Database Design Document

for

Subscription Sharing System

Prepared By

Group 36

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1 PURPOSE

The purpose of the design document is to provide a clear understanding to the database designers of all the entities and elements they require to build a database management system. This document can act as a single source or reference for all activities regarding the construction of the database and it's efficient implementation.

1.1 Document Objectives

The following are the objectives of the database design document.

- This document should act as a source for the developers and guide them towards an easy and efficient implementation of the database.
- The design document makes it easy for us to make decisions regarding the database management system.
- It also helps in defining the structure of the project and making it efficient.

1.2 Intended Audience and Document Overview

The document is intended for the following audience

- **Developers** : The document is of utmost importance to the developers as they are the ones who develop the entire system.
- **Database Architects :** The document is essential for the database architects to construct the schema and build the database so that it could be used to store the data.
- **Testers** : The design document is essential for the testers so that they can verify that the database is functioning properly and is functioning as necessary and all the required constraints are being maintained and data security is present.
- **UI Developers :** Along with the developers, the document is necessary for the User Interface developers also because they need to create interfaces that take in the required data and display the processed data, that is they need the database design document so that they can create the proper interfaces.
- **Manual Writers and Copywriters :** The writers also need the database design document so that they can write the required manuals and help the users understand what data is expected from them beforehand.

1.3 Definitions, Acronyms and Abbreviations

- DBMS - Database Management System
- 1NF - First Normal Form
- 2NF - Second Normal Form
- 3NF - Third Normal Form

2 ASSUMPTIONS AND CONSTRAINTS

2.1 Assumptions

The following are the assumptions made while developing this product:

- Every person has an email ID using which they can create an account.
- Users are comfortable with sharing their subscription passwords to others.
- Users are capable of communicating among themselves and coordinating the exchange of subscription passwords.
- We assume that the users will be trusting with each other and will not participate in any malpractices such as changing the password as a prank.
- We also assume that the user is comfortable with using a browser and the internet.
- We have also assumed that the default language of the application - English is understandable and comprehensible to everyone.

2.2 Constraints

The following design and implementation constraints are employed in the system:

- The user needs to create an account to be provided access to the application.
- The user has a limit to creating the number of listings at any point of time.
- There also has to be a restriction to the number of listings available for any subscription at a point.
- The users are not allowed to communicate with each other until the listing is full.
- The details of the users in a listing group is not disclosed unless a complaint has been raised.
- The users are also restricted from adding censored content and copyrighted content.

3 DATABASE-WIDE DESIGN DECISIONS

3.1 Behavior

3.1.1 Login

- A user can login through their usernames and passwords.
- A user is provided access to the application only once they login in.
- Every aspect of data in the database is attributed to the user ID and is retrieved once the user is logged in and his session has begun.
- The user can simply use google login or sign up to get into their account.

3.1.2 Add Listing

- This is accessible to the users who have logged in.
- It would allow the users to create a new listing and it involves gathering data from the user.
- It takes in the fields such as Name of the listing, overall price, number of people who can share it and so on.
- The data collected here will help in regularly helping in monitoring and keeping the other data elements consistent.

3.1.3 Chat

- The users are allowed a chat feature so that they can communicate among themselves and exchange subscription passwords.
- All the users who have applied for a bid are chosen and added into a group that will let them communicate.
- Not much of the chat data is stored, but the data of who all belong to the group and who all belong to a particular listing is stored for further.

3.1.4 Listing Feed

- The feed is something like a Facebook or Instagram feed where we can see all the recent listings regardless of their categories and their participants.
- All the listings that have occurred so far are listed here chronologically, with the latest one being the first.

3.2 DBMS Platform

Users will be provided a web application through which they can use and interact with the application.

- They would have no relation with the database, the users are Naive users and they only will interact with the Application.
- All the data they enter and all the data they see will only be through the User Interfaces.

The database platform where all the data is stored in the MySQL database and the user interface will be built with HTML, CSS. NodeJS will help us connect the MySQL database with the front end user interface.

