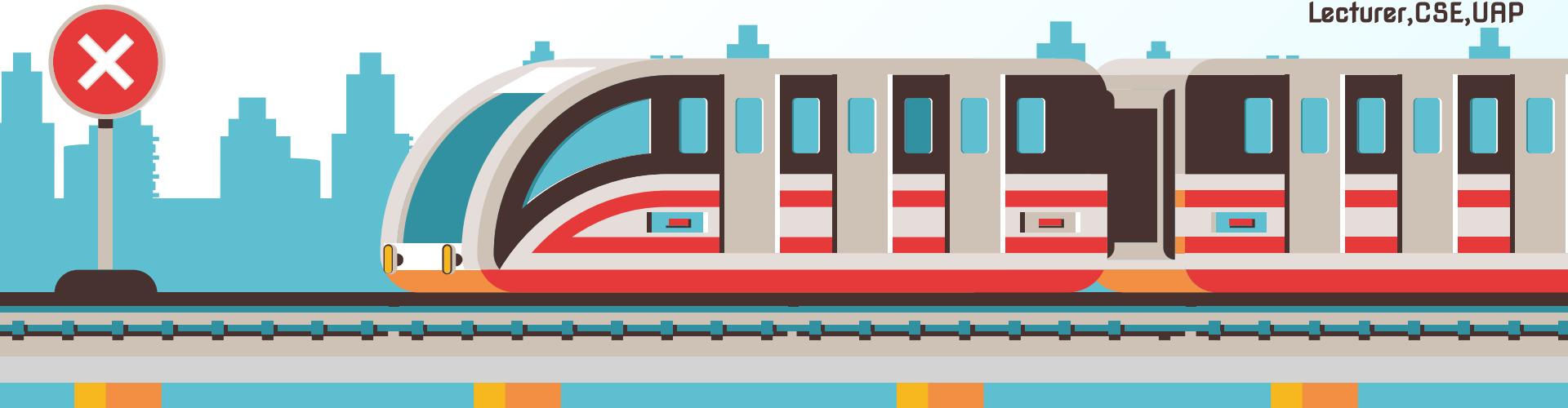


TrackTime

Presented By
Team:Octopus

Submitted to:
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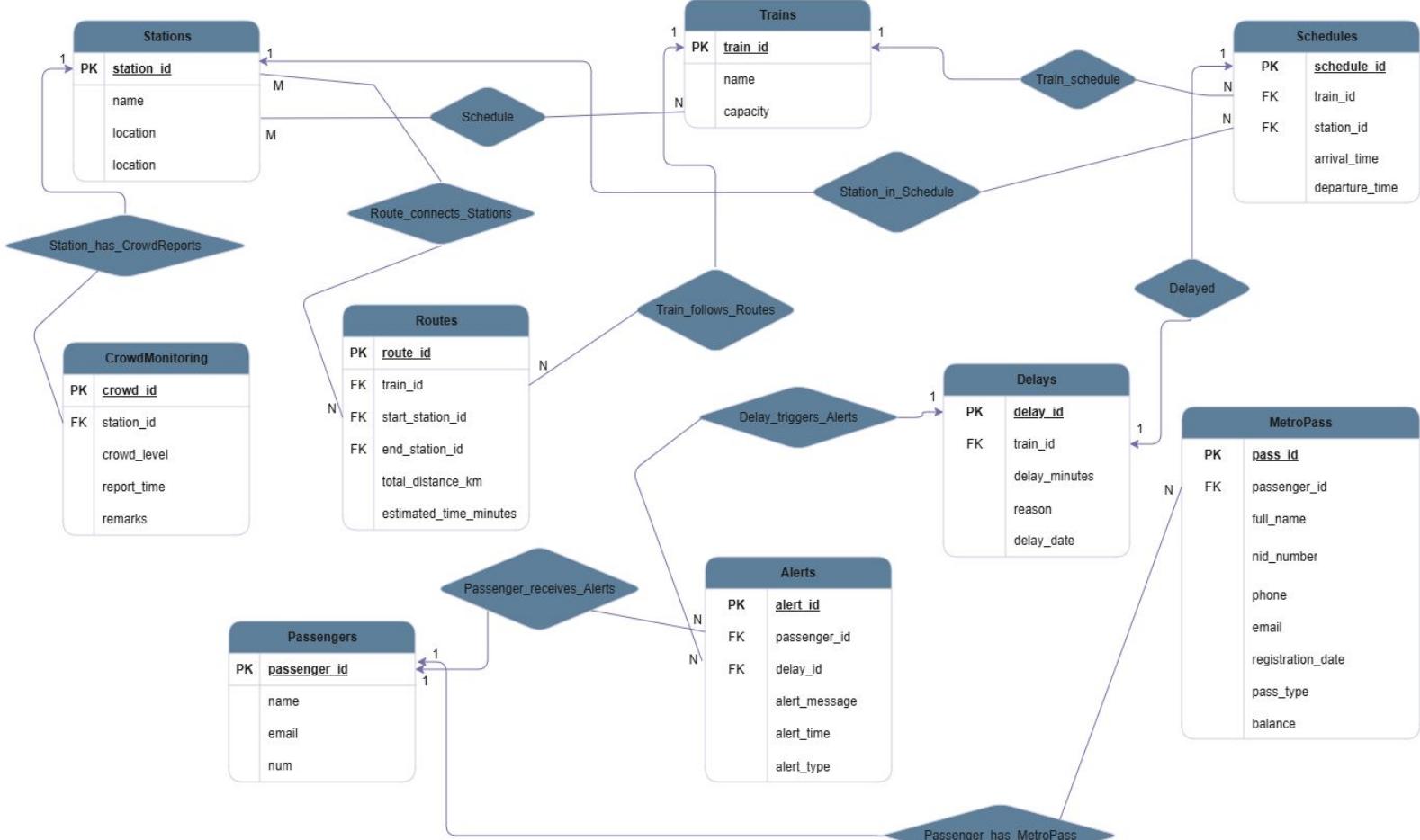
Introduction

TrackTime is a database management system designed to efficiently monitor and manage metro train operations.

