

Theory of Automata (CS402)
Assignment # 1

Total marks = 20
Deadline Date = Nov
5, 2012

Please carefully read the following instructions before attempting the assignment.

Rules for Marking

It should be clear that your assignment would not get any credit if:

- The assignment is submitted after the due date.
- The submitted assignment does not open or file is corrupt.
- **The assignment is copied.**

Strict action will be taken if submitted solution is copied from any other student or from the internet. Students will be punished severely in either case.

- 1) You should concern recommended books to clarify your concepts as handouts are not sufficient.
- 2) You are supposed to submit your assignment in **.doc format**. Any other formats like scan images, PDF, Zip, rar, bmp etc will not be accepted.
- 3) You are advised to upload your assignment at least two days before the due date.
- 4) The assignment file comprises of two pages.

No assignment will be accepted after the due date via email in any case (whether it is the case of load shedding or internet malfunctioning etc.). Hence refrain from uploading assignment in the last hour of the deadline. It is recommended to upload solution file at least **two days before the deadline.**

For any query, feel free to email at:
cs402@vu.edu.pk

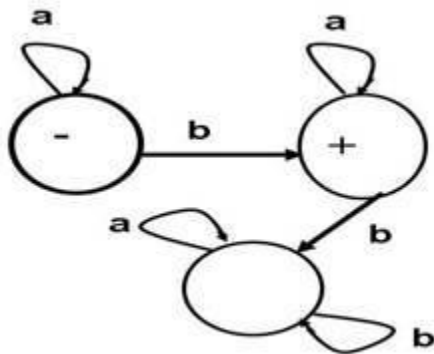
Q. 1. Draw a Finite Automaton (FA) that accepts the following strings:
 Λ , a, aabc, acba and accb Marks
 [7]

A finite set of states, one of which is a start state, and some of which may be designated as accept states or final states.

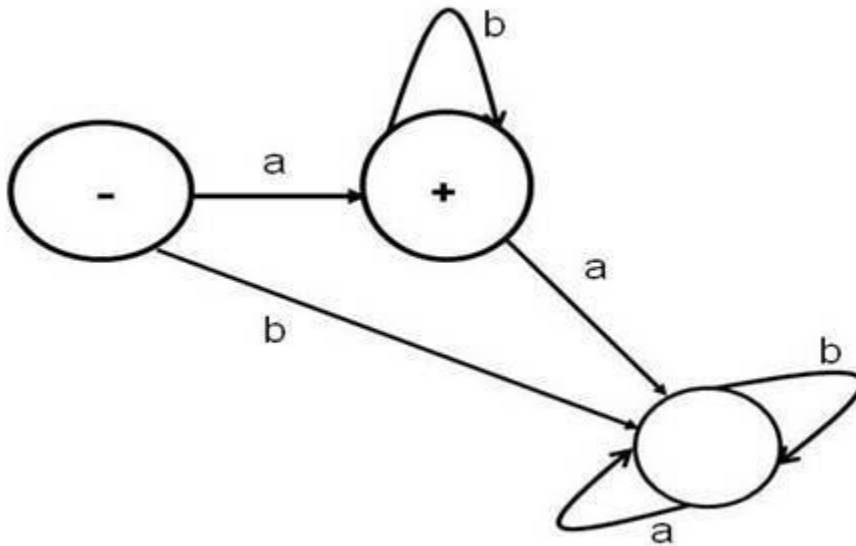
An alphabet .

A finite set of transitions that tell for each state and for each letter of the alphabet which state to go to next.

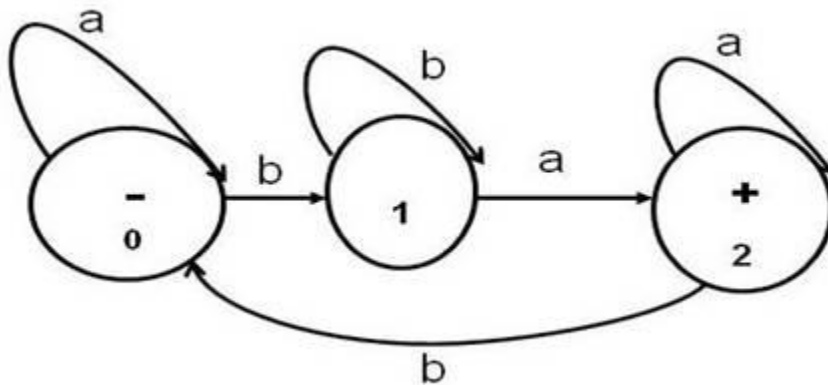
We draw a Finite Automaton (FA) in the following manner: The machine's states are represented by circles and transitions are represented by arrows. Every transition is marked by a symbol from the alphabet Σ . The start state is marked by a – sign and the final states are marked by a + sign as shown in the FA for a^*ba^* .



We draw another Finite Automaton (FA) below which accepts any string from ab^* .



$a^*bb^*aa^*(ba^*bb^*aa^*)^*$.



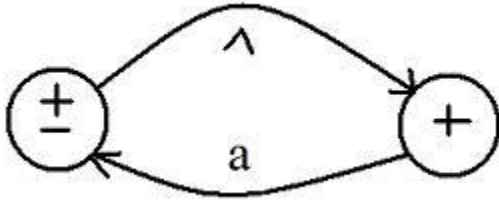
Q. 2. Construct a finite automaton for the given Regular Expression (RE):

$(a + b)^*(ab + ba)^+a^+$

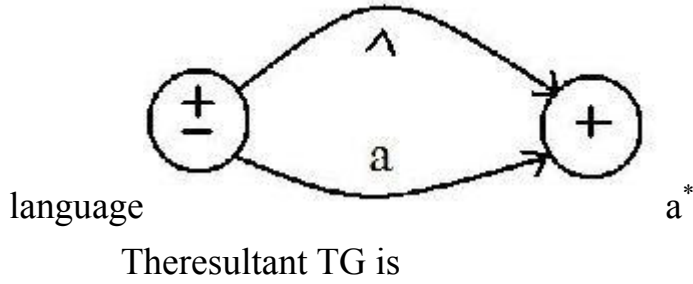
Marks

[8]

The Transition graph that accepts only the empty word is,



Now by reversing an edge of "a" the above transition graph accepts the



Q. 3. Draw a Transition Graph (TG) for the language expressed by the following regular expression:

$^ + 0(01 + 10)^*1 + 1(10 + 01)^*0$

Marks [5]

Will Come soon....

Best of luck!