3.3 Security Requirements

The following are the safety requirements:.

- **User Credential Security :** The login , sign up credentials of the user have to be stored in a secure place, and users should be allowed to login only after proper authentication.
- **User Details :** The data of the user such as their phone numbers, email Id should not be displayed publicly or allowed to access at any cause.
- **Restrictions on the creation of listings :** It must be ensured that unwanted and useless listings should not be present in the site, and only a certain number of listings should be active at a time.
- **User Communication and Exchange Measures :** As we only deal until the stage where a user meets another user who is interested in sharing the subscription, we cannot ensure the safety that they would be treated fair. So here we rely on the honesty and fairness of all the participants in that listing.

  In case of any discrepancy, users could always contact the support and have their problems resolved.

3.4 Performance and Availability Decisions

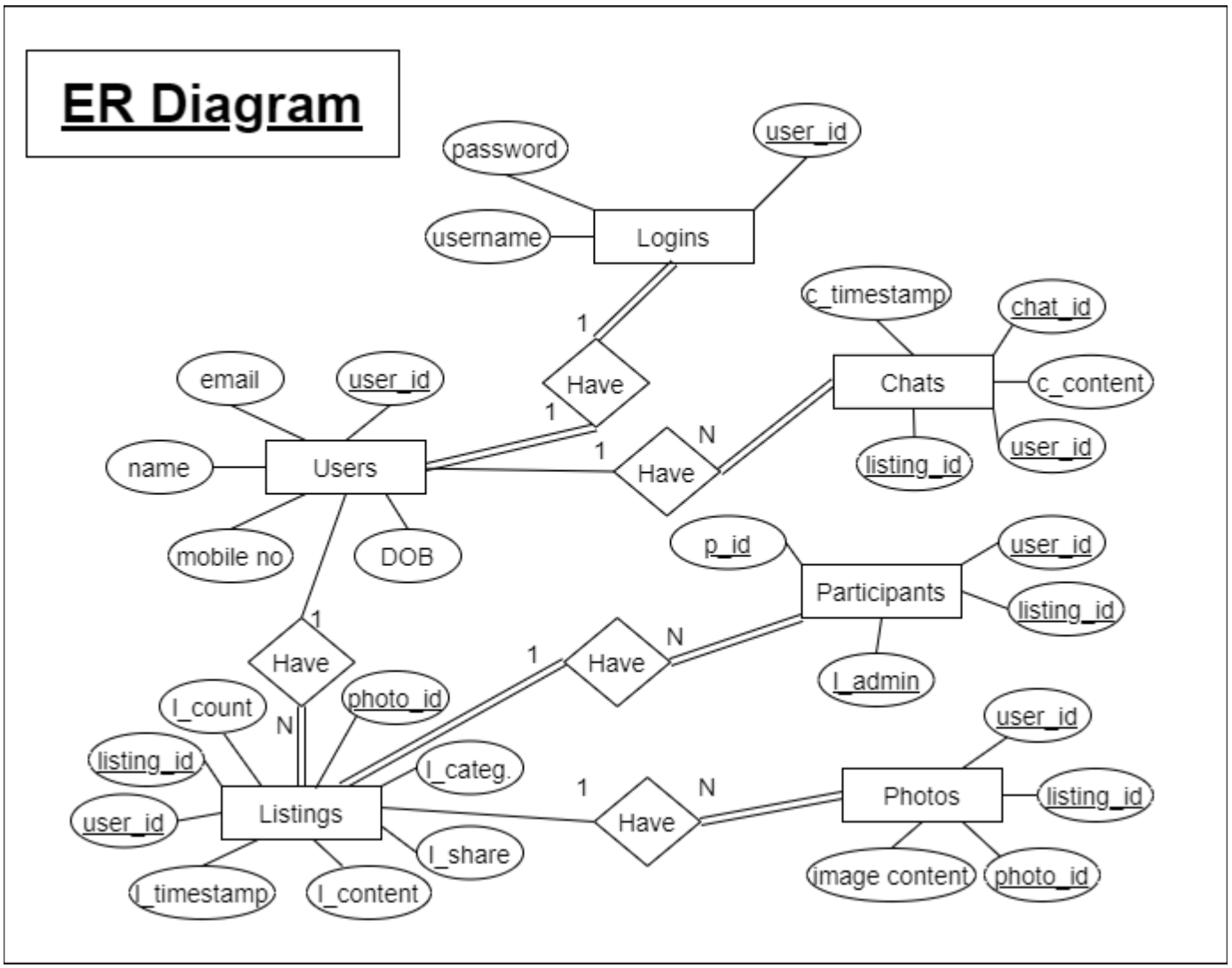
The availability of the application to the users is 24/7. As this is a web application hosted on a 24/7 available platform it will all be available for the users to access and avai it’s services.

