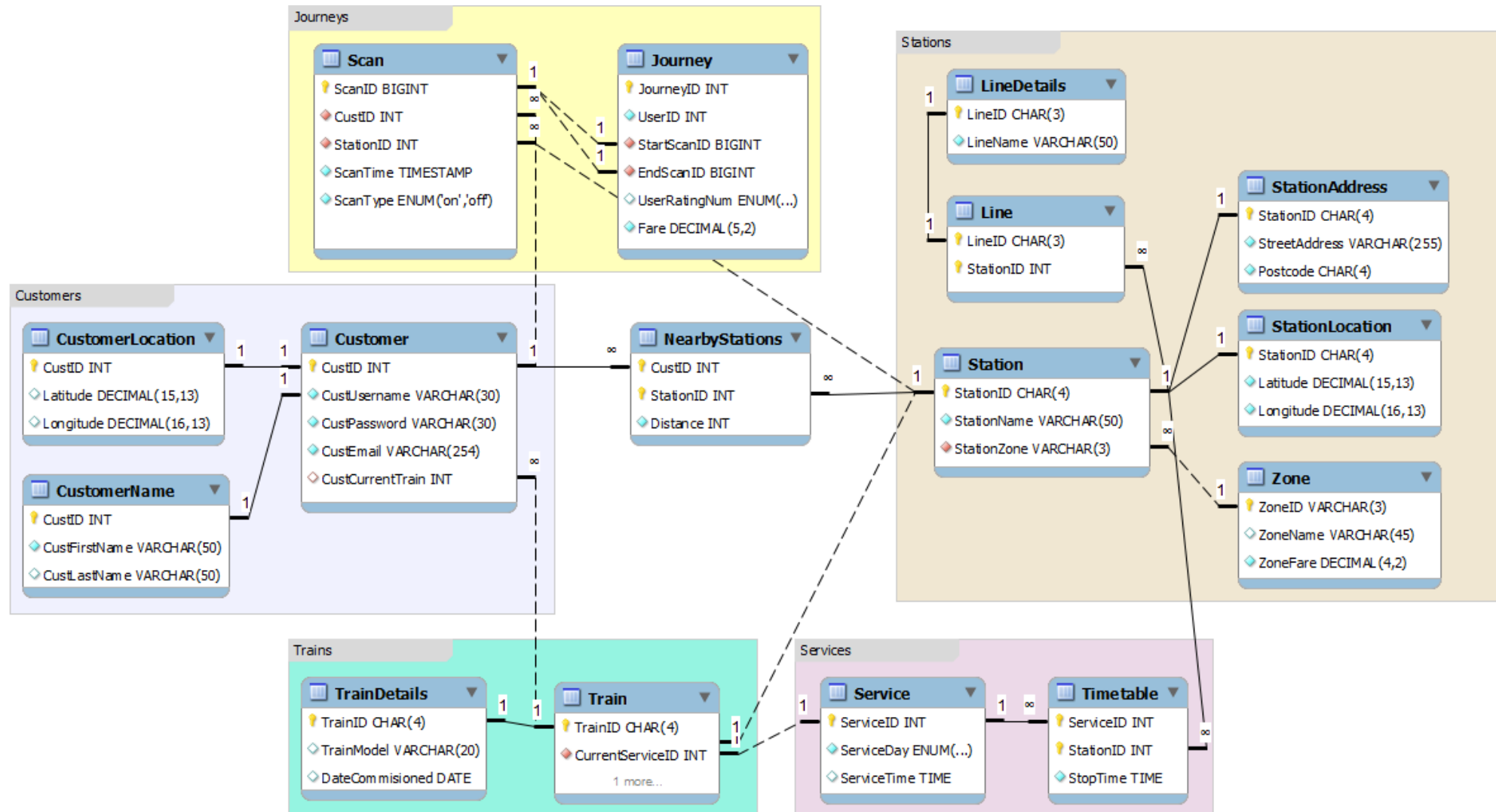
