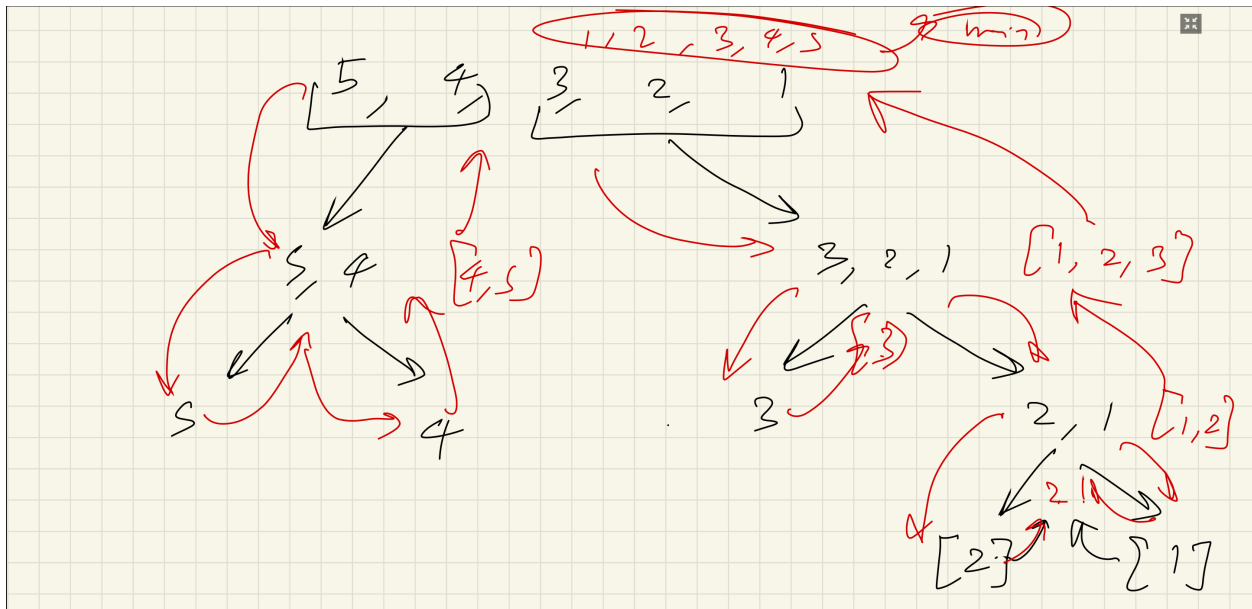
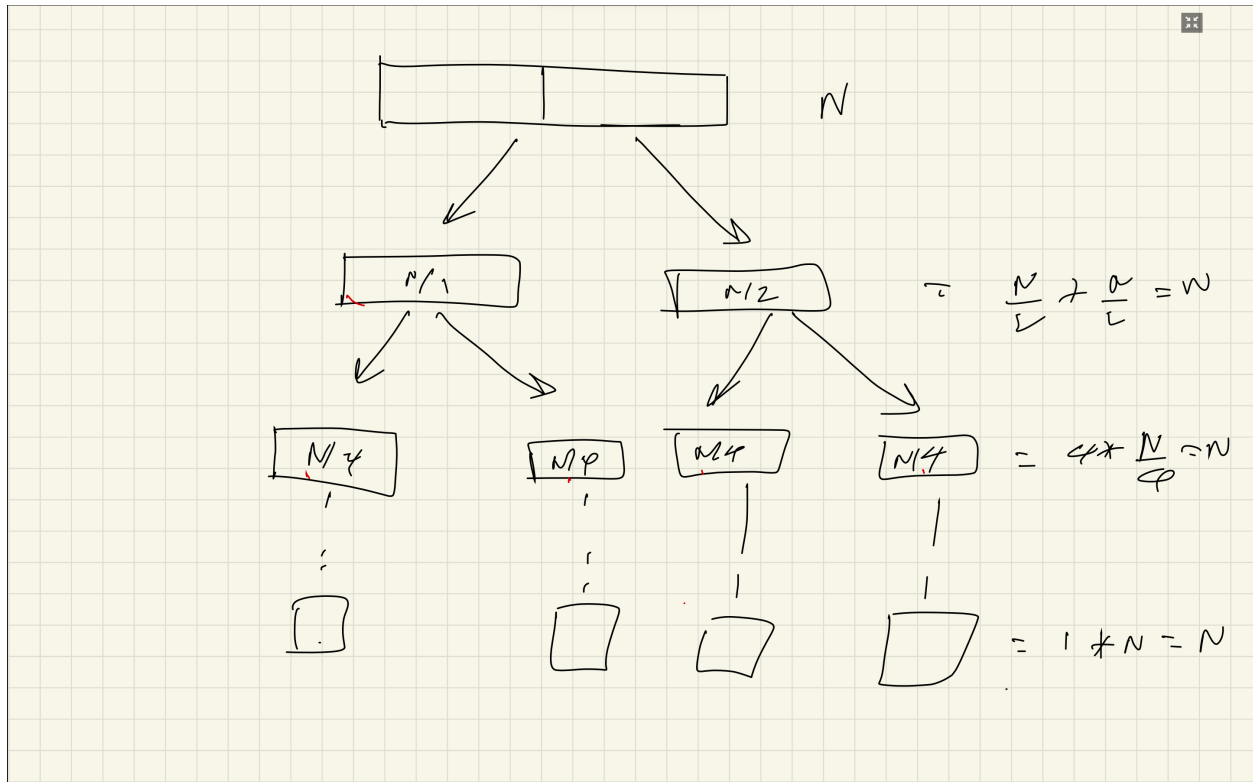


