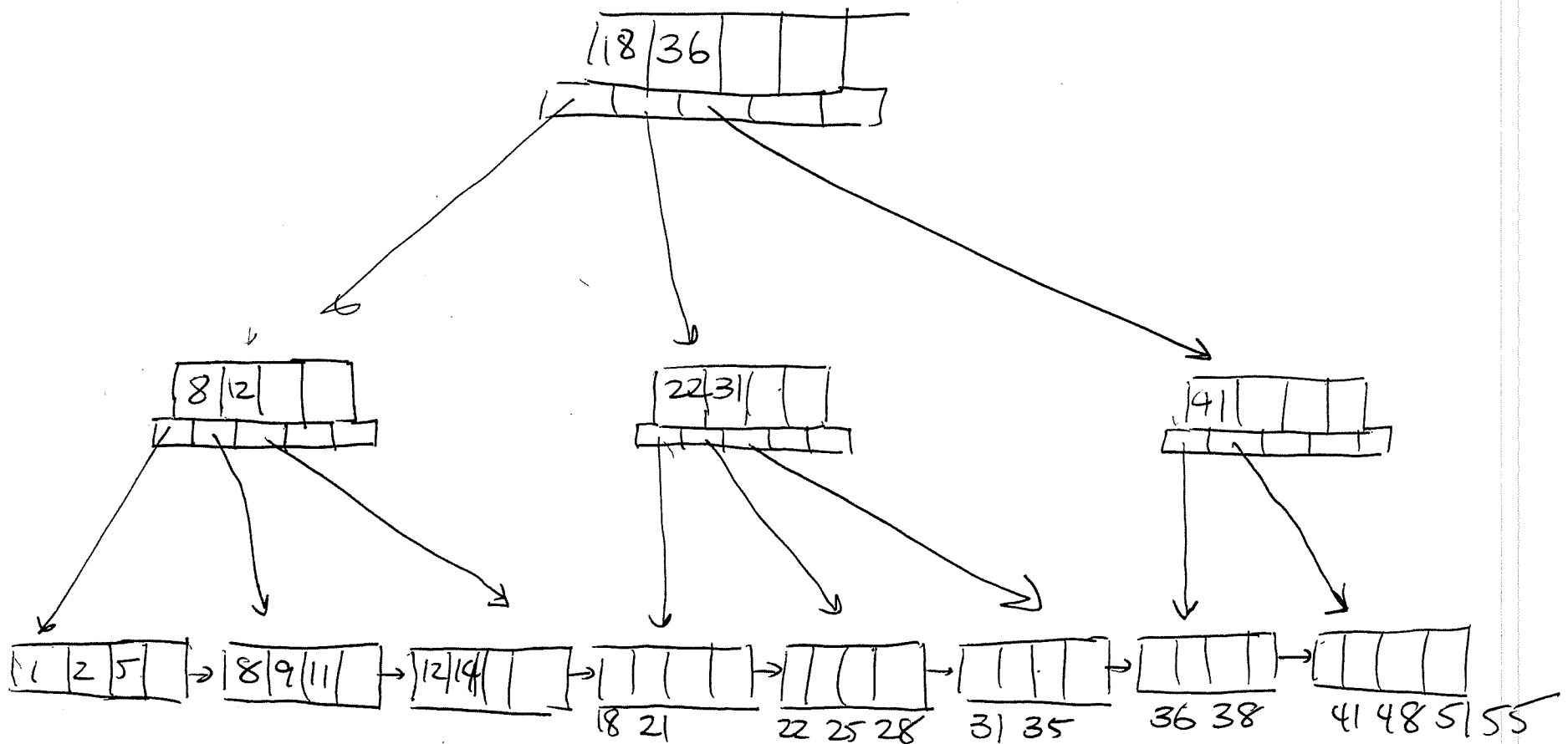


$n=4$ Index on $R(A) \rightarrow$ ~~Not~~ Unique ~~value~~ attribute

$$A = 31$$

$$A \geq 25$$

$$A \leq 30$$



12(B)