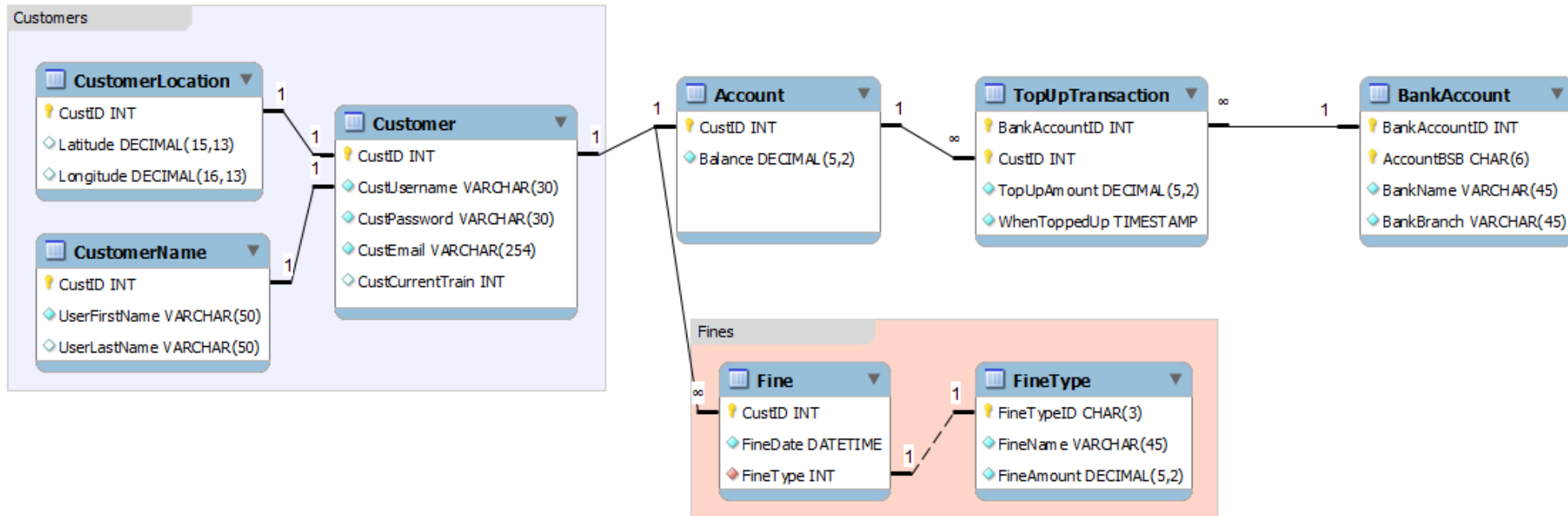


