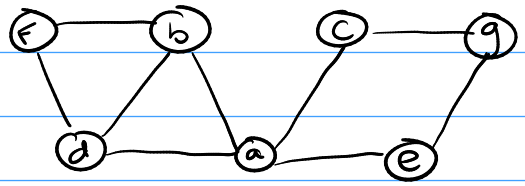
HW 5

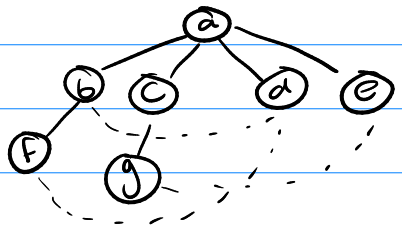
Andrew Davison

1. 

Start at a

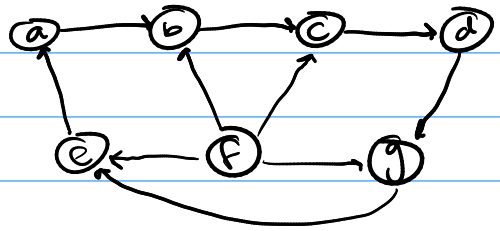
BFS Traversal : a, b, c, d, e, f, g

Forest :



6 tree edges

3 cross edges

2. 

Start at a

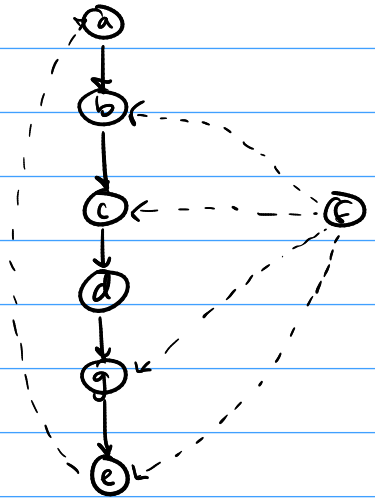
i. $c_{3,4}$ $f_{7,7}$

$b_{2,5}$ $e_{6,1}$

$a_{1,6}$ $g_{5,2}$

$d_{4,3}$

ii.

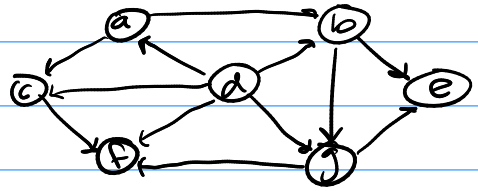


5 tree edges
4 cross edges
0 forward edges
1 back edge

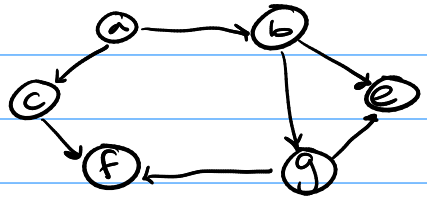
iv. push-in: a, b, c, d, g, e, f
pop-off: e, g, d, c, b, a, f

v. No, there are cycles in the graph

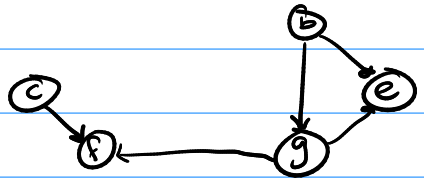
3.



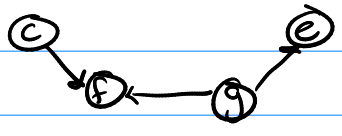
→ delete d



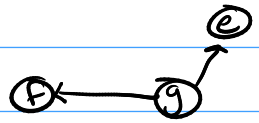
→ delete a



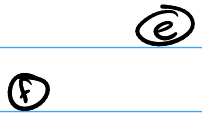
→ delete b



→ delete c



→ delete g



→ delete e

→ delete f

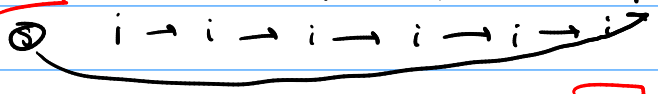
Topological Sorting : d, a, b, c, g, e, f

4. $k = \frac{n}{2} = \frac{7}{2}$

$k = 4$

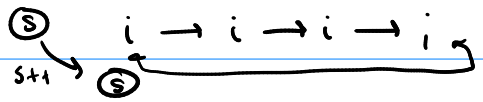
index → 0 1 2 3 4 5 6

p = [77] 19 11 31 -51 42 -4



-4 11 19 31 -51 42 [77]

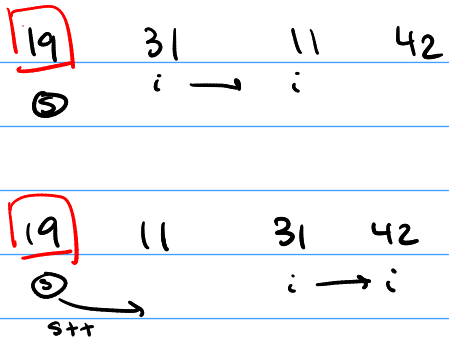
[-4] 11 19 31 -51 42 77



[-4] -51 19 31 11 42

i → i

-51 -4 19 31 11 42 [77]



-51 -4 11 19 31 42 77 s = 3 k-1 = 3

k^{th} smallest ellement is 19