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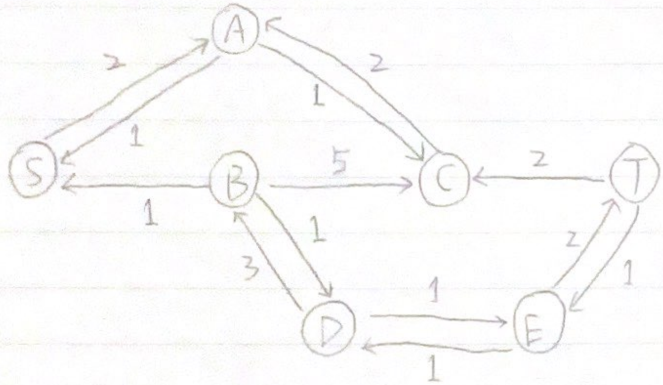
DATE / /

Q1 After traversing Augumented path

① S — B — D — E — T

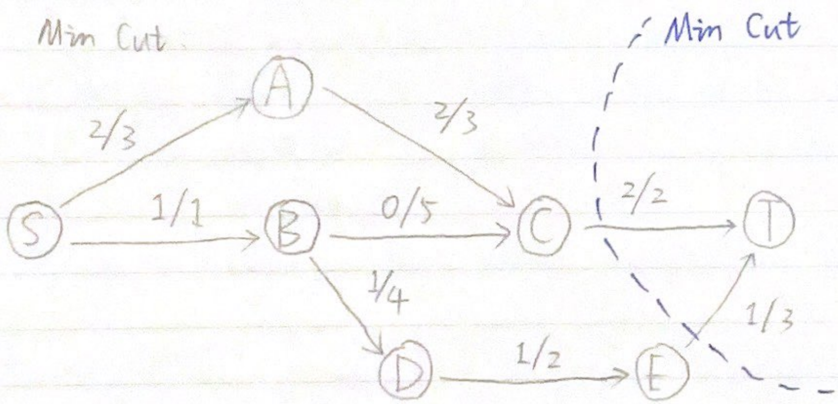
② S — A — C — T

a.



b Max Flow $= 0 + 1 + 2$
$= 3$

Min Cut.



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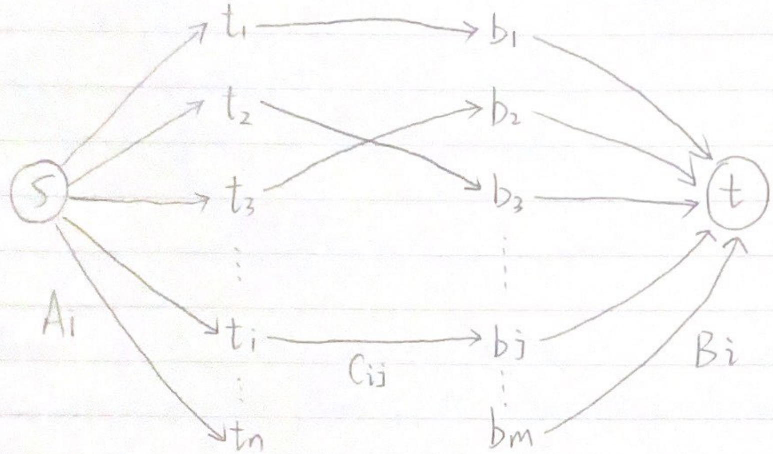
DATE / /

Q2 We can set up a flow network



Assume, Francs flowing from S to t

- $t_1 \ldots t_n$ represents the traders.
- $b_1 \ldots b_n$ represents the currency in bank.
- $S \to t_i$, which is A_i, means the number of trader i who want to change.
- $t_i \to b_j$, which is C_{ij}, means maximum amount of Francs i trade to currency j
- $b_j \to t$, which is B_i, means the available currency j.

Assume, f is a flow, $|f| = \sum_i T_i$, means that trader can change currency available

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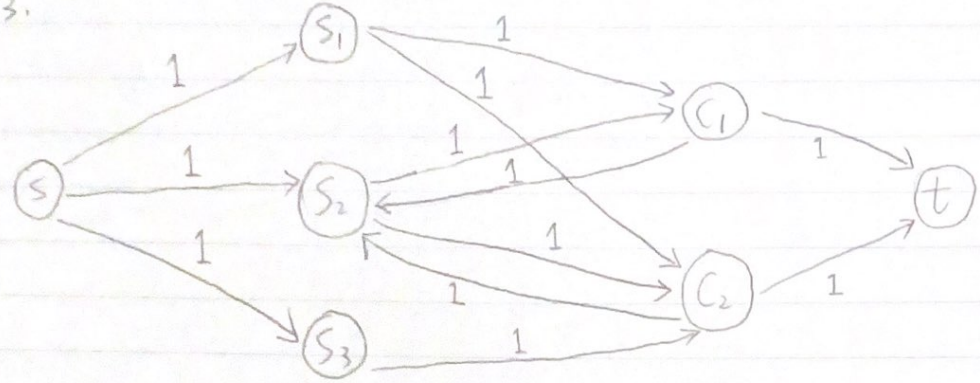
DATE / /

Q3.



