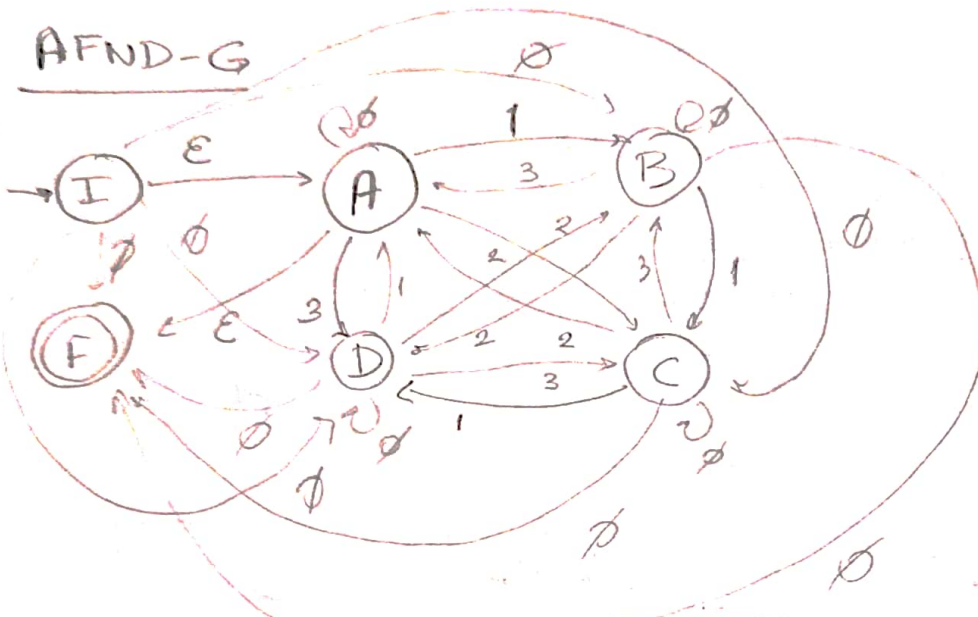


|                   | 1 | 2 | 3 |
|-------------------|---|---|---|
| $\rightarrow A^*$ | B | C | D |
| B                 | C | D | A |
| C                 | D | A | B |
| D                 | A | B | C |

AFND-G



|                 | I | A           | B           | C           | D           | $F^*$       |
|-----------------|---|-------------|-------------|-------------|-------------|-------------|
| $\rightarrow I$ | - | $\epsilon$  | $\emptyset$ | $\emptyset$ | $\emptyset$ | $\emptyset$ |
| A               | - | $\emptyset$ | 1           | 2           | 3           | $\epsilon$  |
| B               | - | 3           | $\emptyset$ | 1           | 2           | $\emptyset$ |
| C               | - | 2           | 3           | $\emptyset$ | 1           | $\emptyset$ |
| D               | - | 1           | 2           | 3           | $\emptyset$ | $\emptyset$ |
| $F^*$           | - | $\epsilon$  | $\emptyset$ | $\emptyset$ | $\emptyset$ | -           |

$$q_{rem} = B$$

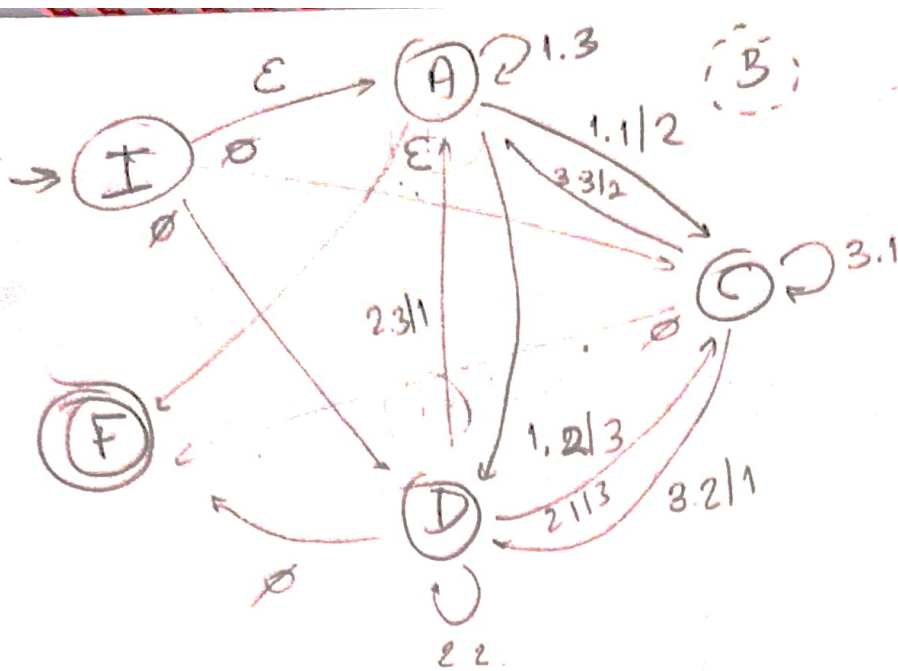
$$q_i = \{I, A, C, D\} \quad q_j = \{A, C, D, F\}$$

