

International School

**Capstone Project 1**

*CMU-SE 450*

**DATABASE DESIGN**

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**School Connect Application**

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# Project Information

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1. **Introduction**
   1. **Purpose**

Place information system’s database design document describes structure of database and file structure of system. Database Design document will introduce all attribute the System that will help developer and tester base on this design to implement and test.

* 1. **Goal**

To create database tables most accurate.

* 1. **Scope**

This Database Design Document provides the basic 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 tables 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 relationship 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. **Data storage platforms**

- Data of application is stored in MySQL database and Firebase Storage

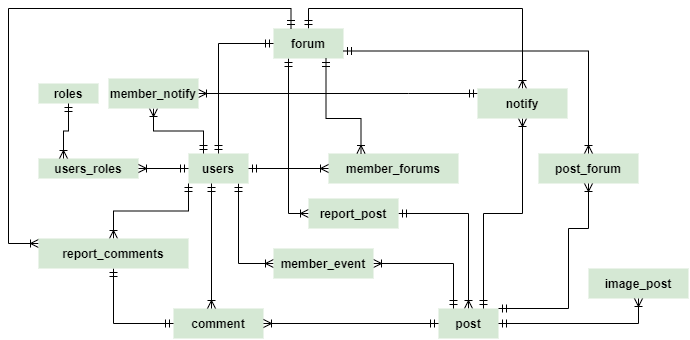
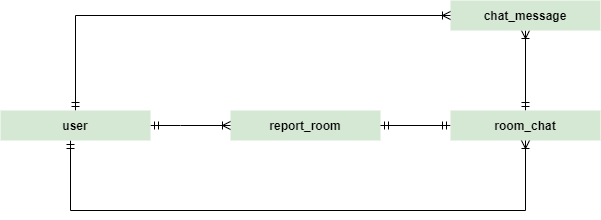
- In MySQL, data structure is stored as tables that the database objects that behave as containers for the data, in which the data will be logically organized in rows and columns format.

- Firebase Storage is a service built for the purpose of storing and managing 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.

1. **Database Diagram**
3. 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 role have in the website |
| 4 | forum | This table shows all forum information including censor of forum. |
| 5 | member\_forums | This table shows all members have in the forum and status of member in forum. |
| 6 | post | This table shows all posts information including user has post |
| 7 | post\_forum | This table shows post in the forum |
| 8 | image\_post | This table shows all link image of the posts. |
| 9 | comment | This table shows all comment of user for the post. |
| 10 | member\_event | This table show all event member has join |
| 11 | member\_notify | This table show all notify for user about new activity in the forum user join |
| 12 | notify | This table show all information notify |
| 13 | report\_comments | This table show all report of comment |
| 14 | report\_post | This table show all report of post |
| 15 | room\_chat | This table show all room of chat |
| 16 | report\_room | This table show all report room of chat by user |
| 17 | chat\_message | This table show all message in the room of chat |

