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Question 5:

* If we schedule the production of the chemicals in order .
* Then, at the end of 1st day, the total amount of chemical is:

Because on the first day, we only produce kilograms of chemical and the amount of evaporate is

At the end of 2nd day, the total amount of chemicals is:

Because on the second day, we produce kilograms of chemical , and the amount before evaporation happens is

So, at the end of second day,

Similarly, at the end of nth day, the amount of total amount of chemicals is:

* Therefore, in order to produce total extra weight of all chemicals needed to produce to compensate for the evaporation loss is as small as possible the must be maximum.
* We claim that, if the chemicals are ordered in an increasing order of weights, the total weight will be maximised.
* Proof:
  + Assume
  + Let us see what happens if we swap to adjacent chemicals and
  + The expected total weight before the swap and after swap are, respectively,
* Thus,

Therefore,

* Consequently, , if and only if , which means that the swap decreases the expected total weight just in case .
* Consequently, the maximum total weight is obtained when there are no inversions.
* When we have the maximum total weight after nth day, which means the amount of chemicals we need to reproduce will be minimum.