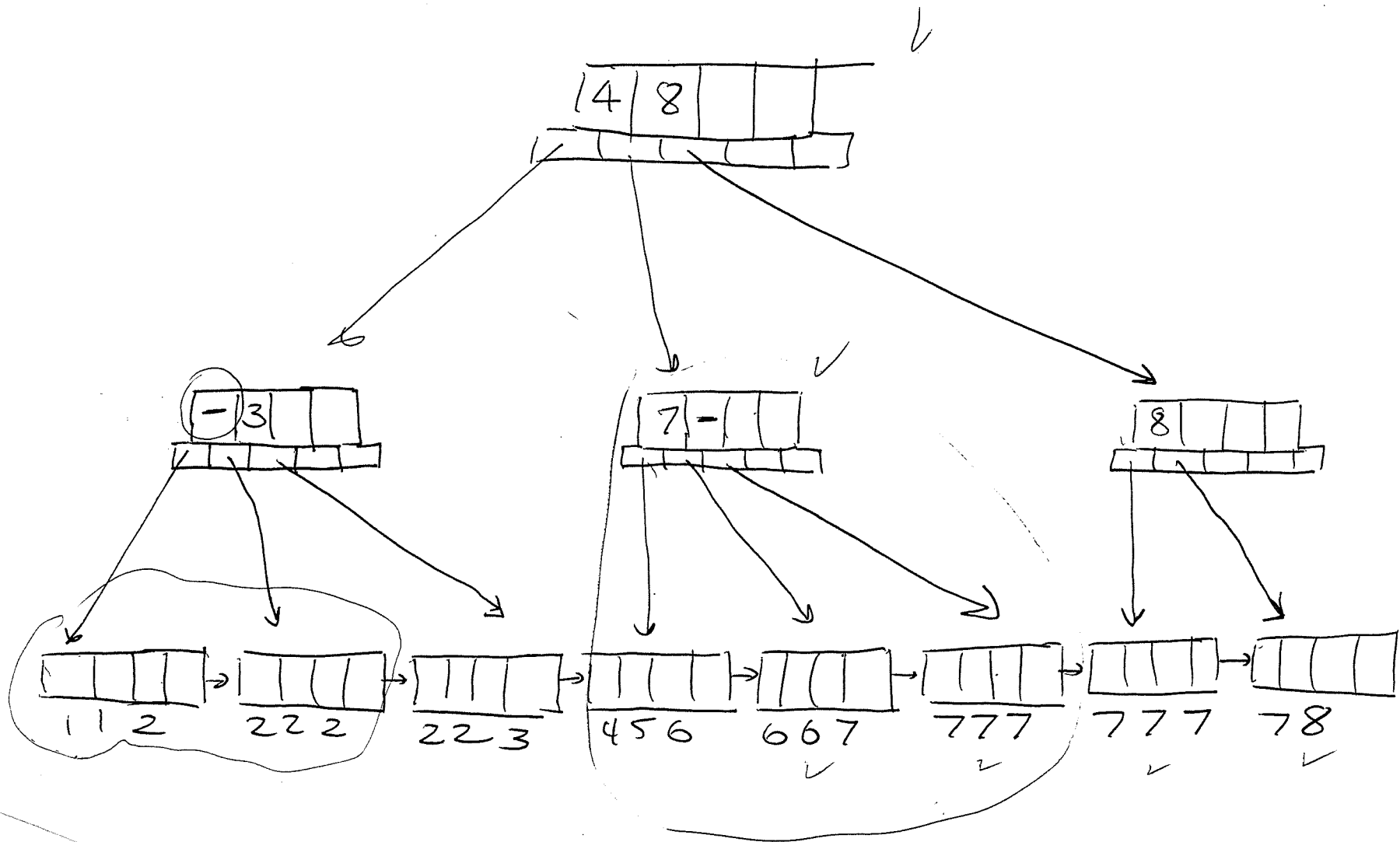
3 values are
not unique

2

Search:

$$A = 7$$

$$A \geq 3 \text{ AND } A \leq 6$$



(3)

