Corrigé Type Thé Graph
2 Info

1) Le graphe est non complet car on a pas d'arc entre (3, 6)
Le graphe est connexe car entre chaque couple de sommets il existe une chaîne (1)

2) L'ordonnancement du graphe (3)

X	$\Gamma^-(x)$
0	-
1	∅
2	1-7-5
3	1-2
4	∅
5	4-7
6	2-3-4-5
7	0-1-4

$N_0 = \{0\}$

X	$\Gamma_G^-(x)$
1	∅
2	~~1~~-7-5
3	~~1~~-2
4	-
5	~~4~~-7
6	2-3-~~4~~-5
7	~~1~~-~~4~~

$N_1 = \{1, 4\}$

X	$\Gamma_G^-(x)$
2	~~7~~-5
3	2
5	~~7~~
6	2-3-5
7	-

$N_2 = \{7\}$

X	$\Gamma^-(x)$
2	~~5~~
3	2
5	-
6	2-3-~~5~~

$N_3 = \{5\}$

X	$\Gamma_G^-(x)$
2	-
3	~~2~~
6	~~2~~-3

$N_4 = \{2\}$

X	$\Gamma_G^-(x)$
3	-
6	3

$N_5 = \{3\}$ $N_6 = \{6\}$

Donc le graphe est ordonnable

3) On peut appliquer l'Algorithme de Bellman car on a pas de circuit (1)

4) Algorithme de Bellman

int. $S = \{0\}$, $A = \emptyset$ $\pi(s) = 0$ (0,1)

it1 : On examine 1 et 4

$\pi(1) = \pi(0) + d(0,1) = 0 + 5 = 5$ $u_1'(0,1)$
$\pi(4) = \pi(0) + d(0,4) = 0 + 9 = 9$ $u_2'(0,4)$ (0,75)
$S = \{0,1,4\} \neq X$ $A = \{(0,1), (0,4)\}$

it2 : On examine 7

$\pi(7) = \min(\pi(0) + d(0,7), \pi(1) + d(1,7), \pi(4) + d(4,7))$
$= \min(0 + 8, 5+4, 9+5) = 8$, $u_3'(0,7)$ (0,75)
$S = \{0,1,4,7\} \neq X$ $A = \{(0,1), (0,4), (0,7)\}$

It3 : On examine 5

$\pi(5) = \min(\pi(4) + d(4,5), \pi(7) + d(7,5))$ (0,75)
$= \min(9+4, 8+6) = 13$ $u_4' = (4,5)$
$S = \{0,1,4,7,5\} \neq X$, $A = \{(0,1), (0,4), (0,7), (4,5)\}$

... examine 2

$\pi(2) = \min(\pi(1)+d(1,2), \pi(7)+d(7,2), \pi(5)+d(5,2))$ 0,75

$= \min(5+12, 8+7, 13+1) = 14$, $u'_5 = (7,2)$

$S = \{0,1,4,7,5,2\} \neq X$, $A = \{(0,1),(0,4),(0,7),(4,5),(7,2)\}$

t_6: On examine 3 0,75

$\pi(3) = \min(\pi(1)+d(1,3), \pi(2)+d(2,3))$

$= \min(5+15, 14+(-3)) = 11$ $u'_6 = (2,3)$

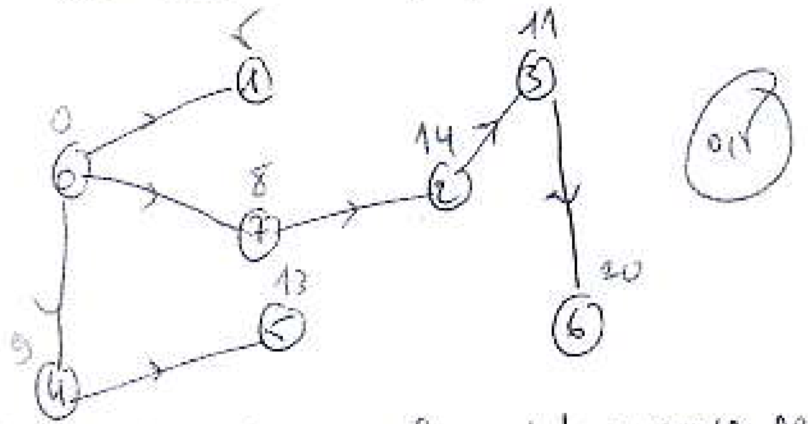
$S = \{0,1,4,7,5,2,3\} \neq X$ $A = \{(0,1),(0,4),(0,7),(4,5),(7,2),(2,3)\}$