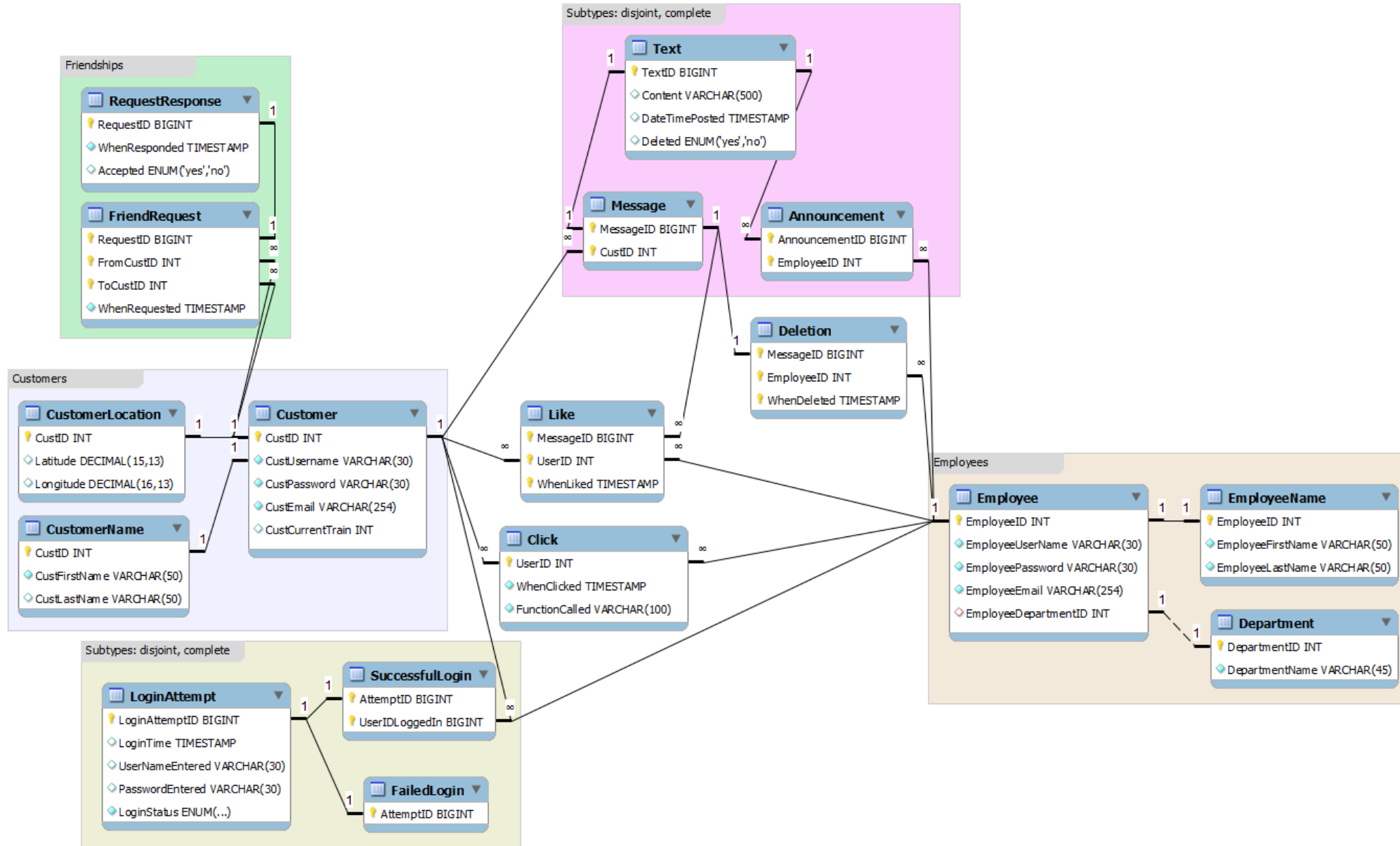
## Entity Relationship Diagram - Journey



