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**Week 12**

**#7**

*# initialize all vertices in G*

for each v in G

v.visited = false

v.color = nil

*# initialize the starting node*

s.visited = true

s.color = black

ENQUEUE(Q, s)

*# proceed to search through the graph*

while Q is not empty

u = DEQUEUE(Q)

for each v in Adj[u]

if v.visited = false

v.visited = true

if u.color = black

v.color = white

else

v.color = black

ENQUEUE(Q, v)

else

if v.color = u.color

return false

return true

**Runtime Justification:**

The runtime should still be . The only change from the original algorithm is that we add some constant work for each vertex in a separate if conditional. Each vertex is placed in the queue exactly once, and each edge is placed twice.