



Capstone Project 1

CMU-SE 450

DATABASE DESIGN

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School Connect Application

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1. Introduction

1.1.Purpose

Place information system's database design document describes the structure of database and file structure of the system. A database Design document will introduce all attributes of the System that will help the developers and tester base on this design to implement and test.

1.2.Goal

To create database tables most accurately.

1.3.Scope

This Database Design Document provides the basics for "School Connect Application" Database design.

It describes both logical and physical definition, non-functional issues, and the database interfaces; storage aspects are defined in the physical database design sections.

The table's performance considerations requirements. The following topics are covered in this document:

- Assumptions and decisions on database design.
- Entity-mapping.
- Table column definitions.
- Primary, unique, and foreign key definitions.
- Column and row-level validation rules (check constraints).
- Rule for populating specific columns (sequences, derivations, demoralized (column)).
- Interfaces and dependencies with other components.
- Data access description.

The database design for "Demark – Decentralized Market" is composed of definitions for database objects derived by mapping entities to tables attributes to columns, unique identifiers to unique keys, and relationships to foreign keys.

During design, these initial definitions are enhanced to support the functionality described in the functional specification/ user stories and defined in the primary and supporting modules of the application high-level design.

1.4.Data storage platforms

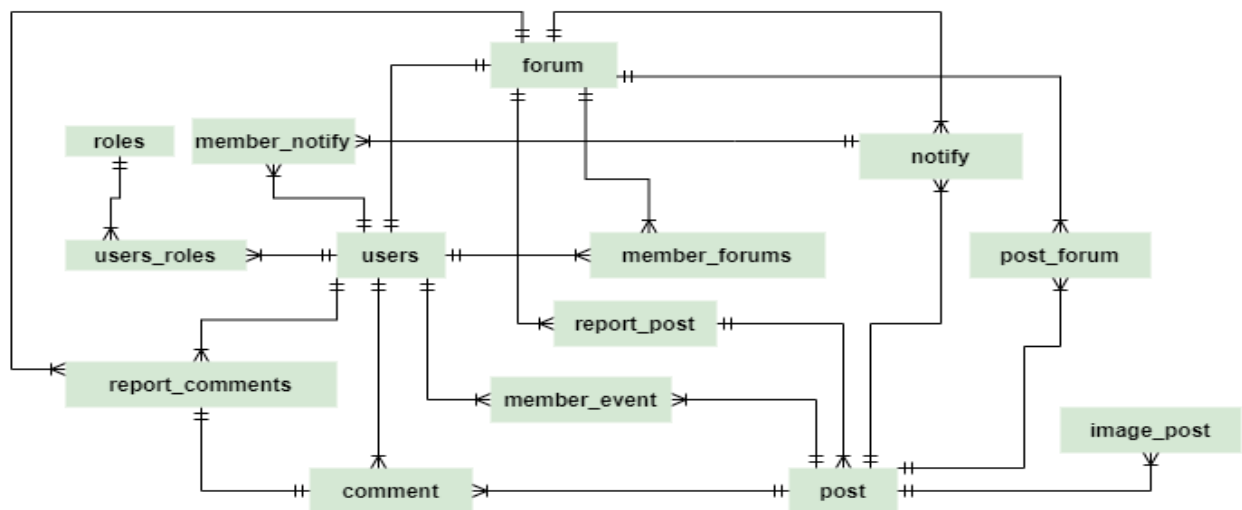
- Data of application is stored in MySQL database and Firebase Storage
- In MySQL, the data structure is stored as tables that the database objects that behave as containers for the data, in which the data will be logically organized in rows and columns format.
- Firebase Storage is a service built to store and manage user-generated content such as photos, videos, or file data. Firebase Storage provides APIs for securely uploading and downloading files from your app, and you don't have to worry about network quality.

