Entraînement - Training

INSTRUCTION : *English version below*

En haut de chaque page se trouvent 3 nombres, par exemple +1/3/58+. Vous ***devez*** *vérifier que, sur chacune des pages de votre sujet, le* ***premier*** *de ces 3 nombres est le même (dans cet exemple, il s'agit donc du 1). Ce nombre identifie votre copie. Les deux autres nombres ne sont pas importants.*

Détacher la dernière feuille et répondre dessus. Ne pas rendre les pages contenant les questions, vous ne devez rendre ***que la dernière feuille****. Chaque question est sur 1 point, aucun point ne sera attribué aux questions contenant une mauvaise réponse.*

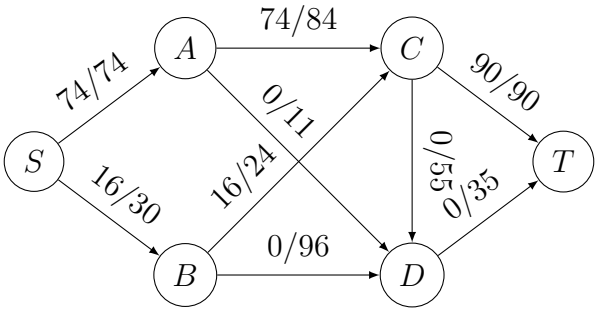
Les questions faisant apparaître le symbole ♣ peuvent présenter une ou plusieurs bonnes réponses qui doivent toutes être cochées. Les autres ont une unique bonne réponse.

At the top of each page are written 3 numbers, +1/3/58+. You ***must*** *check that, on each page you have, the* ***first*** *number is the same (in this case, it would be the number 1). This number is the id of your subject. The two other numbers are not important.*

Answer only on the last page. Keep the other pages containing the questions, you just have to return ***the last page****. Each right answer gives you 1 point. For any wrong answer, the mark of the question is 0.*

If there is a question with a symbol ♣, there may be one or more right answer. All of them must be checked. Any other question has only one right answer.

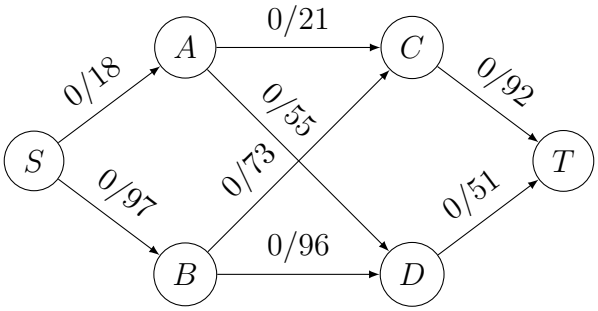
Question 1 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
Among all the following path, check all the augmenting path.

- ☐ 1 S B T
- ☐ 2 S A B C T
- ☐ 3 S A C D T
- ■ S B D T
- ☐ 5 S A C T
- ☐ 6 S C T

Question 2 ♣



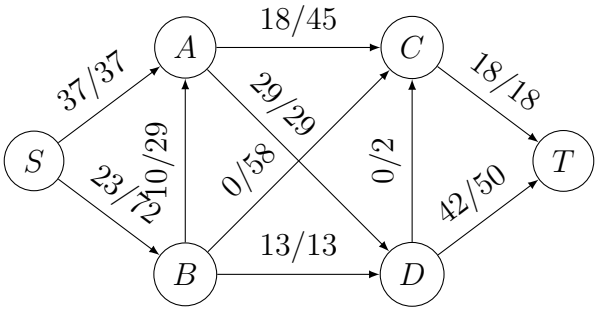
In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc. We then applied the marking algorithm. On the following table is written, for each marked node, the marking of that node.

Node	Marking
S	+
B	+S
A	+S
C	+B

We would like to mark T. Is it possible to mark that node before we mark any other node ? In that case, check every possible marking of that node. Otherwise, check $-$.