It focuses on organizing train schedules, tracking delays, and delivering real-time passenger notifications, ensuring commuters stay informed and experience smooth, reliable travel.



ER Diagram



Entity Relationships

Train_schedule:

Train → Schedule : (One-to-Many) → A train can have many schedules, but each schedule belongs to only one train.

Station_in_Schedule:

Station → Schedule : (One-to-Many) → A station can appear in multiple schedules, while each schedule record refers to one station.

Train_follows_Routes:

Train → Route : (One-to-Many) → A train can follow multiple routes, and each route is assigned to one train.



Train ↔ Station (via Schedule) : (Many-to-Many) → A train can stop at many stations, and a station can serve many trains, represented through the Schedule entity.

Route_connects_Stations:

Route - Station : (Many-to-Many) → A route connects multiple stations, and a station can belong to multiple routes.

Station_has_CrowdReports:

Station → CrowdMonitoring : (One-to-Many) → A station can have several crowd monitoring reports; each report belongs to one station.

Delayed:

Schedule → Delays : (One-to-Many) → A schedule can have multiple delay records, but each delay belongs to one specific schedule/train.

Delay_triggers_Alerts:

Delay → Alerts : (One-to-Many) → A delay can trigger multiple alerts; each alert corresponds to one delay

Passenger_receives_Alerts:

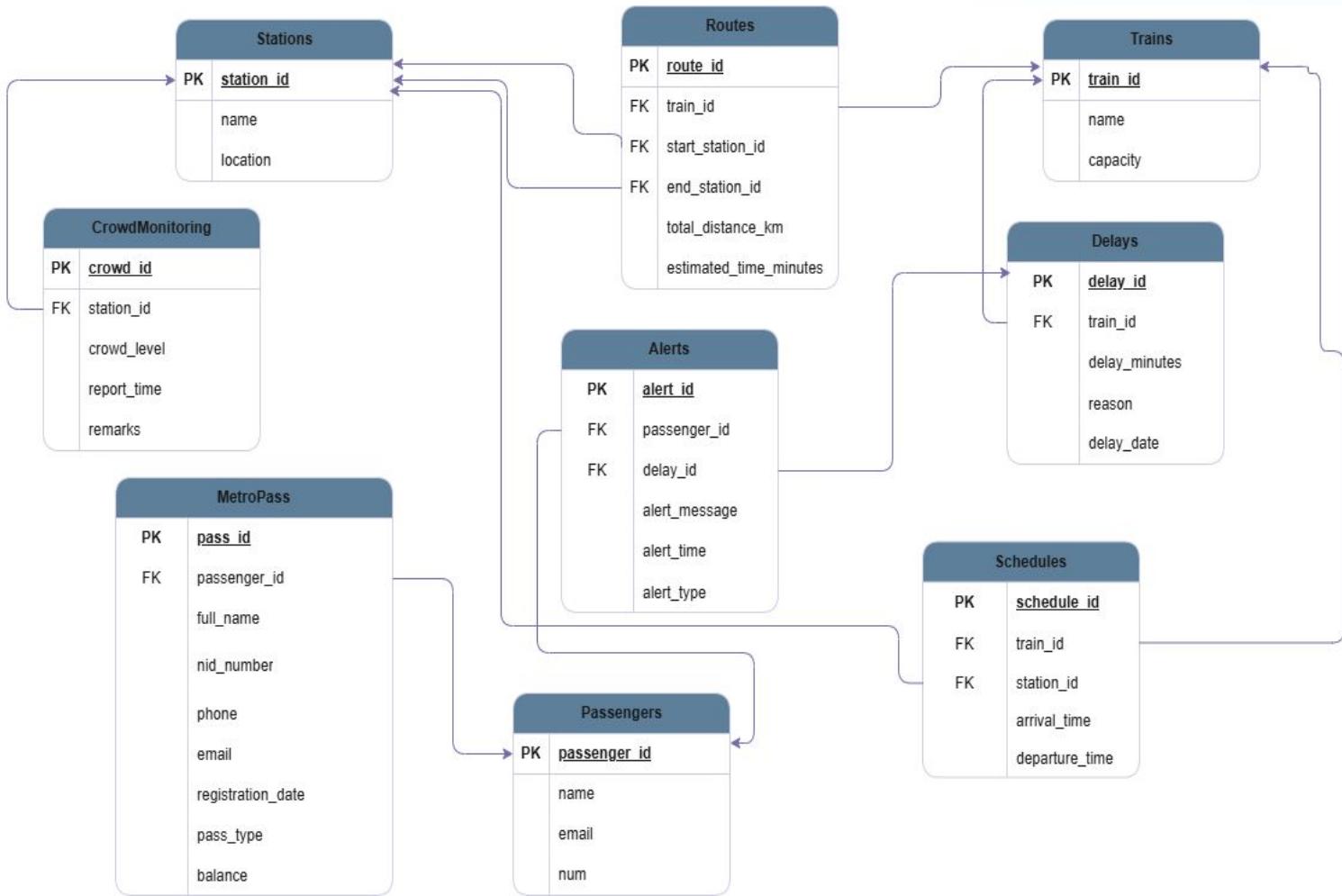
Passenger → Alerts : (One-to-Many) → A passenger can receive many alerts, while each alert is sent to one passenger.