2 Database Diagram

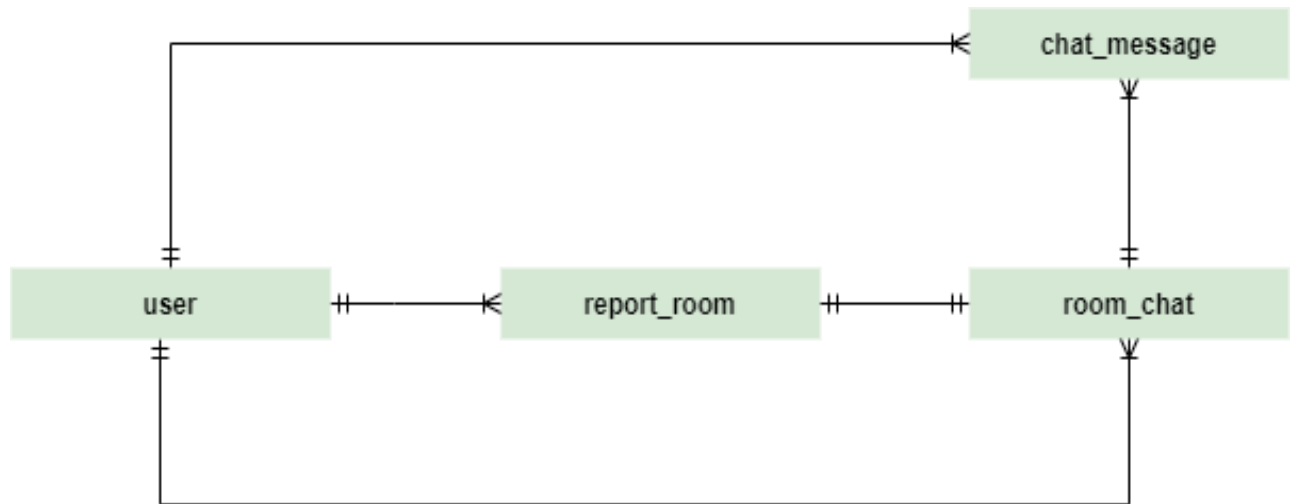
2.1 Table Overview

No.	Table name	Short Description
1	users	This table shows user information including all related fields.
2	users_roles	This table shows the role of users for the website
3	roles	This table shows all roles have in the website
4	forum	This table shows all forum information including the censor of the forum.
5	member_forums	This table shows all members have in the forum and the status of members in the forum.
6	post	This table shows all posts information including user has a post
7	post_forum	This table shows posts in the forum
8	image_post	This table shows all linked images of the posts.
9	comment	This table shows all comments of the users for the post.
10	member_event	This table shows all event member has joined
11	member_notify	This table shows all notify for the user about new activity in the forum user join
12	notify	This table show all information notify
13	report_comments	This table shows all reports of comment
14	report_post	This table shows all reports of post
15	room_chat	This table shows all room for chat
16	report_room	This table shows all report room of chat by user
17	chat_message	This table shows all messages in the room of the chat

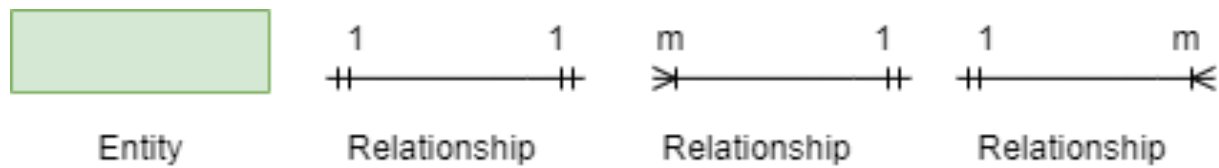
2.2 Entity Relationship Diagram



Picture 1: Entity Relationship Diagram 1



Picture 2: Entity Relationship Diagram 2



Picture 3: Legend Entity Relationship Diagram

2.3 Table Diagram



3. Table Details

- *Table 01: user*

ID	Field	Type	Constraint	Description
1	id	BIGINT	Primary key	User id
2	innitiated_date	DATETIME		Data initialization date
3	creator	VARCHAR (255)		Data originator
4	repairer	VARCHAR (255)		Data editor
5	modification_date	DATETIME		Data modification date
6	code_user	BIGINT (20)	Unique	User code
7	username	VARCHAR (255)	Unique	Username for login
8	password	VARCHAR (255)		Password for login
9	email	VARCHAR (255)	Unique	Email of user
10	full_name	VARCHAR (255)		Full name of the user
11	gender	VARCHAR (255)		Gender of user
13	date_of_birth	DATE		Date of birth of the user
14	avatar	TEXT		Avatar of user
15	number_phone	VARCHAR (255)		Number phone of the user
16	position	VARCHAR (255)		Position of user
17	status	VARCHAR (255)		Status of a user in the system

- *Table 02: users_roles*

ID	Field	Type	Constraint	Description
1	user_id	BIGINT (20)	Primary key, Foreign key (user)	Id of user
2	role_id	BIGINT (20)	Primary key, Foreign key (user)	Id of role

