
pattern rule. then print string
is accepted else print string not accepted.

Program :

```c
# include < stdio.h >
# include < stdlib.h >
# include < stdbool.h >
# include < string.h >

int main() {
    printf(' Enter the length of the string \n ');
    int n, i;
    scanf (" %d ", &n);
    char * str = (char*) malloc (n * sizeof (char));
    printf (' Enter the string:') ;
    scanf (" %s", str);
    int flag = 0;
    if (strlen (str) == 1 &&  * str == 'a' ) {
        printf (" It is a valid string") ;
        return 0;
    }
    else {
        bool isa = false, isb = false;
```

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```c
for (i=0; i<n-1; i++) {
    if (str[n-1] == 'b') {
        if (str[i] == 'b' && isa == true) {
            isb = true;
        }
        else if (str[i] == 'b' && isa == false) {
            isb = true;
        }
        else if (str[i] == 'a' && isb = false) {
            isa = true;
        }
        else if (str[i] == 'a' && isb == true) {
            flag = 1;
            break;
        }
    }
    else {
        flag = 1;
        break;
    }
}
if (flag == 0) {
    printf("It is a valid string \n");
}
else {
    printf("It is not a valid string \n");
}
return 0;
}
```

Output :

Enter the length of the string : 7

I. Enter the string :

aaabbbb

It is a valid string

Enter the length of the string : 5

II. Enter the string :

aabab

It is not a valid string

Discussion :

Here, Given that we had to write the program to recognize strings under a* , a*b+ , abb . So, For that Firstly I checked whether a string starting with 'a' can be recognized or not. Here, '*' means 'a' may be zero occurance string but '+' means atleast 1 occurance of 'b'. So, I used the transition diagram to build the logic for above program & got the desired result.

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