Theory of Computation
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Turing machine for User Authentication

Innovative Assignment

Here we implemented four types of fields in user authentication module :

1. Username
2. Email ID
3. Password
4. Confirm-Password

Here we considered following notation :

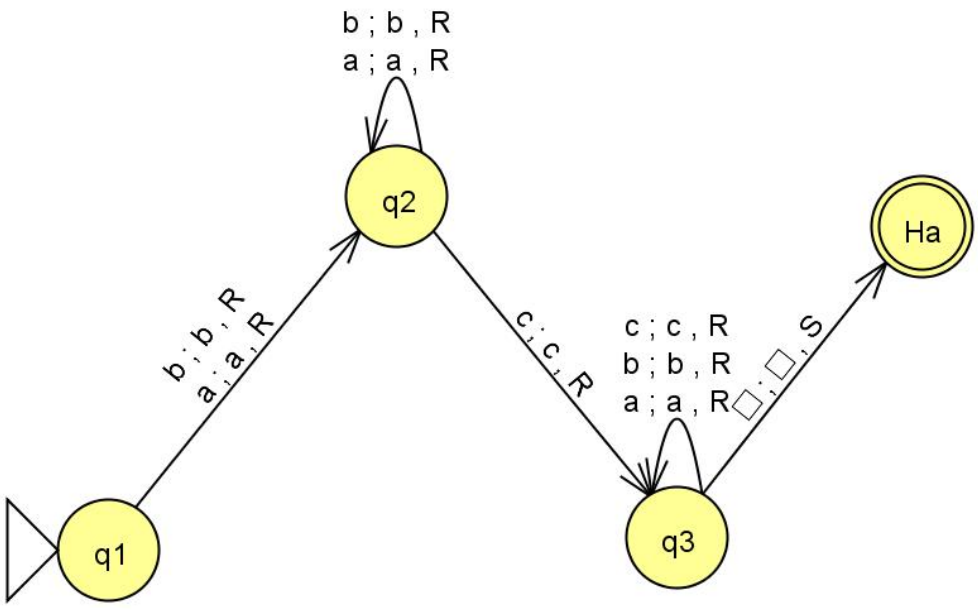
a : lowercase

b : uppercase

c : password

d : special character

1. Turing machine for Username



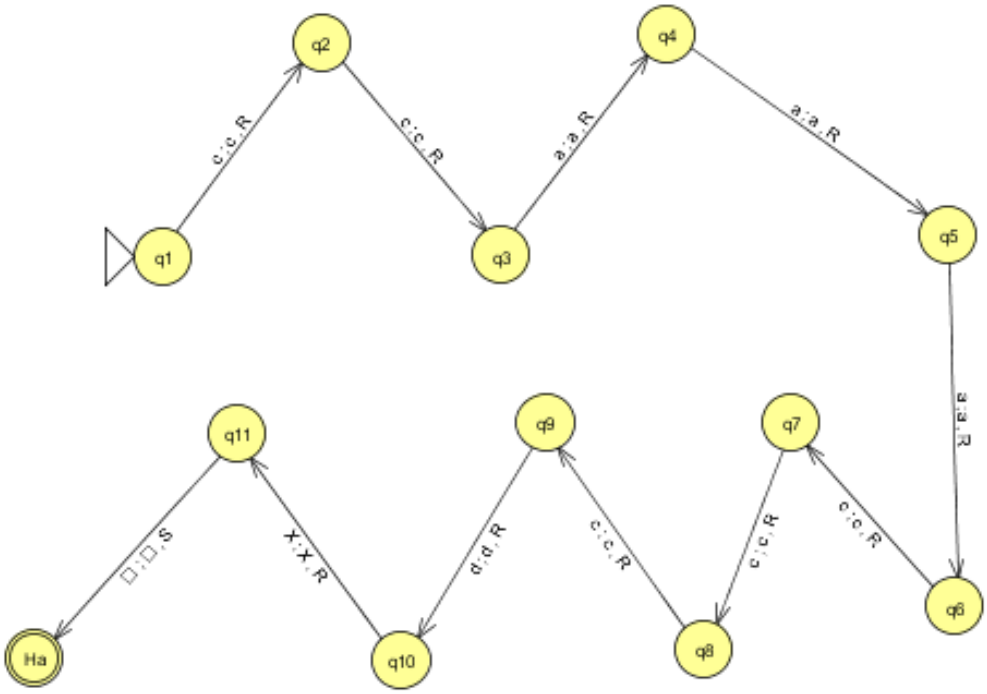
Username has following characteristics :

- Username should start with uppercase/lowercase letter
- Includes numbers, but not special characters
- Minimum length should be 2 which contains atleast one letter and one number