- *Table 03: roles*

ID	Field	Type	Constraint	Description
1	id	BIGINT (20)	Primary key	Role id
2	innitiated_date	DATETIME		Data initialization date
3	creator	VARCHAR (255)		Data originator
4	repairer	VARCHAR (255)		Data editor
5	modification_date	DATETIME		Data modification date
6	code_role	VARCHAR (255)		Code of role
7	name_role	VARCHAR (255)		Name of role

• *Table 04: forums*

ID	Field	Type	Constraint	Description
1	id	BIGINT (20)	Primary key	Forum id
2	innitiated_date	DATETIME		Data initialization date
3	creator	VARCHAR (255)		Data originator
4	repairer	VARCHAR (255)		Data editor
5	modification_date	DATETIME		Data modification date
6	forum_name	VARCHAR (255)	Unique	Name of forum
7	description	TEXT		Description of forum
8	cover_image	TEXT		Cover image of the forum
9	status	VARCHAR (255)		Status of forum
10	censor_id	VARCHAR (255)	Foreign key (user)	The user id of the censor manage forum

• *Table 05: member_forums*

ID	Field	Type	Constraint	Description
1	id	INT (20)	Primary key	Role id
2	innitiated_date	DATETIME		Data initialization date
3	creator	VARCHAR (255)		Data originator
4	repairer	VARCHAR (255)		Data editor
5	modification_date	DATETIME		Data modification date
7	forum_id	BIGINT (20)	Foreign key (forums)	Id of forums
8	user_id	BIGINT (20)	Foreign key (user)	Id of user

9	status	VARCHAR (255)		Status of member
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• **Table 06: post**

ID	Field	Type	Constraint	Description
1	id	BIGINT (20)	Primary key	Post id
2	innitiated_date	DATETIME		Data initialization date
3	creator	VARCHAR (255)		Data originator
4	repairer	VARCHAR (255)		Data editor
5	modification_date	DATETIME		Data modification date
6	content	LONG TEXT		Content in post
7	address_of_event	VARCHAR (255)		Address of event in the post
8	date_of_event	DATE		Date of the event in the post
9	number_like	INT (11)		Number of like in post
10	user_id	BIGINT (20)	Foreign key (user)	Id of user create a post

• **Table 07: image_post**

ID	Field	Type	Constraint	Description
1	id	BIGINT (20)	Primary key	Image id
2	innitiated_date	DATETIME		Data initialization date
3	creator	VARCHAR (255)		Data originator
4	repairer	VARCHAR (255)		Data editor
5	modification_date	DATETIME		Data modification date
6	link_image	VARCHAR (255)		Link image of the post
7	post_id	BIGINT (20)	Foreign key (post)	Id of post

• **Table 08: post_forum**

ID	Field	Type	Constraint	Description
1	id	BIGINT (20)	Primary key	Id post in a forum
2	innitiated_date	DATETIME		Data initialization date
3	creator	VARCHAR (255)		Data originator
4	repairer	VARCHAR (255)		Data editor
5	modification_date	DATETIME		Data modification date
6	forum_id	BIGINT (20)	Foreign key (forums)	Id of forum
7	post_id	BIGINT (20)	Foreign key	Id of post

			(post)	
8	status	VARCHAR (255)		Status post in a forum

• **Table 09: comment**

ID	Field	Type	Constraint	Description
1	id	BIGINT (20)	Primary key	Id comment
2	innitiated_date	DATETIME		Data initialization date
3	creator	VARCHAR (255)		Data originator
4	repairer	VARCHAR (255)		Data editor
5	modification_date	DATETIME		Data modification date
6	content	VARCHAR (255)		Content of comment
7	like_comment	INT (11)		Like of comment
8	link_image	TEXT		Link image of comment
9	reply_comment_id	BIGINT (20)		Reply of comment
10	comment_time	DATE		Time comment
11	post_id	BIGINT (20)	Foreign key (post)	Id of post
12	user_id	BIGINT (20)	Foreign key (user)	Id of user comment

• **Table 10: member_event**

ID	Field	Type	Constraint	Description
1	id	BIGINT (20)	Primary key	Id comment
2	innitiated_date	DATETIME		Data initialization date
3	creator	VARCHAR (255)		Data originator
4	repairer	VARCHAR (255)		Data editor
5	modification_date	DATETIME		Data modification date
6	event_id	BIGINT (20)	Foreign key (post)	Id of post
7	user_id	BIGINT (20)	Foreign key (user)	Id of user comment
8	date_of_event	DATE		The date of the event will happen

