Assignment 2 Solution
CMPT432 Spring 2022

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1. Problem One

Write regular expressions that define the strings recognized by the FAs in Figure 3.33 on page 107.
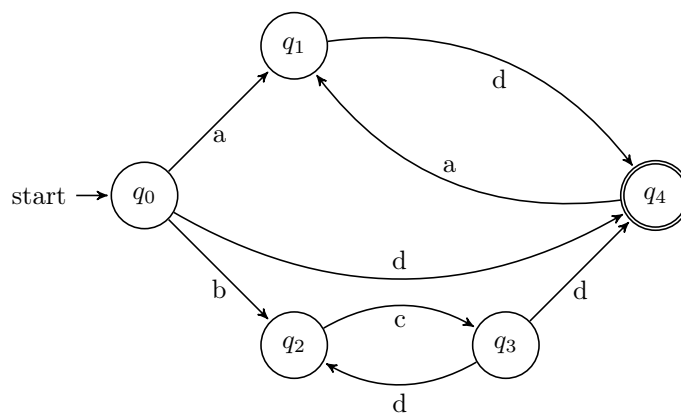
1.a Solution

1. ab*a | ba*b

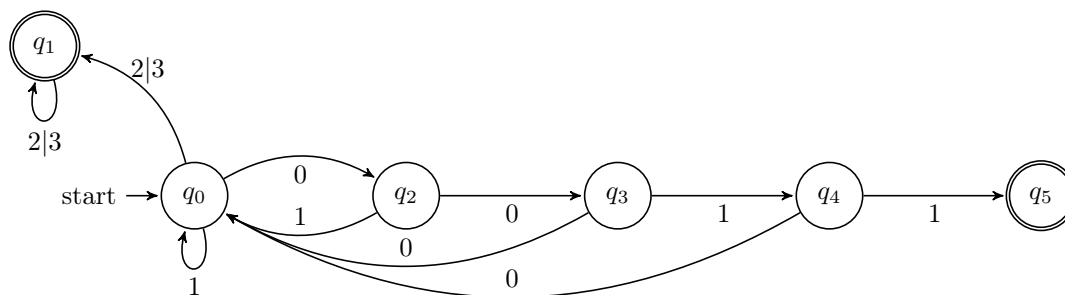2. a(bcda|cda)*

3. ε | ab*c

2. Problem Two

Write DFAs that recognize the tokens defined by the following regular expressions:
(1) (a | (bc)*d)+
(2) ((0 | 1)*(2 | 3)+) | 0011
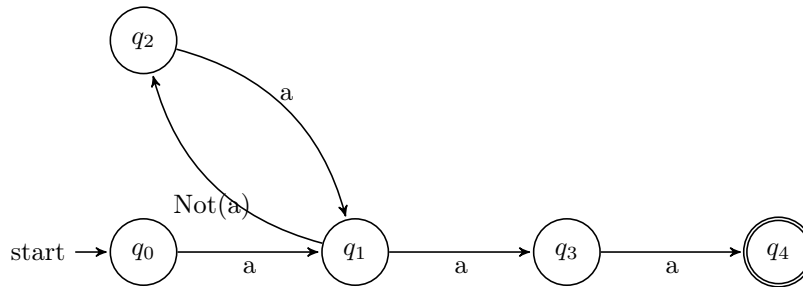(3) (a NOT(a))*aaa

2.a Solution

2.b Solution

2.c Solution

3. Problem Three

Most languages are case sensitive, so keywords can be written only one way, and the regular expressions describing their lexeme is very simple. However, some languages, like SQL, are case insensitive, so a keyword can be written either in lowercase or in uppercase, or in any mixture of cases. Thus, the SQL keyword SELECT can also be written select, Select, or sElEcT, for instance. Show how to write a regular expression for a keyword in a caseinsensitive language. Illustrate the idea by writing the expression for "select" in SQL.

3.a Solution

The Regular Expression to ignore case when using the word "SELECT" would look like this:

((S|s) (E|e) (L|l) (E|e) (C|c) (T|t))

This way the order in which the letters are iterated through stays the same, but the case of the letter is ignored.