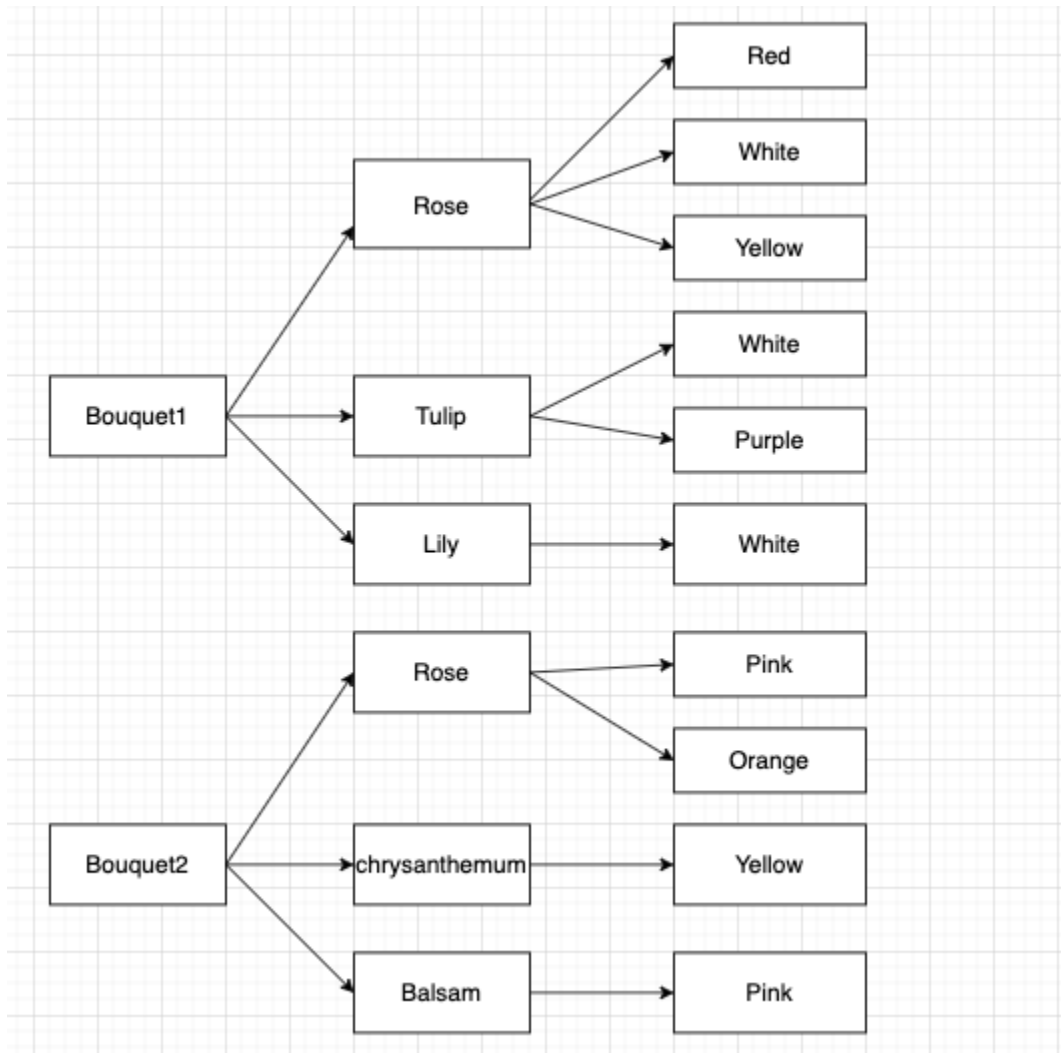


1. Write Data Structure to store the below diagram of bouquet1, bouquet2, etc. It should have efficient retrieval (low time complexity).

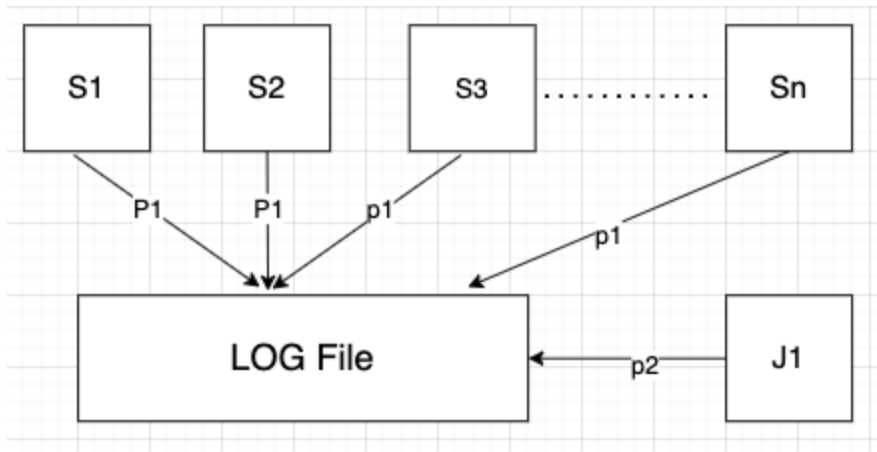


Write Java code to check if the following exists:

Input: Red Rose ; Output : Bouquet1

Input: Pink Lily ; Output : None

2. There are 100 jobs (or processes) S1, S2, S3,.....S100 writing logs to a log file named trace.log.



The format will be:

YYYY-MM-DD HH:mm:ss <jobname> <text>

Each log entry will be single-line

Sample log entry of S1:

2023-06-29 20:52:44 s1 sample log text generated from s1

Write a Java program to find the first log of J1 after 2023-06-29 04:04:04.

It should be giving fast results.

3. There is a club with 5 players p1,...p5 with each of their ranks as shown in the diagram below. A new player Harper wants to join the club. Write a Java program to find out Harper's rank in the most efficient way.

|        |    |    |    |    |    |
|--------|----|----|----|----|----|
| Harper | P1 | P2 | P3 | P4 | p5 |
| ?      | 20 | 5  | 28 | 67 | 44 |

4. Design the database schema (as an ER diagram) for the following. These are the rules:
- One user can make 0 or more tweets
  - One user can follow 0 or more users
  - If user1 is following user2, then user2 may or may not follow user1

User fields: id, name, handleName, bio, followersCount, followingCount

Tweet fields: id, text, createdAt, rtCount, replyCount

