Fall 24 Div Compete Week 1 - Solutions

(taken from editorials of original problems)

Problem A

(Source: ETH Zurich Competitive Programming Contest Spring 2024 Problem L)

Solution $\mathcal{O}(n)$

- Use station B as a stack
- Prioritize the A-C type operations

Problem B

(Source: ETH Zurich Competitive Programming Contest Spring 2024 Problem B)

Solution $\mathcal{O}(|V|)$

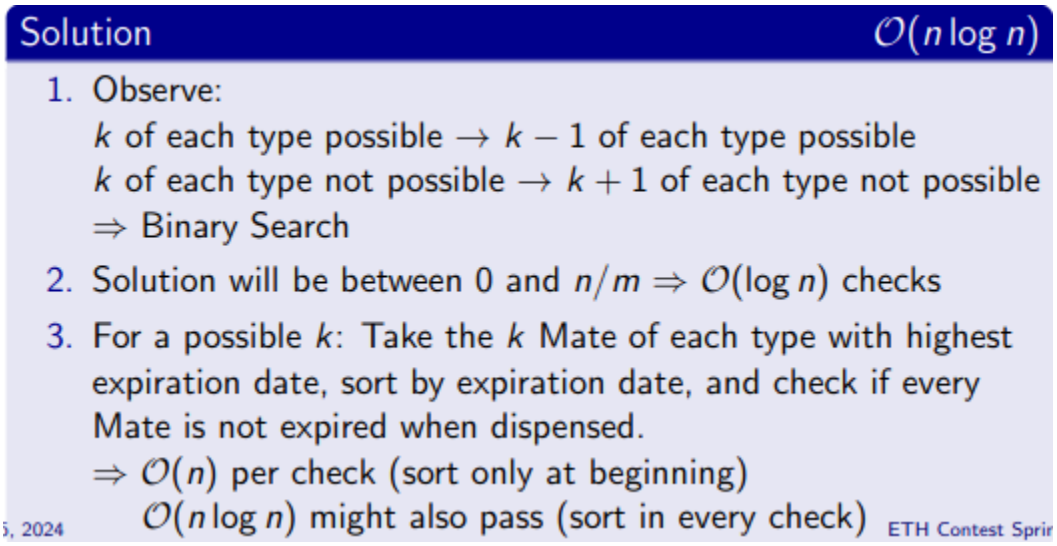
If there is a path with length more than 2, then we have a maximum matching with size more than 1.

Solution $\mathcal{O}(|V|)$

For each vertex v count the number of subgraphs with maximum matching of size 1 it is in it, which is equal to $2^{deg(v)} - 1$.
By inclusion-exclusion answer is $(\sum_{v \in V} 2^{deg(v)}) - 2n - 1$.

Problem C

(Source: ETH Zurich Competitive Programming Contest Spring 2024 Problem H)



Problem D

(Source: ETH Zurich Competitive Programming Contest Spring 2024 Problem A)