Passenger_has_MetroPass:

Passenger → MetroPass : (One-to-Many) → A passenger can own multiple metro passes, but each metro pass belongs to one passenger.

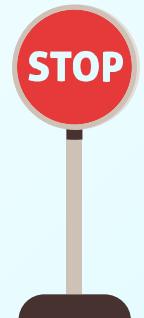


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Entity Attributes

- **Trains** : train_id[PK] , name , capacity
- **Stations** : station_id[PK] , name , location
- **Passengers** : passenger_id[PK] , name , email , num
- **MetroPass** : pass_id[PK] , passenger_id[FK], Full_name , nid_number , phone , email , registration_date , pass_type , balance
- **Schedules** : schedule_id[PK] , train_id[FK] , station_id[FK] , arrival_time,departure_time
- **Delays** : delay_id[PK] , schedule_id[FK] , delay_minutes,reason , delay_date
- **Alerts** : alert_id[PK],passenger_id[FK] , delay_id[FK] , alert_message,alert_time , alert_type
- **CrowdMonitoring** : crowd_id[PK], station_id[FK] , crowd_level , report_time , remarks
- **Routes** : route_id[PK] , train_id[FK] , start_station_id[FK], end_station_id[FK] , total_distance_km , estimated_time_minutes



Tables

```
-- Stations
CREATE TABLE Stations (
    station_id INT PRIMARY KEY AUTO_INCREMENT,
    name VARCHAR(100) NOT NULL,
    location VARCHAR(100)
);

INSERT INTO Stations (station_Id, name, location) VALUES
(1, 'Uttara Center', 'Uttara, Dhaka'),
(2, 'Uttara South', 'Uttara, Dhaka'),
(3, 'Pallabi', 'Mirpur, Dhaka'),
(4, 'Mirpur 11', 'Mirpur, Dhaka'),
(5, 'Mirpur 10', 'Mirpur, Dhaka'),
(6, 'Kazipara', 'Mirpur, Dhaka'),
(7, 'Shewrapara', 'Mirpur, Dhaka'),
(8, 'Agargaon', 'Agargaon, Dhaka'),
(9, 'Bijoy Sarani', 'Tejgaon, Dhaka'),
(10, 'Farmgate', 'Farmgate, Dhaka'),
(11, 'Kawran Bazar', 'Kawran Bazar, Dhaka'),
(12, 'Shahbagh', 'Shahbagh, Dhaka'),
(13, 'Dhaka University', 'Dhaka University Campus'),
(14, 'Bangladesh Secretariat', 'Secretariat, Dhaka'),
(15, 'Motijheel', 'Motijheel, Dhaka'),
(16, 'Kamalapur', 'Kamalapur, Dhaka');
```

