Maxflow and Mincut



1/3 points earned (33%)

You haven't passed yet. You need at least 66% to pass. Review the material and try again! You have 3 attempts every 8 hours.

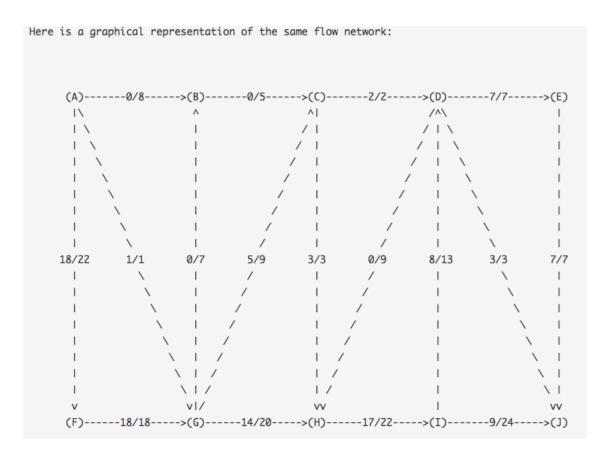
Review Related Lesson



1/1 points

Suppose that you are computing a max flow from the source vertex A to the sink vertex J in the flow network given below:

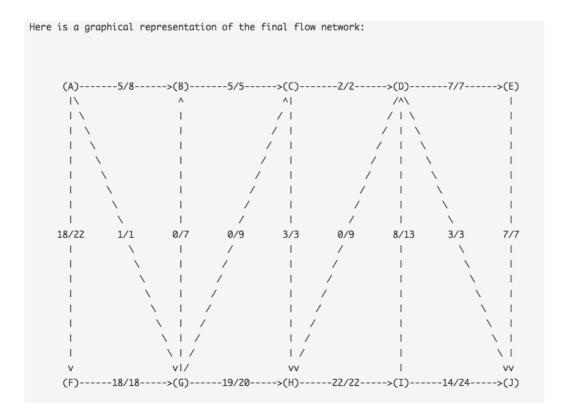
1	odao	£1 ow	/	canaci +v
	edge	I LOW	/	capacity
2				
3	A->B	0	/	8
4	A->F	18		
5	A->G	1	/	1
6	B->C	0	/	5
7	C->D	2	/	2
8	C->H	3	/	3
9	D->E	7	/	7
10	D->H		/	
11	D->J		/	
12	E->J		/	7
13	F->G	18		
14		0		
15	G->C		/	
16	G->H		/	
17	H->I	17	/	22
18	I->D	8	/	13
19	I->J	9	/	24



Starting from the given flow (of value 19), give the sequence of vertices in the next (and final) augmenting path discovered by the Ford-Fulkerson algorithm.

```
ABCGHIJ
```

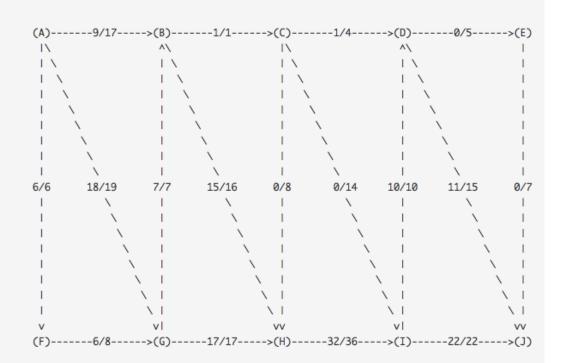
```
The correct answer is: A B C G H I {\sf J}
2
 3
    augmenting path:
 4
                          A \rightarrow B \rightarrow C \rightarrow G \rightarrow H \rightarrow I \rightarrow J
 5
    bottleneck capacity: 5
    value of flow:
 6
                          24
 8
    Here is the final flow network:
9
10
        edge flow / capacity
11
                 5 / 8
12
        A->B
                18 / 22
13
        A->F
                  1 /
14
        A->G
                         1
                  5 /
15
        B->C
16
        C->D
                 2 /
17
        C->H
                  3 /
                  7 /
18
        D->E
19
        D->H
                 0 / 9
20
        D->J
                  3 / 3
                  7 / 7
21
        E->J
22
        F->G
                 18 / 18
23
                  0 /
                          7
        G->B
24
        G->C
                  0 /
                         9
25
                 19 / 20
        G->H
                 22 / 22 8 / 13
26
        H->I
27
        I->D
                 14 / 24
28
        I->J
29
```



