

I ac cd de ef fh

zac cd de ef fg gh

zac cd de eg gf fh

sab be ed de ef fg gh

sab be ed de ef fg gh

7 ab be ed de eg gf fh

3 ab be ed de eg gf fh

4 ab be ed de eg gf fh

4 ab be ed de eg gf fh

4 ab be ed de eg gf fh

22 possible paths from a to h

sab be ed de eg gf

3 9 ab bg ge ef fh

5 11 ab bg gh ge ef fh

6 13 ac cb bg gf fh

7 19 ab bd de eg gf

18 ab bd de eg gf

18 ab bd de eg gf

19 ac, cd, db, bg, gh 20 ac, cd, db, bg 21 ac, cd, db, bg 22 ac, cd, db, bg

1: ac, cd, de, ef, fh

z: ac, cd, de, eg, gh

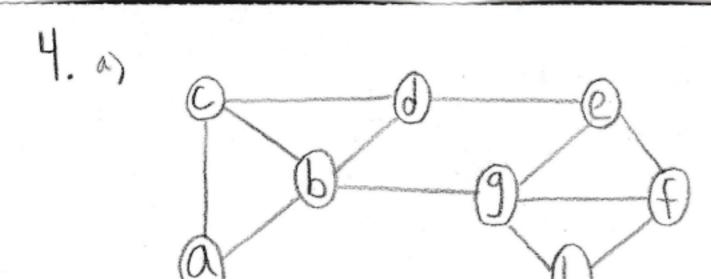
3: ab, bg, ge, ef, fh

4: ab, bg, gf, fh

5: ab, bg, gh

6: ac, cb, bg, gf, fh

c) 9 possible paths of length < 5



ac cd de ef fh

zac cd de ef fg

gh

zac cd de eg gh

hac cd de eg gf fh

sab bc cd de ef fg

hab bc cd de eg gf

sab bc cd de eg gf

sab bc cd de eg gf

hab bc cd de

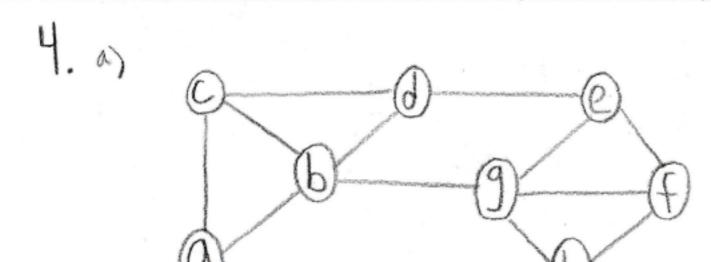
22 possible paths from a to h

sab be ed de eg gf
3 ab bg ge ef fh
4 10 ab bg gf fh
5 11 ab bg gf fh
6 13 ac cb bg gf fh
7 19 ac cb bg gf fh
7 19 ab bd de eg gf
18 ab bd de eg gf
18 ab bd de eg gf

19 ac, cd, db, bg, gh 20 ac, cd, db, bg 21 ac, cd, db, bg 22 ac, cd, db, bg

1: ac, cd, de, ef, fh
z: ac, cd, de, eg, gh
3: ab, bg, ge, ef, fh
4: ab, bg, gf, fh
5: ab, bg, gh
6: ac, cb, bg, gf, fh

() 9 possible paths of length < 5



ac cd de ef fh

zac cd de ef fg gh

zac cd de eg gf fh

sab be ed de ef fg gh

sab be ed de ef fg gh

rab be ed de eg gf fh

sab be ed de eg gf fh

rab be ed de eg gf fh

your sab be ed de eg gf fh

your sab be ef fh

your sab be ef fh

22 possible paths from a to h

39 ab bg ge ef fh
4 10 ab bg gf fh
5 11 ab bg gh ge ef fh
6 13 ac cb bg gf fh
7 14 ac cb bg gh fh
8 15 ab bd de ef fg gh
1 17 ab bd de eg gf fh
1 18 ab bd de eg gf fh

