**NetID: jc12300**

**Name: Jie Cheng**

**Course: CSGY-6083-Principles of Database Systems**

**Section: B**

**Date of submission: Oct 12, 2023**

**SAMTA**

**Logical Model**

图示

描述已自动生成

**Relational Model**

图示

描述已自动生成

**Assumptions**

1. Each Train Line can serve multiple Subway Stations. (One-to-Many)
2. Each Subway Station can have multiple Facilities, but it’s optional. (One-to-Many)
3. Subway Operations are associated with both Train Lines and Subway Stations.

**DDL code**

-- Generated by Oracle SQL Developer Data Modeler 23.1.0.087.0806

--   at:        2023-10-12 01:50:31 EDT

--   site:      Oracle Database 11g

--   type:      Oracle Database 11g

-- predefined type, no DDL - MDSYS.SDO\_GEOMETRY

-- predefined type, no DDL - XMLTYPE

CREATE TABLE jc\_facility (

    jc\_facility\_id       NUMBER(4)

        CONSTRAINT nnc\_jc\_facility\_facilityid NOT NULL,

    elevator             CHAR(1),

    escalator            CHAR(1),

    restroom             CHAR(1),

    wheelchairaccessible CHAR(1),

    transferconnection   CHAR(1),

    busconnection        CHAR(1),

    twentyfourhourbooth  CHAR(1),

    jc\_station\_id        NUMBER(4)

);

COMMENT ON TABLE jc\_facility IS

    'FacilityID

';

ALTER TABLE jc\_facility ADD CONSTRAINT jc\_facility\_pk PRIMARY KEY ( jc\_facility\_id );

CREATE TABLE jc\_operation (

    jc\_operation\_id              NUMBER(4) NOT NULL,

    arrivaldatetime              DATE NOT NULL,

    departuredatetime            DATE NOT NULL,

    localexpressmixed            VARCHAR2(30) NOT NULL,

    jc\_station\_jc\_station\_id     NUMBER(4)

        CONSTRAINT nnc\_jc\_operation\_jc\_station\_id NOT NULL,

    jc\_trainline\_jc\_trainline\_id NUMBER(4) NOT NULL

);

COMMENT ON TABLE jc\_operation IS

    'OperationID';

ALTER TABLE jc\_operation ADD CONSTRAINT jc\_operation\_pk PRIMARY KEY ( jc\_operation\_id );

CREATE TABLE jc\_station (

    jc\_station\_id                NUMBER(4)

        CONSTRAINT nnc\_jc\_station\_jc\_station\_id NOT NULL,

    stationname                  VARCHAR2(30)

        CONSTRAINT nnc\_jc\_station\_stationname NOT NULL,

    stationaddress               VARCHAR2(30)

        CONSTRAINT nnc\_jc\_station\_stationaddress NOT NULL,

    borough                      VARCHAR2(30)

        CONSTRAINT nnc\_jc\_station\_borough NOT NULL,

    neighborhood                 VARCHAR2(30)

        CONSTRAINT nnc\_jc\_station\_neighborhood NOT NULL,

    jc\_trainline\_jc\_trainline\_id NUMBER(4)

        CONSTRAINT nnc\_jc\_station\_jc\_trainline\_id NOT NULL

);

COMMENT ON TABLE jc\_station IS

    'StationID';

ALTER TABLE jc\_station ADD CONSTRAINT jc\_station\_pk PRIMARY KEY ( jc\_station\_id );

CREATE TABLE jc\_trainline (

    jc\_trainline\_id  NUMBER(4) NOT NULL,

    linename         VARCHAR2(30)

        CONSTRAINT nnc\_jc\_trainline\_linename NOT NULL,

    division         VARCHAR2(30)

        CONSTRAINT nnc\_jc\_trainline\_division NOT NULL,

    yearsinoperation NUMBER(4) NOT NULL

);

COMMENT ON TABLE jc\_trainline IS

    'TrainID';

ALTER TABLE jc\_trainline ADD CONSTRAINT jc\_trainline\_pk PRIMARY KEY ( jc\_trainline\_id );

ALTER TABLE jc\_facility

    ADD CONSTRAINT jc\_facility\_jc\_station\_fk FOREIGN KEY ( jc\_station\_id )

        REFERENCES jc\_station ( jc\_station\_id );

ALTER TABLE jc\_operation

    ADD CONSTRAINT jc\_operation\_jc\_station\_fk FOREIGN KEY ( jc\_station\_jc\_station\_id )

        REFERENCES jc\_station ( jc\_station\_id );

ALTER TABLE jc\_operation

    ADD CONSTRAINT jc\_operation\_jc\_trainline\_fk FOREIGN KEY ( jc\_trainline\_jc\_trainline\_id )

        REFERENCES jc\_trainline ( jc\_trainline\_id );

ALTER TABLE jc\_station

    ADD CONSTRAINT jc\_station\_jc\_trainline\_fk FOREIGN KEY ( jc\_trainline\_jc\_trainline\_id )