1 $+S$	5 $+B$	9 $+D$	13 $-$
2 $-S$	6 $-B$	10 $-D$	
3 $+A$	■ $+C$	11 $+T$	
4 $-A$	8 $-C$	12 $-T$	

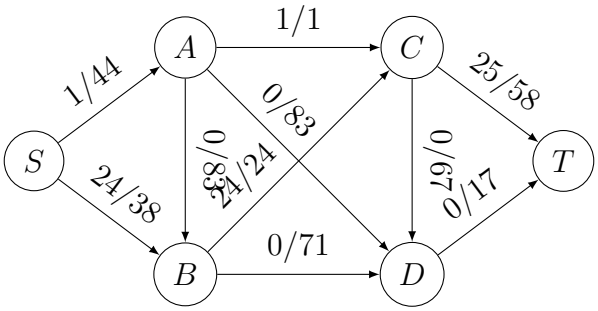
Question 3 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a maximum flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
We look at the minimum cut separating S from T that is the computed by the Ford-Fulkerson algorithm : check all the nodes that are in the set of the cut containing S.

■ S ■ A ■ B ■ C ☐ D ☐ T

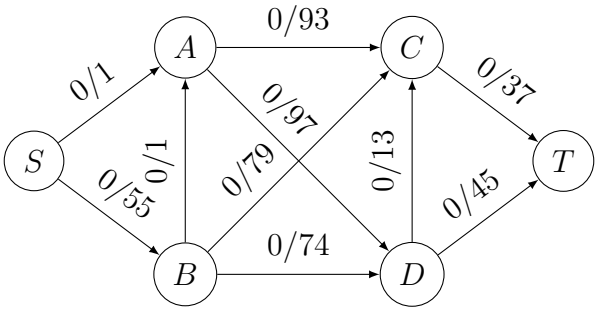
Question 4 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
Among all the following path, check all the augmenting path.

- ■ S A D T
- 2 S A C T
- 3 S A B C D T
- 4 S D T
- ■ S B D T
- 6 S A B T

Question 5 ♣



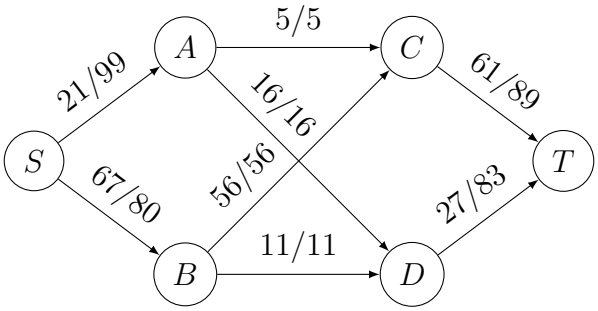
In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc. We then applied the marking algorithm. On the following table is written, for each marked node, the marking of that node.

Node	Marking
S	$+$

We would like to mark T. Is it possible to mark that node before we mark any other node ? In that case, check every possible marking of that node. Otherwise, check $-$.

1 $+S$	5 $+B$	9 $+D$	■ $-$
2 $-S$	6 $-B$	10 $-D$	
3 $+A$	7 $+C$	11 $+T$	
4 $-A$	8 $-C$	12 $-T$	

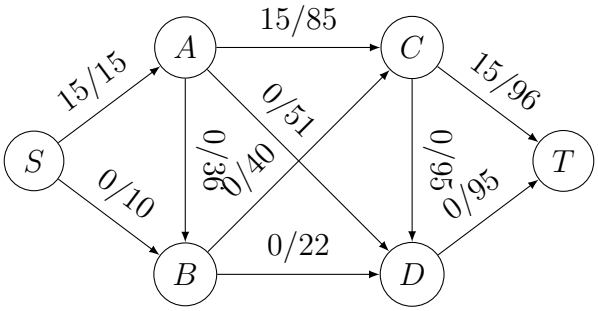
Question 6 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a maximum flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
We look at the minimum cut separating S from T that is the computed by the Ford-Fulkerson algorithm : check all the nodes that are in the set of the cut containing S.

■ S ■ A ■ B ☐ 4 C ☐ 5 D ☐ 6 T

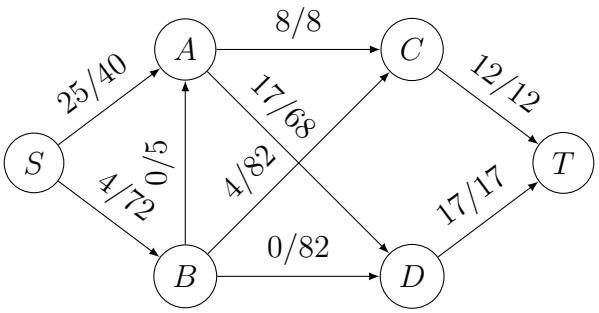
Question 7 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
Among all the following path, check all the augmenting path.

