**TELECOMMUNICATION SYSTEM**

CREATE database TelecommunicationSystem;

use TelecommunicationSystem;

-- Create Subscriber table

CREATE TABLE Subscribers (

SubscriberID INT PRIMARY KEY,

Name VARCHAR(200),

Phone\_number INT(200),

Address VARCHAR(200)

);

-- Insert subscriber data

INSERT INTO Subscribers (SubscriberID, Name, Phone\_number, Address)

VALUES

(1, 'Kavya', '98763452', '2-4/1 Warangal'),

(2, 'Shruthi', '98756783', '3-9/1 Hyderabad'),

(3,'Devika','87456903','4-6/2 Karimnagar'),

(4,'Gayathri','79023456','6-90 Nizamabad'),

(5,'Bhavitha','87123409','576-2 Medak');

SELECT \* from Subscribers;

------------------------------------------------------

SubscriberID Name Phone\_number Address

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1 Kavya 98763452 2-4/1 Warangal

3 Devika 87456903 4-6/2 Karimnagar

4 Gayathri 79023456 6-90 Nizamabad

5 Bhavitha 87123409 Kamareddy

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-- Retrieve subscriber information

SELECT \* FROM Subscribers WHERE SubscriberID = 1;

-- Update subscriber information

UPDATE Subscribers

SET Name = 'Bhavitha',

Address = 'Kamareddy'

WHERE SubscriberID = 5;

-- Delete subscriber

DELETE FROM Subscribers WHERE SubscriberID = 2;

-- Create Calls table

CREATE TABLE Calls (

CallID INT PRIMARY KEY,

SubscriberID INT,

CallDate DATE,

CallTime TIME,

CalledParty VARCHAR(200),

CallDuration INT,

FOREIGN KEY (SubscriberID) REFERENCES Subscribers(SubscriberID)

);

SELECT \* from Calls;

-- Insert call data

INSERT INTO Calls (CallID, SubscriberID, CallDate, CallTime, CalledParty, CallDuration)

VALUES

(1, 1, '2024-03-01', '10:00:00', '9876543210', 30),

(2, 1, '2024-03-02', '11:00:00', '5551234567', 45);

-- Retrieve call details

SELECT \* FROM Calls WHERE SubscriberID = 1;

-- Update call duration

UPDATE Calls

SET CallDuration = 60

WHERE CallID = 1;

-- Create Messages table

CREATE TABLE Messages (

MessageID INT PRIMARY KEY,

SubscriberID INT,

MessageDate DATE,

MessageTime TIME,

MessageType VARCHAR(10),

MessageContent VARCHAR(255),

FOREIGN KEY (SubscriberID) REFERENCES Subscribers(SubscriberID)

);

-- Insert message data

INSERT INTO Messages (MessageID, SubscriberID, MessageDate, MessageTime, MessageType, MessageContent)

VALUES

(1, 1, '2024-03-01', '10:05:00', 'SMS', 'Hello, how are you?'),

(2, 1, '2024-03-02', '11:10:00', 'MMS', 'Check out this image');

-- Retrieve message details

SELECT \* FROM Messages WHERE SubscriberID = 1;

-- Create Billing\_Cycles table

CREATE TABLE Billing\_Cycles (

BillingCycleID INT PRIMARY KEY,

SubscriberID INT,

BillingDate DATE,

Amount DECIMAL(10, 2),

FOREIGN KEY (SubscriberID) REFERENCES Subscribers(SubscriberID));

-- Insert billing cycle data

INSERT INTO Billing\_Cycles (BillingCycleID, SubscriberID, BillingDate, Amount)

VALUES

(1, 1, '2024-03-01', 100.00),

(2, 1, '2024-04-01', 120.00);

SELECT \* from Billing\_Cycles;

-- Retrieve billing cycle information

SELECT \* FROM Billing\_Cycles WHERE SubscriberID = 1;

----------------------------------------------------------------------------------

BillingCycleID SubscriberID BillingDate Amount

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-- Retrieve subscriber call history

