

### Exercise 3.3.4

Select -> [Ss] [Ee][Ll][Ee][Cc][Tt]

### Exercise 3.3

$$Q1 = \lambda$$

$$Q2 = Q1a + Q2b$$

$$Q3 = Q1b + Q2a$$

$$Q4 = Q3b + Q2a - \text{Valid input field}$$

$$Q4 = (Q1b + Q2a)b + (Q1a + Q2b)a$$

$$Q4 = (b+a)b + (a+b)a$$

$$Q4 = (ab^*a) \mid (ba^*b)$$

$$\text{Regex} = (ab^*a) \mid (ba^*b)$$

$$Q1 = Q4d + \lambda$$

$$Q2 = Q1a - \text{valid input field}$$

$$Q3 = Q2b$$

$$Q4 = Q3c + Q2c$$

$$Q2 = (Q4d)a + \lambda$$

$$Q2 = (Q3c + Q2b)d)a$$

$$Q2 = (cb)d)a$$

$$\text{RegEx} = a \mid a((c \mid bc)da)$$

$$Q1 = \lambda - \text{Valid input field}$$

$$Q2 = Q1a + Q2b$$

$$Q3 = Q2c - \text{Valid input field}$$

$$Q1 - \text{Can't be simplified}$$

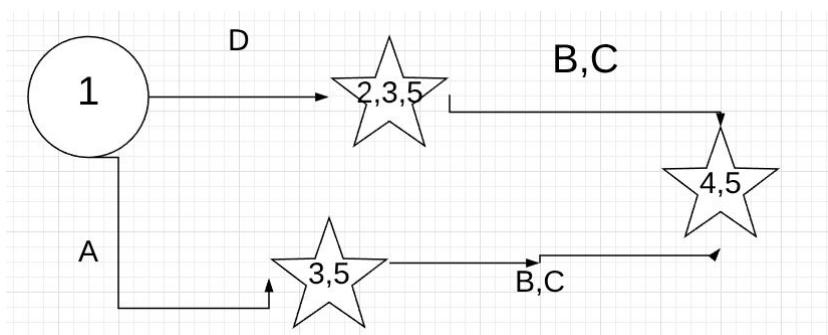
$$Q3 = (Q1a + Q2b)c$$

$$Q3 = (ab)c$$

$$\text{RegEx} = \lambda \mid (ab^*c)$$

### Exercise 3.4 (Stars represent Goal states)

A.



B.