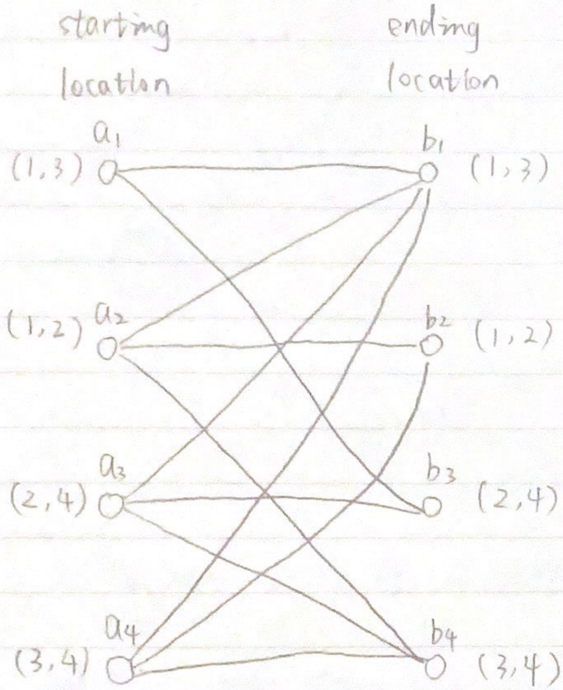
Hence S_1, S_2, S_3 are students, C_1 C_2 are classes
Any students can enroll for more than 1 class.
After from 1 day, one student can be selected.

So selection exist if
① we run the Ford - Fulkerson algorithm
② Earned out the Max - Flow in the graph.

No.

DATE / /

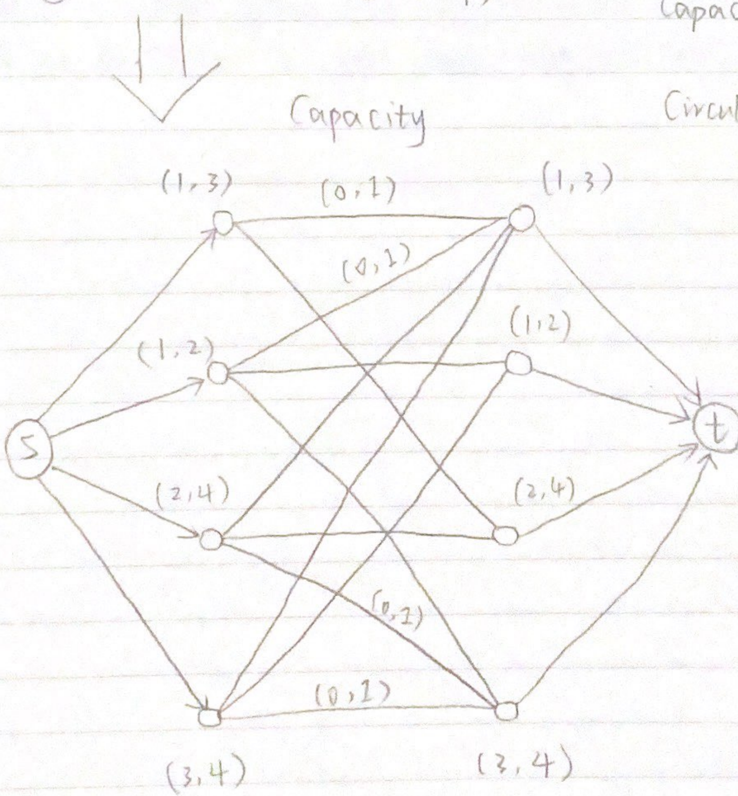
Q4. (a)