--Trains

```
CREATE TABLE Trains (
    train_id INT PRIMARY KEY AUTO_INCREMENT,
    name VARCHAR(100) NOT NULL,
    capacity INT
);
```

```
INSERT INTO Trains (train_Id, name, capacity) VALUES
(1, 'MRT-6 Uttara Express 01', 600),
(2, 'MRT-6 Uttara Express 02', 620),
(3, 'MRT-6 Uttara Express 03', 610),
(4, 'MRT-6 Uttara Express 04', 630),
(5, 'MRT-6 Uttara Express 05', 640),
(6, 'MRT-6 Motijheel Express 01', 600),
(7, 'MRT-6 Motijheel Express 02', 615),
(8, 'MRT-6 Motijheel Express 03', 625),
(9, 'MRT-6 Motijheel Express 04', 610),
(10, 'MRT-6 Motijheel Express 05', 620),
(11, 'MRT-6 Uttara Commuter 01', 580),
(12, 'MRT-6 Uttara Commuter 02', 600),
(13, 'MRT-6 Motijheel Commuter 01', 590),
(14, 'MRT-6 Motijheel Commuter 02', 610),
(15, 'MRT-6 Express Link 01', 700);
```

```
-- Passengers
CREATE TABLE Passengers (
    passenger_id INT PRIMARY KEY AUTO_INCREMENT,
    name VARCHAR(50) NOT NULL,
    email VARCHAR(100) NOT NULL,
    num CHAR(15)
);

-- Passengers
INSERT INTO Passengers (passenger_id, name, email, num) VALUES
(1, 'Alice Rahman', 'alice@example.com', '01710000001'),
(2, 'Bob Karim', 'bob@example.com', '01710000002'),
(3, 'Cathy Alam', 'cathy@example.com', '01710000003'),
(4, 'David Chowdhury', 'david@example.com', '01710000004'),
(5, 'Ema Hasan', 'ema@example.com', '01710000005'),
(6, 'Farhan Islam', 'farhan@example.com', '01710000006'),
(7, 'Gina Sultana', 'gina@example.com', '01710000007'),
(8, 'Hadi Khan', 'hadi@example.com', '01710000008'),
(9, 'Ina Roy', 'ina@example.com', '01710000009'),
(10, 'Jamil Ahmed', 'jamil@example.com', '01710000010'),
(11, 'Kazia Begum', 'kazia@example.com', '01710000011'),
(12, 'Liton Das', 'liton@example.com', '01710000012'),
(13, 'Mina Chowdhury', 'mina@example.com', '01710000013'),
(14, 'Nashit Hossain', 'nashit@example.com', '01710000014'),
(15, 'Oliya Rahman', 'oliya@example.com', '01710000015'),
(16, 'Rana Sarker', 'rana@example.com', '01710000016'),
(17, 'Sadia Noor', 'sadia@example.com', '01710000017'),
(18, 'Tariq Hossain', 'tariq@example.com', '01710000018'),
(19, 'Fariha Akter', 'fariha@example.com', '01710000019'),
(20, 'Zahin Ahmed', 'zahin@example.com', '01710000020');
```

```
-- MetroPass
CREATE TABLE MetroPass (
    pass_id INT PRIMARY KEY AUTO_INCREMENT,
    passenger_id INT,
    full_name VARCHAR(100) NOT NULL,
    nid_number VARCHAR(20) UNIQUE NOT NULL,
    phone CHAR(15) NOT NULL,
    email VARCHAR(100) NOT NULL,
    registration_date DATETIME DEFAULT CURRENT_TIMESTAMP,
    pass_type VARCHAR(30),
    balance DECIMAL(10,2) DEFAULT 0.00,
    FOREIGN KEY (passenger_id) REFERENCES Passengers(passenger_id) ON DELETE CASCADE
);
INSERT INTO MetroPass (passenger_id, full_name, nid_number, phone, email, pass_type, balance) VALUES
(C1, 'Alice Rahman', '1001', '01710000001', 'alice@example.com', 'MRT', 500.00),
(C2, 'Bob Karim', '1002', '01710000002', 'bob@example.com', 'MRT', 200.00),
(C3, 'Cathy Alam', '1003', '01710000003', 'cathy@example.com', 'RAPID', 450.00),
(C4, 'David Chowdhury', '1004', '01710000004', 'david@example.com', 'MRT', 1200.00),
(C5, 'Ema Hasan', '1005', '01710000005', 'ema@example.com', 'MRT', 180.00),
(C6, 'Farhan Islam', '1006', '01710000006', 'farhan@example.com', 'RAPID', 550.00),
(C7, 'Gina Sultana', '1007', '01710000007', 'gina@example.com', 'MRT', 400.00),
(C8, 'Hadi Khan', '1008', '01710000008', 'hadi@example.com', 'RAPID', 220.00),
(C9, 'Ina Roy', '1009', '01710000009', 'ina@example.com', 'RAPID', 1300.00),
(C10, 'Jamil Ahmed', '1010', '01710000010', 'jamil@example.com', 'MRT', 500.00),
(C11, 'Kazia Begum', '1011', '01710000011', 'kazia@example.com', 'RAPID', 190.00),
(C12, 'Liton Das', '1012', '01710000012', 'liton@example.com', 'MRT', 480.00),
(C13, 'Mina Chowdhury', '1013', '01710000013', 'mina@example.com', 'RAPID', 1250.00),
(C14, 'Nashit Hossain', '1014', '01710000014', 'nashit@example.com', 'RAPID', 520.00),
(C15, 'Oliya Rahman', '1015', '01710000015', 'oliya@example.com', 'MRT', 210.00);
```

```
--Routes
CREATE TABLE Routes (
    route_id INT PRIMARY KEY AUTO_INCREMENT,
    train_id INT,
    start_station_id INT,
    end_station_id INT,
    total_distance_km DECIMAL(5,2),
    estimated_time_minutes INT,
    FOREIGN KEY (train_id) REFERENCES Trains(train_id),
    FOREIGN KEY (start_station_id) REFERENCES Stations(station_id),
    FOREIGN KEY (end_station_id) REFERENCES Stations(station_id)
);

INSERT INTO Routes (train_id, start_station_id, end_station_id, total_distance_km, estimated_time_minutes) VALUES
(1, 1, 5, 25.50, 40),
(1, 2, 4, 18.00, 30),
(2, 1, 3, 20.00, 35),
(2, 2, 5, 22.50, 38),
(3, 3, 1, 25.00, 45),
(3, 4, 5, 15.00, 25),
(4, 5, 2, 28.00, 50),
(4, 1, 4, 30.00, 55),
(5, 2, 3, 17.50, 28),
(5, 3, 4, 19.00, 32),
(1, 1, 3, 22.00, 36),
(2, 4, 1, 24.00, 40),
(3, 2, 5, 26.50, 48),
(4, 3, 5, 20.00, 34),
(5, 1, 5, 29.00, 52);
```

