Programming Challenges for HD Energy

Q1. Regular find function for list

Describe (with pseudocode or real code) how to find an element by value in an unsorted list (i.e. define the "find" function for a list, with a list and a value as inputs). The function should return the index of the element found. What should you return if the element is not in the list?

> For simplicity, you can assume a list of integers.

Q2. Optimised find function for sorted list

How would optimise the "find" function of Q1 if the input list is a sorted list?

Q3. Produce the merge_ranges function.

Produce, in the language of your choice (Javascript or Typescript strongly suggested), the `merge_ranges` function.

> This challenge is to produce the code to merge multiple ranges of values if the ranges intersect.

> The function should take a list of `DateRange`, and produces another list of `DateRange` which is the minimum representation of the input.

> A `DateRange` object is simply an object with a `start`, an `end`, with `start <= end`, where `start` and `end` are `date` objects. You can implement this object however you feel is most appropriate for the task.

Example: Assume `date1 < date2 < date3 < date4 < date5 < date6`, then

- `merge_ranges([DateRange(date1, date3), DateRange(date2, date4)]) == [DateRange(date1, date4)]`

- `merge_ranges([DateRange(date1, date3), DateRange(date2, date5), DateRange(date4, date6)]) == [DateRange(date1, date6)]`

- `merge_ranges([DateRange(date1, date2), DateRange(date3, date5), DateRange(date4, date6)]) == [DateRange(date1, date2), DateRange(date3, date6)]`