

***WHATSAPP DATABASE DESIGN SQL IMPLEMENTAION ***

SQL QUERIES:

CREATION OF RELATIONS(TABLES):

```
CREATE TABLE Users (  
    UserID INT AUTO_INCREMENT PRIMARY KEY,  
    PhoneNumber VARCHAR(255) NOT NULL,  
    Username VARCHAR(255) NOT NULL,  
    ProfilePicture VARCHAR(255),  
    Status TEXT,  
    LastSeen TIMESTAMP DEFAULT CURRENT_TIMESTAMP  
);  
CREATE TABLE Contacts (  
    ContactID INT AUTO_INCREMENT PRIMARY KEY,  
    UserID INT NOT NULL,  
    ContactUserID INT NOT NULL,  
    Nickname VARCHAR(255),  
    Blocked BOOLEAN DEFAULT FALSE,  
    FOREIGN KEY (UserID) REFERENCES Users(UserID) ON DELETE CASCADE,  
    FOREIGN KEY (ContactUserID) REFERENCES Users(UserID) ON DELETE CASCADE  
);  
CREATE TABLE ContactDetails (  
    ContactDetailID INT AUTO_INCREMENT PRIMARY KEY,  
    ContactID INT NOT NULL,  
    PhoneNumber VARCHAR(255),  
    FOREIGN KEY (ContactID) REFERENCES Contacts(ContactID) ON DELETE CASCADE  
);  
CREATE TABLE Messages (  
    MessageID INT AUTO_INCREMENT PRIMARY KEY,  
    SenderID INT NOT NULL,  
    ReceiverID INT NOT NULL,  
    Content TEXT,  
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP,  
    FOREIGN KEY (SenderID) REFERENCES Users(UserID),  
    FOREIGN KEY (ReceiverID) REFERENCES Users(UserID)  
);  
CREATE TABLE MessageDetails (  
    MessageDetailID INT AUTO_INCREMENT PRIMARY KEY,  
    MessageID INT NOT NULL,  
    MediaURL VARCHAR(255),  
    Status VARCHAR(255),  
    FOREIGN KEY (MessageID) REFERENCES Messages(MessageID) ON DELETE  
CASCADE
```

```

);
CREATE TABLE Groups (
    GroupID INT AUTO_INCREMENT PRIMARY KEY,
    GroupName VARCHAR(255),
    GroupPicture VARCHAR(255),
    AdminID INT NOT NULL,
    CreationDate TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    FOREIGN KEY (AdminID) REFERENCES Users(UserID) ON DELETE CASCADE
);
CREATE TABLE GroupMembers (
    GroupMemberID INT AUTO_INCREMENT PRIMARY KEY,
    GroupID INT NOT NULL,
    UserID INT NOT NULL,
    JoinDate TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    Role VARCHAR(255),
    FOREIGN KEY (GroupID) REFERENCES Groups(GroupID) ON DELETE CASCADE,
    FOREIGN KEY (UserID) REFERENCES Users(UserID) ON DELETE CASCADE
);

CREATE TABLE Statuses (
    StatusID INT AUTO_INCREMENT PRIMARY KEY,
    UserID INT NOT NULL,
    Content TEXT,
    Timestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    FOREIGN KEY (UserID) REFERENCES Users(UserID) ON DELETE CASCADE
);
CREATE TABLE StatusDetails (
    StatusDetailID INT AUTO_INCREMENT PRIMARY KEY,
    StatusID INT NOT NULL,
    ViewerID INT NOT NULL,
    ViewTimestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    FOREIGN KEY (StatusID) REFERENCES Statuses(StatusID) ON DELETE CASCADE,
    FOREIGN KEY (ViewerID) REFERENCES Users(UserID) ON DELETE CASCADE
);
CREATE TABLE Calls (
    CallID INT AUTO_INCREMENT PRIMARY KEY,
    CallerID INT NOT NULL,
    ReceiverID INT NOT NULL,
    CallTimestamp TIMESTAMP DEFAULT CURRENT_TIMESTAMP,
    FOREIGN KEY (CallerID) REFERENCES Users(UserID),
    FOREIGN KEY (ReceiverID) REFERENCES Users(UserID)
);
CREATE TABLE CallDetails (

```

```
CallDetailID INT AUTO_INCREMENT PRIMARY KEY,  
CallID INT NOT NULL,  
CallDuration INT,  
Status VARCHAR(255),  
FOREIGN KEY (CallID) REFERENCES Calls(CallID) ON DELETE CASCADE  
);
```

INSERTION OF DATA:

=====

-- Insert into Users

```
INSERT INTO Users (PhoneNumber, Username, ProfilePicture, Status)  
VALUES ('1234567890', 'JohnDoe', 'john.jpg', 'Hey there! I am using WhatsApp.').  
('0987654321', 'JaneDoe', 'jane.jpg', 'Busy at the moment.');
```

-- Insert into Contacts

```
INSERT INTO Contacts (UserID, ContactUserID, Nickname, Blocked)  
VALUES (1, 2, 'Jane', FALSE),  
        (2, 1, 'John', FALSE);
```

-- Insert into ContactDetails

```
INSERT INTO ContactDetails (ContactID, PhoneNumber)  
VALUES (1, '0987654321'),  
        (2, '1234567890');
```

-- Insert into Messages

```
INSERT INTO Messages (SenderID, ReceiverID, Content)  
VALUES (1, 2, 'Hey Jane!'),  
        (2, 1, 'Hello John!');
```

