## Arrays

Q14 Merge overlapping sub-intervals

i/p→ [[1,3],[2,6],[8,10],[15,18]] 0/p→ [[1,6],[8,10],[15,18]]

The first step would be to sort the intervals on the basis of starting point. Now simply take a pair & linearly traverse the input & if we found they are merging, then simply merge them if not merging then simply push that to the ans vector of vector.

## Menging steb

(1) [1,3] [2,6] [2,6] [1,3] [2,6] [2,6] [2,6] [2,6] [2,6]

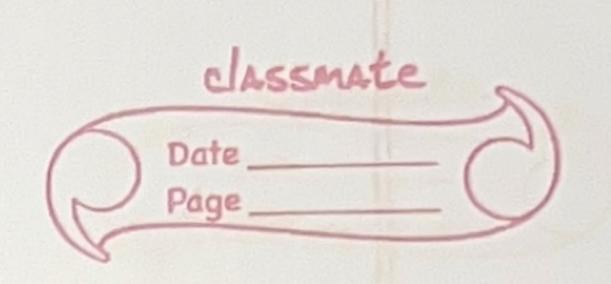
(2) [1,4] [2,3]  $[4) = 2 \text{ and hence merge} \Rightarrow [1,4]$ 

Dry run

{1,33, {2,63, {8,103, {15,183

1) Simply sort it on the basis of starting number.

{1,34, {2,63, {8,103, {15,183}



- 2) Considering the Bair {1,33

- (i) {1,33 is merging with {1,33 and hence we get {1,33} is merging with {2,63 4 hence we merged to get {1,63}

  (ii) Now {1,63 is not merging with {8,103 kence bush {1,63 in the ans vector.
  - 3) Considering the pair £8,103
- (i) {8,103 is merging with {8,103 and hence we
- get {8,103 (ii) {8,103 is not merging with {15,183 & hence push {8,103 in the answer vector.
  - 4) Considering the Bair {15,183
  - (i) {15,183 is merging with {15,189 & hence we get {15,183. Push this in ans vector. {left 3 Now the 1/p vector largay has finished 4 we got ans vector as

{1,63, {B,103, {15,1833

Why the above algorithm work?
This is because of sorting & if overlapping intervals exist they would be consecutive only. charme, barele, (fempl)

vector (vector (int)) merge Intervals ( vector (vector (int)) 4 intervals) ? 1/ Creation of ans vector (int)) ansi // Edge case -mo interval if (intervals. size () = =0){ return ansi // Temp vector to be created vector <int> temp = intervals [0]; // Linear traversal for (auto i : intervals) { // Merging condition if (i [0] < = temp[1]) { starting 4 Gending temp[]= max (temp[1], i[1]) not merging case 1/Push the pair ans. push-back (temp); // Update or Consider new pair temp = iv moderna la matini // Pysh left interval ans. push-back (temp); 1/ return

Time complexity = O(nlogn) Space = O(n)

neturn ans