- ■ S B C D T
- ■ S B D T
- ■ S B C T
- [4] S D T
- [5] S A T
- [6] S A B T

Question 8 ♣



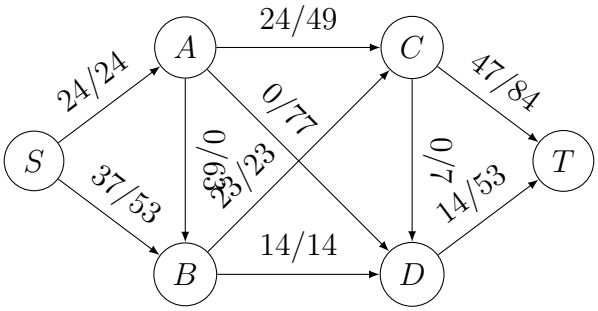
In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc. We then applied the marking algorithm. On the following table is written, for each marked node, the marking of that node.

Node	Marking
S	$+$
A	$+$S

We would like to mark T. Is it possible to mark that node before we mark any other node ? In that case, check every possible marking of that node. Otherwise, check $-$.

1	$+S$	5	$+B$	9	$+D$	■	$-$
2	$-S$	6	$-B$	10	$-D$		
3	$+A$	7	$+C$	11	$+T$		
4	$-A$	8	$-C$	12	$-T$		

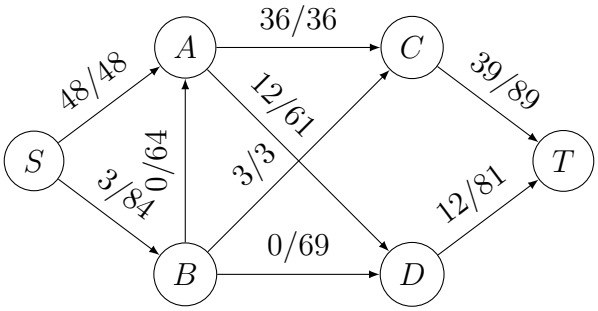
Question 9 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a maximum flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
We look at the minimum cut separating S from T that is the computed by the Ford-Fulkerson algorithm : check all the nodes that are in the set of the cut containing S.

■ S 2 A ■ B 4 C 5 D 6 T

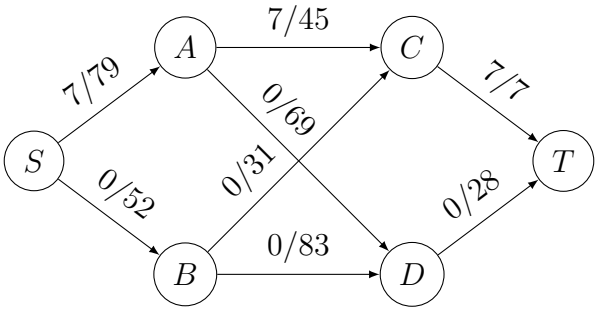
Question 10 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
Among all the following path, check all the augmenting path.

- [1] S B T
- [2] S A B T
- [3] S A T
- [4] S A B C D T
- [5] S B D T
- [6] S C T

Question 11 ♣



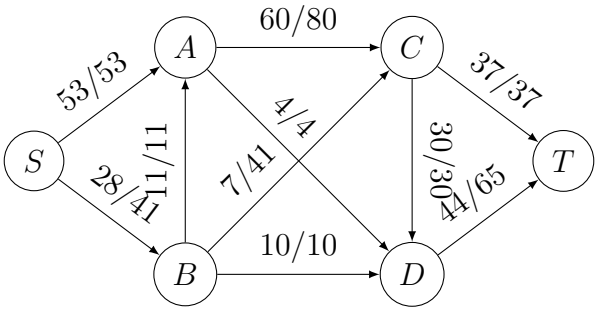
In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc. We then applied the marking algorithm. On the following table is written, for each marked node, the marking of that node.

Node	Marking
S	+
B	+S
D	+B
T	+D
C	+B

We would like to mark A. Is it possible to mark that node before we mark any other node ? In that case, check every possible marking of that node. Otherwise, check $-$.

