

```

1 for each vertex  $u \in G.V - \{s\}$  do
2   |  $u.color = WHITE;$ 
3 end
4  $s.color = GRAY;$ 
5  $Q = \emptyset;$ 
6 enqueue( $Q, s$ );
7 while  $Q \neq \emptyset$  do
8   |  $u = dequeue(Q);$ 
9   | for each  $v \in G.Adj[u]$  do
10    | | if  $v.color == WHITE$  then
11    | | |  $v.color = GRAY;$ 
12    | | | enqueue( $Q, v$ );
13    | | end
14   | end
15 end

```

} $\theta(v)$

} $\theta(1)$

} $\leq \sum_{u \in V} |Adj[u]| = \theta(E)$
 $\Rightarrow O(E)$

Algorithm 17: BFS(G, s)

$$T_{BFS}(\overbrace{V, E}^n) = \underline{\underline{O(V+E)}}$$