--Schedules

```
CREATE TABLE Schedules (
    schedule_id INT PRIMARY KEY AUTO_INCREMENT,
    train_id INT,
    station_id INT,
    arrival_time DATETIME,
    departure_time DATETIME,
    FOREIGN KEY (train_id) REFERENCES Trains(train_id) ON DELETE CASCADE,
    FOREIGN KEY (station_id) REFERENCES Stations(station_id) ON DELETE CASCADE
);
```

```
INSERT INTO Schedules (train_id, station_id, arrival_time, departure_time) VALUES
(1, 1, '2025-10-21 08:00:00', '2025-10-21 08:10:00'),
(1, 2, '2025-10-21 08:30:00', '2025-10-21 08:35:00'),
(1, 3, '2025-10-21 09:00:00', '2025-10-21 09:05:00'),
(2, 1, '2025-10-21 08:15:00', '2025-10-21 08:25:00'),
(2, 4, '2025-10-21 08:50:00', '2025-10-21 08:55:00'),
(2, 5, '2025-10-21 09:20:00', '2025-10-21 09:25:00'),
(3, 2, '2025-10-21 07:50:00', '2025-10-21 08:00:00'),
(3, 3, '2025-10-21 08:40:00', '2025-10-21 08:45:00'),
(3, 5, '2025-10-21 09:30:00', '2025-10-21 09:35:00'),
(4, 1, '2025-10-21 06:30:00', '2025-10-21 06:40:00'),
(4, 4, '2025-10-21 07:10:00', '2025-10-21 07:15:00'),
(4, 5, '2025-10-21 07:50:00', '2025-10-21 07:55:00'),
(5, 3, '2025-10-21 09:15:00', '2025-10-21 09:25:00'),
(5, 4, '2025-10-21 09:55:00', '2025-10-21 10:00:00'),
(5, 2, '2025-10-21 10:30:00', '2025-10-21 10:35:00');
```

--Delays

```
CREATE TABLE Delays (
    delay_id INT PRIMARY KEY AUTO_INCREMENT,
    schedule_id INT,
    delay_minutes INT,
    reason VARCHAR(100),
    delay_date DATE,
    FOREIGN KEY (schedule_id) REFERENCES Schedules(schedule_id) ON DELETE CASCADE
);
```

```
INSERT INTO Delays (schedule_id, delay_minutes, reason, delay_date) VALUES
(1, 5, 'Technical issue', '2025-10-21'),
(2, 10, 'Signal problem', '2025-10-21'),
(3, 3, 'Late arrival of previous train', '2025-10-21'),
(4, 7, 'Track maintenance', '2025-10-21'),
(5, 15, 'Weather conditions', '2025-10-21'),
(6, 2, 'Passenger boarding delay', '2025-10-21'),
(7, 0, 'No delay', '2025-10-21'),
(8, 12, 'Mechanical failure', '2025-10-21'),
(9, 5, 'Crew change', '2025-10-21'),
(10, 8, 'Power supply issue', '2025-10-21'),
(11, 4, 'Minor accident nearby', '2025-10-21'),
(12, 6, 'Track obstruction', '2025-10-21'),
(13, 0, 'No delay', '2025-10-21'),
(14, 9, 'High passenger load', '2025-10-21'),
(15, 11, 'Operational adjustment', '2025-10-21');
```

-- Alerts

```
CREATE TABLE Alerts (
    alert_id INT PRIMARY KEY AUTO_INCREMENT,
    passenger_id INT,
    delay_id INT,
    alert_message VARCHAR(255),
    alert_time DATETIME,
    alert_type VARCHAR(30),
    FOREIGN KEY (passenger_id) REFERENCES Passengers(passenger_id) ON DELETE CASCADE,
    FOREIGN KEY (delay_id) REFERENCES Delays(delay_id) ON DELETE CASCADE
);

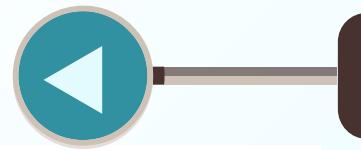
INSERT INTO Alerts (passenger_id, delay_id, alert_message, alert_time, alert_type) VALUES
(1, 1, 'Train MRT-6 Uttara Express 01 delayed by 5 minutes due to technical issue.', '2025-10-21 08:05:00', 'Delay Notification'),
(2, 2, 'Signal problem causing 10-minute delay for MRT-6 Uttara Express 01.', '2025-10-21 08:30:00', 'Delay Notification'),
(3, 3, 'Previous train delay affecting schedule.', '2025-10-21 08:45:00', 'Schedule Update'),
(4, 4, 'Track maintenance ongoing on MRT line 2.', '2025-10-21 09:00:00', 'Maintenance Alert'),
(5, 5, 'Weather conditions affecting service timing.', '2025-10-21 09:10:00', 'Weather Update'),
(6, 6, 'Minor delay due to boarding time.', '2025-10-21 09:20:00', 'Delay Notice'),
(7, 7, 'All trains running on time.', '2025-10-21 09:25:00', 'Service Normal'),
(8, 8, 'Mechanical failure on MRT-6 Motijheel Express 03.', '2025-10-21 09:35:00', 'Critical Alert'),
(9, 9, 'Crew change delay at Mirpur station.', '2025-10-21 09:45:00', 'Crew Alert'),
(10, 10, 'Power supply issue under repair.', '2025-10-21 09:55:00', 'System Alert'),
(11, 11, 'Minor accident cleared; services resuming.', '2025-10-21 10:05:00', 'Safety Notice'),
(12, 12, 'Track obstruction causing temporary hold.', '2025-10-21 10:15:00', 'Track Alert'),
(13, 13, 'Train running smoothly with no delay.', '2025-10-21 10:20:00', 'Positive Update'),
(14, 14, 'High passenger load causing short delays.', '2025-10-21 10:30:00', 'Passenger Info'),
(15, 15, 'Operational adjustment: expect 11-minute delay.', '2025-10-21 10:40:00', 'Operational Notice');
```

