

Q5. An interval is represented as a combination of start time and end time.

Given a set of intervals, check if any two intervals intersect.

Input: $\text{arr}[] = \{\{1, 3\}, \{5, 7\}, \{2, 4\}, \{6, 8\}\}$

Output: Yes

The intervals $\{1, 3\}$ and $\{2, 4\}$ overlap

Input: $\text{arr}[] = \{\{1, 3\}, \{7, 9\}, \{4, 6\}, \{10, 13\}\}$

Output: No

$$\left\{ \begin{matrix} \text{start} & \text{end} \\ (1, 3) \\ 2 \end{matrix} \right\}, (5, 7), (2, 4), (6, 8) \}$$

max = 8

x = arr[i].start
y = arr[i].end

<u>arr</u>	0	1	1	-1	-1	1	1	-1	-1
	0	1	2	3	4	5	6	7	8
<u>prefix sum</u>	0	1	2	1	0	1	2	1	0
	0	1	2	3	4	5	6	7	8

Yes

$\{ (1,3) , (7,9) , (4,6) , (10,13) \}$

1-3

4-6

7-9

10-13

No

No overlap

No intersection

$\{(1, \underline{3}), (7, \underline{9}), (4, \underline{6}), (10, \underline{13})\}$

max = 13

aux

0	1	0	-1	1	0	-1	1	0	-1	1	0	0	-1
0	1	2	3	4	5	6	7	8	9	10	11	12	13

prefix
sum

0	1	1	0	1	1	0	1	1	0	1	1	1	0
0	1	2	3	4	5	6	7	8	9	10	11	12	13

No