• **Table 11: notify**

ID	Field	Type	Constraint	Description
1	id	BIGINT (20)	Primary key	Id comment
2	innitiated_date	DATETIME		Data initialization date

3	creator	VARCHAR (255)		Data originator
4	repairer	VARCHAR (255)		Data editor
5	modification_date	DATETIME		Data modification date
6	forum_id	BIGINT (20)	Foreign key (forum)	Id of forum
7	message	VARCHAR (255)		Message of notify
8	post_id	BIGINT (20)	Foreign key (post)	Id of post

• **Table 12: report_post**

ID	Field	Type	Constraint	Description
1	id	BIGINT (20)	Primary key	Id comment
2	innitiated_date	DATETIME		Data initialization date
3	creator	VARCHAR (255)		Data originator
4	repairer	VARCHAR (255)		Data editor
5	modification_date	DATETIME		Data modification date
6	post_id	BIGINT (20)	Foreign key (post)	Id of post reported
7	user_id	BIGINT (20)	Foreign key (user)	Id of user report
8	forum_id	BIGINT (20)	Foreign key (forum)	Id of the forum has post reported
9	reason	VARCHAR (255)		Reason of report

• **Table 13: report_comments**

ID	Field	Type	Constraint	Description
1	id	BIGINT (20)	Primary key	Id comment
2	innitiated_date	DATETIME		Data initialization date
3	creator	VARCHAR (255)		Data originator
4	repairer	VARCHAR (255)		Data editor
5	modification_date	DATETIME		Data modification date
6	comment_id	BIGINT (20)	Foreign key (comment)	Id of comment reported
7	user_id	BIGINT (20)	Foreign key (user)	Id of user report
8	forum_id	BIGINT (20)	Foreign key (forum)	Id of the forum have comments reported
9	reason	VARCHAR (255)		Reason of report

• **Table 14: member_notify**

ID	Field	Type	Constraint	Description
1	id	BIGINT (20)	Primary key	Id comment
2	innitiated_date	DATETIME		Data initialization date
3	creator	VARCHAR (255)		Data originator
4	repairer	VARCHAR (255)		Data editor
5	modification_date	DATETIME		Data modification date
6	notify_id	BIGINT (20)	Foreign key (notify)	Id of notifying
7	user_id	BIGINT (20)	Foreign key (user)	Id of the user receiving the notice
8	status	VARCHAR (255)		Status of notifying the user has read or not

• **Table 15: room_chat**

ID	Field	Type	Constraint	Description
1	id	BIGINT (20)	Primary key	Id comment
2	innitiated_date	DATETIME		Data initialization date
3	creator	VARCHAR (255)		Data originator
4	repairer	VARCHAR (255)		Data editor
5	modification_date	DATETIME		Data modification date
6	status_room	VARCHAR (255)		Status of room chat
7	new_message	VARCHAR (255)		The latest message of room
8	user_id1	BIGINT (20)	Foreign key (user)	Id of user one in-the-room chat
9	user_id2	BIGINT (20)	Foreign key (user)	Id of user two in-the-room chat
10	status_message	VARCHAR (255)		Status of the new message, user have read or not
11	username_recipient	VARCHAR (255)		Username of the recipient message

• **Table 16: report_room**

ID	Field	Type	Constraint	Description
1	id	BIGINT (20)	Primary key	Id comment
2	innitiated_date	DATETIME		Data initialization date
3	creator	VARCHAR (255)		Data originator
4	repairer	VARCHAR (255)		Data editor

5	modification_date	DATETIME		Data modification date
6	room_id	BIGINT (20)	Foreign key (room_chat)	Id of room chat reported
7	user_id	BIGINT (20)	Foreign key (user)	Id of user report room chat
8	reason	VARCHAR (255)		Reason of report
9	message_report	VARCHAR (255)		Message reported
10	userReport	VARCHAR (255)		Reported person
11	status	VARCHAR (255)		Status of the report
12	message_recipient	VARCHAR (255)		The user receives a new message

• *Table 17: chat_message*

ID	Field	Type	Constraint	Description
1	id	BIGINT (20)	Primary key	Id comment
2	innitiated_date	DATETIME		Data initialization date
3	creator	VARCHAR (255)		Data originator
4	repairer	VARCHAR (255)		Data editor
5	modification_date	DATETIME		Data modification date
6	image_chat	TEXT		Link image user send
7	message	TEXT		Message user send in-the-room chat
8	room_id	BIGINT (20)	Foreign key (room_chat)	Id of room chat
9	user_id	BIGINT (20)	Foreign key (user)	Id of user send message

