**Problem Statement :** A system that keeps track of employee leave/vacation requests. This is not meant to be a completely functional application, but should demonstrate the process, patterns and methods you’d use to construct the functional application. Please submit a partial skeleton project demonstrating one or two areas of focus in addition to a short document describing your initial approach, and potential paths forward, were you to be asked to finish the project.

**Solution Approach:**

Employee leave\vacation system will have a entry point (main method) which will allow users to login with their employee ID and submit their vacation requests. User enters the empId, start date and end date for the vacation and submits it for approval 🡪 the vacations days are calculated by the system and updates the system with the details. An email notification is sent to the approvers based on the no of vacation days 🡪 <3 days goes to level 1 approval, vacationDays > 3 and vacationDays < 10 days goes for level 1 and 2 approval, vacationDays > 10 days goes to level 1,2,3 approvals.

**Solution Design:**

View layer and service layer are seperated from each other into independent modules. The service layer implements the **Factory pattern** which evolves around the **Encapsulation object oriented concept** to store the data. The system can communicate and store data either to database, a file system or a JMS or webservice layer and the view layer need not know the implementation. Any new system in future can be easily integrated and it can be migrated to a different backend system based on the requirements.

In addition to this, the solution uses **Chain of responsibility** design pattern to send an email notification to the approvers based on the number of vacation days.

**Employee** class will be the model class with getters and setters and defines the employee state and behaviour. **LeaveUtil** class will have the common methods that will be used across the system as part of code reusability.

**Junit test suite** is created and unit test cases will be written and executed as part of the unit testing process.

The system currently has methods to submit leave request and also for notifications. Current design can be easily scaled up for retrieval and display by adding methods to the corresponding java classes.

Below is the class diagram for the system.

