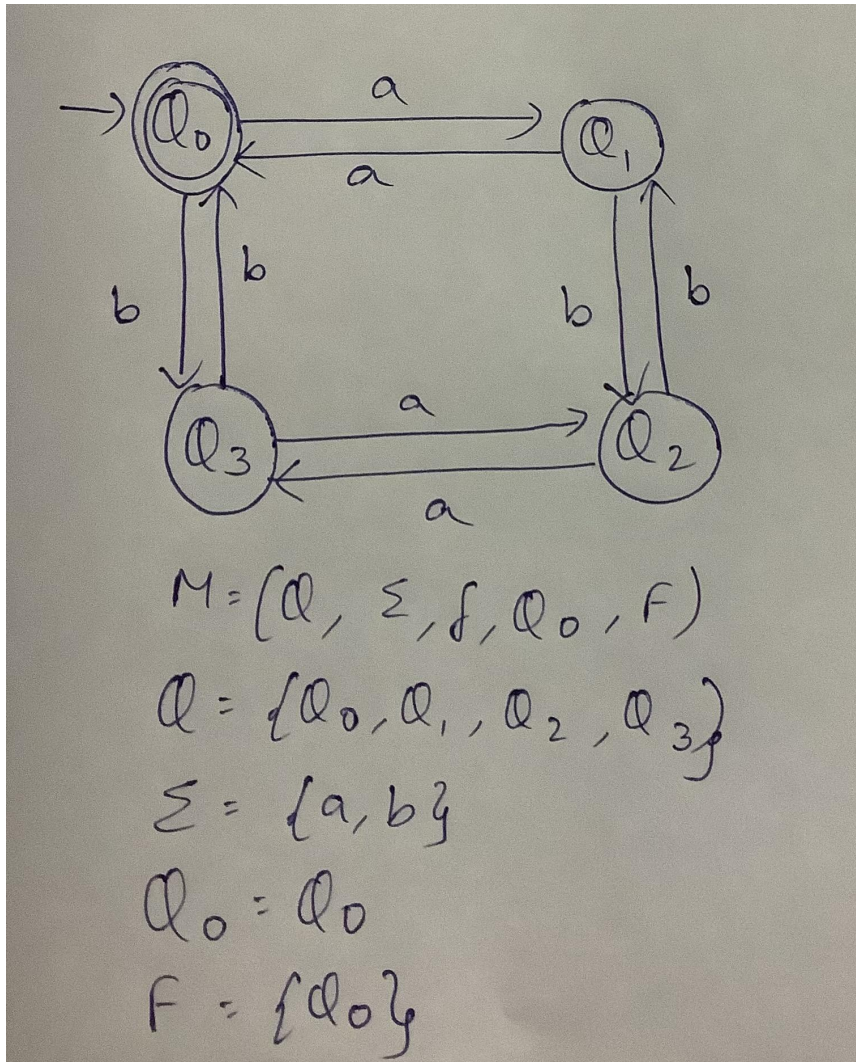
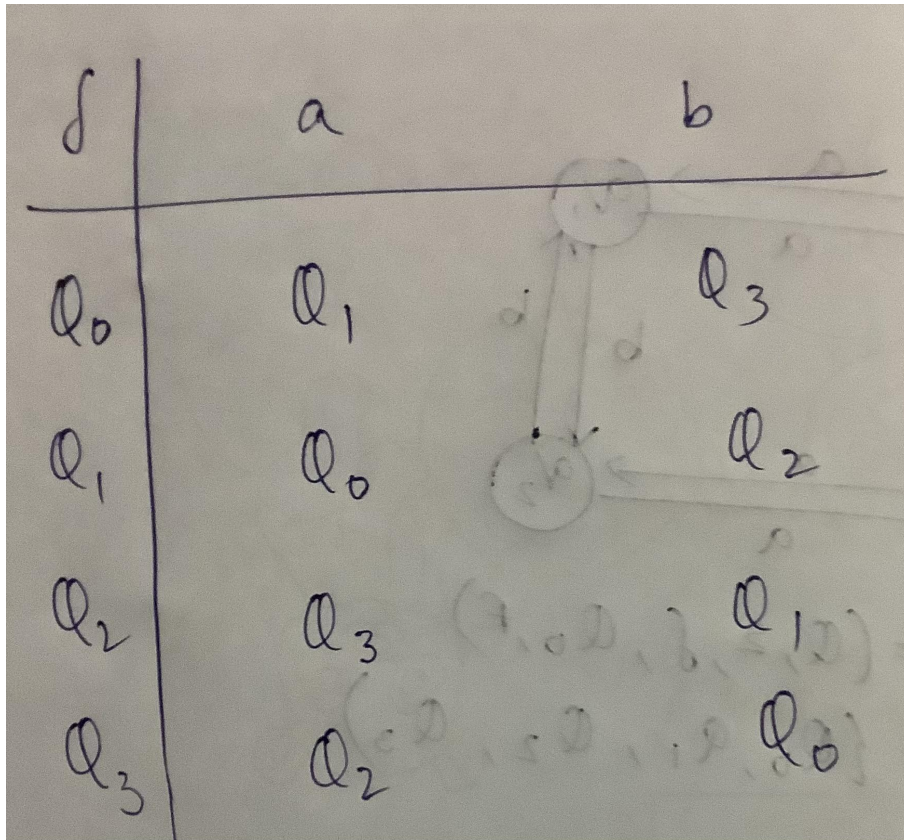


Week 1: Implementation of Language recognizer

Program 1 - Implementation of Language recognizer for a set of all strings over input alphabet $\Sigma=\{a,b\}$ containing even number of a's and even number of b's.