■ $+S$
2 $-S$
3 $+A$
4 $-A$
5 $+B$
6 $-B$
7 $+C$
■ $-C$
9 $+D$
10 $-D$
11 $+T$
12 $-T$
13 $-$

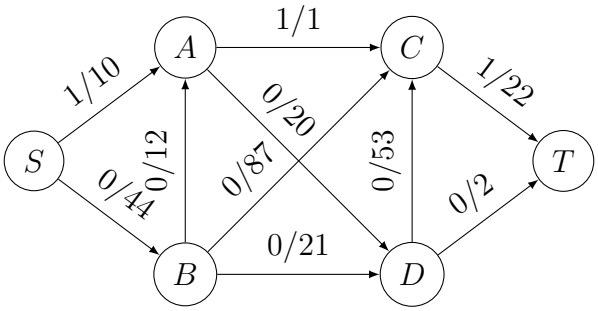
Question 12 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a maximum flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
We look at the minimum cut separating S from T that is the computed by the Ford-Fulkerson algorithm : check all the nodes that are in the set of the cut containing S.

■ S ■ A ■ B ■ C ☐ D ☐ T

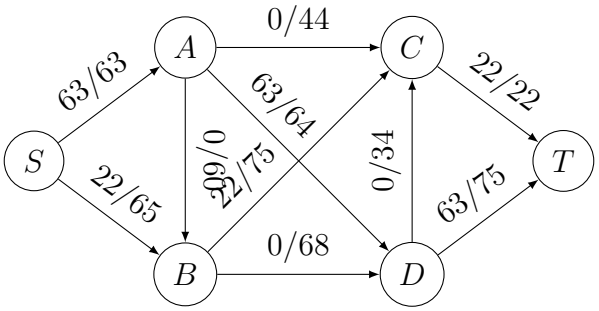
Question 13 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
Among all the following path, check all the augmenting path.

- ■ S A D T
- ■ S B C T
- [3] S A B C T
- [4] S A T
- [5] S A B D T
- [6] S A B C D T

Question 14 ♣



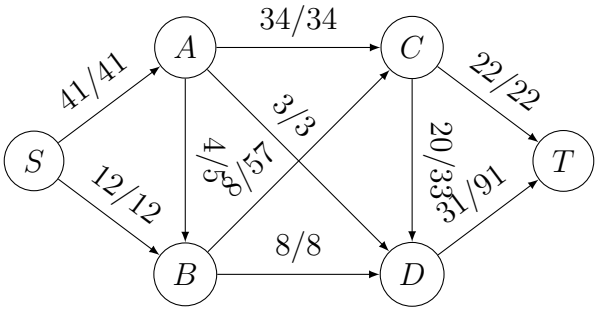
In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc. We then applied the marking algorithm. On the following table is written, for each marked node, the marking of that node.

Node	Marking
S	$+$
B	+S
D	+B
C	+B
T	+D

We would like to mark A. Is it possible to mark that node before we mark any other node ? In that case, check every possible marking of that node. Otherwise, check $-$.

1 $+S$	5 $+B$	9 $+D$	13 $-$
2 $-S$	6 $-B$	■ $-D$	
3 $+A$	7 $+C$	11 $+T$	
4 $-A$	8 $-C$	12 $-T$	

Question 15 ♣



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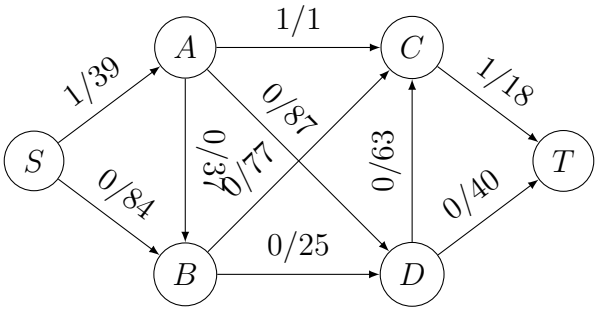
We look at the minimum cut separating S from T that is the computed by the Ford-Fulkerson algorithm : check all the nodes that are in the set of the cut containing S.

■ S 2 A 3 B 4 C 5 D 6 T

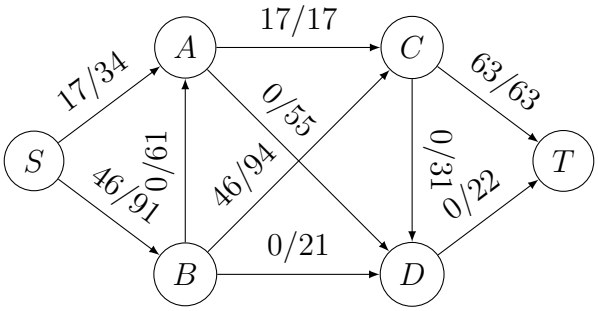
Question 16 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
Among all the following path, check all the augmenting path.