-- Crowd Monitoring

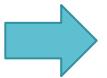
```
CREATE TABLE CrowdMonitoring (
    crowd_id INT PRIMARY KEY AUTO_INCREMENT,
    station_id INT,
    crowd_level ENUM('Low', 'Medium', 'High') NOT NULL,
    report_time DATETIME DEFAULT CURRENT_TIMESTAMP,
    remarks VARCHAR(255),
    FOREIGN KEY (station_id) REFERENCES Stations(station_id)
);
```

```
INSERT INTO CrowdMonitoring (station_id, crowd_level, report_time, remarks) VALUES
(1, 'High', '2025-10-20 08:30:00', 'Morning rush hour'),
(2, 'Medium', '2025-10-20 09:00:00', 'Moderate traffic'),
(3, 'Low', '2025-10-20 10:00:00', 'Very few passengers'),
(4, 'High', '2025-10-20 07:45:00', 'Holiday crowd'),
(5, 'Medium', '2025-10-20 11:15:00', 'Regular morning'),
(6, 'Low', '2025-10-20 12:30:00', 'Off-peak hour'),
(7, 'High', '2025-10-20 17:30:00', 'Evening office return'),
(8, 'Medium', '2025-10-20 15:00:00', 'Usual movement'),
(9, 'Low', '2025-10-20 13:45:00', 'Less crowd'),
(10, 'High', '2025-10-20 18:00:00', 'Heavy commuter flow'),
(11, 'Medium', '2025-10-20 16:00:00', 'Busy but manageable'),
(12, 'Low', '2025-10-20 14:00:00', 'Quiet hour'),
(13, 'Medium', '2025-10-20 19:00:00', 'Steady stream of people'),
(14, 'High', '2025-10-20 08:00:00', 'Packed platforms'),
(15, 'Low', '2025-10-20 20:00:00', 'End of day quietness');
```

Queries and Outputs



```
SELECT * FROM Stations;
```



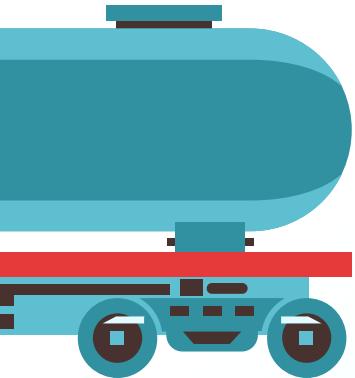
Output:

station_id	name	location
1	Uttara Center	Uttara, Dhaka
2	Uttara South	Uttara, Dhaka
3	Pallabi	Mirpur, Dhaka
4	Mirpur 11	Mirpur, Dhaka
5	Mirpur 10	Mirpur, Dhaka
6	Kazipara	Mirpur, Dhaka
7	Shewrapara	Mirpur, Dhaka
8	Agargaon	Agargaon, Dhaka
9	Bijoy Sarani	Tejgaon, Dhaka
10	Farmgate	Farmgate, Dhaka
11	Kawran Bazar	Kawran Bazar, Dhaka
12	Shahbagh	Shahbagh, Dhaka
13	Dhaka University	Dhaka University Campus
14	Bangladesh Secretariat	Secretariat, Dhaka
15	Motijheel	Motijheel, Dhaka
16	Kamalapur	Kamalapur, Dhaka

Output:

station_id	name	location
1	Uttara Center	Uttara, Dhaka
2	Uttara South	Uttara, Dhaka
3	Pallabi	Mirpur, Dhaka
4	Mirpur 11	Mirpur, Dhaka
5	Mirpur 10	Mirpur, Dhaka
6	Kazipara	Mirpur, Dhaka
7	Shewrapara	Mirpur, Dhaka
8	Agargaon	Agargaon, Dhaka
9	Bijoy Sarani	Tejgaon, Dhaka
10	Farmgate Metro	Farmgate, Dhaka
11	Kawran Bazar	Kawran Bazar, Dhaka
12	Shahbagh	Shahbagh, Dhaka
13	Dhaka University	Dhaka University Campus
14	Bangladesh Secretariat	Secretariat, Dhaka
15	Motijheel	Motijheel, Dhaka
16	Kamalapur	Kamalapur, Dhaka

```
UPDATE Stations  
SET name = 'Farmgate Metro'  
WHERE name = 'Farmgate';  
SELECT * FROM Stations;
```



```
ALTER TABLE Trains  
RENAME COLUMN name TO  
train_name;  
SELECT * FROM Trains ;
```



Output:

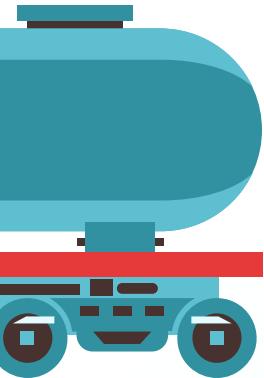
train_id	train_name	capacity
1	MRT-6 Uttara Express 01	600
2	MRT-6 Uttara Express 02	620
3	MRT-6 Uttara Express 03	610
4	MRT-6 Uttara Express 04	630
5	MRT-6 Uttara Express 05	640
6	MRT-6 Motijheel Express 01	600
7	MRT-6 Motijheel Express 02	615
8	MRT-6 Motijheel Express 03	625
9	MRT-6 Motijheel Express 04	610
10	MRT-6 Motijheel Express 05	620
11	MRT-6 Uttara Commuter 01	580
12	MRT-6 Uttara Commuter 02	600
13	MRT-6 Motijheel Commuter 01	590
14	MRT-6 Motijheel Commuter 02	610
15	MRT-6 Express Link 01	700

