

## Lab 2

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Andrew Hatch

Andrew.Hatch1@Marist.edu

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### 1 CRAFTING A COMPILER EXERCISES

#### 1.1 CHAPTER 3.3

*Write regular expressions that define the strings recognized by the FAs in figure 3.33.*

**DFA Sequence is as follows:**

1.  $(ab^*a) \mid (ba^*b)$
2.  $a^*(bcda) \mid (ac^*da) \mid a$
3.  $[\text{Epsilon}] \mid (ab^*c)$

(I couldn't get the epsilon symbol to register properly so it's been marked.)

#### 1.2 CHAPTER 3.4

*Write DFAs that recognize the tokens defined by the following regular expressions.*

Provided DFAs can be seen at the bottom of the page, in corresponding order.

### 2 DRAGON BOOK EXERCISES

#### 2.1 CHAPTER 3.3.4

*Show how to write a regular expression for a keyword in a case insensitive language. Illustrate the idea by writing the expression for select in SQL.*

Since SQL is case-insensitive, we can naturally assume that our expression can be written in uppercase or lowercase interchangeably. Therefore, we could write our expression like this:

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

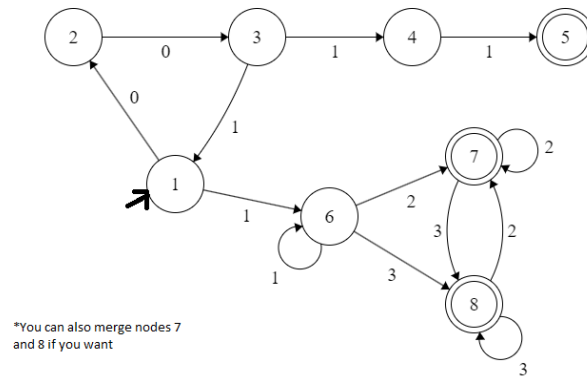


Figure 1.1:  $(a|(bc)^*d)^+$

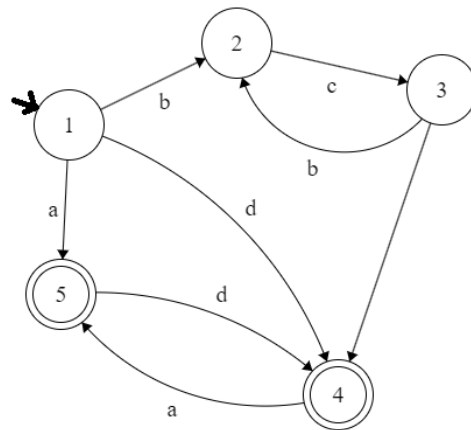


Figure 1.2:  $((0|1)^*(2|3)^+)|0011$

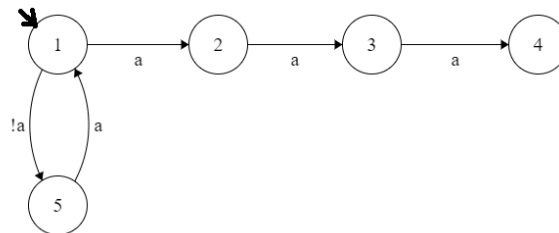


Figure 1.3:  $(a \text{ NOT}(a))^*aaa$