Home Management System
Project Proposal

Description
Home management portal to track home related activity such as expenses, grocery purchases, who is cooking next, whose turn is in cleaning trash using a combination of functions like expense manager, to do list, note taking utilities along with a instant messenger for member communication regarding the activity.

Users
Each project(name for new profile) consists of groups. Group can be created by one or more individual members. The portal consists of three abstract activity.

Activity
Task, List and Expense. Task involves work which will consume time of the activity based on the type of work, example Trash cleaning or cooking. List is a way to specify items in a order or unordered form, grocery listing for next week or things to repair in house. Expense activity will involve the money component in it, grocery purchases, refueling vechile. One or more combination can be used to create groups. The groups will encompass members. The task alone group will be cooking turns. Expense activity will involve trips. List activity will involve. Below is the example of each.

Scope
Each users in the given project will have equal access. The groups can be created by members. Members can create new groups, add, delete or modify items.

Tables
Members(member_id,member_name,email,phone)
Member_groups(member_group_id,group_id,member_id,member_value)
Groups(group_id,member_id,group_name)
Expenses(transaction_id,member_group_id,item,cost,expenses_shared_with)
Lists(list_id,member_group_id,list,status)
Tasks(task_id,member_group_id,task,status)
Messages(message_id,to_id,from_id,message,time)

Table description

Members — Will hold all the member details.

Groups — Members form a group which involve in certain activity. Expenses, Lists and Tasks uses this group as a reference to specific member activity.

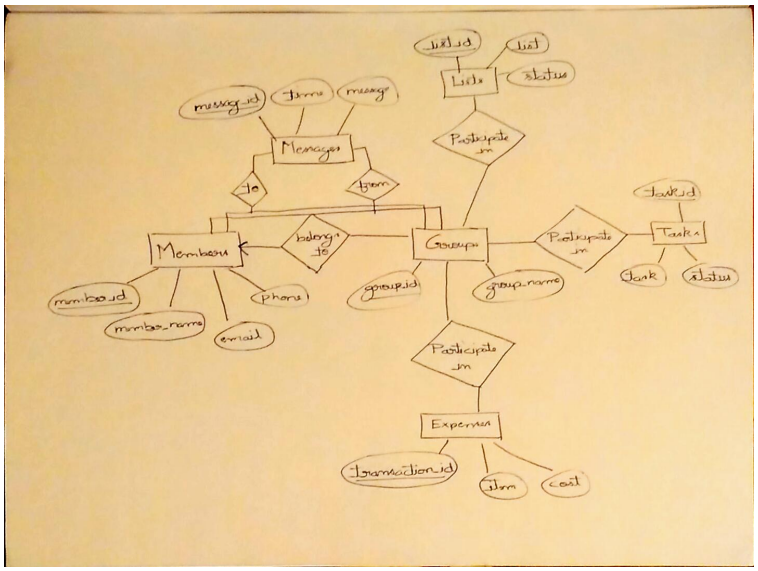
Member_groups — This table reduces the redundancy of using both group_id and member_id in each activities(Expenses, Lists, Tasks) and as well as messages instead member_group_id is used in it's place. member_value column is assigned unique value to a member within a group which enables to identify if only few member in that group. For example, If a purchase is made and it should be shared between 3 members in a 5 member group. member_value column will help in identifying these three members out of 5 and expenses will be shared among only these 3.(member_value column will be modified based on implementation realization. This table needs both SQL and NoSQL database implementation to accommodate the Message table.

Expenses — Activity involving expenses. expenses_shared_with column references Member_groups(member_value) to identify whether the expenses is of individual or whole group or few members in a group.

List,Task Activity involving Lists and Tasks. Status refers to whether the activity is pending or completed.

Messages Message can be attached to any activity, group or individual based on to_id(sender of message by an individual) and from_id(reciever of the message to group or individual or selected members in a group for an activity). The given relation is given for a SQL database which will be translated to NoSQL database upon implementation.

Entity Relationship Diagram



Implementation
Database implementation is using PostgreSQL and MongoDB(Messaging and member_groups table alone). User interface is either using html/php or J2EE(JSP) or AngularJS.

Dataset
For the project the personal available data is used having 7 years of personal expenses, trips, grocery bills. The available data is modified to suite to the project. Remaining data will be created.