-- Insert into MessageDetails

```
INSERT INTO MessageDetails (MessageID, MediaURL, Status)  
VALUES (1, NULL, 'Delivered'),  
        (2, NULL, 'Seen');
```

-- Insert into Groups

```
INSERT INTO Groups (GroupName, GroupPicture, AdminID)  
VALUES ('Friends Group', 'friends.jpg', 1);
```

-- Insert into GroupMembers

```
INSERT INTO GroupMembers (GroupID, UserID, Role)  
VALUES (1, 1, 'Admin'),  
        (1, 2, 'Member');
```

```
-- Insert into Statuses
INSERT INTO Statuses (UserID, Content)
VALUES (1, 'Feeling happy!'),
       (2, 'At the beach.');
```

```
-- Insert into StatusDetails
INSERT INTO StatusDetails (StatusID, ViewerID)
VALUES (1, 2),
       (2, 1);
```

```
-- Insert into Calls
INSERT INTO Calls (CallerID, ReceiverID)
VALUES (1, 2),
       (2, 1);
```

```
-- Insert into CallDetails
INSERT INTO CallDetails (CallID, CallDuration, Status)
VALUES (1, 300, 'Completed'),
       (2, 200, 'Missed');
```

GENERATED TABLES:

• Users Table:

UserID	PhoneNumber	Username	ProfilePicture	Status	LastSeen
1	1234567890	JohnDoe	john.jpg	Hey there! I am using WhatsApp.	2024-10-08 10:00:00
2	0987654321	JaneDoe	jane.jpg	Busy at the moment.	2024-10-08 10:05:00

• Contacts Table:

ContactID	UserID	ContactUserID	Nickname	Blocked
1	1	2	Jane	FALSE
2	2	1	John	FALSE

• ContactDetails Table:

ContactDetailID	ContactID	PhoneNumber
1	1	0987654321
2	2	1234567890

• Messages Table:

MessageID	SenderID	ReceiverID	Content	Timestamp
1	1	2	Hey Jane!	2024-10-08 10:01:00
2	2	1	Hello John!	2024-10-08 10:02:00

• MessageDetails Table:

MessageDetailID	MessageID	MediaURL	Status
1	1	NULL	Delivered
2	2	NULL	Seen

• Groups Table:

GroupID	GroupName	GroupPicture	AdminID	CreationDate
1	Friends Group	friends.jpg	1	2024-10-08 10:00:00

• GroupMembers Table:

GroupMemberID	GroupID	UserID	JoinDate	Role
1	1	1	2024-10-08 10:00:00	Admin
2	1	2	2024-10-08 10:00:00	Member

• Statuses Table:

StatusID	UserID	Content	Timestamp
1	1	Feeling happy!	2024-10-08 10:03:00
2	2	At the beach.	2024-10-08 10:04:00

• StatusDetails Table:

StatusDetailID	StatusID	ViewerID	ViewTimestamp
1	1	2	2024-10-08 10:06:00
2	2	1	2024-10-08 10:07:00

• Calls Table:

CallID	CallerID	ReceiverID	CallTimestamp
1	1	2	2024-10-08 10:08:00
2	2	1	2024-10-08 10:09:00

• CallDetails Table:

CallDetailID	CallID	CallDuration	Status
1	1	300	Completed
2	2	200	Missed

VERIFICATION:

• SELECT * FROM Users;

UserID	PhoneNumber	Username	ProfilePicture	Status	LastSeen
1	1234567890	JohnDoe	john.jpg	Hey there! I am using WhatsApp.	2024-10-08 10:00:00
2	0987654321	JaneDoe	jane.jpg	Busy at the moment.	2024-10-08 10:05:00

SELECT u1.Username AS Sender, u2.Username AS Receiver, m.Content, md.Status

```

FROM Messages m
JOIN MessageDetails md ON m.MessageID = md.MessageID
JOIN Users u1 ON m.SenderID = u1.UserID
JOIN Users u2 ON m.ReceiverID = u2.UserID
WHERE u1.UserID = 1 AND u2.UserID = 2;

```

Sender	Receiver	Content	Status
JohnDoe	JaneDoe	Hey Jane!	Delivered
JaneDoe	JohnDoe	Hello John!	Seen

```

SELECT gm.Role, u.Username
FROM GroupMembers gm
JOIN Users u ON gm.UserID = u.UserID
WHERE gm.GroupID = 1;

```

Role	Username
Admin	JohnDoe
Member	JaneDoe

```

SELECT u.Username AS Viewer, s.Content
FROM StatusDetails sd
JOIN Statuses s ON sd.StatusID = s.StatusID
JOIN Users u ON sd.ViewerID = u.UserID
WHERE s.UserID = 1;

```

Viewer	Content
JaneDoe	Feeling happy!

```

SELECT u1.Username AS Caller, u2.Username AS Receiver, cd.CallDuration, cd.Status
FROM Calls c
JOIN CallDetails cd ON c.CallID = cd.CallID
JOIN Users u1 ON c.CallerID = u1.UserID
JOIN Users u2 ON c.ReceiverID = u2.UserID
WHERE (u1.UserID = 1 AND u2.UserID = 2) OR (u1.UserID = 2 AND u2.UserID = 1);

```

Caller	Receiver	CallDuration	Status
JohnDoe	JaneDoe	300	Completed
JaneDoe	JohnDoe	200	Missed