## Entity Relationship Diagram - Account



## Entity Relationship Diagram – Social Media



## Data Dictionary

### Legend

PK: primary key

FK: foreign key

PFK: primary key and foreign key

### Entity 'TRAIN'

#### Description

This entity represents a train, its current station and the service it's running on.

#### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	TrainID	CHAR(4)	Yes	Yes	A primary key that uniquely identifies every single train
FK	CurrentServiceID	INT	Yes	No	A foreign key that shows what service a particular train is on
FK	CurrentStationID	CHAR(4)	Yes	No	A foreign key linked to station entity that identifies at what station a train is at.

## Entity 'TRAINDetails'

### Description

This entity represents the manufacturing details of a particular train.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	TrainID	CHAR(4)	Yes	Yes	A primary key that uniquely identifies a particular train.
	TrainModel	VARCHAR (20)	Yes	No	An attribute that represents the train model. A model can be thought of a design specification on when a particular train is manufactured.
	DateCommissioned	DATE	Yes	No	An attribute that shows the date on which a train was commissioned.

## Entity 'SERVICE'

### Description

This entity represents a train service. A train service starts at one station and ends at another, stopping at some or all stations between them.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	ServiceID	INT	Yes	Yes	A primary key that uniquely identifies a train service.
	ServiceDay	ENUM	Yes	No	An attribute that shows the day of the service.
	ServiceTime	TIME	Yes	No	This attribute shows the time of a particular service

## Entity 'TIMETABLE'

### Description

This entity represents shows the timetable of a train service that shows what stations it serves and at what time it stops at a particular station.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PFK	ServiceID	INT	Yes	No	This unique attribute represents the ID of a particular train service
PFK	StationID	CHAR(4)	Yes	No	A foreign key that shows the ID of a station where it stops
	StopTime	TIME	Yes	No	Shows the time onwhich the train service stops at a particular station

## Entity 'STATION'

### Description

This entity represents Train Stations in Melbourne.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	StationID	CHAR(4)	Yes	Yes	A primary key type that uniquely identifies a train station.
	StationName	VARCHAR (50)	Yes	Yes	Each station in Melbourne has a unique name
FK	StationZone	VARCHAR(3)	Yes	No	A foreign key that identifies the zone of the station. For instance, Melbourne's train system is divided into 2 zones.

## Entity 'STATION LOCATION'

### Description

This entity shows the location of a particular station based on geographical coordinates.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PFK	StationID	CHAR(4)	Yes	Yes	A primary key that uniquely identifies a train station with 4 characters (Max – 9999 stations).
	Latitude	DECIMAL (15,13)	Yes	Yes	Shows the latitude value, up to 13 decimal points, of a train station. Latitude is a geographic coordinate that identifies north-south position of a point on Earth's surface
	Longitude	DECIMAL (16,13)	Yes	Yes	Shows the longitude value, up to 13 decimal points, of a train station. Longitude is a geographic coordinate that identifies east-west position of a point on Earth's surface

## Entity 'STATION ADDRESS'

### Description

This entity shows the address of a particular station.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PFK	StationID	CHAR(4)	Yes	Yes	A primary key type that uniquely identifies a train station.
	StreetAddress	VARCHAR (255)	Yes	Yes	Shows the street address of a station
	Postcode	CHAR (4)	Yes	Yes	Shows a four-digit code that uniquely identifies a suburb/city of the station

## Entity 'ZONE'

### Description

This attribute shows the zones in which the train system is divided. This division is done because fares are based on the zones in which the travel occurs.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	ZoneID	VARCHAR(3)	Yes	Yes	A primary key value that uniquely identifies a zone.
	ZoneName	VARCHAR (45)	Yes	Yes	Represents the name of the zone.
	ZoneFare	DECIMAL (4,2)	Yes	Yes	Shows the fare of a single zone

## Entity 'LINE'

### Description

This entity represents train lines. Melbourne has 15 train lines that connect multiple stations.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	LineID	CHAR(3)	Yes	Yes	A primary key that uniquely identifies the train line which serves a particular station. (Max lines - 999)
	LineName	VARCHAR (50)	Yes	No	Name of a particular train line.
FK	StationID	CHAR(4)	Yes	Yes	A foreign key that is used to join line entity with station entity



## Entity 'NEARBY STATIONS'

### Description

This entity is used when a customer wants to find out the nearest station in order to plan the journey.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	CustID	INT	Yes	Yes	Uniquely identifies a customer
FK	StationID	CHAR(4)	Yes	Yes	Uniquely identifies a station
	Distance	INT	Yes	No	This attribute is shows the distance between the customer and nearest station. It is calculated by calculating the distance between customers and stations geographic location

## Entity 'SCAN'

### Description

The scan entity is used to record 'Touch ON' and 'Touch Off' actions by customers when they undertake a journey at a particular station.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	ScanID	BIGINT	Yes	Yes	Uniquely identifies a scan whether Touch On or Touch off
FK	CustID	INT	Yes	Yes	Identifies a customer uniquely
FK	StationID	CHAR(4)	Yes	Yes	Unique identifier for a station
	WhenScanned	TIMESTAMP	Yes	No	Shows the date and time of a particular scan
	ScanType	ENUM	Yes	No	This attribute determines whether the scan was Touch On or Touch Off

