Program 1:

Implementation of Language recognizer for set of all strings ending with two symbols of same type.

Description:

The acceptable strings of the language are aa, bb, abaa, babbabb etc.

Deterministic Finite Automata for the given language is given below:
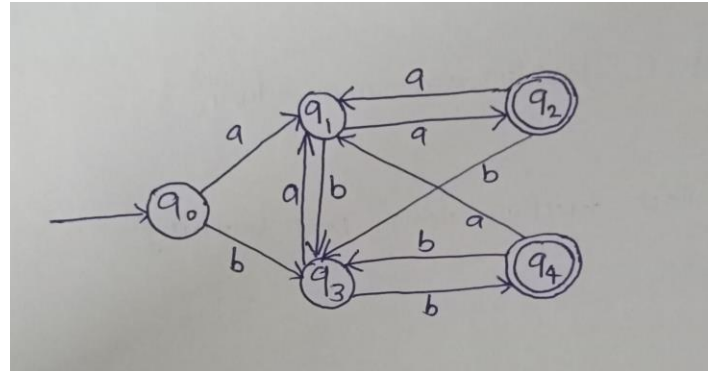
DFA M= (Q, Σ, δ, Q0, F) Where

Q=Set of all states = {Q0, Q1, Q2, Q3}

 Σ=Input Alphabet= {a, b}.

Start state is Q0.

F=Set of all final States={Q0} And

The transitions are defined in the transition diagram.

C Program

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

void main()
{
    int state=0,i=0;
    char token,input[20];
    printf("Enter input string:   ");
    scanf("%s",input);

    while((token=input[i++])!='\0')
    {
        switch(state)
        {
            case 0: if(token=='a')
                        state=1;
                    else if(token=='b')
```

```c
                state=3;
            else
            {
                printf("Invalid token");
                exit(0);
            }
            break;
    case 1: if(token=='a')
                state=2;
            else if(token=='b')
                state=3;
            else
            {
                printf("Invalid token");
                exit(0);
            }
            break;
    case 2: if(token=='a')
                state=1;
            else if(token=='b')
                state=3;
            else
            {
                printf("Invalid token");
                exit(0);
            }
            break;
    case 3: if(token=='a')
                state=1;
            else if(token=='b')
                state=4;
            else
            {
                printf("Invalid token");
                exit(0);
            }
            break;
    case 4: if(token=='a')
                state=1;
            else if(token=='b')
                state=3;
            else
            {
                printf("Invalid token");
                exit(0);
            }
            break;
```

```
            }
    }
    if(state==2 || state==4)
        printf("\nString accepted\n\n");
    else
        printf("\nString not accepted\n\n");
}
```

Test Cases:

aabbaa	String accepted
bababb	String accepted
bbaaba	String not accepted
aaaabb	String accepted
abbaaba	String not accepted