

---

---

---

---

---




---

---

---

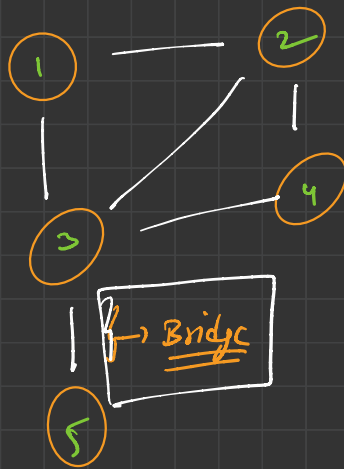
---

---



# Bridge

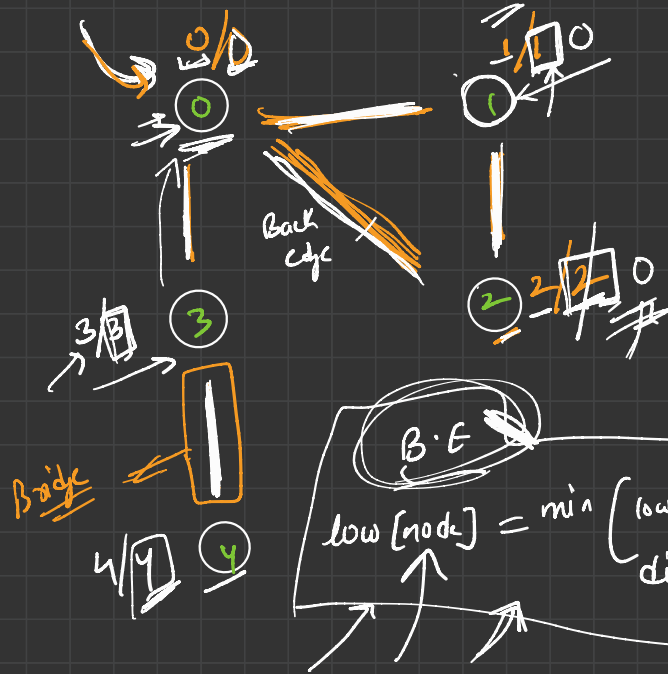
→ Bridge ?  
↓  
edge → remove  
↓  
no. of conn.  
comp  
↑



Brute force

↳ every edge → remove

DFS → connected  
comp



if (neighbor == parent)  
ignore

while return  

$$low[node] = \min \begin{cases} low[node] \\ low[child] \end{cases}$$

disc

0	1	2	3	4
<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
0	1	2	3	4

low

0	1	2	3	4
<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
0	1	2	3	4

0	1	2	3	4
-1	<del>1</del>	<del>1</del>	<del>1</del>	<del>1</del>
0	1	2	3	4

vis

0	1	2	3	4
<del>T</del>	<del>T</del>	<del>T</del>	<del>T</del>	<del>T</del>
F	F	F	F	F

timer = ~~0~~ ~~1~~ 2 ~~3~~ 4

B.E  

$$low[node] = \min \begin{cases} low[node] \\ disc[neighbor] \end{cases}$$
  
 parent

$$\boxed{4 > 3}$$
  
 $\downarrow$   
 T

$$0 > 0$$
  
 $\downarrow$   
 F

To check bridge

$$\boxed{\text{low}[\text{neighbor}] > \text{disc}[\text{node}]}$$
  
 $\rightarrow$  Bridge  $\rightarrow$  why?

$$0 > 1 \rightarrow f.$$

$$\underline{O(VN + E)}$$

$$SC \rightarrow \underline{O(N)}$$





