The performance of the application is entirely dependent on the internet speed as the application would provide complete efficient performance and it’s entire efficiency would be dependent on the user's computer system.

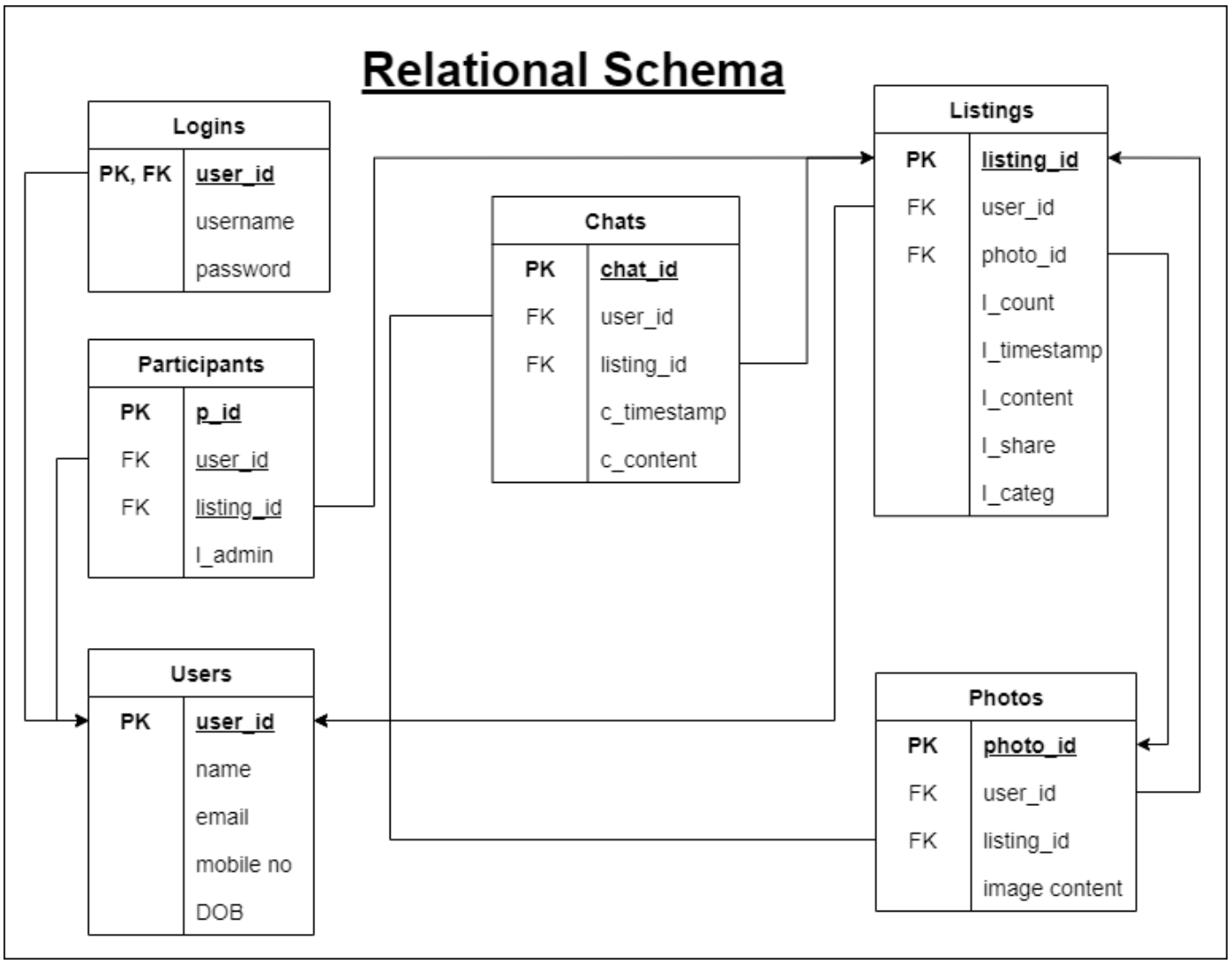
The performance of the system is also going to be entirely responsive, and work proficiently on all the devices of all sizes.