- [1] S C T
- [2] S A C T
- [3] S D T
- [ ] S A D T
- [5] S A C D T
- [ ] S B C T

Question 17 ♣



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Node	Marking
S	+
B	+S
D	+B
C	+B
T	+D

We would like to mark A. Is it possible to mark that node before we mark any other node ? In that case, check every possible marking of that node. Otherwise, check $-$.

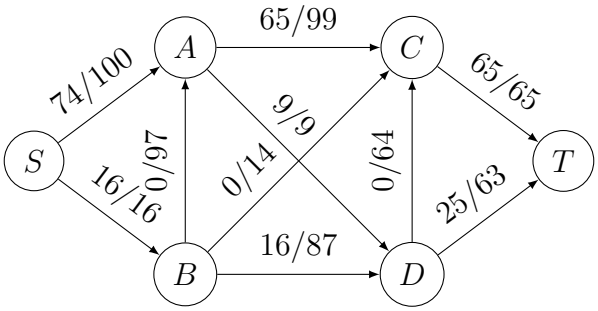
■ $+S$
2 $-S$
3 $+A$
4 $-A$

■ $+B$
6 $-B$
7 $+C$
■ $-C$

9 $+D$
10 $-D$
11 $+T$
12 $-T$

13 $-$

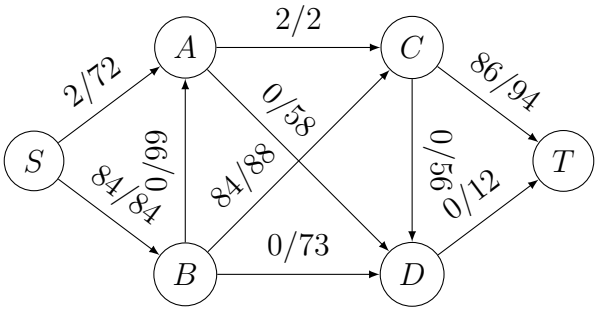
Question 18 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a maximum flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
We look at the minimum cut separating S from T that is the computed by the Ford-Fulkerson algorithm : check all the nodes that are in the set of the cut containing S.

■ S ■ A ☐ 3 B ■ C ☐ 5 D ☐ 6 T

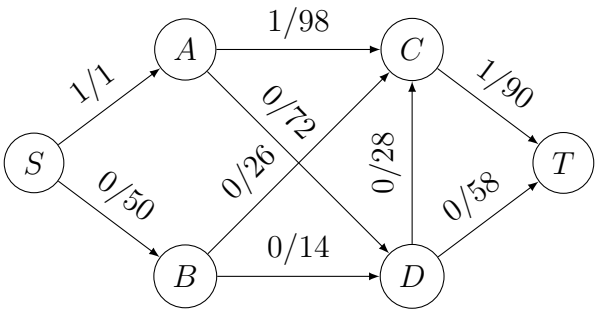
Question 19 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
Among all the following path, check all the augmenting path.

- 1 S A C T
- 2 S A B D T
- 3 S C T
- 4 S B D T
- 5 S D T
- ■ S A D T

Question 20 ♣



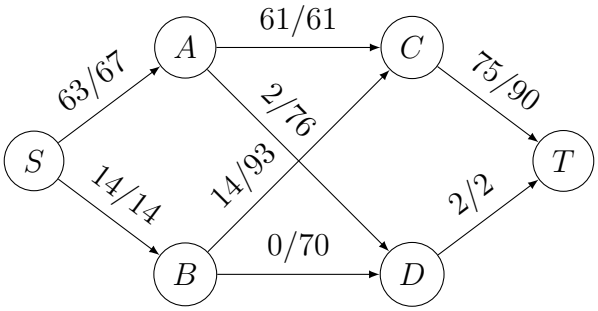
In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc. We then applied the marking algorithm. On the following table is written, for each marked node, the marking of that node.

Node	Marking
S	$+$
B	+S
D	+B
T	+D
C	-T

We would like to mark A. Is it possible to mark that node before we mark any other node ? In that case, check every possible marking of that node. Otherwise, check $-$.

