

first glance:

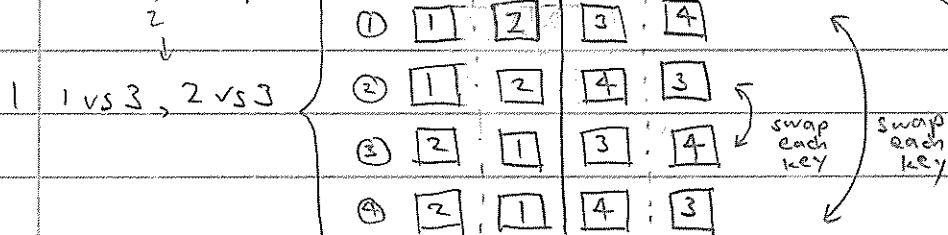
best case - 4 key Cmp

worst case - 5 key Cmp

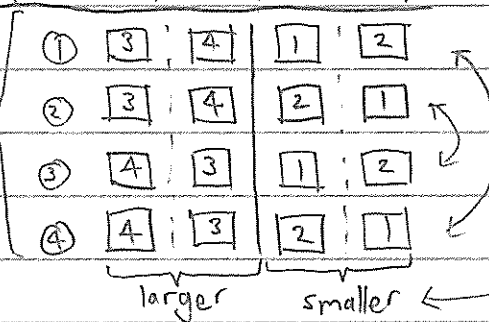
$$\begin{aligned} \text{average case} &= 8 \left( \frac{1}{24} \times 4 \text{ key Cmp} \right) + 16 \left( \frac{1}{24} \times 5 \text{ cmp} \right) \\ &= \frac{4}{3} \text{ key Cmp} + \frac{10}{3} \text{ key Cmp} \\ &= \frac{14}{3} \text{ key Cmp} = 4 \frac{2}{3} \text{ key Cmp} \end{aligned}$$

stats breakdown and analysis:

(2+2) 4 key Cmp



2 3 vs 1, 3 vs 2



best case

(2+3) 5 key Cmp

- 1 1 vs 2, 3 vs 2, 3 vs 4
- 2 1 vs 2, 4 vs 2, 4 vs 3
- 3 2 vs 1, 2 vs 4, 3 vs 4
- 4 2 vs 1, 2 vs 3, 4 vs 3