|              | B, I, A  | B, I, C  | B, I, D  | B, I, F  |
|--------------|--|--|--|--|
| $\downarrow$ | $(I, B) = \emptyset$                                 | $(I, B) = \emptyset$                                   | $(I, B) = \emptyset$                                   | $(I, B) = \emptyset$   |
| $\downarrow$ | $(B, B) = \emptyset$                                 | $(B, B) = \emptyset$                                   | $(B, B) = \emptyset$                                   | $(B, B) = \emptyset$   |
| $\downarrow$ | $(B, A) = 3$   | $(B, C) = 1$   | $(B, D) = 2$   | $(B, F) = \emptyset$   |
| $\downarrow$ | $(I, A) = \epsilon$                                  | $(I, C) = \emptyset$                                   | $(I, D) = \emptyset$                                   | $(I, F) = \emptyset$   |
|              | $\emptyset \emptyset^* 3   \epsilon$<br>= $\epsilon$ | $\emptyset \emptyset^* 1   \emptyset$<br>= $\emptyset$ | $\emptyset \emptyset^* 2   \emptyset$<br>= $\emptyset$ | $\emptyset \emptyset^* \emptyset   \emptyset$<br>= $\emptyset$ |

|              | B, A, A                                       | B, A, C                                   | B, A, D                                   | B, A, F  |
|--------------|---|---|---|--|
| $\downarrow$ | $(A, B) = 1$                                  | $(A, B) = 1$                              | $(A, B) = 1$                              | $(A, B) = 1$   |
| $\downarrow$ | $(B, B) = \emptyset$                          | $(B, B) = \emptyset$                      | $(B, B) = \emptyset$                      | $(B, B) = \emptyset$                                 |
| $\downarrow$ | $(B, A) = 3$                                  | $(B, C) = 1$                              | $(B, D) = 2$                              | $(B, F) = \emptyset$                                 |
| $\downarrow$ | $(A, A) = \emptyset$                          | $(A, C) = 2$                              | $(A, D) = 3$                              | $(A, F) = \epsilon$                                  |
|              | $1 \emptyset^* 3   \emptyset$<br>$\epsilon.3$ | $1 \emptyset^* 1   2$<br>$\epsilon.1   2$ | $1 \emptyset^* 2   3$<br>$\epsilon.2   3$ | $1 \emptyset^* \emptyset   \epsilon$<br>= $\epsilon$ |

|              | B, C, A                            | B, C, C                                | B, C, D                            | B, C, F  |
|--------------|------------------------------------|--|------------------------------------|--|
| $\downarrow$ | $(C, B) = 3$                       | $(C, B) = 3$                           | $(C, B) = 3$                       | $(C, B) = 3$   |
| $\downarrow$ | $(B, B) = \emptyset$               | $(B, B) = \emptyset$                   | $(B, B) = \emptyset$               | $(B, B) = \emptyset$                                   |
| $\downarrow$ | $(B, A) = 3$                       | $(B, C) = 1$                           | $(B, D) = 2$                       | $(B, F) = \emptyset$                                   |
| $\downarrow$ | $(C, A) = 2$                       | $(C, C) = \emptyset$                   | $(C, D) = 1$                       | $(C, F) = \emptyset$                                   |
|              | $3 \emptyset^* 3   2$<br>$3.3   2$ | $3 \emptyset^* 1   \emptyset$<br>$3.1$ | $3 \emptyset^* 2   1$<br>$3.2   1$ | $3 \emptyset^* \emptyset   \emptyset$<br>= $\emptyset$ |