1 $+S$	5 $+B$	9 $+D$	13 $-$
2 $-S$	6 $-B$	10 $-D$	
3 $+A$	7 $+C$	11 $+T$	
4 $-A$	■ $-C$	12 $-T$	

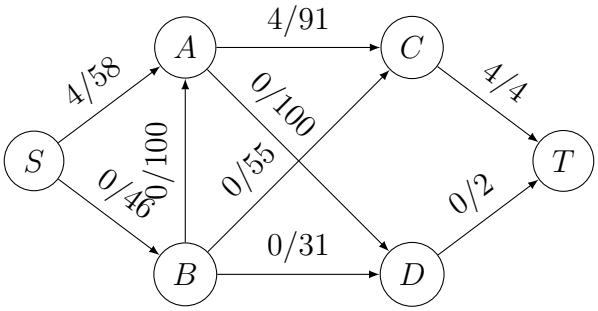
Question 21 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a maximum flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
We look at the minimum cut separating S from T that is the computed by the Ford-Fulkerson algorithm : check all the nodes that are in the set of the cut containing S.

■ S ■ A ☐ 3 B ☐ 4 C ■ D ☐ 6 T

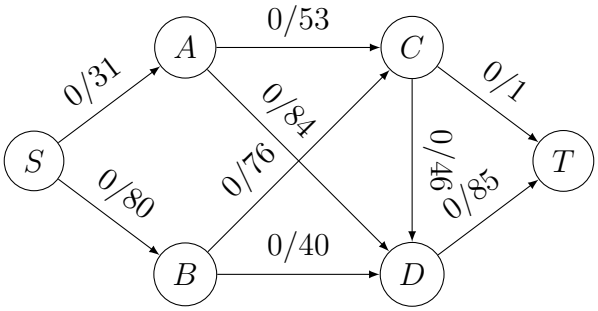
Question 22 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
Among all the following path, check all the augmenting path.

- [1] S A B D T
- [2] S A T
- [3] S C T
- [4] S B D T
- [5] S A D T
- [6] S B T

Question 23 ♣



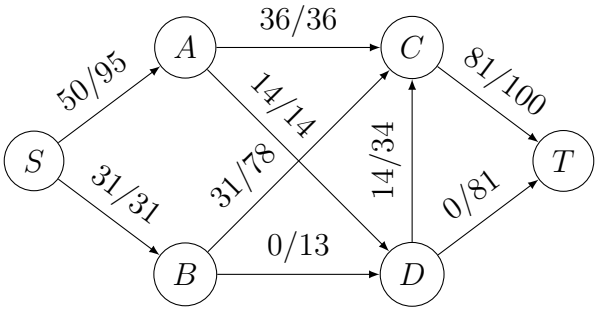
In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc. We then applied the marking algorithm. On the following table is written, for each marked node, the marking of that node.

Node	Marking
S	+
A	+S
B	+S
D	+A
C	+B

We would like to mark T. Is it possible to mark that node before we mark any other node ? In that case, check every possible marking of that node. Otherwise, check $-$.

1 $+S$	5 $+B$	■ $+D$	13 $-$
2 $-S$	6 $-B$	10 $-D$	
3 $+A$	■ $+C$	11 $+T$	
4 $-A$	8 $-C$	12 $-T$	

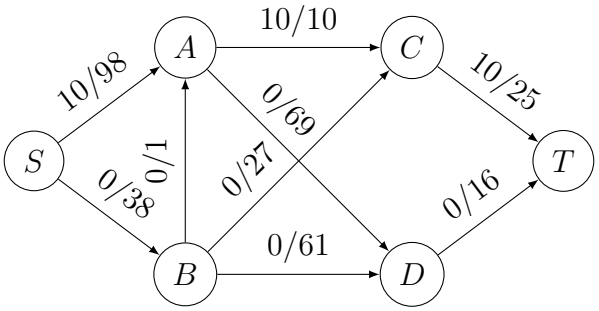
Question 24 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a maximum flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
We look at the minimum cut separating S from T that is the computed by the Ford-Fulkerson algorithm : check all the nodes that are in the set of the cut containing S.