Sample I/O

- Accepted : abb, ab
- Rejected : bc, ad

2. Turing machine for Email ID



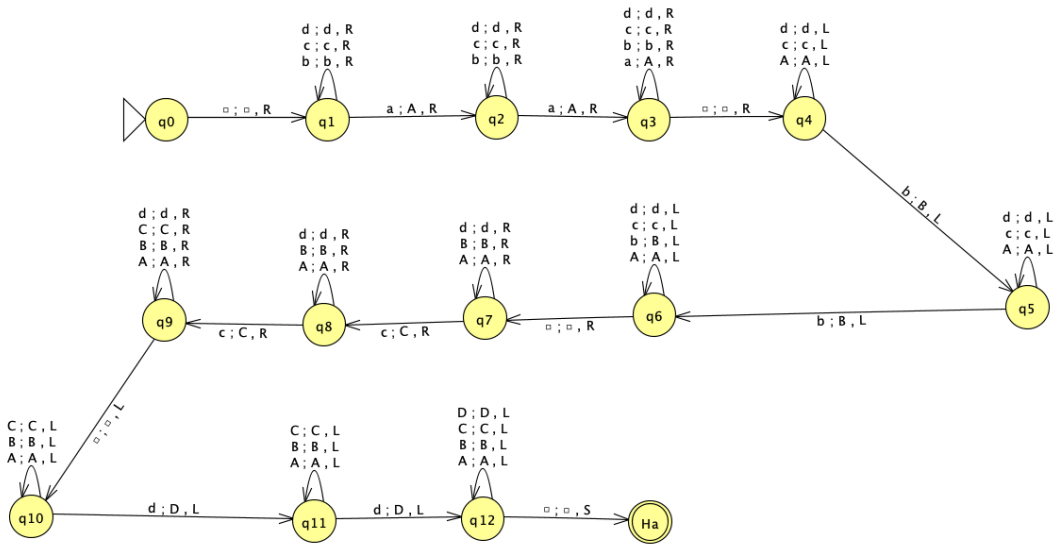
Email ID has following characteristics :

- Consist only lowercase letters and numbers
- Only one @ sign
- Accepted format : DDLLLDDD@nirmauni.ac.in
  - Here D : digit and L : lowercase letter

Sample I/O

- Accepted : ccaaacccdX
- Rejected : aa, abcd, aXd

3. Turing machine for Password



Password has following characteristics :

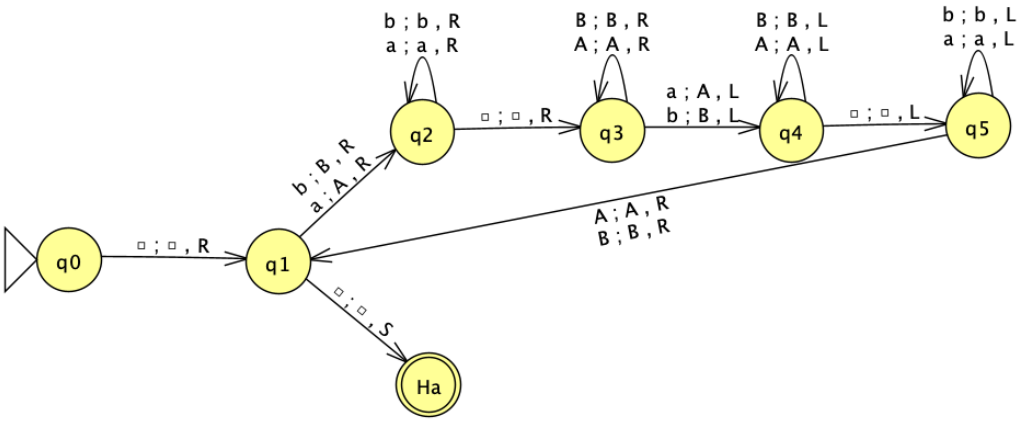
- It includes atleast :
  - 2 lowercase letters
  - 2 uppercase letters
  - 2 special characters
  - 2 numbers
- Minimum length : 8 characters

Sample I/O

- Accepted : ▫abcdabcd, ▫aabbccdd, ▫abcdabcdaaa
- Rejected : ▫abcd, ▫aaaa, ▫abcddddd

4. Turing machine for Confirm Password

Confirm-Password has following characteristics :



- Here consider a,b as individual characters this logic will be applied for all lowercase letters, uppercase letters, special characters and numbers.
- Here first word is actual password from password field and the next word will be the confirm password.

Sample I/O

- Accepted : ▫abcdabcd▫abcdabcd▫
- Rejected : ▫abcdabcd▫abcdaaaaa▫

This Turing machine simulated in JFLAP which can be downloaded from here :

https://www.jflap.org/jflaptmp/

Rough Diagram plotted in notebook :