## Entity 'JOURNEY'

### Description

The journey entity records the details of a journey undertaken by a customer in order to determine the fare based on the zones travelled.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	JourneyID	INT	Yes	Yes	This attribute of unique integer values identifies individual journeys undertaken
FK	CustID	INT	Yes	Yes	Uniquely identifies a customer
FK	StartScanID	BIGINT	Yes	Yes	A foreign key that connects to the scan entity that represents Touch on action
FK	EndScanID	BIGINT	Yes	Yes	A foreign key that represents Touch off action in the scan entity
	Fare	DECIMAL (5,2)	Yes	No	This attribute shows the fare that is paid by the customer for the journey
	UserRating	ENUM	Yes	No	An attribute of ENUM data type that represents the ratings given by the customer for a particular journey. The values of the ENUM data type are "1star", "2star", "3star", "4star", "5star"

## Entity 'ACCOUNT'

### Description

This entity is used to manage a customer's account balance.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PFK	CustID	INT	Yes	Yes	An attribute that uniquely identifies a customer
	Balance	DECIMAL (5,2)	Yes	No	This attribute represents the amount in the customer's account from which the fare of a journey is deducted

## Entity 'TOPUP TRANSACTION'

### Description

An entity that shows the record for all the top up transaction made by a customer.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PFK	BankAccountID	CHAR(14)	Yes	Yes	A Bank account identifier composed of an account number and BSB number that uniquely identifies a bank account from which top up transactions have been made
FK	CustID	INT	Yes	Yes	Uniquely identifies a customer
	TopUpAmount	DECIMAL (5,2)	Yes	No	This attribute shows the amount of top up transaction which is then added to the balance attribute in the Account entity
	Time	TIMESTAMP	Yes	No	Shows the date and time of the transaction in real time

## Entity 'BANK ACCOUNT'

### Description

This entity shows the bank account details of a customer.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	BankAccountID	CHAR(8)	Yes	Yes	Coupled with BSB number uniquely identifies a bank account.
PK	BSB	CHAR (6)	Yes	No	This attribute of six characters shows the branch number of a bank. Coupled with account number unique identifies an account.
	BankName	VARCHAR (45)	Yes	No	Shows the name of the bank. For Example, "Commonwealth Bank"
	BankBranch	VARCHAR (45)	Yes	No	Represents the name of the branch. For Example, "University of Melbourne, Parkville"

## Entity 'FINE'

### Description

This entity represents the fines that have been incurred by a customer when the balance is less than a minimum and the customer is unable to pay for a journey.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PFK	CustID	INT	Yes	Yes	Unique identifier for a customer
	FineDate	DATETIME	Yes	No	Shows the date and time for a fine
FK	FineTypeID	CHAR(3)	Yes	No	A Foreign key that shows what fine has been incurred by a customer.

## Entity 'FINE TYPE'

### Description

This entity holds the description of all types of fines applicable on a customer.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	FineTypeID	CHAR(3)	Yes	Yes	A primary key that uniquely identifies the type of a fine
	FineName	VARCHAR (45)	Yes	Yes	Each type of a fine has a unique name
	FineAmount	DECIMAL (5,2)	Yes	No	Every single fine type has a unique amount that must be deducted from a customer's account when they have incurred a fine

## Entity 'CUSTOMER'

### Description

This entity holds the records of a customer to be used on a journey and connecting to social media.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	CustID	INT	Yes	Yes	A primary key of integer value that uniquely identifies a customer
	CustUserName	VARCHAR (30)	Yes	Yes	This attribute shows the username of a customer that he/she uses to identify themselves when they connect to the social media
	CustPassword	VARCHAR (30)	Yes	No	This attribute holds the password that a customer enters in order to gain access to social media
	CustEmail	VARCHAR (254)	Yes	Yes	An attribute that holds the record of a customer's email
FK	CustCurrentTrainID	INT	Yes	No	A foreign key that uniquely identifies a train on which a customer is travelling. When a customer sends a message on social media, this attribute is used to identify which users can see the message and have a chat.

