RealOffice Database Design Document

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Introduction

RealOffice is an application software intended for use in the CSE department office to simplify routine procedural tasks. In essence, it shall allow office staff to schedule different kinds of meetings, track meeting requirements, manage room allotments, file meeting reports and also cancel arrangements for cancelled meetings. It shall also remind the staff regarding upcoming events that need attention and facilitate routine backups as replacement for hard paperwork. It shall also integrate data from the CSE department calendar about meetings scheduled from other platforms.

The data shall be stored in an *SQL* database on a server running *Ubuntu 14.04 LTS*. Access to the data will be through a web interface running on *nginx* web server and using *Django*. This design is to allow easy and efficient data insertions and meeting queries.

The driving philosophy behind the database design is to have an efficient, normalized database that would be easy to maintain and expand, as well as allow easy data entry and access.

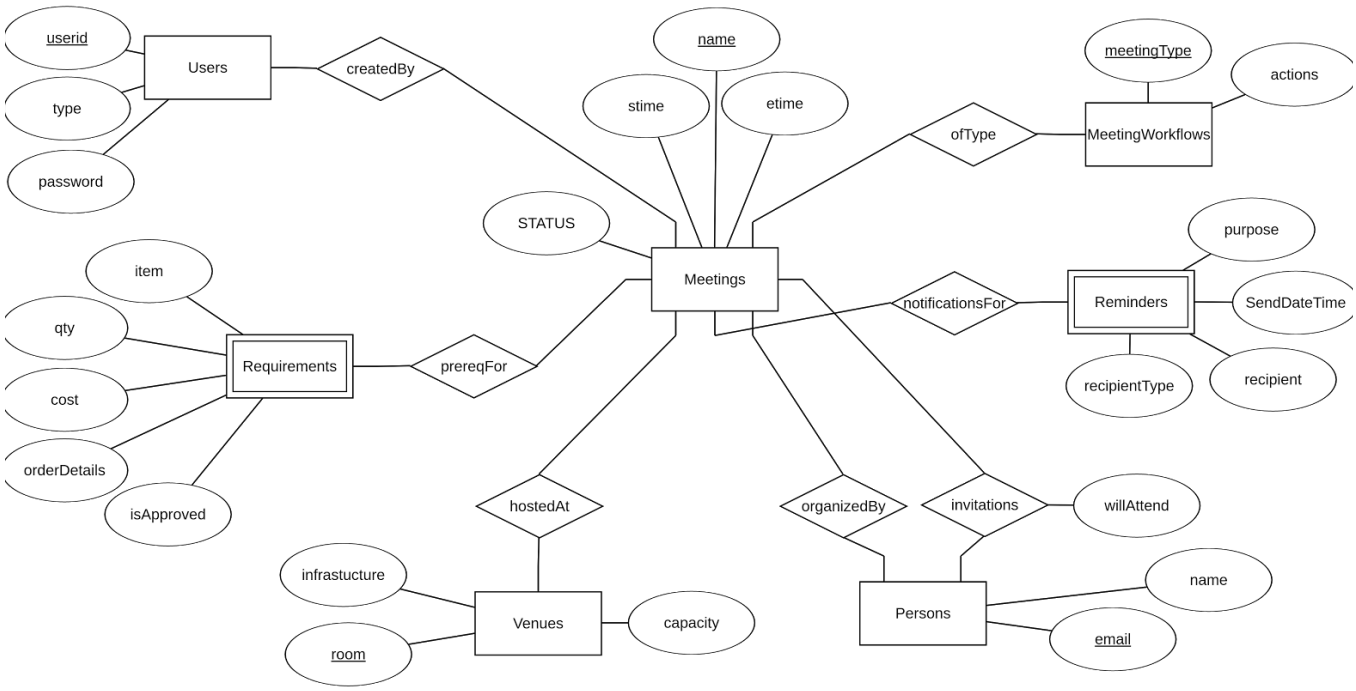
Database Software Specifications

Minimum requirements for the database software:

1. Allow multiple users to access tables simultaneously.
2. Should run on linux systems.
3. Should ensure reliability and security.

