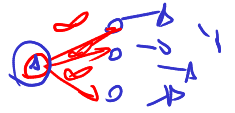


Prova de aquecimento 3

1) Entrada: $G = (V, A, w)$, $t \in V$, $E \subset V$

function Q1:
 Entrada: grafo $G = (V, A, w)$, $t \in V$, $E \subset V$



1. $V' \leftarrow V \cup \{s\}$

2. $A' \leftarrow A$

3. foreach $e \in E$ do

4. $A' \leftarrow A' \cup \{(s, e)\}$

5. Criar uma função $w': A' \rightarrow \mathbb{Z}^+$

6. foreach $(u, v) \in A'$ do

7. if $(u, v) \in A$ then

8. \quad definir $w'((u, v)) \rightarrow w((u, v))$

9. else

10. \quad definir $w'((u, v)) \rightarrow +\infty$

11. $G' = (V', A', w')$

// criar o grafo residual G_f

12. $V'' \leftarrow V'$

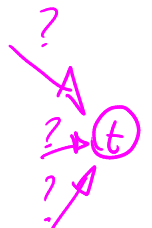
13. $A_f \leftarrow A'$

14. criar a função $c_f: A_f \rightarrow \mathbb{Z}^+$

15. foreach $(u, v) \in A'$ do

16. $A_f \leftarrow A_f \cup \{(v, u)\}$

17. definir $c_f((v, u)) \rightarrow 0$



18. $G_f \leftarrow (V'', A_f, c_f)$

19. Alg. Edmonds-Karp(G, s, t, G_f)

// descoberta do fluxo para t .

;

20. $A_t \leftarrow \{(u, v) \in A_f : v = t\}$

21. $q \leftarrow 0$

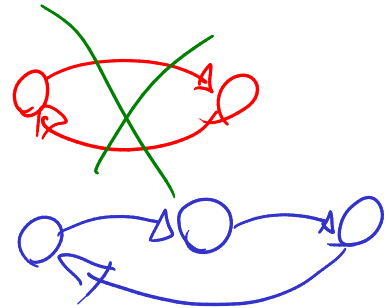
22. foreach $(u, v) \in A_t$ do

23. $q \leftarrow q + w((u, v)) - c_f((u, v))$

24. return q

$$c_f((u, v)) = c((u, v)) - f((u, v))$$

$$c_f + f = c$$
$$f = \frac{10}{2} - \frac{7}{1} = 3$$



2) function Q2:
Entrada: os conjuntos D e R , $C = \{(d, r), \dots\}$ na qual
 $d \in D, r \in R$.