Output:

train_id	name	capacity
15	MRT-6 Express Link 01	700
5	MRT-6 Uttara Express 05	640
4	MRT-6 Uttara Express 04	630
8	MRT-6 Motijheel Express 03	625
2	MRT-6 Uttara Express 02	620
10	MRT-6 Motijheel Express 05	620
7	MRT-6 Motijheel Express 02	615
3	MRT-6 Uttara Express 03	610
9	MRT-6 Motijheel Express 04	610
14	MRT-6 Motijheel Commuter 02	610
1	MRT-6 Uttara Express 01	600
6	MRT-6 Motijheel Express 01	600
12	MRT-6 Uttara Commuter 02	600
13	MRT-6 Motijheel Commuter 01	590
11	MRT-6 Uttara Commuter 01	580

```
SELECT * FROM Trains  
ORDER BY capacity DESC;
```





```
SELECT s.name AS station_name,  
       COUNT(c.crowd_id) AS total_reports  
  FROM CrowdMonitoring c  
 JOIN Stations s ON c.station_id = s.station_id  
 GROUP BY s.name;
```

Output:

station_name	total_reports
Uttara Center	1
Uttara South	1
Pallabi	1
Mirpur 11	1
Mirpur 10	1
Kazipara	1
Shewrapara	1
Agargaon	1
Bijoy Sarani	1
Farmgate	1
Kawran Bazar	1
Shahbagh	1
Dhaka University	1
Bangladesh Secretariat	1
Motijheel	1

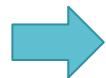
Output:

route_id	train_id	start_station_id	end_station_id
1	1	1	5
2	1	2	4
3	2	1	3
4	2	2	5
5	3	3	1
6	3	4	5
7	4	5	2
8	4	1	4
9	5	2	3
10	5	3	4
11	1	1	3
12	2	4	1
13	3	2	5
14	4	3	5
15	5	1	5



```
SELECT * FROM Routes;
```

```
SELECT DISTINCT pass_type  
FROM MetroPass  
LIMIT 2;
```



Output:

pass_type
MRT
RAPID

Output:

route_id	total_distance_km	estimated_time_minutes
14	20.00	34
3	20.00	35
11	22.00	36
4	22.50	38
1	25.50	40
12	24.00	40
5	25.00	45
13	26.50	48
7	28.00	50
15	29.00	52
8	30.00	55

```
SELECT route_id, total_distance_km,  
estimated_time_minutes  
FROM Routes  
WHERE total_distance_km BETWEEN  
20 AND 30  
ORDER BY estimated_time_minutes  
ASC;
```



```
SELECT full_name, pass_type,  
balance  
FROM MetroPass  
WHERE balance < 300 OR  
pass_type = 'RAPID'  
ORDER BY balance DESC;
```

Output:

full_name	pass_type	balance
Ina Roy	RAPID	1300.00
Mina Chowdhury	RAPID	1250.00
Farhan Islam	RAPID	550.00
Nashit Hossain	RAPID	520.00
Cathy Alam	RAPID	450.00
Hadi Khan	RAPID	220.00
Oliya Rahman	MRT	210.00
Bob Karim	MRT	200.00
Kazia Begum	RAPID	190.00
Ema Hasan	MRT	180.00

Output:

schedule_id	delay_minutes	reason
1	5	Technical issue
2	10	Signal problem
4	7	Track maintenance
9	5	Crew change
10	8	Power supply issue
12	6	Track obstruction
14	9	High passenger load

```
SELECT s.schedule_id,  
d.delay_minutes, d.reason  
FROM Schedules s  
JOIN Delays d ON s.schedule_id =  
d.schedule_id  
WHERE d.delay_minutes BETWEEN  
5 AND 10;
```

```
select * from Passengers;
```



passenger_id	name	email	num
1	Alice Rahman	alice@example.com	01710000001
2	Bob Karim	bob@example.com	01710000002
3	Cathy Alam	cathy@example.com	01710000003
4	David Chowdhury	david@example.com	01710000004
5	Ema Hasan	ema@example.com	01710000005
6	Farhan Islam	farhan@example.com	01710000006
7	Gina Sultana	gina@example.com	01710000007
8	Hadi Khan	hadi@example.com	01710000008
9	Ina Roy	ina@example.com	01710000009
10	Jamil Ahmed	jamil@example.com	01710000010
11	Kazia Begum	kazia@example.com	01710000011
12	Liton Das	liton@example.com	01710000012
13	Mina Chowdhury	mina@example.com	01710000013
14	Nashit Hossain	nashit@example.com	01710000014
15	Oliya Rahman	oliya@example.com	01710000015
16	Rana Sarker	rana@example.com	01710000016
17	Sadia Noor	sadia@example.com	01710000017
18	Tariq Hossain	tariq@example.com	01710000018
19	Fariha Akter	fariha@example.com	01710000019
20	Zahin Ahmed	zahin@example.com	01710000020