## Entity 'CUSTOMER NAME'

### Description

This entity holds the records of customer's name.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PFK	CustID	INT	Yes	Yes	Uniquely identifies a customer
	CustFirstName	VARCHAR (50)	Yes	No	This attribute shows the first name of a customer
	CustLastName	VARCHAR (50)	No	No	This attribute shows the last name of customer.

## Entity 'CUSTOMER LOCATION'

### Description

This entity stores the geographic location of a customer. The record in this entity is used when a customer searches for nearest stations to his/her location and distance between the customer and station.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PFK	CustID	INT	Yes	Yes	Unique identifier for a customer
	Latitude	DECIMAL (15,13)	Yes	No	Shows the latitude value, upto 13 decimal points, of a customer. Latitude is a geographic coordinate that identifies north-south position of a point on Earth's surface
	Longitude	DECIMAL (16,13)	Yes	No	Shows the longitude value, upto 13 decimal points, of a customer. Longitude is a geographic coordinate that identifies east-west position of a point on Earth's surface

## Entity 'CLICK'

### Description

Click entity stores the records of actions by customer when they interact with the app. Examples of a click can be “when a customer likes a message, un-likes a message, searches for nearby stations etc

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PFK	CustID	INT	Yes	Yes	This attribute uniquely identifies a customer
	WhenClicked	TIMESTAMP	Yes	No	Shows the date and time of a click
	FunctionCalled	VARCHAR (100)	Yes	No	The attribute shows the function that is called when a customer “clicks” on the app. For example, “like”, “unlike”, “station search” etc

## Entity 'FRIEND REQUEST'

### Description

This entity holds the records of all the friendship requests made by customers on the app.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	RequestID	BIGINT	Yes	Yes	A primary key that identifies unique friendship requests between 2 customers
FK	FromCustID	INT	Yes	No	Shows the customer who initiated the friendship request on the app
FK	ToCustID	INT	Yes	No	Shows the intended customer to whom friendship request was made.
	WhenRequested	TIMESTAMP	Yes	No	Shows the date and time of the request in real time

## Entity 'REQUEST RESPONSE'

### Description

This entity shows the responses to each friendship requests.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PFK	RequestID	BIGINT	Yes	Yes	Unique identifier of a friendship request
	WhenResponded	TIMESTAMP	Yes	No	Shows the date and time of a friend request in real time
	Accepted	ENUM	Yes	No	This attribute shows whether the request has been accepted or not. This attribute is of ENUM type with valued ("yes" and "no")

## Entity 'EMPLOYEE'

### Description

The Employee entity holds the record of employees of the transport department who interact with the social media app.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	EmployeeID	INT	Yes	Yes	A unique identifier for each employee of the transport department
	EmployeeUsername	VARCHAR (30)	Yes	Yes	This attribute shows the username of an employee that he/she uses to identify themselves when they connect to the social media
	EmployeePassword	VARCHAR (30)	Yes	No	This attribute holds the password that an employee enters in order to gain access to social media
	EmployeeEmail	VARCHAR (254)	Yes	Yes	An attribute that holds the record of an employee's email
FK	EmployeeDepartmentID	INT	Yes	No	A foreign key that shows to which department an employee belongs to.

## Entity 'EMPLOYEE NAME'

### Description

This entity holds the records of employee's name

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PFK	EmployeeID	INT	Yes	Yes	A unique identifier for each employee
	EmployeeFirstName	VARCHAR (50)	Yes	No	Shows the First name of an employee
	EmployeeLastName	VARCHAR (50)	Yes	No	Shows the last name of an employee



## Entity 'DEPARTMENT'

### Description

This entity holds the records of all departments for which employees work.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	DepartmentID	INT	Yes	Yes	A primary key that uniquely identifies a particular department
	DepartmentName	VARCHAR (50)	Yes	Yes	An attribute that shows the name of the department. For example, Human Resources, Operations, marketing, etc.