|              | B, D, A                            | B, D, C                            | B, D, D                                | B, D, F  |
|--------------|------------------------------------|------------------------------------|--|--|
| $\downarrow$ | $(D, B) = 2$                       | $(D, B) = 2$                       | $(D, B) = 2$                           | $(D, B) = 2$   |
| $\downarrow$ | $(B, B) = \emptyset$               | $(B, B) = \emptyset$               | $(B, B) = \emptyset$                   | $(B, B) = \emptyset$                                   |
| $\downarrow$ | $(B, A) = 3$                       | $(B, C) = 1$                       | $(B, D) = 2$                           | $(B, F) = \emptyset$                                   |
| $\downarrow$ | $(D, A) = 1$                       | $(D, C) = 3$                       | $(D, D) = \emptyset$                   | $(D, F) = \emptyset$                                   |
|              | $2 \emptyset^* 3   1$<br>$2.3   1$ | $2 \emptyset^* 1   3$<br>$2.1   3$ | $2 \emptyset^* 2   \emptyset$<br>$2.2$ | $2 \emptyset^* \emptyset   \emptyset$<br>= $\emptyset$ |



|     | I | A     | C     | D     | F |
|-----|---|-------|-------|-------|---|
| → I | — | ε     | ∅     | ∅     | ∅ |
| A   | — | 1.3   | 1.1/2 | 1.2/3 | ε |
| C   | — | 3.3/2 | 3.1   | 3.2/1 | ∅ |
| D   | — | 2.3/1 | 2.1/3 | 2.2   | ∅ |
| F*  | — | —     | —     | —     | — |

$q_{\text{start}} = C$      $q_i = \{I, A, D\}$      $q_f = \{A, D, F\}$

C, I, A  
 $IC = \emptyset$   
 $CC = 3.1$   
 $CA = 3.3/2$   
 $IA = \epsilon$

= ∅

C, I, D  
 $IC = \emptyset$   
 $CC = 3.1$   
 $CD = 3.2/1$   
 $ID = \emptyset$

= ∅

C, I, F  
 $IC = \emptyset$   
 $CC = 3.1$   
 $CF = \emptyset$   
 $IF = \emptyset$

= ∅

C, A, A  
 $AC = 1.1/2$   
 $CC = 3.1$   
 $CA = 3.3/2$

$AA = 1.3$

$(1.1/2)(3.1)^*(3.3/2)(1.3)$

C, A, D  
 $AC = 1.1/2$   
 $CC = 3.1$   
 $CD = 3.2/1$   
 $AD = 1.2/3$

$(1.1/2)(3.1)^*(3.2/1)(1.2/3)$

C, A, F  
 $AC = 1.1/2$   
 $CC = 3.1$   
 $CF = \emptyset$   
 $AF = \epsilon$

= ∅    (3)



