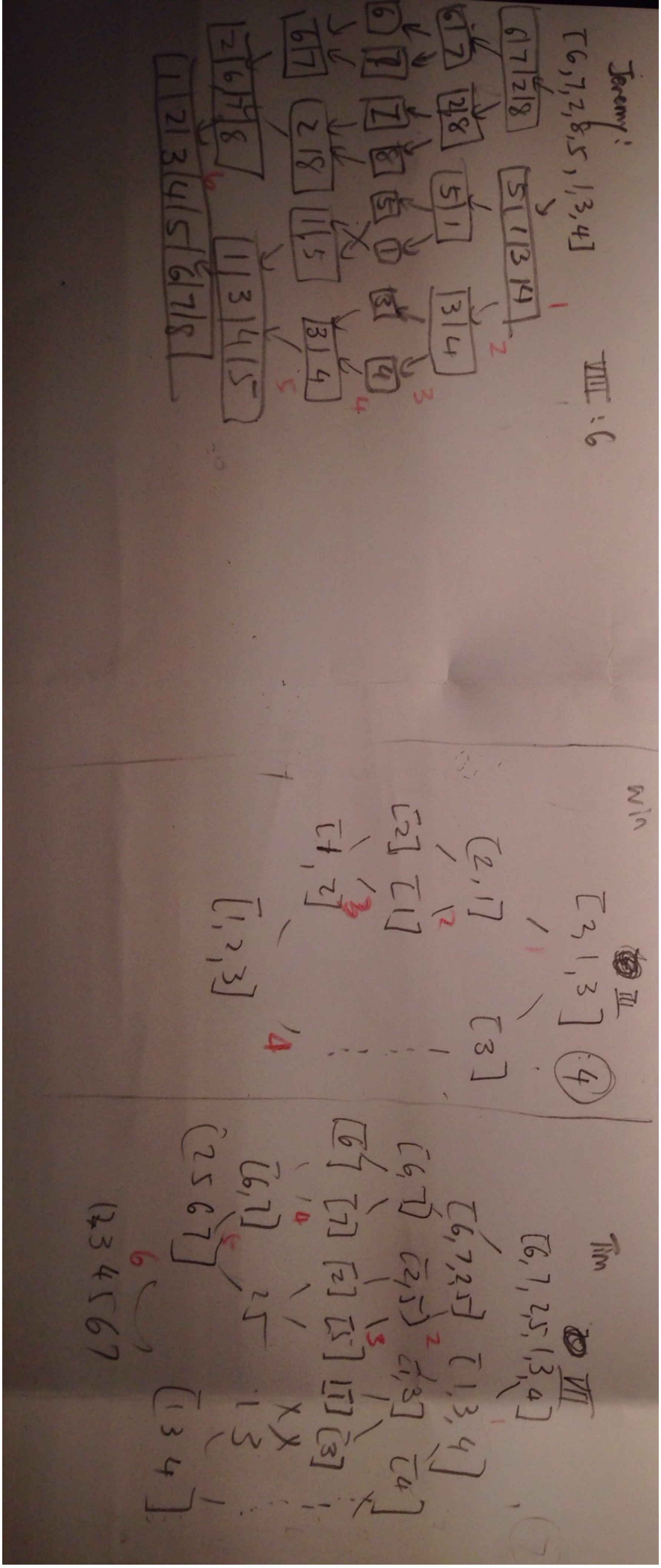
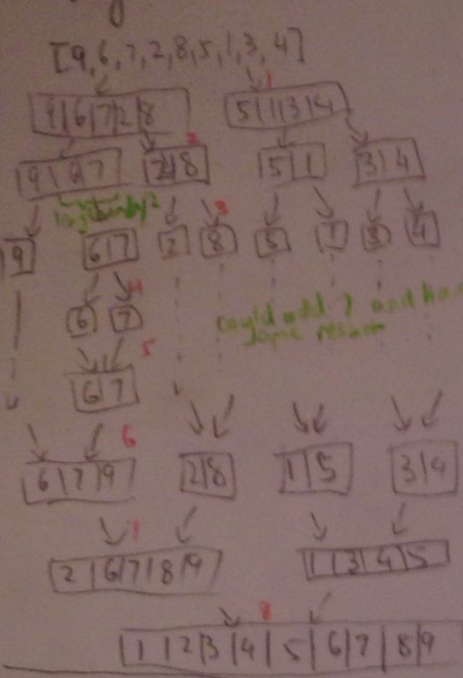


