CSCI 104

tkw

- HW5
- problem 1

1. unusual
   - $\binom{7}{5} = 21$ unique subsets $7P5 = 2520$ different strings

2. $\binom{13}{2}\binom{4}{2}\binom{4}{2}$ $44 = 123552$

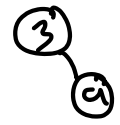
3. (6 remaining couples) (15 remaining songs)

   scenario where fighting couple gets one song: | | | | | | ★★★★★★ ...

   $$\frac{(15+6)!}{15! * 6!} = 54264$$

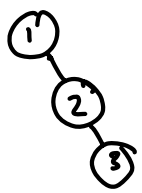
4. 2 node tree (3, 9)

   left child can be 1 — 2 ways

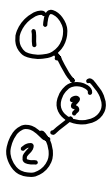


3 node tree (1, 2, 3)

- 1, 2, 3

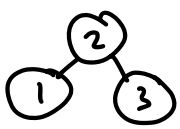


- 1, 3, 2

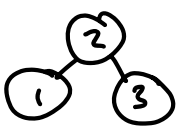


5 ways

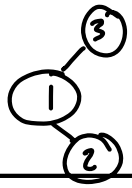
- 2, 1, 3



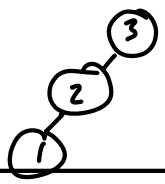
- 2, 3, 1



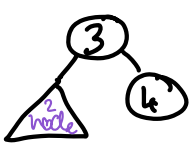
- 3, 1, 2



- 3, 2, 1

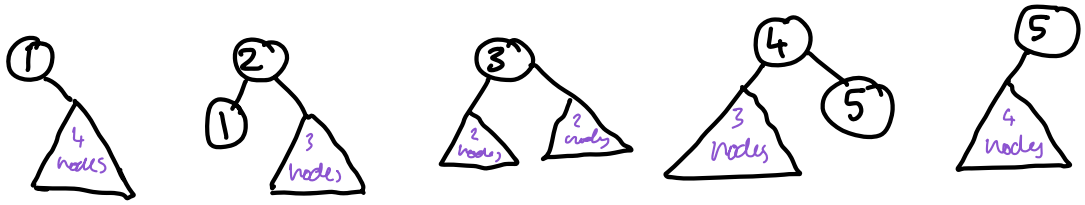


4 node tree (1, 2, 3, 4)



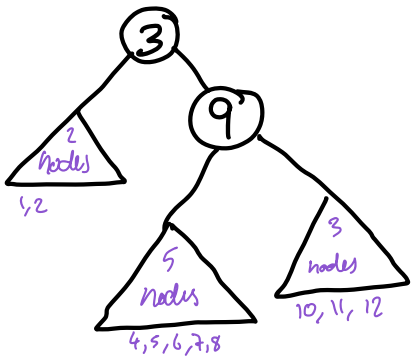
5 ways + 2 ways + 2 ways + 5 ways = 14 ways

5 node tree (1, 2, 3, 4, 5)



14 ways + 5 ways + 4 ways + 5 ways + 14 ways = 42 ways

12 nodes



2 ways + 42 ways + 5 ways = 49 ways

5.

if nurse goes on break: 2 bars, 10 stars $\binom{10-1}{2-1} = 9$

if nurse doesn't go on break: 3 bars, 10 stars $\binom{10-1}{3-1} = 36$

36 + 9 = 45 combinations