

1

for  $i$  in range  $(1, \text{len}(k)+1)$   $O(n)$

for  $i, j$  in  $g.\text{items}()$   $O(n^2)$   
for  $k$  in  $j$

while  $\text{len}(pq) > 0$   $O(n)$   $O(n^2)$   
for neighbour  $O(n)$

So  $O(n^2)$

② for  $i$  in range( $k$ )  $O(n)$

for  $i$  in  $1..n$   $O(n)$

for  $j$  in node  $O(n)$

for  $j, k$  in  $d.items()$   $O(n^2)$   
for  $k, l$  in  $d.items()$

while  $O(n)$

for neighbour  $on$   $O(n^2)$

So,  $O(n^2)$

④ The algorithm that can solve in  $O(N+M)$  time complexity, in a way that each node contains exactly one bit, is Prim's Algorithm