

CMSC 303 Introduction to Theory of Computation, VCU

Assignment: 3

Name: Steven Hernandez

1. (a) $R_a = 0\Sigma^*1$

Which says: 0 concatenated with zero or more character concatenated with 1.

- (b) $R_b = (\Sigma^*0\Sigma^*)^4$

Says: zero or more characters followed by a 0 followed by zero or more of any character, which is then repeated 4 times.

- (c) $R_c = 1 \cup 11 \cup \epsilon$

Which explicitly states the contents of the language.

- (d) $R_d = \{\Sigma\} \cup \{\Sigma\Sigma\} \cup \{\Sigma\Sigma\Sigma\} \cup \{\epsilon\}$

Explicitly allows for any strings with one character or two characters or three characters or no characters.

- (e) $R_e =$

- (f) $R_f = \Sigma^+$

Plus indicates 1 or more.

2. (a) $M_a = (Q, \Sigma, \delta, q, F)$ such that:

$Q = \{q_0\}$ Σ is our language $q = q_0$ $F = \{q_0\}$ $\delta = \epsilon$ because any transitions would mean a character was read, which would

- (b) $M_b = (Q, \Sigma, \delta, q, F)$ such that:

$$Q = \{q_0, q_1, q_2, q_3\} q = q_0 F = \{q_3\}$$

Define δ by:

δ	0	1
7274	Robinson	37
7432	O'Malley	39
9824	Darkes	38
9297	O'Malley	56

3.

4. (a)

- (b)

- (c)

5. (a)

- (b)