4. Firebase JSON Structure

School_connection

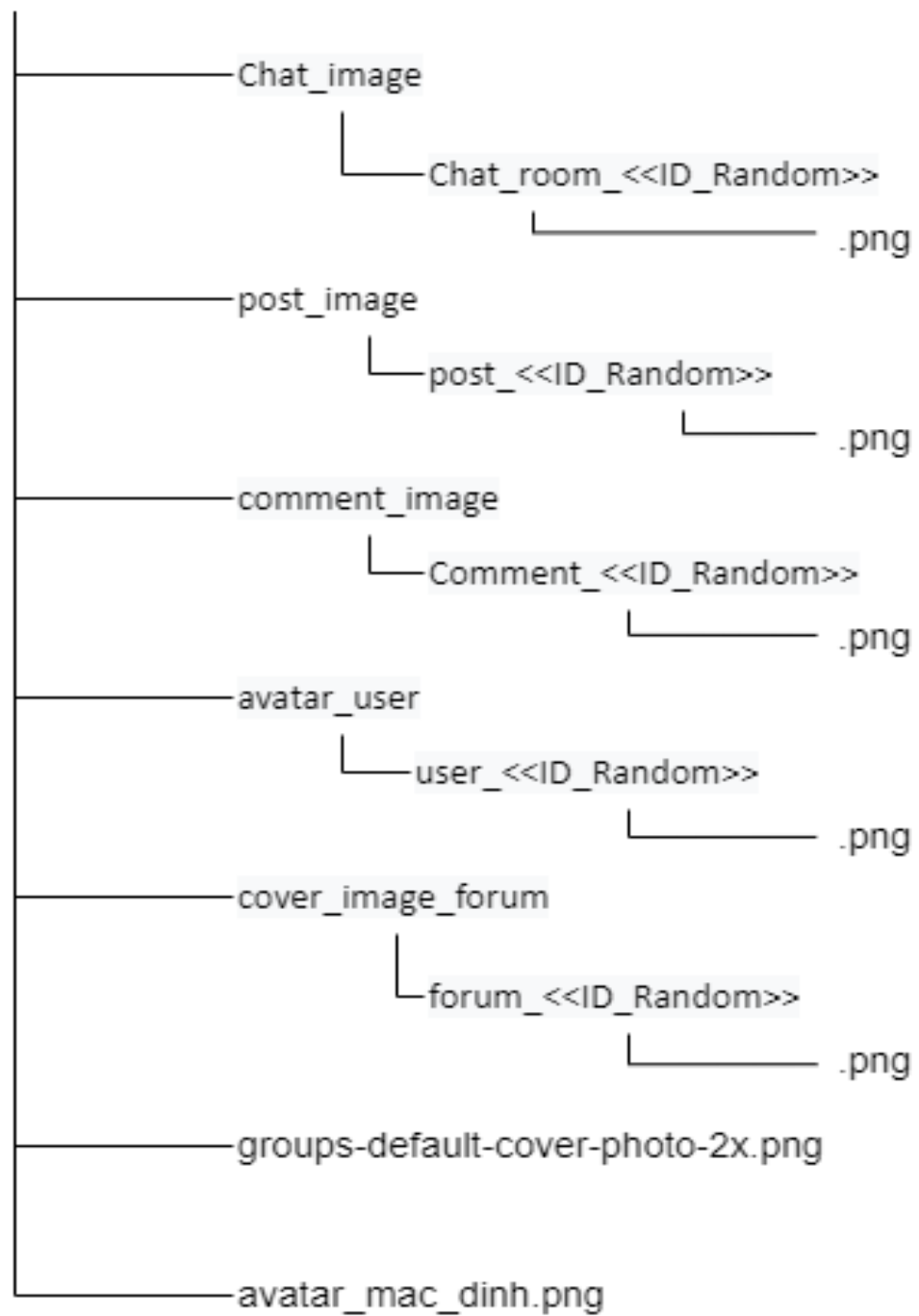


Figure 4: Firebase JSON Structure

4.1 Details

- *Table 19: Details firebase Structure*

Folder	Description
Chat_room<<ID_Random>>	The folder contains an image in the chat
Comment_<<ID_Random>>	The folder contains an image in the comment
post_<<ID_Random>>	The folder contains an image in the post
user_<<ID_Random>>	The folder contains an image in the avatar user
forum_<<ID_Random>>	The folder contains an image in the cover image of the forum
avatar_mac_dinh.png	default image of user avatar
groups-default-cover-photo-2x.png	default image of the cover image in the forum