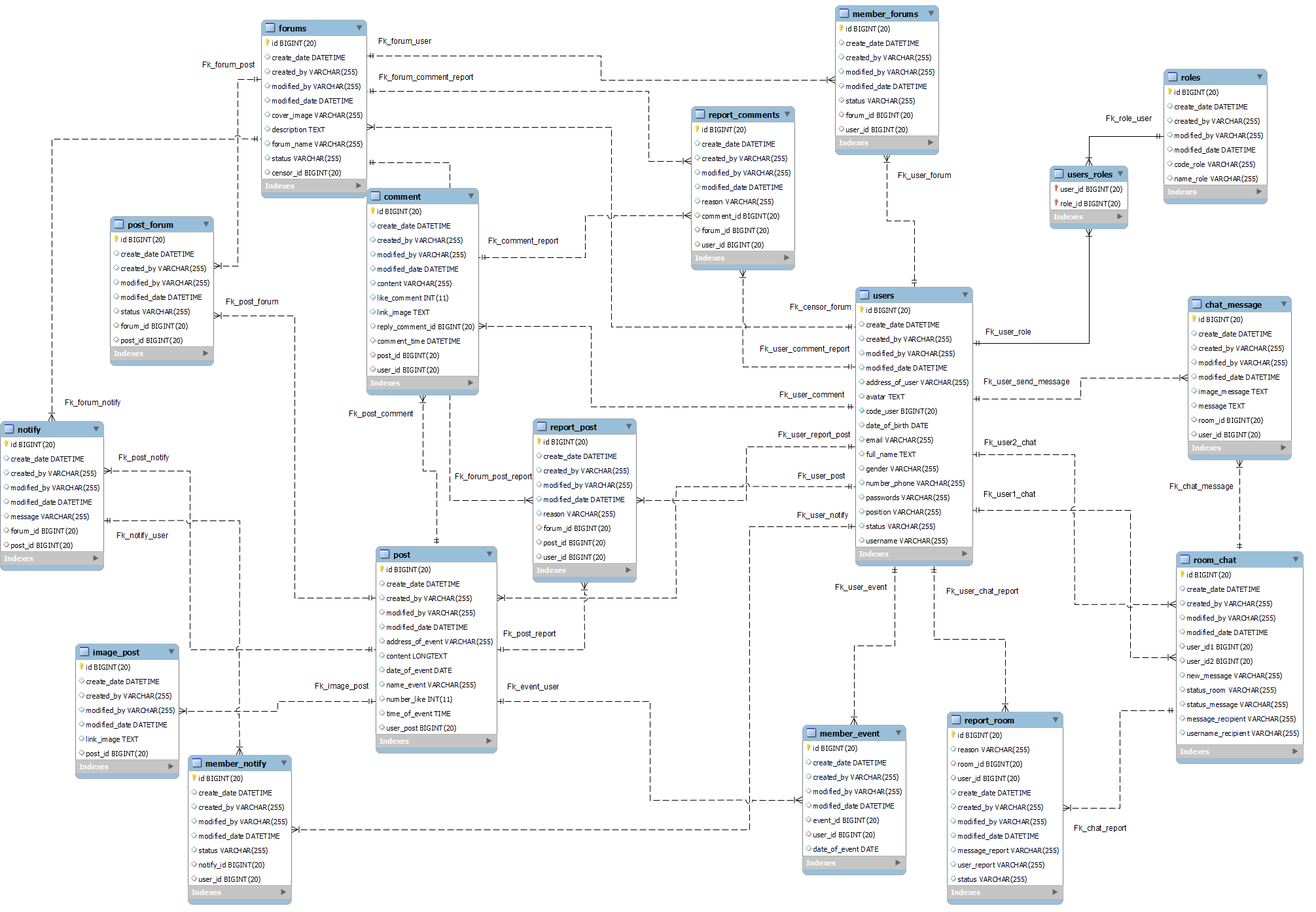
* 1. **Entity Relationship Diagram**

  
  
*Picture 1: Entity Relationship Diagram 1*  
  
*Picture 2: Entity Relationship Diagram 2*



*Picture 3: Lengend Entity Relationship Diagram*

* 1. **Table Diagram**

**** *Picture 4: Table Diagram*

1. **Table Details**

* ***Table 01: user***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Field** | **Type** | **Constraint** | **Description** |
| **1** | id | BIGINT | Primary key | User id |
| **2** | create\_date | DATETIME |  | Record creation date |
| **3** | create\_by | VARCHAR (255) |  | Record creator |
| **4** | modified\_by | VARCHAR (255) |  | Record editor |
| **5** | modified\_date | DATETIME |  | Record edit 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** | create\_date | DATETIME |  | Record creation date |
| **3** | create\_by | VARCHAR (255) |  | Record creator |
| **4** | modified\_by | VARCHAR (255) |  | Record editor |
| **5** | modified\_date | DATETIME |  | Record edit 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** | create\_date | DATETIME |  | Record creation date |
| **3** | create\_by | VARCHAR (255) |  | Record creator |
| **4** | modified\_by | VARCHAR (255) |  | Record editor |
| **5** | modified\_date | DATETIME |  | Record edit 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** | create\_date | DATETIME |  | Record creation date |
| **3** | create\_by | VARCHAR (255) |  | Record creator |
| **4** | modified\_by | VARCHAR (255) |  | Record editor |
| **5** | modified\_date | DATETIME |  | Record edit 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 |

