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Q2.

1. For every entry level job, store its p_i and i of job i of the form (p_i,i) in array PA.
2. For every senior level job, store its q_i and i of job i of the form (q_i,i) in array QA.
3. For every worker, store its x_i and i of worker i of the form (x_i,i) in array XA.
4. Use nlogn sorting algorithms (e.g. mergesort) to sort array PA by increasing order of p_i.
5. Use nlogn sorting algorithms (e.g. mergesort) to sort array QA by increasing order of q_i.
6. Use nlogn sorting algorithms (e.g. mergesort) to sort array XA by increasing order of x_i.
7. Assume all the arrays start with index 1
8. The number of entry jobs is P, the number of senior jobs is Q, the number of workers is N.
9. Let current selected PA index PI = 0, Let current selected QA index QI = 0, Let current selected XA index XI = 0.
10. The result is stored in variable result.
11. Having N iterations

    11.1. Let current_worker = XA[XI], current_P = XA[PI], current_Q = QA

    11.2.If x_i of the current worker is greater than p_i of current_P and x_i of the current worker is less than q_i of the current_Q, then it means, current_worker can't be assigned to neither of current_P(entry level job) and current_Q(senior level job).

        XI remains the same

        PI += 1

        QI += 1

        result remains the same

    11.3. Else If x_i of the current worker is greater than or equals to q_i of current_Q and x_i of the current worker is less than or equals to p_i of the current_P, then it means, current_worker can be assigned to both of current_P(entry level job) and current_Q(senior level job).

        XI += 1

        PI += 1

        QI remains the same

        result += 1

    explanation: when x_i satisfies both P and Q, the job from P(junior) will be selected, this is because if x_i is greater than or equals to q_i, then x_{i+1} will also be greater than or equals to q_i(array X is sorted in increasing order), however if x_i is smaller than or equals to p_i, it is not guaranteed that x_{i+1} will also be smaller than or equals to p_i. Thus, we have a conclusion that Q is more flexible than P, therefore when x_i satisfies both P and Q, the less flexible job P needs to be chosen.

    11.4 Else If x_i of the current worker is greater than or equals to q_i of current_Q and x_i of the current worker is greater p_i of the current_P, then it means, current_worker can be only assigned to current_Q(senior level job).

XI += 1

PI remains the same

QI += 1

result += 1

11.5 (Vice of 11.4)Else If x_i of the current worker less than q_i of current_Q and x_i of the current worker is less than or equals to the current_P, then it means, current_worker can be only assigned to current_P(entry level job).

XI += 1

PI +=1

QI remains the same

result += 1

12.The value of result is the final answer

Time complexity: N*log(N){sort the worker array} + P*log(P){sort the entry job array} + Q*log(Q){sort the senior job array} + N(N iterations,step 11), this Time complex is O(N*log(N) + P*log(P) + Q*log(Q))