DFA of the language -





Test Cases -

Input	Expected Output
aabb	String accepted
ababbbbaa	String accepted
bab	String not accepted
abcd	Invalid symbol

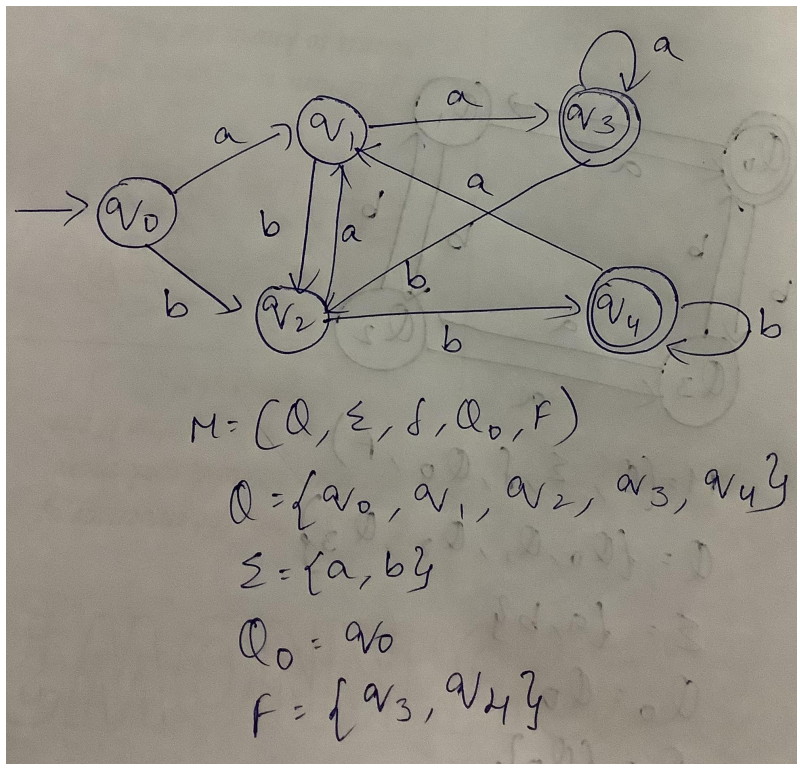
Source Code -

```
s = input("Enter the string: ")
state = 0
for i in s:
    if (state == 0):
        if (i == 'a'):
            state = 1
        elif (i == 'b'):
            state = 3
        else:
            print("Invalid symbol")
            break
    elif (state == 1):
        if (i == 'a'):
            state = 0
        elif (i == 'b'):
            state = 2
        else:
            print("Invalid symbol")
            break
    elif (state == 2):
        if (i == 'a'):
            state = 3
        elif (i == 'b'):
            state = 1
        else:
            print("Invalid symbol")
            break
    elif (state == 3):
        if (i == 'a'):
            state = 2
        elif (i == 'b'):
            state = 0
        else:
            print("Invalid symbol")
            break
```

```
if (state == 0):  
    print(s + " is accepted")  
else:  
    print(s + " is not accepted")
```

Program 2 - Implementation of Language recognizer for a set of all strings over input alphabet $\Sigma=\{a,b\}$ ending with two symbols of the same type.

DFA of the language -



δ	a	b
q_0	q_1	q_2
q_1	q_3	q_2
q_2	q_1	q_4
q_3	q_3	q_2
q_4	q_1	q_4

Test Cases -

Input	Expected Output
abb	String accepted
abaaa	String accepted
abab	String not accepted
abcd	Invalid symbol

Source Code -

```
s = input("Enter the string: ")
state = 0
for i in s:
    if (state == 0):
        if (i == 'a'):
            state = 1
        elif (i == 'b'):
            state = 2
        else:
            print("Invalid symbol")
            break
    elif (state == 1):
        if (i == 'a'):
            state = 3
        elif (i == 'b'):
            state = 2
        else:
            print("Invalid symbol")
            break
    elif (state == 2):
        if (i == 'a'):
            state = 1
        elif (i == 'b'):
            state = 4
        else:
            print("Invalid symbol")
            break
    elif (state == 3):
        if (i == 'a'):
            state = 3
        elif (i == 'b'):
            state = 2
        else:
            print("Invalid symbol")
            break
```

```
elif (state == 4):  
    if (i == 'a'):  
        state = 1  
    elif (i == 'b'):  
        state = 4  
    else:  
        print("Invalid symbol")  
        break  
if ((state == 3) or (state == 4)):  
    print(s + " is accepted")  
else:  
    print(s + " is not accepted")
```