# Database Structure for Code Obfuscation Detection with Real-Time Collaboration and Messaging

## Users Table

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Constraints | Description |
| user\_id | INT | PRIMARY KEY, AUTO\_INCREMENT | Unique identifier for each user. |
| username | VARCHAR(50) | UNIQUE, NOT NULL | Username for login. |
| email | VARCHAR(100) | UNIQUE, NOT NULL | Email for notifications. |
| password\_hash | VARCHAR(255) | NOT NULL | Hashed password for security. |
| created\_at | DATETIME | DEFAULT CURRENT\_TIMESTAMP | Account creation timestamp. |

## Projects Table

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Constraints | Description |
| project\_id | INT | PRIMARY KEY, AUTO\_INCREMENT | Unique identifier for each project. |
| project\_name | VARCHAR(100) | NOT NULL | Name of the project. |
| owner\_id | INT | FOREIGN KEY (users.user\_id) | ID of the user who created the project. |
| created\_at | DATETIME | DEFAULT CURRENT\_TIMESTAMP | Project creation timestamp. |
| updated\_at | DATETIME | DEFAULT CURRENT\_TIMESTAMP ON UPDATE CURRENT\_TIMESTAMP | Last update timestamp. |

## Files Table

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Constraints | Description |
| file\_id | INT | PRIMARY KEY, AUTO\_INCREMENT | Unique identifier for each file. |
| project\_id | INT | FOREIGN KEY (projects.project\_id) | Associated project. |
| file\_name | VARCHAR(100) | NOT NULL | Name of the file. |
| content | TEXT |  | File content. |
| created\_at | DATETIME | DEFAULT CURRENT\_TIMESTAMP | File creation timestamp. |
| updated\_at | DATETIME | DEFAULT CURRENT\_TIMESTAMP ON UPDATE CURRENT\_TIMESTAMP | Last update timestamp. |

## Flags Table

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Constraints | Description |
| flag\_id | INT | PRIMARY KEY, AUTO\_INCREMENT | Unique identifier for each flag. |
| file\_id | INT | FOREIGN KEY (files.file\_id) | Associated file. |
| start\_line | INT | NOT NULL | Starting line of the flagged code. |
| end\_line | INT | NOT NULL | Ending line of the flagged code. |
| issue\_type | VARCHAR(50) |  | Type of issue (e.g., static, dynamic). |
| description | TEXT |  | Details about the flagged issue. |
| flagged\_by | INT | FOREIGN KEY (users.user\_id) | User or system that flagged the issue. |
| created\_at | DATETIME | DEFAULT CURRENT\_TIMESTAMP | Flag creation timestamp. |

## Collaboration Table

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Constraints | Description |
| collab\_id | INT | PRIMARY KEY, AUTO\_INCREMENT | Unique identifier for each entry. |
| project\_id | INT | FOREIGN KEY (projects.project\_id) | Associated project. |
| user\_id | INT | FOREIGN KEY (users.user\_id) | Collaborator user ID. |
| role | ENUM('viewer', 'editor', 'owner') | DEFAULT 'viewer' | Role of the collaborator. |
| joined\_at | DATETIME | DEFAULT CURRENT\_TIMESTAMP | When the collaborator joined. |

## Messages Table

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Constraints | Description |
| message\_id | INT | PRIMARY KEY, AUTO\_INCREMENT | Unique identifier for each message. |
| project\_id | INT | FOREIGN KEY (projects.project\_id) | Associated project. |
| sender\_id | INT | FOREIGN KEY (users.user\_id) | User who sent the message. |
| content | TEXT | NOT NULL | Message content. |
| sent\_at | DATETIME | DEFAULT CURRENT\_TIMESTAMP | Timestamp when the message was sent. |
| view\_at | DATETIME | DEFAULT  CURRENT\_TIMESTAMP | Timestamp when the message is view |

## Notifications Table

|  |  |  |  |
| --- | --- | --- | --- |
| Column Name | Data Type | Constraints | Description |
| notification\_id | INT | PRIMARY KEY, AUTO\_INCREMENT | Unique identifier for notification. |
| user\_id | INT | FOREIGN KEY (users.user\_id) | User to whom the notification is sent. |
| message | TEXT | NOT NULL | Notification message. |
| is\_read | BOOLEAN | DEFAULT FALSE | Whether the notification is read. |
| created\_at | DATETIME | DEFAULT CURRENT\_TIMESTAMP | Notification creation timestamp. |