

# Pset 3

Darwin Do

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- (a) Darwin Do
- (b) 919941748
- (c) Collaborators:
- (d) I have followed the academic integrity and collaboration policy
- (e) Hours:

## 1 Checking Connectivity

(a) **function** REDFIND( $G, u, v$ )  
    **for all**  $v \in V$  **do**  
        visited[ $v$ ]  $\leftarrow$  False  
    **end for**  
     $Q = \text{MAKEQUEUE}()$   
     $Q.\text{ENQUEUE}(u)$   
    **while**  $Q$  not empty **do**  
         $q \leftarrow Q.\text{POP}()$   
        **if**  $q == v$  **then return** True  
        **end if**  
        visited[ $q$ ]  $\leftarrow$  True  
        **for all**  $v \in \text{Adj}[q]$  **do**  
            **if** COLOR( $q, v$ ) == RED and not visited[ $v$ ] **then**  
                 $Q.\text{ENQUEUE}(v)$   
            **end if**  
        **end for**  
    **end while**  
    **return** False  
**end function**

**Correctness**

Blah blah blah

**Running Time**

(b) **function** DFS( $G, u, v$ )  
    **for all**  $w \in V$  **do**  
        visited[ $w$ ]  $\leftarrow$  False  
    **end for**  
    **for all**  $w \in \text{Adj}[u]$  **do**  
        **if** COLOR( $w, u$ ) == Red **then**  
            **if** EXPLORE( $G, w, v, \text{Red}$ ) == True **then return** True  
            **end if**  
        **else if** EXPLORE( $G, w, v, \text{Blue}$ ) == True **then return** True  
        **end if**  
    **end for**  
    **return** False  
**end function**

**function** EXPLORE( $G, w, v, \text{edgeColor}$ )  
    **if**  $w == v$  **then return** True  
    **end if**  
    **for all**  $u \in \text{Adj}[w]$  **do**  
        **end for**  
    **return** False

**end function**