19 ac, cd, db, bg, gh 20 ac, cd, db, bg 21 ac, cd, db, bg 22 ac, cd, db, bg

1: ac, cd, de, ef, fh

z: ac, cd, de, eg, gh

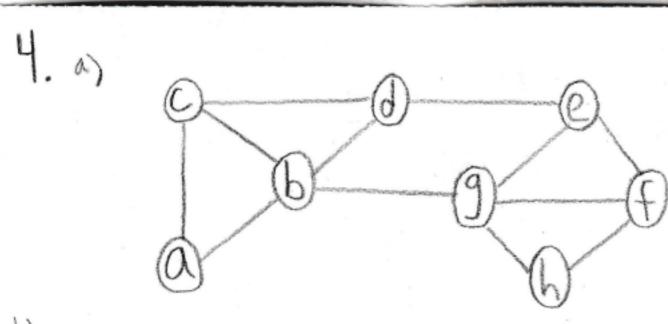
3: ab, bg, ge, ef, fh

4: ab, bg, gf, fh

5: ab, bg, gh

6: ac, cb, bg, gf, fh

() 9 possible paths of length < 5



ef fg gh z 3 ac cd de eg gh 4 ac cd de eg gf fh 5 ab be cd de ef fh 7 ab be ed de eg gh slab be ed de eg gf fh 4 10 ab bg gf Fh

22 possible paths From a to h

s nab bagh 12 ac cb bg ge ef fh 714/ac ch bg gh 815/ab bd de ef fh bab bd de ef fg gh 117 ab bd de eg gh 18 ab bd de eg gf fh

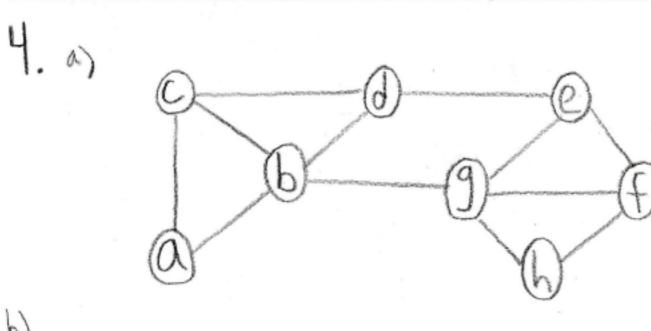
19 ac, cd, db, bg, gh 20 ac, cd, db, bg 21 ac, cd, db, ba 22 ac, cd, db, ba

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1: ac, cd, de, ef, Fh z: ac, cd, de, eg, gh 3: ab, bg, ge, ef, fh 4: ab, bg, gf, fh

5: ab, bq, gh 6: ac, cb, bg, gf, fh

4) 9 possible paths of length < 5



ef fg gh zlac cd z 3 ac cd de sab be ed de eg gh 7 ab be ed de ef fg gh slab be ed de eg gf fh

22 possible paths from a to h

4 10 ab bg gf Fh s nab bagh 12 ac cb bg ge ef fh 714/ac ch bg gh 815/ab bd de ef fh 16ab bd de ef fg gh 117ab bd de eg gh 18ab bd de eg gf fh

19 ac, cd, db, bg, gh 20 ac, cd, db, bg 21 ac, cd, db, ba 22 ac, cd, db, bg

of length < 5 c) I possible paths 1: ac, cd, de, ef, fh z: ac, cd, de, eg, gh 3: ab, bg, ge, ef, fh 4: ab, bg, gf, fh 5: ab, bq, gh 6: ac, cb, bg, gf, fh

7: ac, cb, bg, gh 8: ab, bd, de, ef, fh

9: ab, bd, de, eg, gh

5.

Base Case:
$$N=1$$
 $N=2$
 $N=2$
 $N=3$
 $N=3$
 $N=4$
 $N=4$

1. H: Assume that the statement 2m K K2-K is true for some K > n.

1.5: Need to show that $2m+K \times (K+1)^2 - (K+1)$ as adding a new nodes adds at most K edges. $2m+K \times (K+1)^2 - (K+1)$ $2m+K \times K^2 + 2K+1 - K+1$

2m+k ((k2-K)+2K+1+1

2m+K x 2m + 2k+1+1 [1.H.]

K < 2K+1+1

0 5 K+Z