■ S ■ A 3 B 4 C 5 D 6 T

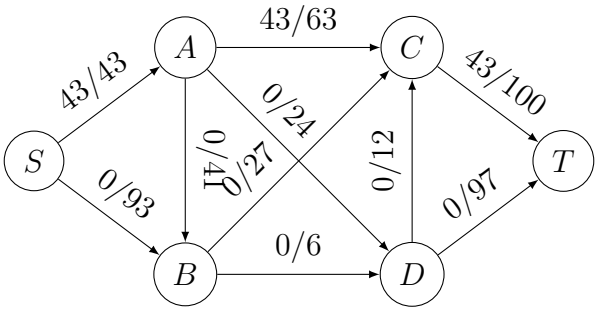
Question 25 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
Among all the following path, check all the augmenting path.

- [1] S A B C D T
- [2] S C T
- [3] S A B T
- [ ] S B D T
- [5] S A C D T
- [ ] S A D T

Question 26 ♣



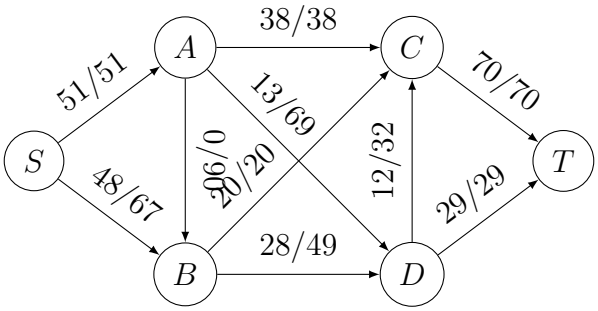
In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc. We then applied the marking algorithm. On the following table is written, for each marked node, the marking of that node.

Node	Marking
S	$+$
B	$+$S

We would like to mark A. Is it possible to mark that node before we mark any other node ? In that case, check every possible marking of that node. Otherwise, check $-$.

1	$+S$	5	$+B$	9	$+D$	■	$-$
2	$-S$	6	$-B$	10	$-D$		
3	$+A$	7	$+C$	11	$+T$		
4	$-A$	8	$-C$	12	$-T$		

Question 27 ♣



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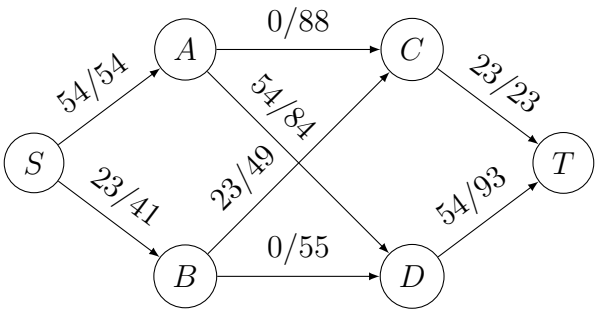
We look at the minimum cut separating S from T that is the computed by the Ford-Fulkerson algorithm : check all the nodes that are in the set of the cut containing S.

■ S ■ A ■ B ■ C ■ D ☐ T

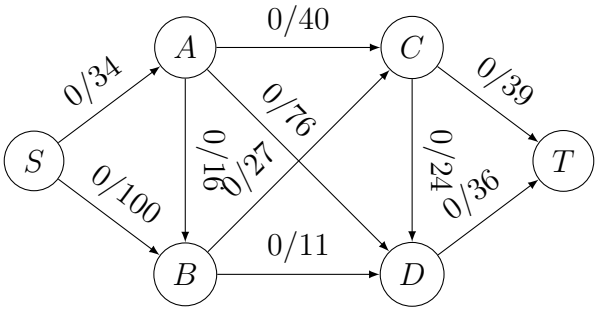
Question 28 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
Among all the following path, check all the augmenting path.

- [1] S B C T
- [2] S C D T
- [■] S B D T
- [4] S B T
- [5] S A C T
- [6] S A B C D T

Question 29 ♣



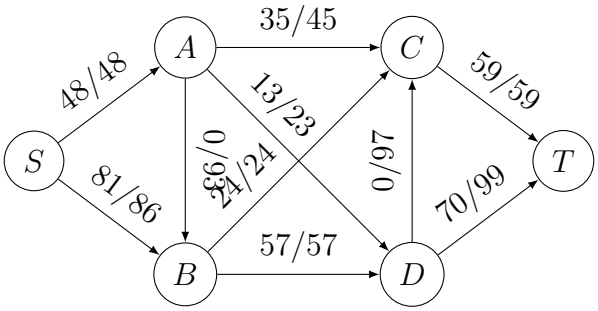
In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc. We then applied the marking algorithm. On the following table is written, for each marked node, the marking of that node.