Entity-Relationship Diagram

The system can be modelled using the following entities and relationships:



Database Design

From the ER diagram, the system is decomposed to the following tables:

1. Users
2. Meetings
3. Requirements
4. Venues
5. Persons
6. Invitations
7. Reminders
8. MeetingWorkflows

MeetingWorkflows is introduced as a table for extendability. It stores the ordered list of actions that different types of meetings go through. It allows easy addition of new meeting types. In the absence of this table, the meeting actions would have to be hardcoded leading to difficult addition of newer meeting types.

Invitations relationship involves a many-many relationship between Persons and Meetings and also, holds an attribute. Thus, it is converted to a table rather than a ForeignKey relationship on one side of the original relationship.

Table Specifications

1. Table #1: Users

Column Name	Type	Descriptive Name	Valid Values	Index Column	Allow Nulls	Description
userid	varchar(64)	User ID		Unique, index	No	User ID used for logging into the system
type	varchar(64)	User type	‘staff’, ‘admin’		No	Type of user. Used for privilege checks.
password	varchar(64)	Hashed Password			No	Hash of user password.

2. Table #2: Meetings

Column Name	Type	Descriptive Name	Valid Values	Index Column	Allow Nulls	Description
name	varchar(128)	Meeting Name		Unique, Index	No	Name of the meeting.
stime	datetime	Start DateTime of meeting			No	Datetime for meeting beginning.
etime	datetime	End DateTime of meeting			No	Datetime for meeting end.
STATUS	varchar(32)	Meeting Status	SCHEDULED, RUNNING, POST_MEETING, FINISHED, CANCELLED		No	Status of the meeting.
createdBy	ForeignKey(Users)	Created by User			No	Creator of the meeting tuple.
hostedAt	ForeignKey(Venues)	Meeting Venue			No	Venue where meeting is held.

organizedBy	ForeignKey(Persons)	Meeting organizer			No	Organizer of meeting.
ofType	ForeignKey(MeetingWorkflows)	Type of Meeting			No	Type of meeting.

3. Table #3: Venues

Column Name	Type	Descriptive Name	Valid Values	Index Column	Allow Nulls	Description
room	varchar(64)	Room Name		Unique, index	No	Name of room.
capacity	int	Maximum Capacity			No	Maximum no. of people that can be seated.
infrastructure	varchar(1024)	Infrastructure Facilities			No	Infrastructure available at room.

4. Table #4: Persons

Column Name	Type	Descriptive Name	Valid Values	Index Column	Allow Nulls	Description
name	varchar(128)	Name			No	Name of person.
email	varchar(128)	Email		Unique, index	No	Email id of person.

5. Table #5: MeetingWorkflows

Column Name	Type	Descriptive Name	Valid Values	Index Column	Allow Nulls	Description
actions	varchar(1024)	Ordered Actions			No	Stringified list of actions needed to be done for respective meeting type.
meetingType	varchar(64)	Type of meetings		Unique, index	No	Type of meeting.

6. Table #6: Reminders

Column Name	Type	Descriptive Name	Valid Values	Index Column	Allow Nulls	Description
recipient	varchar(64)	Receiver of reminder			No	Id of receiver for reminders.
recipientType	varchar(64)	Type of receiver	‘User’, ‘Person’		No	Type of receiver.
purpose	varchar(128)	Reminder purpose			No	Purpose fulfilled by reminder.
sendDateTime	datetime	Sending Datetime			No	Datetime for dispatching reminder.
notificationFor	ForeignKey(Meetings)	Reminder for Meeting			No	Meeting for which reminder is scheduled.

7. Table #7: Requirements

Column Name	Type	Descriptive Name	Valid Values	Index Column	Allow Nulls	Description
item	varchar(128)	Item Name			No	Name of item.
qty	int	Item Quantity			No	Quantity of item required.
cost	float	Total Cost			No	Total cost of items.
orderDetails	varchar(128)	Details of Order			No	Details about item order.
isApproved	boolean	Is Approved by Office			No	Has it been approved by the office.
prereqFor	ForeignKey(Meeting)	Prerequisite for Meeting			No	Meeting for which requirement is scheduled.

8. Table #8: Invitations

Column Name	Type	Descriptive Name	Valid Values	Index Column	Allow Nulls	Description
meetingId	ForeignKey(Meetings)	Meeting ID			No	Meeting for which invitation was sent.
personId	ForeignKey(Persons)	Person ID			No	Person to whom invitation was sent.
willAttend	boolean	Will be Attending			No	Whether the Person will attend the Meeting.