C, D, A

$$DC = 2.1|3$$

$$CC = 3.1$$

$$CA = 3.3|2$$

$$DA = 2.3|1$$

C, D, D

$$DC = 2.1|3$$

$$CC = 3.1$$

$$CD = 3.2|1$$

$$DD = 2.2$$

C, D, F

$$DC = 2.1|3$$

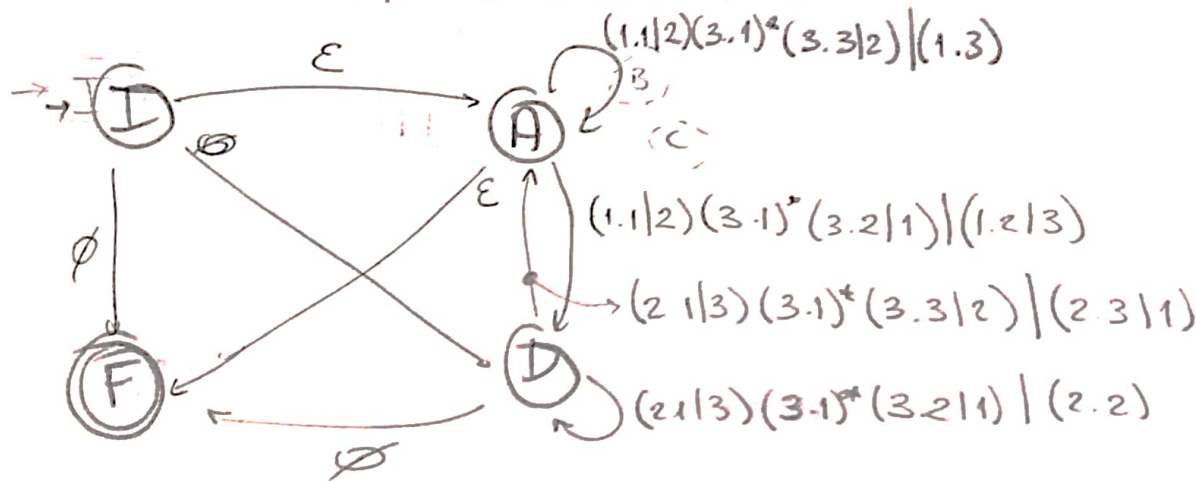
$$CC = 3.1$$

$$CF = \emptyset$$

$$DF = \emptyset$$

$$= \emptyset$$

$$(2.1|3)(3.1)^*(3.3|2)|(2.3|1) \quad (2.1|3)(3.1)^*(3.2|1)|(2.2)$$



|   | A                             | D                               | F           |
|---|-------------------------------|---------------------------------|-------------|
| I | $\epsilon$                    | $\emptyset$                     | $\emptyset$ |
| A | $(1.1 2)(3.1)^*(3.3 2) (2.2)$ | $(1.1 2)(3.1)^*(3.2 1) (1.2 3)$ | $\epsilon$  |
| D | $(2.1 3)(3.1)^*(3.3 2) (1.3)$ | $(2.1 3)(3.1)^*(3.2 1) (2.2)$   | $\emptyset$ |

$$q_{rem} = D \quad q_i = \{I, A\} \quad q_j = \{A, F\}$$

$\emptyset$  (ID)  
 $\emptyset$  (DD)  
 $\emptyset$  (DA)  
 $\epsilon$  (IA)

$$\epsilon$$

$\emptyset$  (ID)  
 $\emptyset$  (DD)  
 $\emptyset$  (DF)  
 $\emptyset$  (IF)

$$\emptyset$$

$\emptyset$  (AD)  
 $\emptyset$  (DD)  
 $\emptyset$  (DA)  
 $\emptyset$  (AA)

$(AD)(DD)^*(DA)|(AA)$   
 (muito grande p/ colocar aqui)

$\emptyset$  (AD)  
 $\emptyset$  (DD)  
 $\emptyset$  (DA)  
 $\epsilon$  (AF)

$$\epsilon$$

| $I$ | $A$  | $A$        | $F$ | $F$         |
|-----|--|------------|-----|-------------|
| $I$ |  | $\epsilon$ |     | $\emptyset$ |
| $A$ | $\left( (1.1 2)(3.1)^*(3.3 2) (2.3 1) \right) \left( (2.1 3)(3.1)^*(3.2 1) (2.2) \right)^* \left( (2.1 3)(3.1)^*(3.3 2) (1.3) \right)$<br>$\left  (1.1 2)(3.1)^*(3.3 2) (2.2) \right)$ |            |     | $\epsilon$  |

$$q_{rem} = A$$

$$q_i = I$$

$$q_j = F$$

$A, I, F$

$$\mathcal{L}(I, A) = \epsilon$$

$$\mathcal{L}(A, A) = \Rightarrow$$

$$\mathcal{L}(A, F) = \epsilon$$

$$\mathcal{L}(I, F) = \emptyset$$

ER:

$$\left( (1.1|2)(3.1)^*(3.3|2)|(2.3|1) \right) \left( (2.1|3)(3.1)^*(3.2|1)|(2.2) \right)^*$$

$$\left( (2.1|3)(3.1)^*(3.3|2)|(1.3) \right) \left| (1.1|2)(3.1)^*(3.3|2)|(2.2) \right)$$