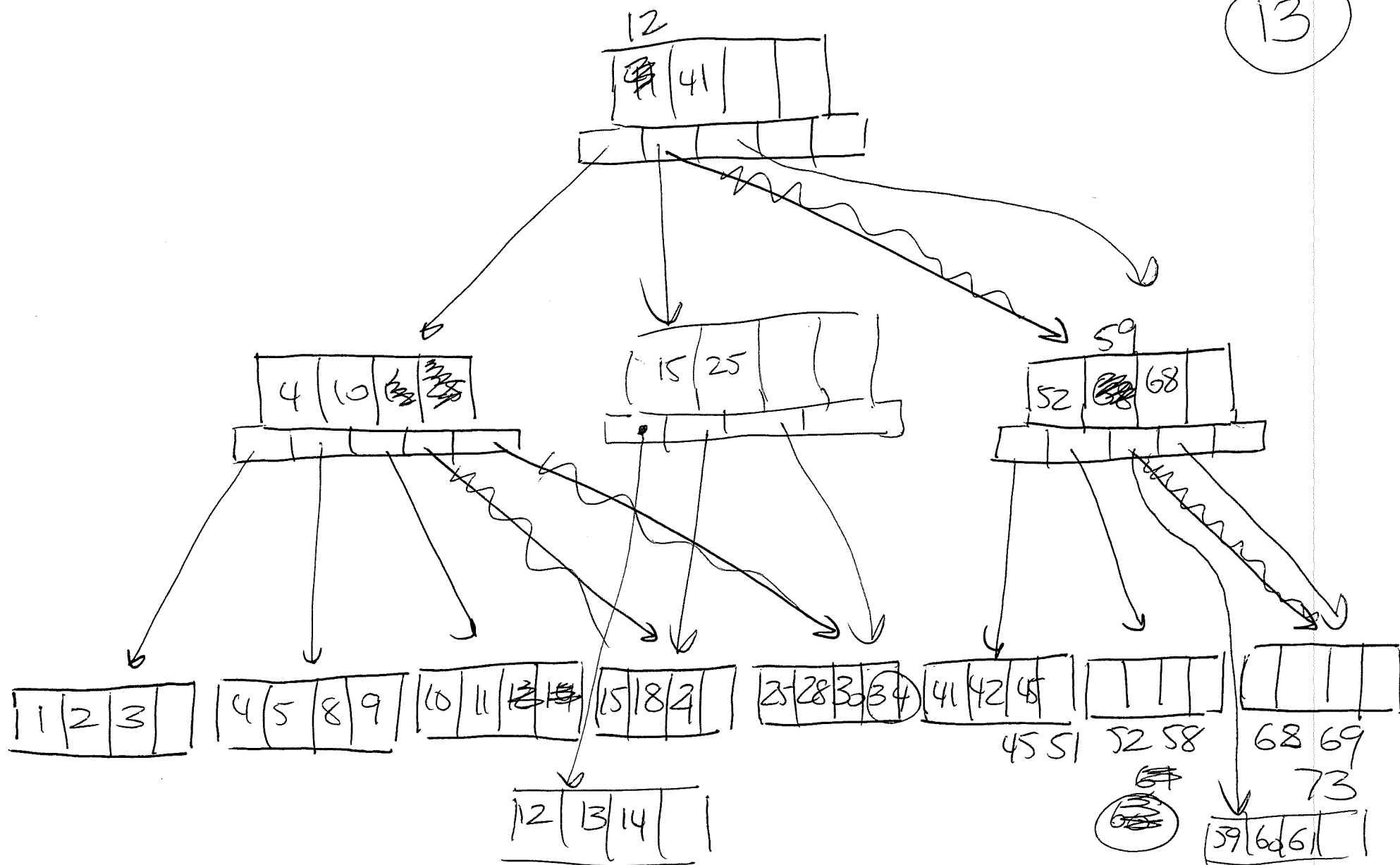
$n=4$
 $12(A)$ is a unique str.