t_6 = On examine 6 0,75

$\pi(6) = \min(\pi(3)+d(3,6), \pi(2)+d(2,6), \pi(5)+d(5,6), \pi(4)+d(4,6))$

$\min(11+9, 14+11, 13+13, 9+20) = 20$ $u'_7 = (3,6)$

$S = X$ On s'arrête et $A = \{(0,1),(0,4),(0,7),(4,5),(7,2),(2,3),(3,6)\}$



0,5

5) On examine les arcs hors Arborescence par Ford

$\delta(1,7) = 8-5-4 = -1 < 0$
$\delta(4,7) = 8-9-5 = -6 < 0$
$\delta(1,2) = 14-5-12 = -3 < 0$
$\delta(1,3) = 11-5-15 = -9 < 0$
$\delta(7,5) = 13-8-6 = -1 < 0$
$\delta(5,2) = 14-13-1 = 0 \leq 0$
$\delta(2,6) = 20-14-11 = -5 < 0$
$\delta(5,6) = 20-13-13 = -6 < 0$
$\delta(4,6) = 20-9-20 = -9 < 0$

1,5

Tous les $\delta(i,j) \leq 0$ donc l'arborescence est optimal

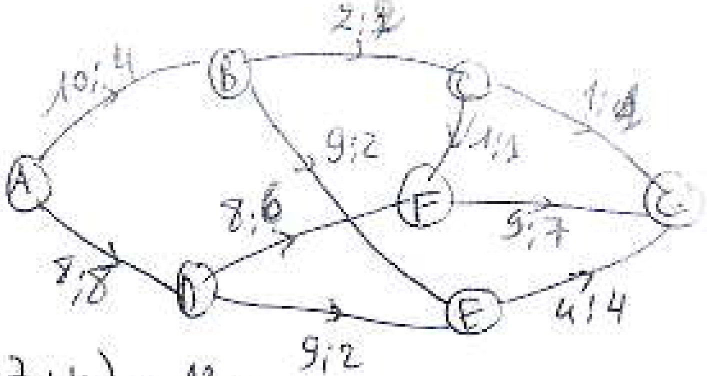
flot est compatible car [illegible]
flot est conservatif car pour chaque som[met] [illegible]
des flux entrants égale a la somme des flux sortants
) le flot est non complet car on a des chemins non saturés [illegible]
le flot complet

It1: A B C G

$\varepsilon_1 = min(10-3, 2-1, 1-0) = 1$

It2: A D F G

$\varepsilon_1 = min(8-2, 8-0, 9-1) = 6$



le flot complet $= (4+8) = (1+7+4) = 12$

0,1

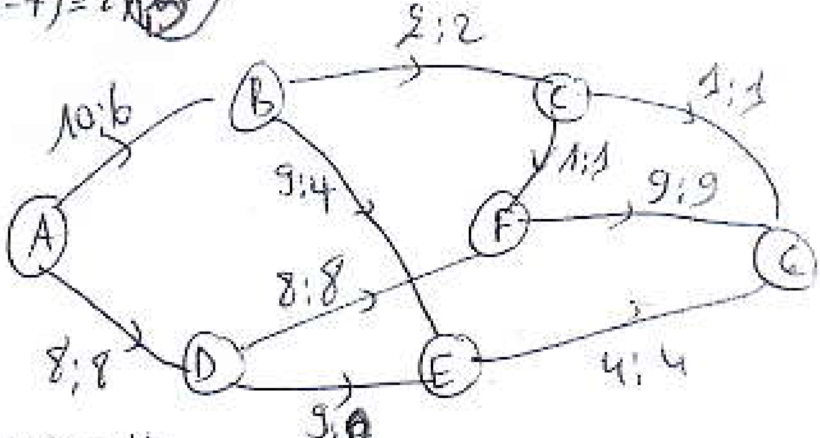
4) le flot est ~~non max~~ car on a une ~~chaîne~~ chaine augmentante
ABEDFG

0,1

$\varepsilon_1 = min(10-4, 9-2, 8-6, 9-7) = 2$

$\varepsilon_2 = min(2) = 2$

$\varepsilon = \varepsilon$



le flot max $= 6+8 = 1+9+4 = 14$

0,1