Object-Oriented Analysis & Design:
Specification of Leave Management System (LMS)

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Requirement Specification

A Company wants to manage the attendance and leave of its employees through LMS. The requirement specifications are:

1. The company has three categories of employees:

   - *Executive*: Employees who work as individual contributors and report to a Lead.
   - *Lead*: Every Executive reports to a Lead who approves / regrets her / his leave. A Lead reports to the Manager.
   - *Manager*: Every Lead reports to the Manager who approves / regrets her / his leave. There is *only one* Manager.

2. The company has provisions for the following categories of leave associated with the respective leave rules:

   - *Casual Leave (CL)*:
     - 10 CL's are available in a calendar year. All CL's are credited to an employee on 01-Jan. For employees joining in the middle of the year, the number of CL's are prorated. CL's cannot be carried over to the next calendar year.
     - More than 2 CL's cannot be availed at a time. CL's cannot be clubbed with other types of leave. Total period of absence including holidays cannot be more than 4 days. Holidays intervening the absence are not counted as leave.
     - CL's do not need pre-approval; but must be approved within 2 days of its availing.
   - *Earned Leave (EL)*:
     - 15 EL's are available in a calendar year. 1.25 EL is credited on the completion of a full month's service. EL's can be carried over to the next calendar year and accumulated up to 45 days. Once it crosses 45 days then on the completion of the current quarter, 30 days are en-cashed and paid to the employee. Remaining EL's continue in the account. All EL's are en-cashed when an employee leaves the company.
     - EL's can be availed at a stretch and up to the existing balance. It can be clubbed with other leaves (except CL). All holidays within the leave of absence of EL are counted as EL.
     - In exceptional cases Manager can approve more EL's than what exists in one's account. Maximum of 15 days' negative balance is allowed.
     - All EL's must be pre-approved (at least by a week).
   - *Duty Leave (DL)*:
     - When an employee is sent out of station or on leave on work, a DL is created.
     - Every DL is approval basis and has no specific accounting. It is considered as being "On Duty".
   - *Sick Leave (SL)*:
     - 12 SL's are available in a calendar year. All SL's are credited to an employee on 01-Jan. For employees joining in the middle of the year, the number of SL's are prorated. SL's can be carried over to the next calendar year and accumulated up to 60 days.
     - SL's can be availed at a stretch and up to the existing balance. It can be clubbed with other leaves (except CL). All holidays within the leave of absence of SL are counted as SL.
     - In exceptional cases Manager can approve more SL's than what exists in one's account. Maximum of 12 days' negative balance is allowed.
     - Medical certificates are needed to proceed for and join back from SL's. SL's can be approved post-facto in cases of emergency.
   - *Maternity Leave (ML)*:
     - Every female employee is eligible for 4 months' ML when pregnant. It can be clubbed with other leaves (except CL). All holidays within the leave of absence of ML are counted as ML.
     - Medical certificates are needed to proceed for and join back from ML's.
     - All ML's must be pre-approved (at least by a week).
     - A female employee can avail of ML only twice during her employment with the company.

- *Parental Leave (PL)*:
  - Every employee is eligible for 7 days' PL when she / he becomes a parent (biologically, or by adoption). It can be clubbed with other leaves (except CL). All holidays within the leave of absence of PL are counted as PL.
  - A female employee cannot enjoy a PL if she is availing of ML.
  - Parenthood certificates are needed for PL's.
  - All PL's may be pre-approved. However, given the uncertainty of date of birth, PL's can be approved post-facto within 2 days of proceeding on leave.
  - An employee can avail of PL only twice during his / her employment with the company.
- *Leave Without Pay (LWP)*:
  - A employee can avail of a maximum of 180 days' LWP at a stretch where he / she continues to be employed by the company; but is on leave and does not draw any salary.
  - LWP can be clubbed with other leaves (except CL). All holidays within the leave of absence of LWP are counted as LWP.
  - All LWP's must be pre-approved (at least by a week) and are of exceptional nature. Hence are always approved by the Manager.

Note:

- Every leave (leaving aside the exceptions mentioned above) for an employee is approved / regretted by the Lead or Manager to whom he / she reports.
- Leave is a privilege and not a right. Hence an approved leave can be revoked.
- Any other leave of absence is considered an Unauthorized Leave (UL) for which salary is deducted. More than a week's UL warrants disciplinary actions.

3. Typical Use-Cases of the LMS are:

   (a) Manage the logins for Manager, Lead, and Executive employees.

   (b) Manage leave for the employees (Leave Accounting).

   (c) When a new employee joins he / she has to create an account by providing his / her name, personal details and designation. After registering he / she will get a unique employee code. This employee code will be his / her login id.

   (d) Every employee (Executive, Lead, or Manager) can do the following from her / his account:
   - Record Daily Attendance
   - Request for Leave
   - Cancel an Approved Leave not yet availed
   - Avail Leave (if approved)
   - Check / Export own Leave Status for a period
     - All / Category-wise / Specific Request-wise

   (e) A Lead can do the following from the account (in addition to his / her functions as an Executive):
   - Approve / Regret leave request of an Executive
   - Revoke an approved leave of an Executive
   - Check / Export the Leave Status of an Executive for a period
     - All / Category-wise / Executive-wise / Specific Request-wise

   (f) The Manager can do the following from the account (in addition to his / her functions as a Lead):
   - Approve / Regret leave request for an Executive / a Lead
   - Revoke an approved leave of an Executive / a Lead
   - Check / Export the Leave Status of an Executive / a Lead for a period
     - All / Category-wise / Executive-wise / Lead-wise / Specific Request-wise
   - Credit, Debit and Adjust Leaves for employees:
     - Executive-wise / Lead-wise / Specific Request-wise
   - Perform Administration Functions
     - Hire (Let join) and Fire (Let go) employees
     - Generate list of employees
     - Force-execute a SysAdmin batch (check below)

   (g) The SysAdmin (a cron job) performs batch tasks to Credit, Debit and Adjust Leaves for all employees:
   - Day-end batch for all Leaves against Daily Attendance (reconciliation and unauthorized leave)
   - Month-end batch for ELs (credit)
   - Quarter-end batch for ELs (encashment)
   - Year-end batch for CLs and SLs (credit)
   - Leave credit at the time of joining
   - Leave encashment at the time of leaving