SE 4367 Homework #10, FSM

Given a finite state machine with

- **input alphabet {a, b}**
- **output alphabet {0,1}**

that will recognize the substring abba.

It outputs 0's until recognizing a substring, then outputs a 1.

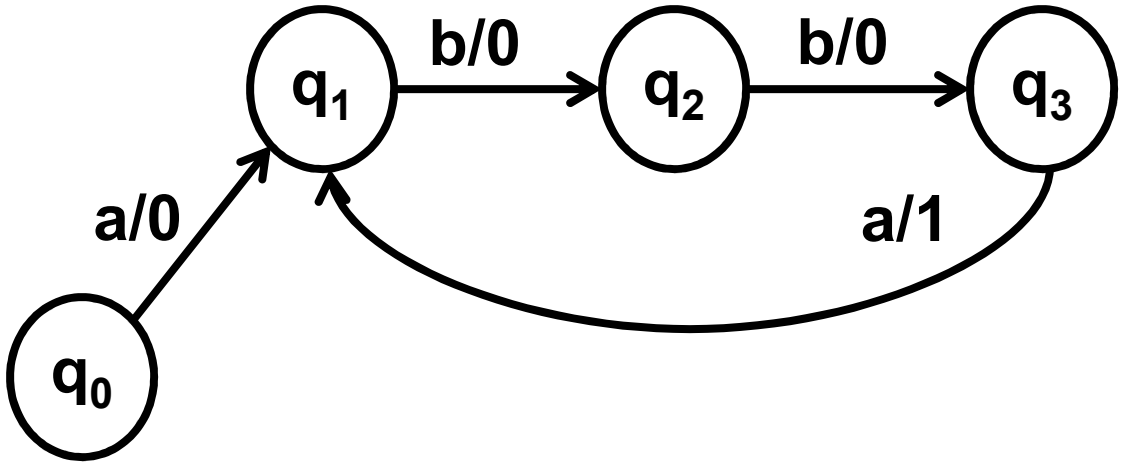
It recognizes overlapping substrings.

The FSM does not terminate.

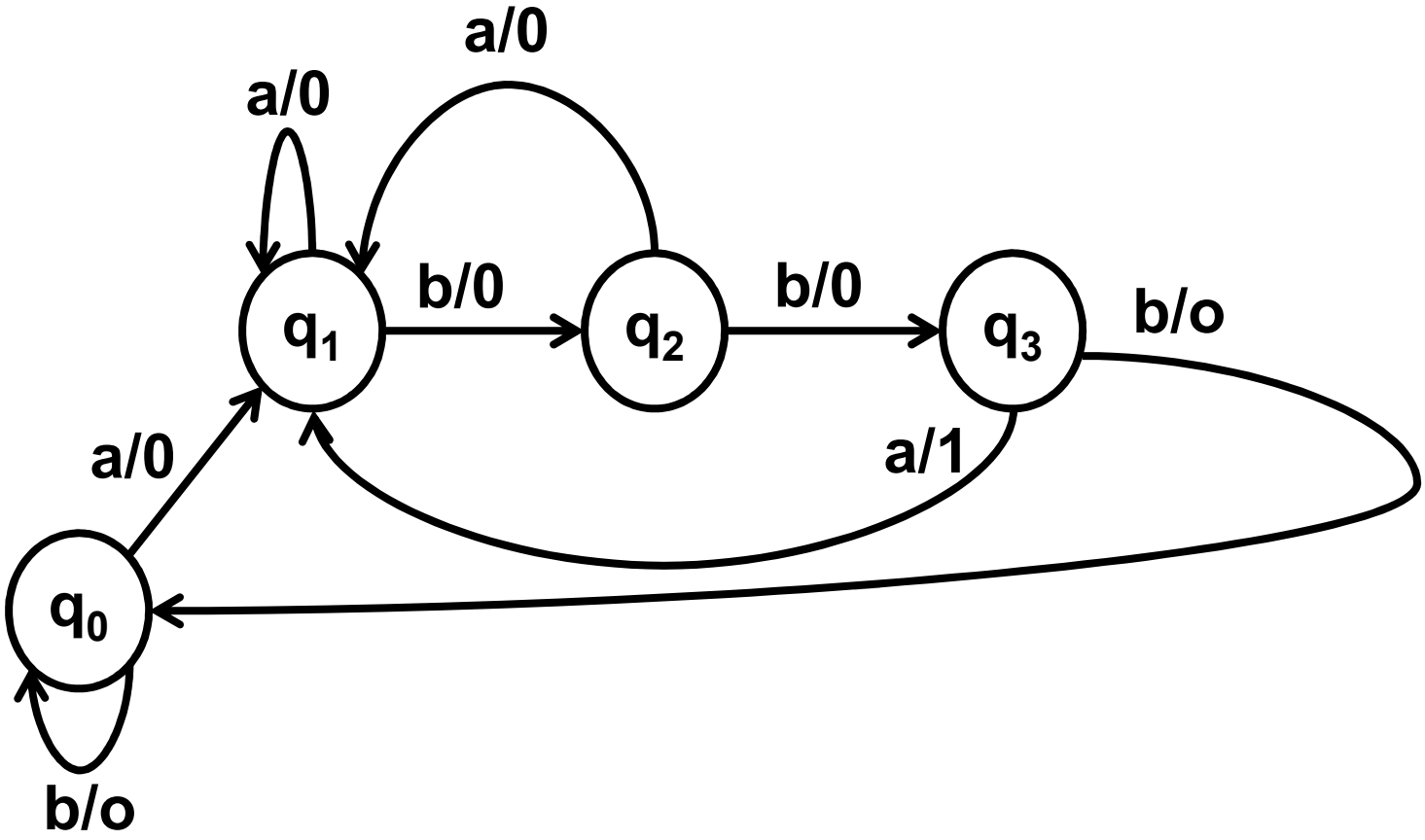
a) Draw the FSM's testing tree using the notation from Mathur's Example 5.11.

b) What is the transition cover set for the FSM?