(seed = 536089) Consider the flow network with 10 vertices and 17 edges:

A->F 6 / 6 A->G 18 / 19 A->B 9 / 17 G->B 7 / 7 B->H 15 / 16 B->C 1 / 1 C->I 0 / 14 C->D 1 / 4 C->H 0 / 8 I->D 10 / 10 D->J 11 / 15 D->E 0 / 5 E->J 0 / 7 F->G 6 / 8 G->H 17 / 17 H->I 32 / 36	edge	flow	/	capacity
A->B 9 / 17 G->B 7 / 7 B->H 15 / 16 B->C 1 / 1 C->I 0 / 14 C->D 1 / 4 C->H 0 / 8 I->D 10 / 10 D->J 11 / 15 D->E 0 / 5 E->J 0 / 7 F->G 6 / 8 G->H 17 / 17 H->I 32 / 36	A->F	6	/	6
G->B 7 / 7 B->H 15 / 16 B->C 1 / 1 C->I 0 / 14 C->D 1 / 4 C->H 0 / 8 I->D 10 / 10 D->J 11 / 15 D->E 0 / 5 E->J 0 / 7 F->G 6 / 8 G->H 17 / 17 H->I 32 / 36	A->G	18	1	19
B->H 15 / 16 B->C 1 / 1 C->I 0 / 14 C->D 1 / 4 C->H 0 / 8 I->D 10 / 10 D->J 11 / 15 D->E 0 / 5 E->J 0 / 7 F->G 6 / 8 G->H 17 / 17 H->I 32 / 36	A->B	9	/	17
B->C 1 / 1 C->I 0 / 14 C->D 1 / 4 C->H 0 / 8 I->D 10 / 10 D->J 11 / 15 D->E 0 / 5 E->J 0 / 7 F->G 6 / 8 G->H 17 / 17 H->I 32 / 36	G->B	7	/	7
C->I 0 / 14 C->D 1 / 4 C->H 0 / 8 I->D 10 / 10 D->J 11 / 15 D->E 0 / 5 E->J 0 / 7 F->G 6 / 8 G->H 17 / 17 H->I 32 / 36	B->H	15	/	16
C->D 1 / 4 C->H 0 / 8 I->D 10 / 10 D->J 11 / 15 D->E 0 / 5 E->J 0 / 7 F->G 6 / 8 G->H 17 / 17 H->I 32 / 36	B->C	1	/	1
C->H 0 / 8 I->D 10 / 10 D->J 11 / 15 D->E 0 / 5 E->J 0 / 7 F->G 6 / 8 G->H 17 / 17 H->I 32 / 36	C->I	0	/	14
I->D 10 / 10 D->J 11 / 15 D->E 0 / 5 E->J 0 / 7 F->G 6 / 8 G->H 17 / 17 H->I 32 / 36	C->D	1	/	4
D->J 11 / 15 D->E 0 / 5 E->J 0 / 7 F->G 6 / 8 G->H 17 / 17 H->I 32 / 36	C->H	0	/	8
D->E 0 / 5 E->J 0 / 7 F->G 6 / 8 G->H 17 / 17 H->I 32 / 36	I->D	10	/	10
E->J 0 / 7 F->G 6 / 8 G->H 17 / 17 H->I 32 / 36	D->J	11	/	15
F->G 6 / 8 G->H 17 / 17 H->I 32 / 36	D->E	0	/	5
G->H 17 / 17 H->I 32 / 36	E->J	0	/	7
H->I 32 / 36	F->G	6	/	8
	G->H	17	/	17
T 1 22 / 22	H->I	32	/	36
1->J 22 / 22	I->J	22	/	22

Here is a graphical representation of the same flow network:



The flow given above is a maxflow from A to J. What is the corresponding mincut? List the vertices on the s side of mincut in alphabetical order.