

3)

Strong Connectivity (slides)

LAB 2

- Write Pseudo-Code

Bipartite Graph / 2-Colorability

+ write a Pseudo-Code using BFS (ASSUMING THAT THE GRAPH IS CONNECTED)

We run BFS with an extra array, $Color[i]$

s.t. ~~if (v, v') is edge~~

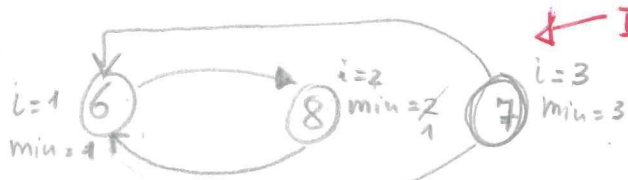
~~if (v, v') is edge~~ if v' is added to $L[i+1]$ then

$$Color[v] = \begin{cases} \text{blue} & \text{if } i \text{ is odd} \\ \text{white} & \text{otherwise} \end{cases}$$

After and we check all edges

else ~~return~~ if $Layer[v] = Layer[v']$ then
return FALSE

TARJAN ALGORITHM



- Adjacency List
- 6 → 8
 - 7 → 6, 9
 - 8 → 6
 - 9 → 10, 11
 - 10 → 12
 - 11 → 12
 - 12 → 9

TRACE

$i=1$ T(6)

6. $i=1, 6.\text{min}=1, i=2$

T(8)

8. $i=2, 8.\text{min}=2, i=3$

8. $\text{min}=4$

→ SCC1

T(7)

7. $i=3, 7.\text{min}=3, i=4$

T(9)

9. $i=4, 9.\text{min}=4, i=5$

T(10)

10. $i=5, 10.\text{min}=5, i=6$

T(12)

12. $i=6, 12.\text{min}=6, i=7$

T(11)

11. $i=7, 11.\text{min}=7, i=8$

11. $\text{min}=4$

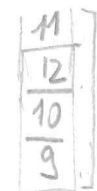
SCC2 = {9, 10, 11, 12}

SCC3 = {7}

Stack



⇒ SCC1 = {6, 8}



⇒ SCC2 = {9, 10, 11, 12}



⇒ SCC3 = {7}