

# Depth-First Search Algorithm

DFS( $G$ )

```
1  for each vertex  $u \in G.V$ 
2       $u.color = \text{WHITE}$ 
3       $u.\pi = \text{NIL}$ 
4   $time = 0$ 
5  for each vertex  $u \in G.V$ 
6      if  $u.color == \text{WHITE}$ 
7          DFS-VISIT( $G, u$ )
```

DFS-VISIT( $G, u$ )

```
1   $time = time + 1$            // white vertex  $u$  has just been discovered
2   $u.d = time$ 
3   $u.color = \text{GRAY}$ 
4  for each vertex  $v$  in  $G.Adj[u]$  // explore each edge  $(u, v)$ 
5      if  $v.color == \text{WHITE}$ 
6           $v.\pi = u$ 
7          DFS-VISIT( $G, v$ )
8   $time = time + 1$ 
9   $u.f = time$ 
10  $u.color = \text{BLACK}$          // blacken  $u$ ; it is finished
```