4 DATABASE ADMINISTRATIVE FUNCTIONS

4.1 Entity-Relation Model



4.2 Relational Schema



4.3 Normalization

- 1NF - The tables are in 1NF, as there are no multivalued or composite attributes. Each table cell contains atomic values, and each record is unique. Hence the database is 1NF normalized.
- 2NF - The tables are already in 1NF as proved above. There are no partial dependencies, that is, there are no non-prime keys solely dependent on only one part of a primary key in any of the tables. Hence the database is 2NF normalized. 2NF raises when a primary contains more than one attribute but we don't have any primary key with more than one attribute.
- 3NF - The tables are already in 2NF as proved above. There are no transitive functional dependencies in the schema. There are non-prime keys that are dependent on another non-prime key in any specific table. Hence the database is 3NF normalized.

5 SCHEMA DESCRIPTION & DATA FORMATS

Table	Attribute	Data type	Type
Users	name	string(varchar(100))	Non-primary key attribute
	user_id	string(varchar(50))	Primary key attribute
	email	string(varchar(100))	Non-primary key attribute
	mobile no	bigint(10)	Non-primary key attribute
	DOB	date	Non-primary key attribute
Logins	user_id	string(varchar(50))	Primary key Attribute, Foreign key Attribute
	username	string(varchar(100))	Non-primary key attribute

	password	string(varchar(100))	Non-primary key attribute
Listings	listing_id	string(varchar(50))	Primary key Attribute
	user_id	string(varchar(50))	Foreign key attribute
	photo_id	string(varchar(50))	Foreign key attribute
	l_count	int	Non-primary key attribute
	l_timestamp	DATETIME	Non-primary key attribute
	l_content	longblob	Non-primary key attribute

	l_share	int	Non-primary key attribute
	l_categ	string(varchar(100))	Non-primary key attribute
Photos	photo_id	string(varchar(50))	Primary key Attribute
	user_id	string(varchar(50))	Foreign key attribute
	listing_id	string(varchar(50))	Foreign key attribute
	image_content	BLOB	Non-primary key attribute
Chats	chat_id	string(varchar(50))	Primary key Attribute

	user_id	string(varchar(50))	Foreign key attribute
	listing_id	string(varchar(50))	Foreign key attribute
	c_timestamp	DATETIME	Non-primary key attribute
	c_content	longblob	Non-primary key attribute
Participants	p_id	string(varchar(50))	Primary key Attribute
	user_id	string(varchar(50))	Foreign key attribute
	listing_id	string(varchar(50))	Foreign key attribute

	l_admin	bool	Non-primary key attribute

6 REFERENCES

http://www.sdlcforms.com/PopupForm-DatabaseDesignDocument.html

https://dba.stackexchange.com

https://app.diagrams.net/