Output:

alert_message	alert_type	alert_time
Weather conditions affecting service timing.	Weather Update	2025-10-21 09:10:00

```
select  
alert_message,alert_type,alert  
_time  
from Alerts where  
passenger_id=5;
```

```

UPDATE Passengers
SET num = CONCAT('88', num)
WHERE num LIKE '0171%';
select passenger_id, name, num
from Passengers;

```

Output:

passenger_id	name	num
1	Alice Rahman	8801710000001
2	Bob Karim	8801710000002
3	Cathy Alam	8801710000003
4	David Chowdhury	8801710000004
5	Ema Hasan	8801710000005
6	Farhan Islam	8801710000006
7	Gina Sultana	8801710000007
8	Hadi Khan	8801710000008
9	Ina Roy	8801710000009
10	Jamil Ahmed	8801710000010
11	Kazia Begum	8801710000011
12	Liton Das	8801710000012
13	Mina Chowdhury	8801710000013
14	Nashit Hossain	8801710000014
15	Oliya Rahman	8801710000015

alert_id	passenger_id	delay_id	alert_message	alert_time	alert_type
6	6	6	Minor delay due to boarding time.	2025-10-21 09:20:00	Resolved

```

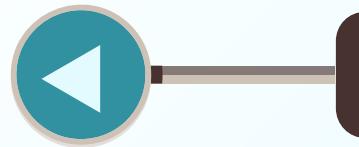
UPDATE Alerts
SET alert_type = 'Resolved'
WHERE alert_type = 'Delay
Notice';
select * FROM Alerts WHERE
alert_type = 'Resolved';

```

```
SELECT  
    a.alert_id,  
    a.alert_message,  
    a.alert_time,  
    d.delay_minutes,  
    d.reason,  
    d.delay_date  
FROM Alerts a  
JOIN Delays d  
ON a.delay_id =  
    d.delay_id;
```



alert_id	alert_message	alert_time	delay_minutes	reason	delay_date
1	Train MRT-6 Uttara Express 01 delayed by 5 minutes due to technical issue.	2025-10-21 08:05:00	5	Technical issue	2025-10-21
2	Signal problem causing 10-minute delay for MRT-6 Uttara Express 01.	2025-10-21 08:30:00	10	Signal problem	2025-10-21
3	Previous train delay affecting schedule.	2025-10-21 08:45:00	3	Late arrival of previous train	2025-10-21
4	Track maintenance ongoing on MRT line 2.	2025-10-21 09:00:00	7	Track maintenance	2025-10-21
5	Weather conditions affecting service timing.	2025-10-21 09:10:00	15	Weather conditions	2025-10-21
6	Minor delay due to boarding time.	2025-10-21 09:20:00	2	Passenger boarding delay	2025-10-21
7	All trains running on time.	2025-10-21 09:25:00	0	No delay	2025-10-21
8	Mechanical failure on MRT-6 Motijheel Express 03.	2025-10-21 09:35:00	12	Mechanical failure	2025-10-21
9	Crew change delay at Mirpur station.	2025-10-21 09:45:00	5	Crew change	2025-10-21
10	Power supply issue under repair.	2025-10-21 09:55:00	8	Power supply issue	2025-10-21
11	Minor accident cleared; services resuming.	2025-10-21 10:05:00	4	Minor accident nearby	2025-10-21
12	Track obstruction causing temporary hold.	2025-10-21 10:15:00	6	Track obstruction	2025-10-21
13	Train running smoothly with no delay.	2025-10-21 10:20:00	0	No delay	2025-10-21
14	High passenger load causing short delays.	2025-10-21 10:30:00	9	High passenger load	2025-10-21
15	Operational adjustment: expect 11-minute delay.	2025-10-21 10:40:00	11	Operational adjustment	2025-10-21



```
SELECT
    p.passenger_id,
    p.name,
    m.pass_id
FROM Passengers p
LEFT JOIN MetroPass m
    ON
        p.passenger_id=m.passenger_id
    WHERE m.passenger_id IS
        NULL;
```

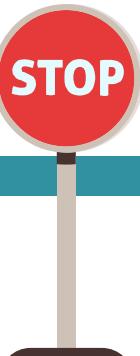


passenger_id	name	pass_id
16	Rana Sarker	NULL
17	Sadia Noor	NULL
18	Tariq Hossain	NULL
19	Fariha Akter	NULL
20	Zahin Ahmed	NULL



Conclusion

TrackTime improves metro management by keeping schedules accurate and delays well-monitored. The system strengthens communication with passengers through real-time alerts, ensuring a smoother and more reliable travel experience across the metro network.

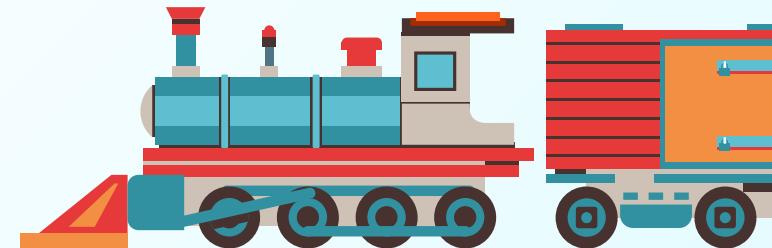


Resources

[Github link](#)

[ER Diagram](#)

[Schema Diagram](#)



THANKS!!



এবার থামুন!!!

