DSAA Ass 13 1231040| 王子恒

1. (1) $O(V+E)$

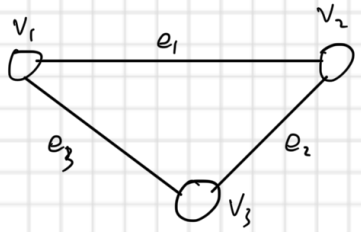
(2) $O(V+E)$

(3) $O(V)$

(4) $O(V^2)$

2. The strategy can produce solution for some case, but not all the case.

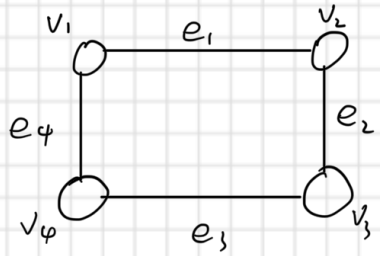
Proudce solution case




$e_1$ not monitored → $v_1, v_2$

⇒ $e_1, e_2, e_3$ are monitored solution right

Can't produce solution



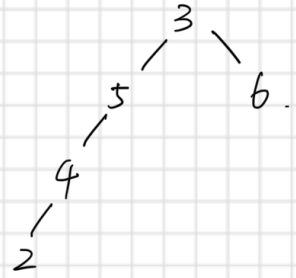

$e_1$ not monitored → $v_1, v_2$

→ $e_1, e_2, e_4$ monitored, $e_3$ not monitored → $v_3, v_4$

It will use 4 camera but the solution is 2 as $\{v_1, v_3\}$ or $\{v_2, v_4\}$.

Greedy strategy: While there is an unmonitored edge, put one video camera on the one (which) connect the most number of unmonitored edge of its vertices

3.




| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| $\pi$ | null | 4 | null | 5 | 3 | 3 |
| d | $\infty$ | 3 | 0 | 2 | 1 | 1 |

4. It still works. Because the last line of the BFS is just a describe of the state, use a bit can represent the status and not change the algorithm.

5. It will scan the $V-1$ nodes except the top for $V$ times if use matrix. Thus $T = O(V) + O(V) \cdot O(V) = O(V^2)$