### Database Design

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### **User Table (User)**

| **Field Name** | **Data Type** | **Description** | **Constraints** |
| --- | --- | --- | --- |
| UserID | INT | User ID | Primary Key, Auto Increment |
| Username | VARCHAR(50) | Username | Not Null |
| Password | VARCHAR(255) | Password | Not Null |
| Email | VARCHAR(100) | Email |  |
| RegisterDate | DATETIME | Registration Date | Default Current Timestamp |

### **Message Table (Message)**

| **Field Name** | **Data Type** | **Description** | **Constraints** |
| --- | --- | --- | --- |
| MessageID | INT | Message ID | Primary Key, Auto Increment |
| SenderID | INT | Sender ID | Foreign Key, References User(UserID) |
| ReceiverID | INT | Receiver ID | Nullable |
| ChatRoomID | INT | Chat Room ID | Foreign Key, References ChatRoom(ChatRoomID), Nullable |
| Content | TEXT | Message Content |  |
| SendTime | DATETIME | Send Time | Default Current Timestamp |
| EmojiID | INT | Emoji ID | Foreign Key, References Emoji(EmojiID), Nullable |

### **Chat Room Table (ChatRoom)**

| **Field Name** | **Data Type** | **Description** | **Constraints** |
| --- | --- | --- | --- |
| ChatRoomID | INT | Chat Room ID | Primary Key, Auto Increment |
| Name | VARCHAR(100) | Chat Room Name | Not Null |
| CreatorID | INT | Creator ID | Foreign Key, References User(UserID) |
| CreateTime | DATETIME | Creation Time | Default Current Timestamp |

### **Emoji Table (Emoji)**

| **Field Name** | **Data Type** | **Description** | **Constraints** |
| --- | --- | --- | --- |
| EmojiID | INT | Emoji ID | Primary Key, Auto Increment |
| Name | VARCHAR(100) | Emoji Name | Not Null |
| ImagePath | VARCHAR(255) | Emoji Image Path | Not Null |
| AddTime | DATETIME | Addition Time | Default Current Timestamp |

### **User-Chat Room Association Table (UserChatRoom)**

| **Field Name** | **Data Type** | **Description** | **Constraints** |
| --- | --- | --- | --- |
| UserID | INT | User ID | Foreign Key, References User(UserID) |
| ChatRoomID | INT | Chat Room ID | Foreign Key, References ChatRoom(ChatRoomID) |
| JoinTime | DATETIME | Join Time | Default Current Timestamp |
|  |  |  | Primary Key (UserID, ChatRoomID) |

### **Relationships Between Tables**

****User and Message****:

Message(SenderID) References User(UserID)

****User and Chat Room****:

UserChatRoom(UserID) References User(UserID)

UserChatRoom(ChatRoomID) References ChatRoom(ChatRoomID)

****Message and Emoji****:

Message(EmojiID) References Emoji(EmojiID)

****Message and Chat Room****:

Message(ChatRoomID) References ChatRoom(ChatRoomID)

****Chat Room and Creator****:

ChatRoom(CreatorID) References User(UserID)