Draw all of the different heaps that can be made from the five keys A B C D E, then draw all of the different heaps that can be made from the five keys A A A B B.

ANSWER:

WIth all the five keys, A, B, C, D, E. we can have 2 power 4 combinations, where half follows min heap and other half follows max heap.

Hence, A, B, C, D, E (non repeated) can have 16 different heaps.

1. A, B, C, D, E
2. A, B, C, E, D
3. A, C, B, D, E
4. A, C, B, E, D
5. A, B, E, C, D
6. A, B, E, D, C
7. A, B, D, E, C
8. A, B, D, C, E

Similarly, 8 heaps is reverse order. So, 16 different heaps.

Now, with elements A, A, A, B, B (In Heaps, parent can have its child equal to them.)

1. A A B A B
2. A B A A B
3. A A B B A
4. B A B A A
5. B B A A A

5 different heaps from A, A, A, B, B.