Recognizing abba



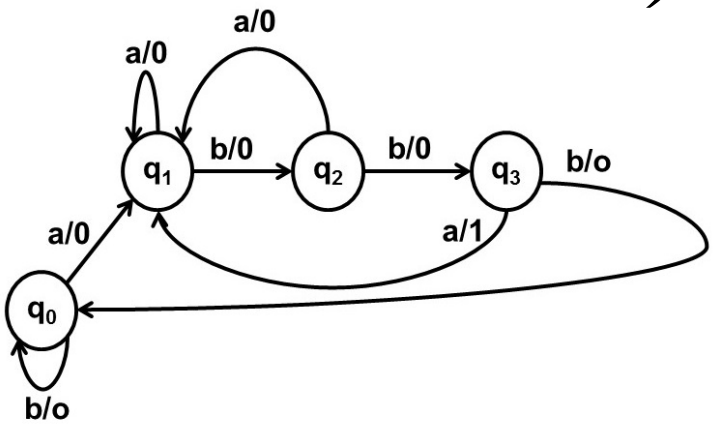
Completely Specifying the abba FSM

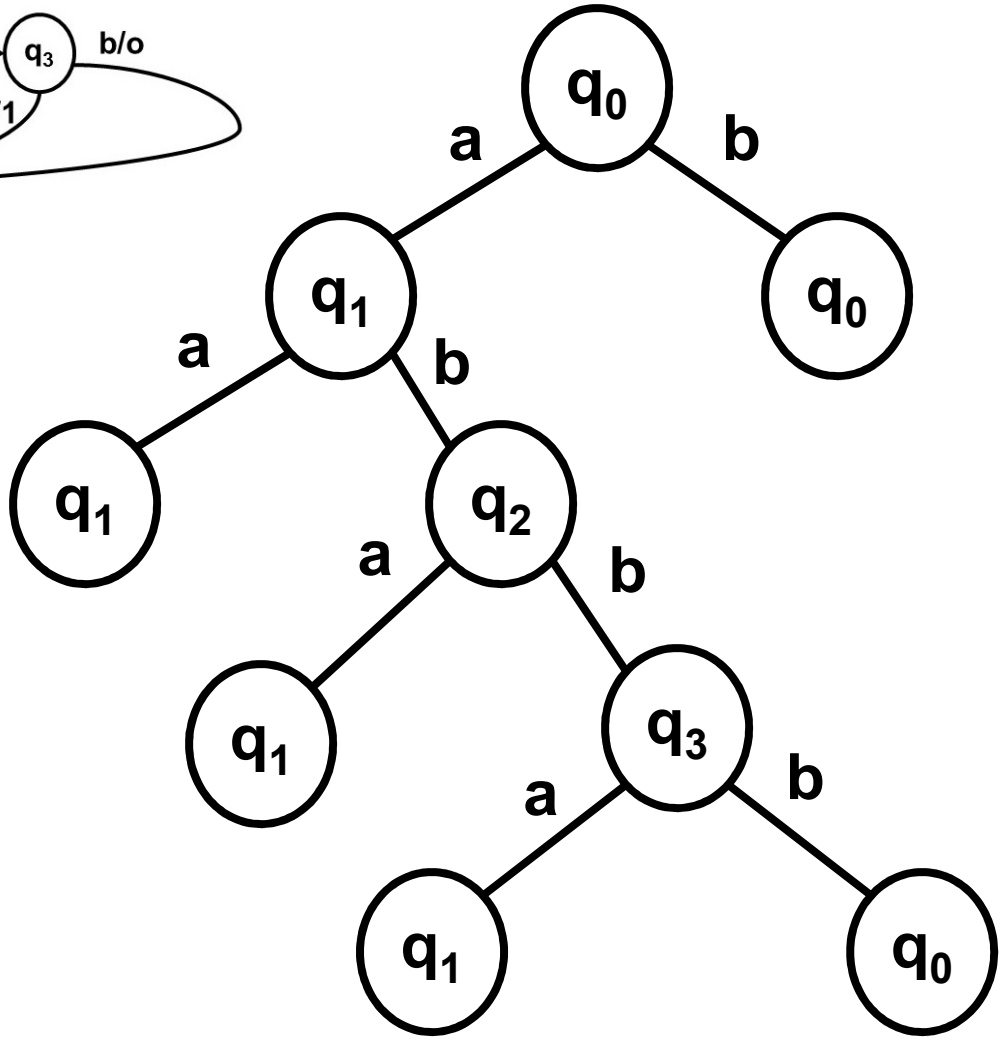


State Transition Table

Current state	Next state a	Output b
q_0	q_1 / 0	q_0 / 0
q_1	q_1 / 0	q_2 / 0
q_2	q_1 / 0	q_3 / 0
q_3	q_1 / 1	q_0 / 0

a) Testing Tree





b) Transition Cover Set

P = {ε, a, b, aa, ab, aba, abb, abba, abbb}

The empty input sequence ε is required (and used in generating the test sequence).

Grading Rubric

Each of the two parts is worth a maximum of 50 points.

a) each wrong node or transition in the testing tree is worth -3 points

b) each wrong or missing path in the transition cover set is -5 points

Formatting Submissions

In the file name, include:

- **class**
- **assignment identifier**
- **your name (or team's name)**
  - **e.g., se4367a01jdoe**

In the file (or hardcopy) submitted, include the class, assignment, and name information at the top.

Minus 5 points per violation. Potentially 30 points off for formatting mistakes!