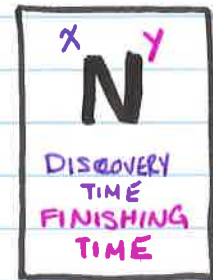
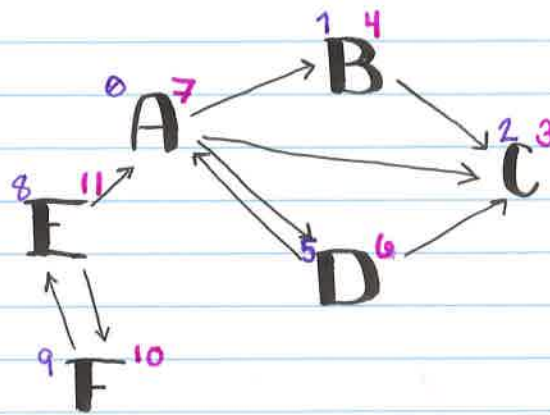


DEPTH FIRST SEARCH



DISCOVERY TIME: WHEN THE NODE WAS FOUND

FINISHING TIME: WHEN ALL CHILDREN HAVE BEEN FOUND AND FINISHED

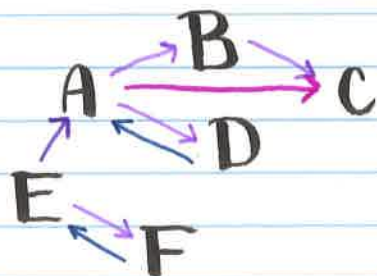
edges

CROSS EDGE: $x \rightarrow y$, y has been finished, x has not

FORWARD EDGE: $x \rightarrow y$, y is a child of x , but has already been discovered by a child of x

BACK EDGE: $x \rightarrow y$, x is a child of y

TREE EDGE: $x \rightarrow y$, y has not been discovered



DFS($G(V, E), s$): $\in O(E)$

$d[s] = \text{time}$

$\text{time} += 1$

for $\forall v \in \text{adj}(G, s)$: $-E$

if $\text{color}(v)$ is white:

$\text{color}(v) = \text{grey}$

$\pi[v] = s$

DFS(G, v)

fi

of $\text{color}(s) = \text{black}$

$f[s] = \text{time}$

$\text{time} += 1$

$\text{time} += 1$

end

DFS-EXEC($G(V, E)$): $\in O(V \cdot E)$

$\text{time} = 0$

for $\forall v \in V$ $-V$

$\text{color}(v) = \text{white}$

$\pi[v] = \emptyset$

of

for $\forall v \in V$ $-V$

if $\text{color}(v)$ is white

$\text{color}(v) = \text{grey}$

DFS(G, v) $-E$

fi

of

end

white: not met
grey: met
black: finished