

CSC236 Worksheet 9 Solution

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Question 1

a. Notes:

- Regular Expression
 - Quick Guide

$$(0 + 1)((01)^*0) \quad (1)$$

The expression implies that

1. Starts with 0 **or** 1
 - * indicated by $(0 + 1)$
 2. Are then followed by **one or more repetitions** of 01
 - * indicated by $(01)^*$
 3. Ends with 0
 - * indicated by the final 0
- Examples
 1. $L = \{w \in \{a, b\}^* \mid w \text{ has an } a\}$

Answer:

$$(a + b)^*a(a + b)^* \quad (2)$$

- Means there is one or more repetitions of a or b at front
- Means there is a in the middle

– Means there is one or more repetitions of a or b at end

2. $L = \{w \in \{a, b\}^* \mid w \text{ has at least two } as\}$

Answer:

$$(a + b)^* a (a + b)^* a (a + b)^* \quad (3)$$

3. $L = \{w \in \{a, b\}^* \mid w \text{ has at least two } as\}$

Answer:

$$(a + b)^* a (a + b)^* a (a + b)^* \quad (4)$$

4. $L = \{w \in \{a, b\}^* \mid |w| \geq 2\}$

Answer:

$$(0 + 1)(0 + 1)(0 + 1)^* \quad (5)$$

In this example,

- Two characters are created (indicated by $(0 + 1)(0 + 1)$)
- And more :D!! (indicated by $(0 + 1)^*$)