1. $X = D$

2. $Y = R$

3. $E = C$

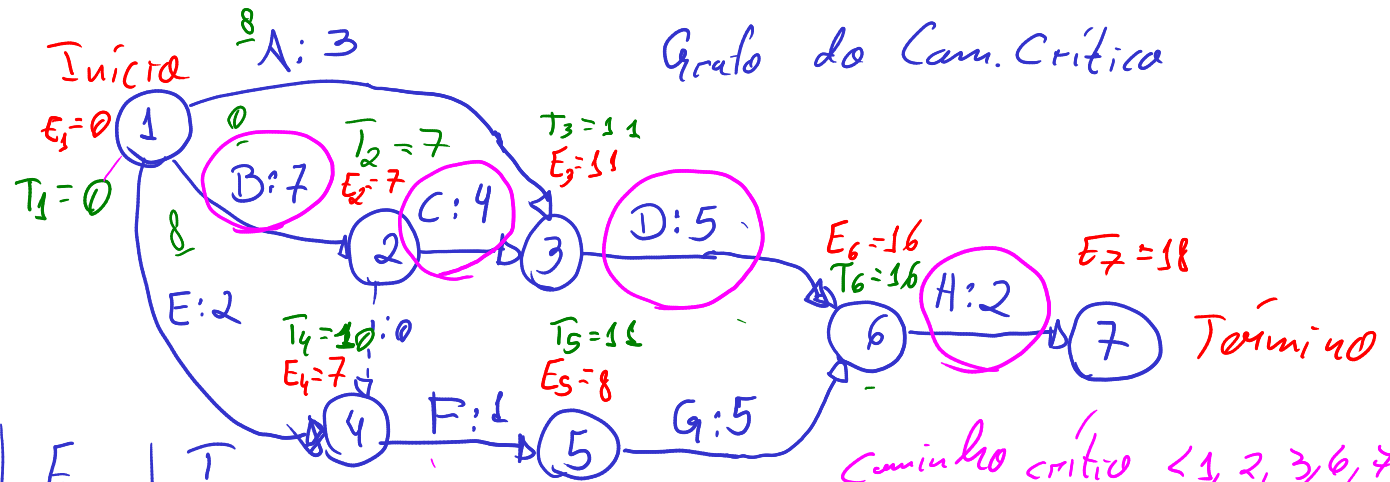
4. $G = (V = X \cup Y, E)$

5. $M \leftarrow \text{Hopcroft-Karp}(G)$

6. return $(M, |M|)$

3)

Gráfico do Cam. Crítico



	E	T
1	0	0
2	7	7
3	11	11
4	7	10
5	8	11
6	16	16
7	18	18

caminho crítico <1, 2, 3, 6, 7>

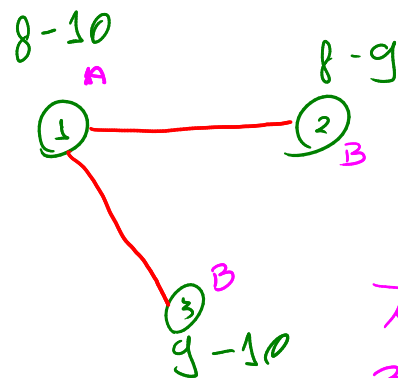
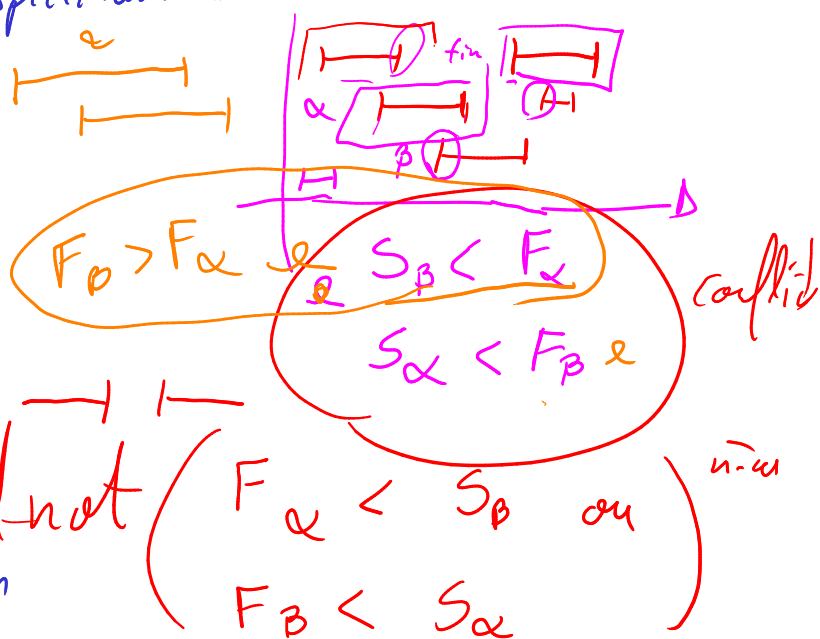
Atividades críticas são: B, C, D, H

- 4) . T : conj. de turmas
 . S_i : tempo de início da turma "i"
 . F_i : tempo de término da turma "i"

function Q4:

Entrada: um conjunto de turmas T , $S_i \in \mathbb{Z}^+$ e $F_i \in \mathbb{Z}^+$
 correspondem ao tempo de início e término da aula
 de cada turma "i" respectivamente.

1. $V \leftarrow T$
2. $E \leftarrow \{\}$
3. for each $u \in V$ do
4. for each $v \in V$ do
5. if $(F_u < S_v \text{ ou } F_v < S_u) = \text{false}$ then
6. $E \leftarrow E \cup \{e_{u,v}\}$
7. $G \leftarrow (V, E)$
8. $m \leftarrow \text{Laurer}(G)$
9. return m



	8-9	9-10
A	1	1
B	2	3