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Question 5

Our aim is to minimise the amount of extra chemical production required as a result of evaporation over time.

Input the weights $W_{0\ldots N-i}$ of the respective chemicals $C_{0\ldots N-i}$ into an array in ascending order.

We simply schedule the lowest required W_i from the first day in ascending order, compensating for evaporation loss. The required amount to produce is $W_i * \ (1+p)^{N-i}$ (i is the element index after we have sorted the chemicals)

An example to illustrate:

3 chemicals C_1, C_2 and C_3. Required to deliver $W_1 = 100kg, W_2 = 10kg, W_3 = 50kg$

This takes 3 days, so we sort the order into $W_1 = 10kg$, $W_2 = 50kg$, $W_3 = 100kg$

Let $p = 10\%$

	C_1	C_2	C_3
Day 1 Weight	$10 * 1.1^2 = 12.1kg$		
Day 2 Weight	$\frac{12.1}{1.1} = 11kg$	$50 * 1.1^1 = 55kg$	
Day 3 Weight	$\frac{11}{1.1} = 10kg$	$\frac{55}{1.1} = 50kg$	$100kg$

This has required an extra $(12.1 - 10) + (55 - 50) = 7.1kg$ of chemicals to be produced

Suppose we instead did the reverse:

- The $100kg$ chemical would be produced on the first day and would require $(100 * 1.1^2) - 100kg = 21kg$ extra production
- The $50kg$ chemical would require the same excess as the example above, $5kg$

So, our required extra weight produced would be $26kg$. Much higher!

Thus, by scheduling C_i, whereby W_i is in ascending order as early as possible we minimise the excess production requirement.