Node	Marking
S	$+$
B	+S
D	+B
A	+S

We would like to mark T. Is it possible to mark that node before we mark any other node ? In that case, check every possible marking of that node. Otherwise, check $-$.

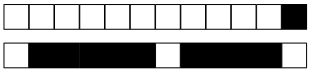
1 $+S$	5 $+B$	■ $+D$	13 $-$
2 $-S$	6 $-B$	10 $-D$	
3 $+A$	7 $+C$	11 $+T$	
4 $-A$	8 $-C$	12 $-T$	

Question 30 ♣



In the previous graph, we partially applied the Ford Fulkerson algorithm in order to compute a maximum flow from S to T. On each arc is written the value of the flow, followed by the capacity of the arc.
We look at the minimum cut separating S from T that is the computed by the Ford-Fulkerson algorithm : check all the nodes that are in the set of the cut containing S.

■ S 2 A ■ B 4 C 5 D 6 T



+1/31/30+

Entraînement - Training

Noircissez complètement ci-dessous les 3 premières lettres de votre nom de famille et la première lettre de votre prénom. Par exemple, pour Jean Dupont, cochez J, D, U, P ; pour Henri Harley, cochez seulement H, A, R ; pour Bernard Ca, cochez seulement A, B, C.

Check entirely the 3 first letters of your lastname and the first letter of your firstname. For instance, for Jean Dupont, check J, D, U, P ; for Henri Harley, check only H, A, R ; for Bernard Ca, check only A, B, C.

A	B	C	D	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z

Then write your lastname and firstname below.

Nom et prénom :

.....

Les réponses aux questions sont à donner exclusivement sur cette feuille. Les réponses données sur les feuilles précédentes ne seront pas prises en compte. Pour cocher une case, il faut la **noircir complètement**. Vous pouvez effacer votre réponse à la gomme ou avec du blanc, attention à ne pas effacer la case à cocher. Si vous êtes dans l'impossibilité de corriger une erreur, cette page est dupliquée au verso ; vous pouvez alors barrer cette feuille ci et répondre au verso.

QUESTION 1 : 1 2 3 ■ 5 6

QUESTION 2 : 1 2 3 4 5 6 ■ 8 9 10 11 12 13

QUESTION 3 : ■ ■ ■ ■ 5 6

QUESTION 4 : ■ 2 3 4 ■ 6

QUESTION 5 : 1 2 3 4 5 6 7 8 9 10 11 12 ■

QUESTION 6 : ■ ■ ■ 4 5 6

QUESTION 7 : ■ ■ ■ 4 5 6

QUESTION 8 : 1 2 3 4 5 6 7 8 9 10 11 12 ■

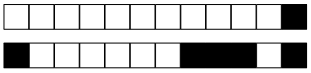
QUESTION 9 : ■ 2 ■ 4 5 6

QUESTION 10 : 1 2 3 4 ■ 6

QUESTION 11 : ■ 2 3 4 5 6 7 ■ 9 10 11 12 13

QUESTION 12 : ■ ■ ■ ■ 5 6

QUESTION 13 : ■ ■ 3 4 5 6



Question 14 : 1 2 3 4 5 6 7 8 9 ■ 11 12 13

Question 15 : ■ 2 3 4 5 6

Question 16 : 1 2 3 ■ 5 ■

Question 17 : ■ 2 3 4 ■ 6 7 ■ 9 10 11 12 13

Question 18 : ■ ■ 3 ■ 5 6

Question 19 : 1 2 3 4 5 ■

Question 20 : 1 2 3 4 5 6 7 ■ 9 10 11 12 13

Question 21 : ■ ■ 3 4 ■ 6

Question 22 : 1 2 3 ■ ■ 6

Question 23 : 1 2 3 4 5 6 ■ 8 ■ 10 11 12 13

Question 24 : ■ ■ 3 4 5 6

Question 25 : 1 2 3 ■ 5 ■

Question 26 : 1 2 3 4 5 6 7 8 9 10 11 12 ■

Question 27 : ■ ■ ■ ■ ■ 6

Question 28 : 1 2 ■ 4 5 6

Question 29 : 1 2 3 4 5 6 7 8 ■ 10 11 12 13

Question 30 : ■ 2 ■ 4 5 6