edge → Introduced 2 new $V = s, t$

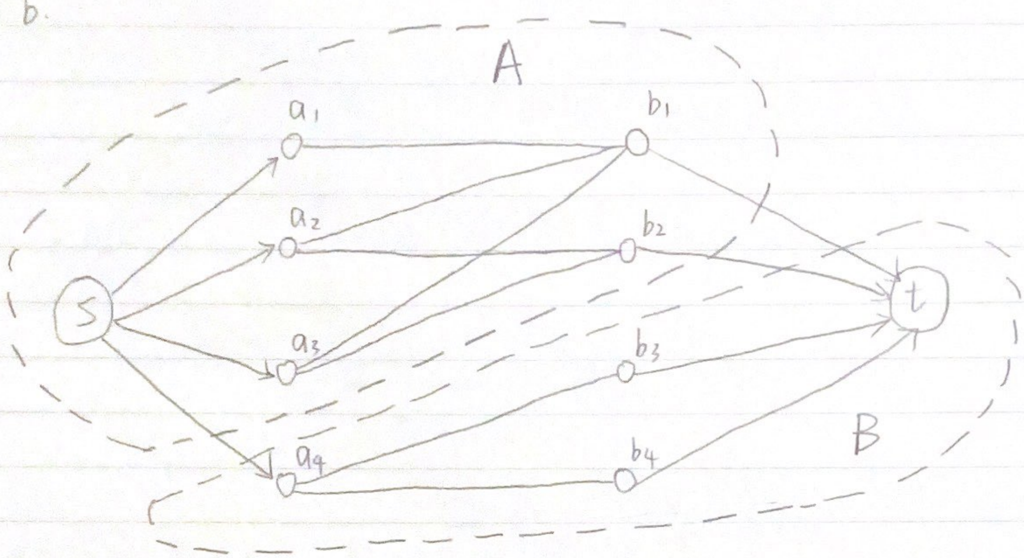
Capacity → $C(i,j) = 1$

Circulation → is a feasible solution to original problem



No.
DATE / /

Q4 b.

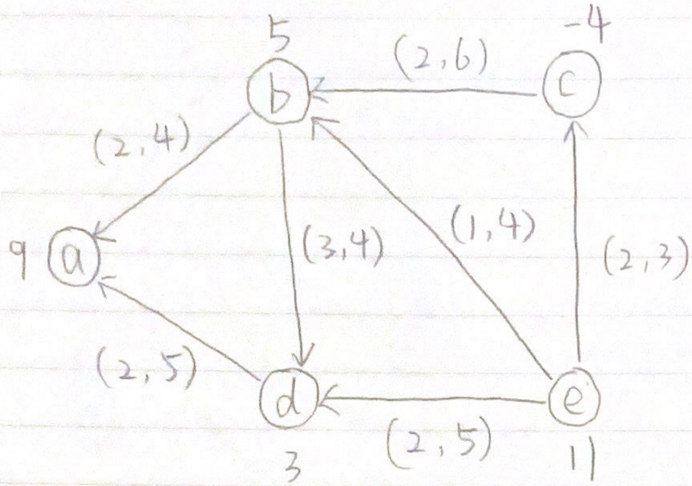


2 Disjoint paths of 2 different groups A & B

Which do not share any vertexs as well as edge
It can be shown in the same way as in Q4(a)

No
DATE / /

Q5



$d(a) = 9 + (-2) + (-2) = 5$

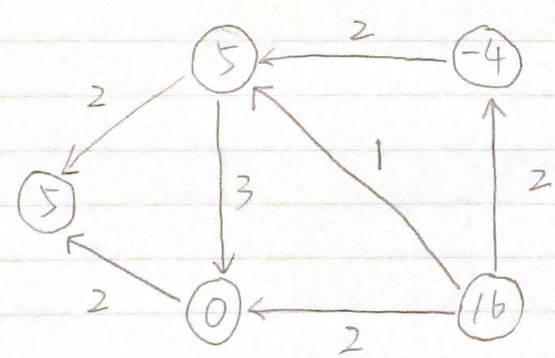
$d(b) = 5 + (-2) + (-1) + 3 = 5$

$d(c) = (-4) + (-2) + (2) = -4$

$d(d) = 3 + (-2) + (-3) + (2) = 0$

$d(e) = 11 + 2 + 1 + 2 = 16$

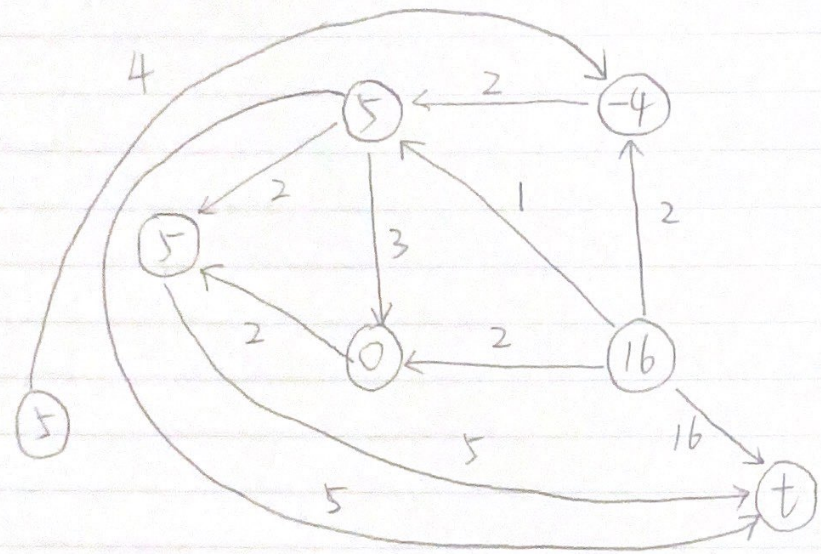
(a)



Calculation Problem without lower bound

No.
DATE / /

(b)



Max flow problem

(c) Feasible Calculation does not exist as

$$\sum d(v) = D \ (s) \quad 4 \neq 26 \ (t)$$