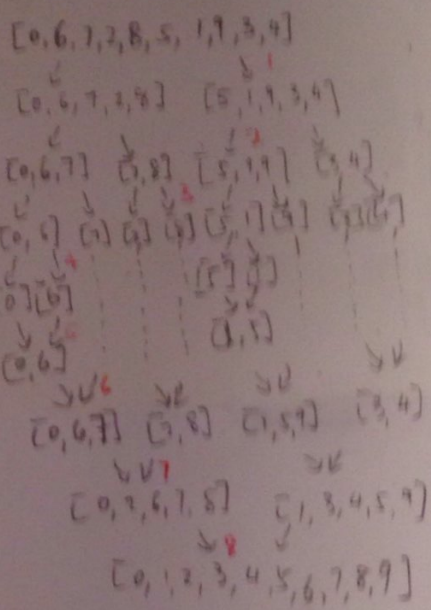
Qian Zhou
APCS2 pd01
HW-06 How fast are your Turtles?
2018-02-13

Previous Paper: II : 4 ; VII : 6 ; VIII : 6

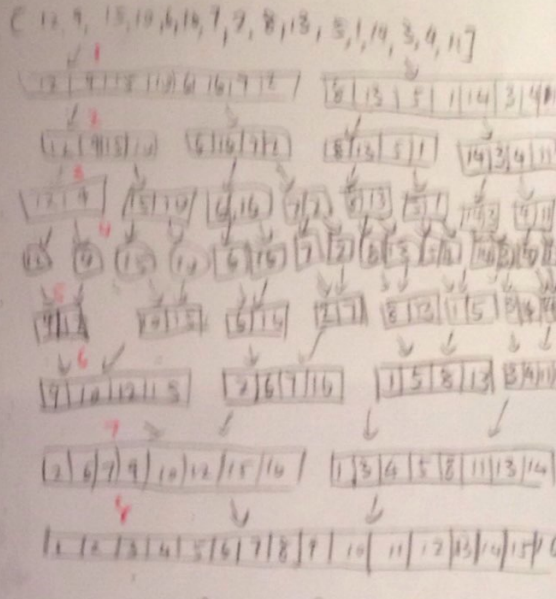
Régine IX : 8



Richard X : 8



William XVI : 8



n	T
I	1
II	2
III-IV	4
V-VIII	6
IX-XVI	8
XVII-XXXII	10

If n = I; T = 1
Else n = II; T = 2
else:
$\lceil \log_2 n \rceil \cdot 2 = T$

because according to this diagram, the time of certain length arrays increases by multiples of 2, and the upper/lower bounds of such values remain close to exponents of 2.
Perhaps $\log_2 n$ determines the maximum of numbers the green comments on Régine's code indicate, such that the total layers remain constant.

Each layer is O(n) run time, at least one that is full, since each needs to either make two new arrays which would require copying elements into each, or merging them which would require comparing and copying elements into the sorted array, both ops which require linear runtime

For n length, $\lceil \log_2 n \rceil \cdot 2$ layers are needed, so the total runtime is about $O(n \log_2 n)$