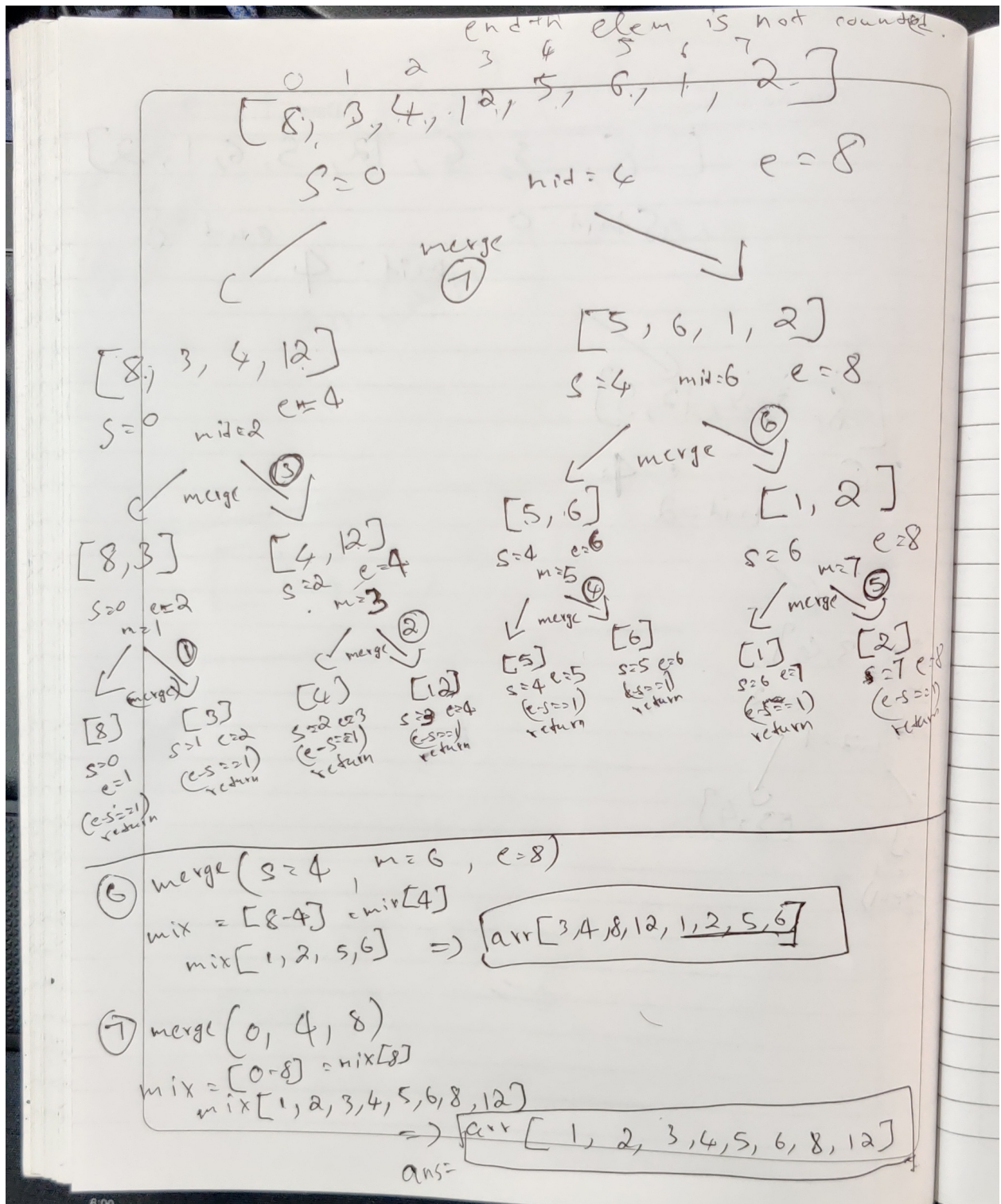
Merge Sort

Steps:

- * 1. Divide the array into 2 parts.
 - * 2. Get both parts sorted via recursion.
 - * 3. Merge the sorted parts
-
- * At every level, N elements are getting merged.
 - * Time Complexity: $O(N * \log N)$
 - * Space Complexity: Auxiliary: $O(N)$







① Merge ($s=0, m=1, e=2$)

$mix = int[e-s] // 0-2$

$mix[2]$

$i=0$

$j=m$

$j=1$

$k=0$

$mix[3,8] \Rightarrow arr[3,8, \dots]$

② merge ($s=2, m=3, e=4$)

$mix = [e-s] = mix[2]$

$mix[4,12] \Rightarrow arr[3,8,4,12, \dots]$

③ merge ($s=0, m=4, e=4$)

$mix = [e-s] = mix[4]$

$mix[3,4,8,12] \Rightarrow arr[3,4,8,12, \dots]$

④ merge ($s=4, m=5, e=6$)

$mix = [e-s] = mix[2]$

$mix[5,6] \Rightarrow arr[3,4,8,12,5,6, \dots]$

⑤ merge ($s=6, m=7, e=8$)

$mix[2] \Rightarrow arr[3,4,8,12,5,6,1,2, \dots]$