## Entity 'DELETION'

### Description

This entity shows what customer messages on social media were deleted by which employee.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PFK	MessageID	BIGINT	Yes	Yes	This attribute identifies unique messages
FK	EmployeeID	INT	Yes	No	The foreign key attribute that shows which employee deleted the message
	WhenDeleted	TIMESTAMP	Yes	No	Shows the time when a particular message was deleted

## Entity 'LIKE'

### Description

This entity shows which user liked which message.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PFK	UserID	INT	Yes	No	An attribute that shows who liked the message. The user can be employee or customer.
FK	TextID	BIGINT	Yes	No	A foreign key attribute that shows what text message was liked
	WhenLiked	TIMESTAMP	Yes	No	Shows the date and time when a particular text message was liked

## Entity 'TEXT'

### Description

Text entity stores all the messages from customers and announcements by the employees on the social media app.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	TextID	BIGINT	Yes	Yes	A primary key that uniquely identifies a text
	Content	VARCHAR (500)	Yes	No	The attribute is where the actual message and/or announcement is stored. The maximum size of this attribute is 500 characters.
	TimePosted	TIMESTAMP	Yes	No	Shows the date and time when the text was posted on social media
	Deleted	ENUM	Yes	No	Shows whether the text was deleted or not. It has two values "yes" & "no". If a text is deleted, it is simply marked as 'hidden' as we do not actually delete the record.

## Entity 'TEXT' subtype 'MESSAGE'

### Description

This is a subtype entity of the main entity 'TEXT'. The messages on the app are sent by customers.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	MessageID	BIGINT	Yes	Yes	This attribute is the same as the TextID in the main entity TEXT
FK	CustID	INT	Yes	No	Shows the id of customers who sent the message on social media app.

## Entity 'TEXT' subtype 'ANNOUNCEMENT'

### Description

This is a subtype entity of the main entity 'TEXT'. The announcements on the social media app are sent by employees.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	AnnouncementID	BIGINT	Yes	Yes	This attribute is the same as 'TextID' in the main entity 'TEXT'
FK	EmployeeID	INT	Yes	No	Shows the id of employee who made the announcement.

## Entity 'LOGIN ATTEMPT'

### Description

An entity that records all the login attempts made by customers and employees on social media app.

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PK	LoginAttemptID	BIGINT	Yes	Yes	A primary key that uniquely identifies each login attempt
	LoginTime	TIMESTAMP	Yes	No	Shows date and time of a login attempt
	UserNameEntered	VARCHAR (30)	Yes	Yes	Shows what username was entered for login
	PasswordEntered	VARCHAR (30)	Yes	No	This attribute shows what password was entered to login
	LoginStatus	ENUM	Yes	No	Shows whether the login was successful or not. The data type of the attribute is ENUM having values "success" & "fail"

## Entity 'LOGIN ATTEMPT' subtype 'LOGIN SUCCESSFUL'

### Description

This sub type entity shows the ID of the user if the login was successful

### Attributes

Key	Attribute	Data Type	Not Null	Unique	Description
PFK	LoginAttemptID	BIGINT	Yes	Yes	Shows the ID of the login attempt
FK	UserIDLoggedIn	INT	Yes	Yes	A foreign key that shows which user has logged in to the app.

**Entity 'LOGIN ATTEMPT' subtype 'LOGIN FAILED'****Description**

This sub type entity shows the ID's of the failed login attempts.

**Attributes**

Key	Attribute	Data Type	Not Null	Unique	Description
PFK	LoginAttemptID	BIGINT	Yes	Yes	Shows the ID of the login attempt