Insert 60

34

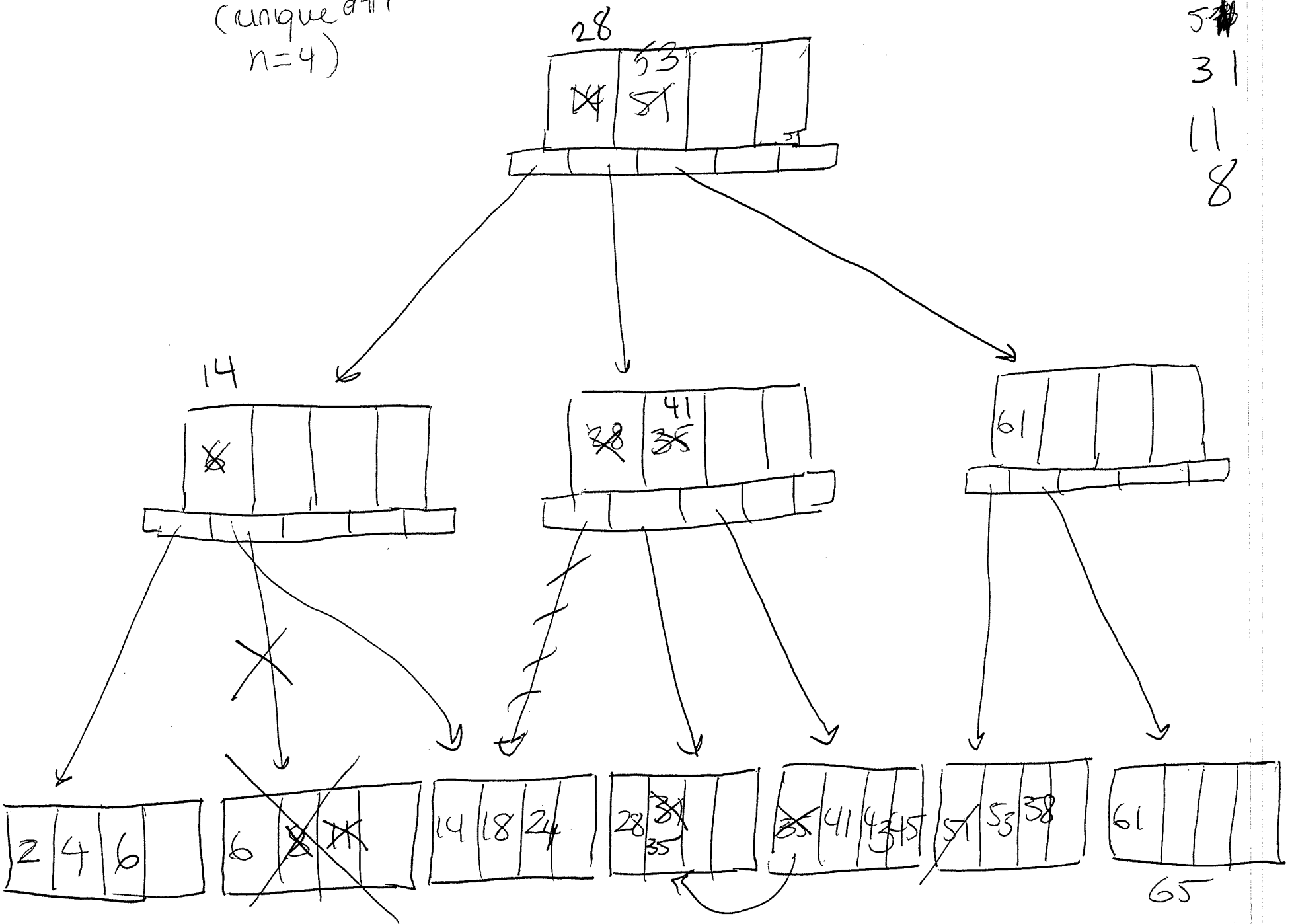
59

13

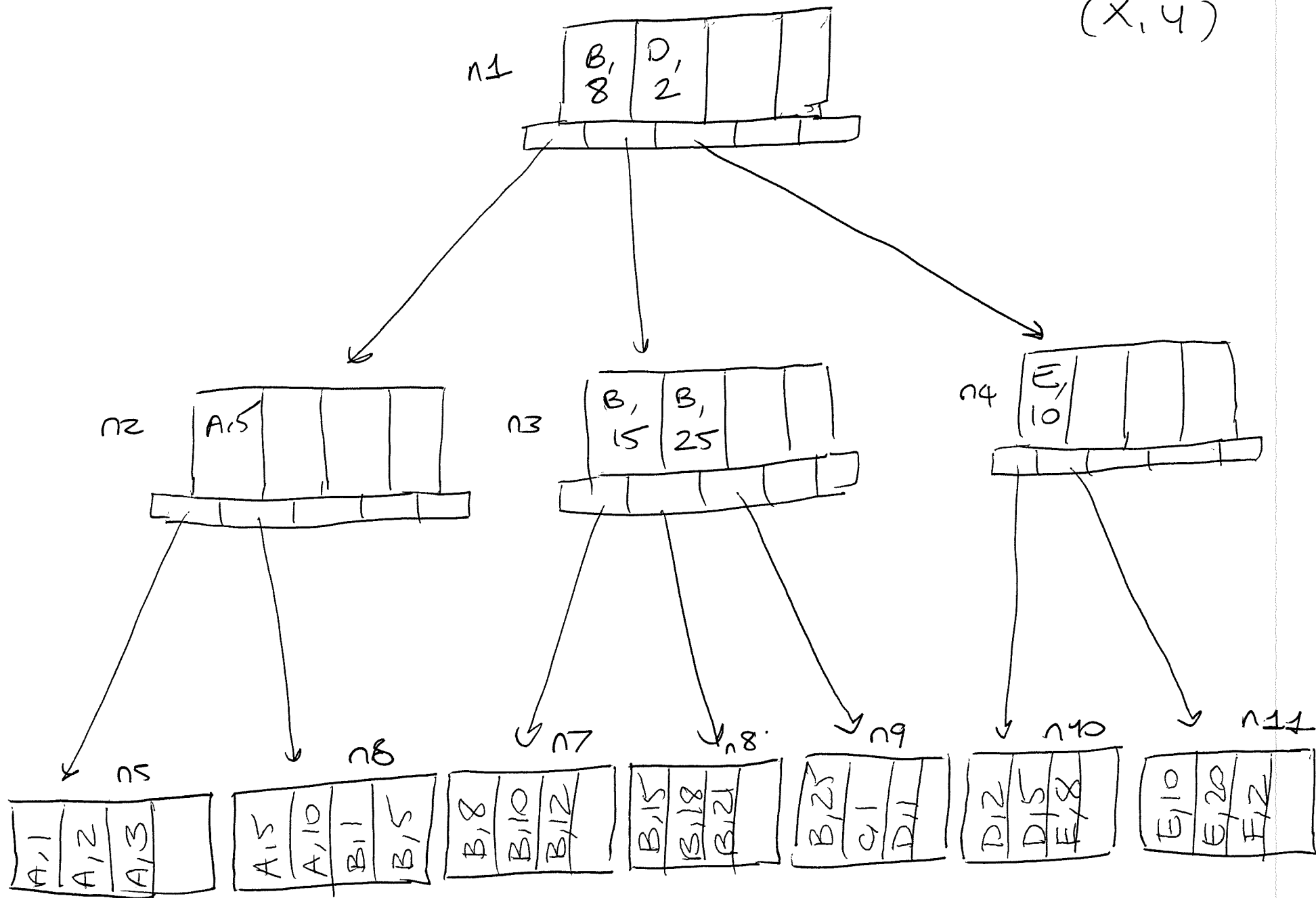


Deletion
(unique attr
n=4)

Deletion
5
31
11
8



Index on $Z(A, B)$
(X, 4)



	CONDITION	NODES VISITED	# TUPLES FOUND
①	$x = 'c' \ \& \ y = 5$	(n_1, n_3, n_9)	
②	$x = 'B'$	$(n_1, n_2, n_6, n_7, n_8, n_9)$	
③	$x = 'c' \text{ AND } y \geq 2 \text{ AND } y \leq 4$ $(('c', 2) - ('c', 4))$	(n_1, n_3, n_9)	
④	$y \geq 2 \text{ AND } y \leq 4$	$n_1, n_2, n_5 - n_6, n_7, n_8, n_9, n_{10}, n_{11}$	6
⑤	$x \geq 'B' \text{ AND } x \leq 'D'$ $\text{AND } y = 3$ $(('B', 3) - ('D', 3))$	$n_1, n_3, n_6, n_7, n_8, n_9, n_{10}$	0

Find restaurants
in this area?