* ***Table 06: post***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Field** | **Type** | **Constraint** | **Description** |
| **1** | id | BIGINT (20) | Primary key | Post id |
| **2** | create\_date | DATETIME |  | Record creation date |
| **3** | create\_by | VARCHAR (255) |  | Record creator |
| **4** | modified\_by | VARCHAR (255) |  | Record editor |
| **5** | modified\_date | DATETIME |  | Record edit 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** | create\_date | DATETIME |  | Record creation date |
| **3** | create\_by | VARCHAR (255) |  | Record creator |
| **4** | modified\_by | VARCHAR (255) |  | Record editor |
| **5** | modified\_date | DATETIME |  | Record edit 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** | create\_date | DATETIME |  | Record creation date |
| **3** | create\_by | VARCHAR (255) |  | Record creator |
| **4** | modified\_by | VARCHAR (255) |  | Record editor |
| **5** | modified\_date | DATETIME |  | Record edit date |
| **6** | forum\_id | BIGINT (20) | Foreign key (forums) | Id of forum |
| **7** | post\_id | BIGINT (20) | Foreign key (post) | Id of 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** | create\_date | DATETIME |  | Record creation date |
| **3** | create\_by | VARCHAR (255) |  | Record creator |
| **4** | modified\_by | VARCHAR (255) |  | Record editor |
| **5** | modified\_date | DATETIME |  | Record edit 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** | create\_date | DATETIME |  | Record creation date |
| **3** | create\_by | VARCHAR (255) |  | Record creator |
| **4** | modified\_by | VARCHAR (255) |  | Record editor |
| **5** | modified\_date | DATETIME |  | Record edit 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** | create\_date | DATETIME |  | Record creation date |
| **3** | create\_by | VARCHAR (255) |  | Record creator |
| **4** | modified\_by | VARCHAR (255) |  | Record editor |
| **5** | modified\_date | DATETIME |  | Record edit 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** | create\_date | DATETIME |  | Record creation date |
| **3** | create\_by | VARCHAR (255) |  | Record creator |
| **4** | modified\_by | VARCHAR (255) |  | Record editor |
| **5** | modified\_date | DATETIME |  | Record edit 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** | create\_date | DATETIME |  | Record creation date |
| **3** | create\_by | VARCHAR (255) |  | Record creator |
| **4** | modified\_by | VARCHAR (255) |  | Record editor |
| **5** | modified\_date | DATETIME |  | Record edit 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 comment 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** | create\_date | DATETIME |  | Record creation date |
| **3** | create\_by | VARCHAR (255) |  | Record creator |
| **4** | modified\_by | VARCHAR (255) |  | Record editor |
| **5** | modified\_date | DATETIME |  | Record edit 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** | create\_date | DATETIME |  | Record creation date |
| **3** | create\_by | VARCHAR (255) |  | Record creator |
| **4** | modified\_by | VARCHAR (255) |  | Record editor |
| **5** | modified\_date | DATETIME |  | Record edit 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 |

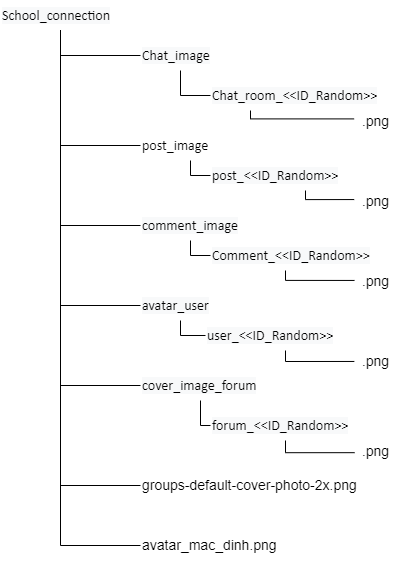
* ***Table 16: report\_room***

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Field** | **Type** | **Constraint** | **Description** |
| **1** | id | BIGINT (20) | Primary key | Id comment |
| **2** | create\_date | DATETIME |  | Record creation date |
| **3** | create\_by | VARCHAR (255) |  | Record creator |
| **4** | modified\_by | VARCHAR (255) |  | Record editor |
| **5** | modified\_date | DATETIME |  | Record edit 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** | create\_date | DATETIME |  | Record creation date |
| **3** | create\_by | VARCHAR (255) |  | Record creator |
| **4** | modified\_by | VARCHAR (255) |  | Record editor |
| **5** | modified\_date | DATETIME |  | Record edit 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 |

1. **Firebase JSON Structure**

*****Figure 4: Firebase JSON Structure*

* 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 |