SELECT S.Name, C.CallDate, C.CallTime, C.CalledParty, C.CallDuration

FROM Subscribers S

JOIN Calls C ON S.SubscriberID = C.SubscriberID;

-- Retrieve subscriber message history

SELECT S.Name, M.MessageDate, M.MessageTime, M.MessageType, M.MessageContent

FROM Subscribers S

JOIN Messages M ON S.SubscriberID = M.SubscriberID;

Here is an ER (Entity-Relationship) diagram for the Telecommunication System:

Entities:

1. Subscriber

- Subscriber ID (Primary Key)

- Name

- Phone Number

- Address

1. Call

- Call ID (Primary Key)

- Subscriber ID (Foreign Key)

- Call Date

- Call Time

- Called Party

- Call Duration

1. Message

- Message ID (Primary Key)

- Subscriber ID (Foreign Key)

- Message Date

- Message Time

- Message Type

- Message Content

1. Billing Cycle

- Billing Cycle ID (Primary Key)

- Subscriber ID (Foreign Key)

- Billing Date

- Amount

1. Payment

- Payment ID (Primary Key)

- Billing Cycle ID (Foreign Key)

- Payment Date

- Payment Method

1. Network Element

- Network Element ID (Primary Key)

- Type

- Location

1. Inventory

- Inventory ID (Primary Key)

- Equipment Type

- Quantity

Relationships:

- A subscriber makes multiple calls (One-to-Many).

- A call is made by one subscriber (Many-to-One).

- A subscriber sends/receives multiple messages (One-to-Many).

- A message is sent/received by one subscriber (Many-to-One).

- A subscriber has multiple billing cycles (One-to-Many).

- A billing cycle is associated with one subscriber (Many-to-One).

- A billing cycle has multiple payments (One-to-Many).

- A payment is made for one billing cycle (Many-to-One).

- A network element is associated with multiple subscribers (Many-to-Many).

- An inventory item is associated with multiple network elements (Many-to-Many).

Notations:

- Rectangles represent entities.

- Ellipses represent attributes.

- Lines represent relationships.

- Crow's foot notation indicates cardinality:

- One-to-One (1|1)

- One-to-Many (1|\*)

- Many-to-One (\*|1)

- Many-to-Many (|)

ER Diagram:

+---------------+

| Subscriber |

+---------------+

| Subscriber ID |

| Name |

| Phone Number |

| Address |

+---------------+

|

| 1 \*

v

+---------------+

| Call |

+---------------+

| Call ID |

| Subscriber |

| Call Date |

| Call Time |

| Called Party|

| Call Duration|

+---------------+

|

| 1 \*

v

+---------------+

| Message |

+---------------+

| Message ID |

| Subscriber |

| Message Date|

| Message Time|

| Message Type|

| Message Content|

+---------------+

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| 1 \*

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+---------------+

| Billing Cycle|

+---------------+

|Billing Cycle |

| Subscriber |

| Billing Date |

| Amount |

+---------------+

|

| 1 \*

v

+---------------+

| Payment |

+---------------+

| Payment ID |

|Billing Cycle |

| Payment Date |

| Payment Method|

+---------------+

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-- Retrieve subscriber call history

SELECT S.Name, C.CallDate, C.CallTime, C.CalledParty, C.CallDuration

FROM Subscribers S

JOIN Calls C ON S.SubscriberID = C.SubscriberID;

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Name CallDate CallTime CalledParty CallDuration

--------------------------------------------------------------------------------

Khavya 2024-03-01 10:00:00 9876543210 60

Khavya 2024-03-02 11:00:00 5551234567 45

--------------------------------------------------------------------------------

-- Retrieve subscriber message history

SELECT S.Name, M.MessageDate, M.MessageTime, M.MessageType, M.MessageContent

FROM Subscribers S

JOIN Messages M ON S.SubscriberID = M.SubscriberID;

-------------------------------------------------------------------------------------------------

Name MessageDate MessageTime MessageType MessageContent

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Khavya 2024-03-01 10:05:00 SMS Hello, how are you?

Khavya 2024-03-02 11:10:00 MMS Check out this image

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