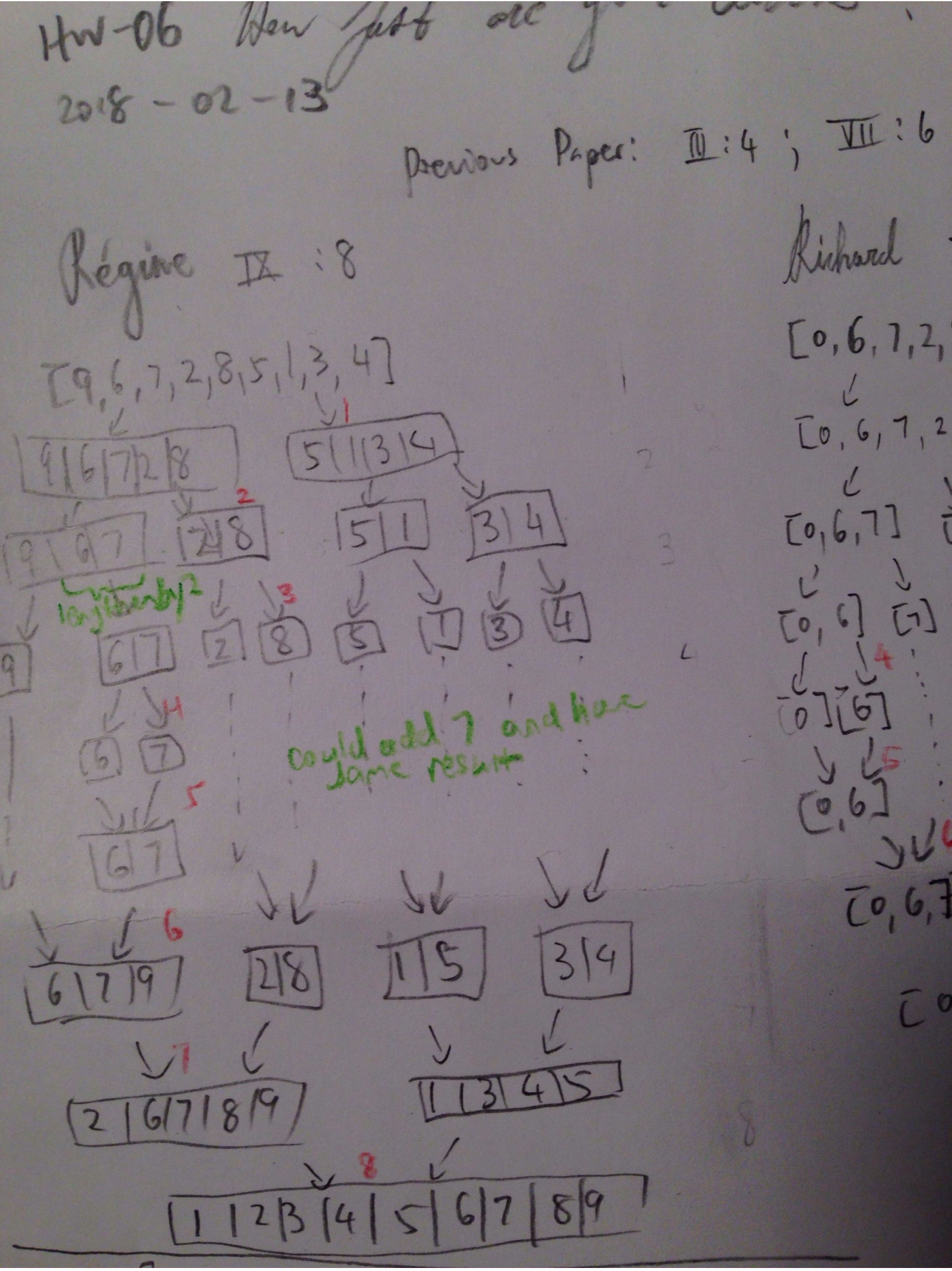
Hw-06 How fast are

2018-02-13

Previous Paper: II : 4 ; VII : 6

Régine IX : 8

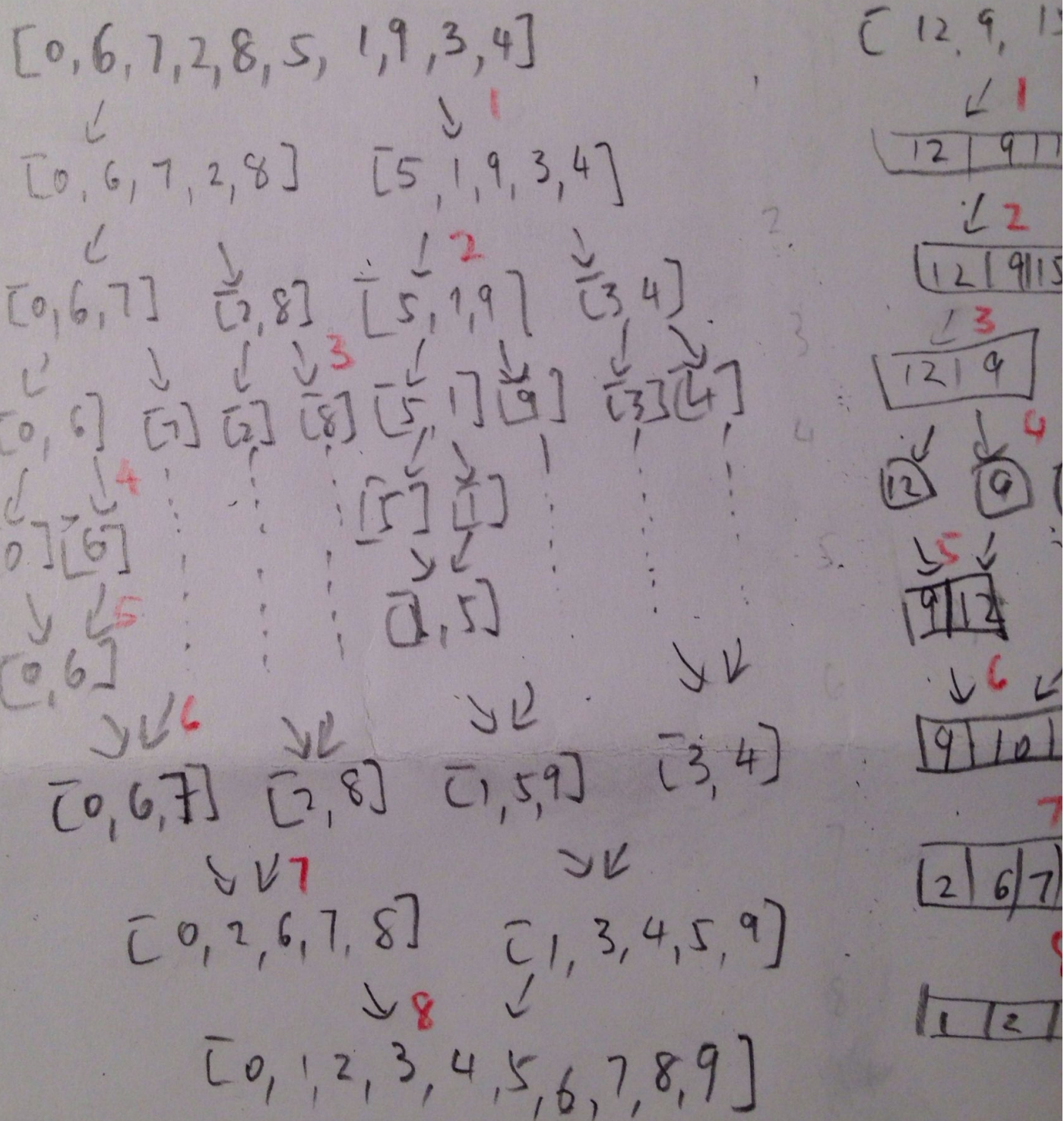
Richard



Ⅳ : 4 ; Ⅶ : 6 ; Ⅷ : 6

Richard Ⅸ : 8

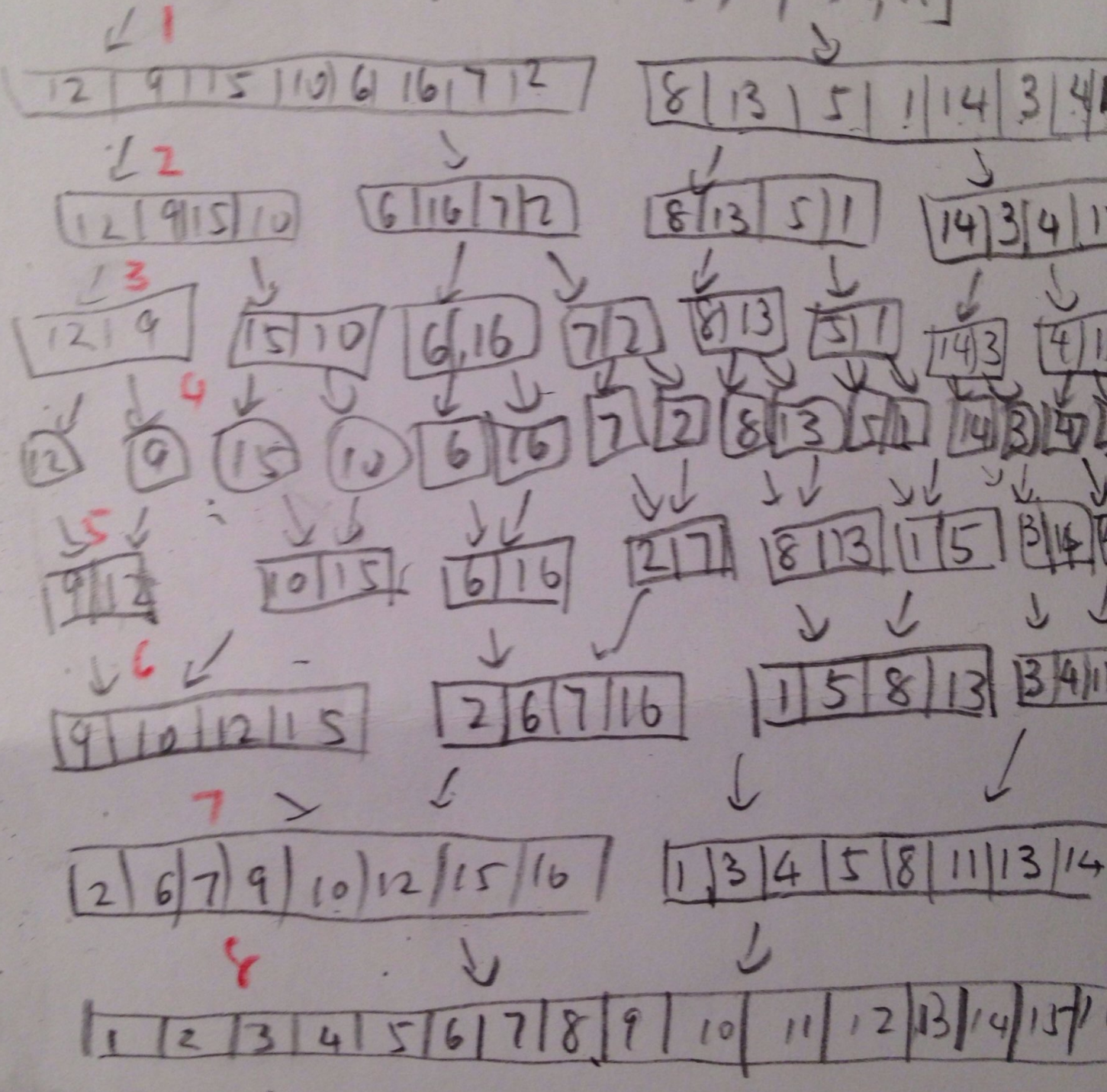
William ~~Ⅻ~~ : 8



William

XVI : 8

[12, 9, 15, 10, 6, 16, 7, 2, 8, 13, 5, 1, 14, 3, 4, 11]



n : z

I : 1

II : 2

III-IV : 4

V-VIII : 6

IX-XVI : 8

XVII-XXXII : 10

if n = I ; z = 1

if else n = II ; z = 2

else

$(\lceil \log_2 n \rceil \cdot 2) = z$

because according to this diagram, the times of certain length arrays increases by multiples of 2, and the upper/lower bounds of such values remain close to exponents of 2.

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For n length, $\lceil \log_2 n \rceil \cdot 2$ layers are needed, so the total runtime is about $O(n \log_2 n)$