        REFERENCES jc\_trainline ( jc\_trainline\_id );

-- Oracle SQL Developer Data Modeler Summary Report:

--

-- CREATE TABLE                             4

-- CREATE INDEX                             0

-- ALTER TABLE                              8

-- CREATE VIEW                              0

-- ALTER VIEW                               0

-- CREATE PACKAGE                           0

-- CREATE PACKAGE BODY                      0

-- CREATE PROCEDURE                         0

-- CREATE FUNCTION                          0

-- CREATE TRIGGER                           0

-- ALTER TRIGGER                            0

-- CREATE COLLECTION TYPE                   0

-- CREATE STRUCTURED TYPE                   0

-- CREATE STRUCTURED TYPE BODY              0

-- CREATE CLUSTER                           0

-- CREATE CONTEXT                           0

-- CREATE DATABASE                          0

-- CREATE DIMENSION                         0

-- CREATE DIRECTORY                         0

-- CREATE DISK GROUP                        0

-- CREATE ROLE                              0

-- CREATE ROLLBACK SEGMENT                  0

-- CREATE SEQUENCE                          0

-- CREATE MATERIALIZED VIEW                 0

-- CREATE MATERIALIZED VIEW LOG             0

-- CREATE SYNONYM                           0

-- CREATE TABLESPACE                        0

-- CREATE USER                              0

--

-- DROP TABLESPACE                          0

-- DROP DATABASE                            0

--

-- REDACTION POLICY                         0

--

-- ORDS DROP SCHEMA                         0

-- ORDS ENABLE SCHEMA                       0

-- ORDS ENABLE OBJECT                       0

--

-- ERRORS                                   0

-- WARNINGS                                 0

**UEAT**

**Logical Model**

图示

描述已自动生成

**Relational Model**

图示

描述已自动生成

**Assumptions**

1. Couriers can have many Orders (one-to-many relationship).
2. Customers can place many Orders (one-to-many relationship).
3. Restaurants can receive many Orders (one-to-many relationship).
4. Each Order is associated with one Courier, one Customer, and one Restaurant.

**DDL code**

-- Generated by Oracle SQL Developer Data Modeler 23.1.0.087.0806

--   at:        2023-10-12 16:36:55 EDT

--   site:      Oracle Database 11g

--   type:      Oracle Database 11g

-- predefined type, no DDL - MDSYS.SDO\_GEOMETRY

-- predefined type, no DDL - XMLTYPE

CREATE TABLE jc\_courier (

    jc\_courier\_id        VARCHAR2(20)

        CONSTRAINT nnc\_jc\_courier\_phone\_number NOT NULL,

    name                 VARCHAR2(50)

        CONSTRAINT nnc\_jc\_courier\_name NOT NULL,

    age                  INTEGER

        CONSTRAINT nnc\_jc\_courier\_age NOT NULL,

    home\_address         VARCHAR2(100)

        CONSTRAINT nnc\_jc\_courier\_home\_address NOT NULL,

    vehicle\_type         VARCHAR2(20)

        CONSTRAINT nnc\_jc\_courier\_vehicle\_type NOT NULL,

    vehicle\_plate\_number VARCHAR2(20),

    gender               CHAR(1)

        CONSTRAINT nnc\_jc\_courier\_gender NOT NULL,

    bank\_account\_number  VARCHAR2(20) NOT NULL,

    bank\_routing\_number  VARCHAR2(20) NOT NULL

);

COMMENT ON TABLE jc\_courier IS

    'Courier';

ALTER TABLE jc\_courier ADD CONSTRAINT jc\_courier\_pk PRIMARY KEY ( jc\_courier\_id );

CREATE TABLE jc\_customer (

    jc\_customer\_id VARCHAR2(20)

        CONSTRAINT nnc\_jc\_customer\_phone\_number NOT NULL,

    name           VARCHAR2(50)

        CONSTRAINT nnc\_jc\_customer\_name NOT NULL,

    age            INTEGER

        CONSTRAINT nnc\_jc\_customer\_age NOT NULL,

    home\_address   VARCHAR2(100)

        CONSTRAINT nnc\_jc\_customer\_home\_address NOT NULL,

    email\_address  VARCHAR2(100)

        CONSTRAINT nnc\_jc\_customer\_email\_address NOT NULL,

    customer\_type  VARCHAR2(20)

        CONSTRAINT nnc\_jc\_customer\_customer\_type NOT NULL

);

COMMENT ON TABLE jc\_customer IS

    'Customer';

ALTER TABLE jc\_customer ADD CONSTRAINT jc\_customer\_pk PRIMARY KEY ( jc\_customer\_id );

CREATE TABLE jc\_orders (

    jc\_orders\_id             INTEGER

        CONSTRAINT nnc\_jc\_orders\_order\_id NOT NULL,

    date\_time\_order          TIMESTAMP

        CONSTRAINT nnc\_jc\_orders\_date\_time\_order NOT NULL,

    date\_time\_delivery       TIMESTAMP NOT NULL,

    order\_amount             NUMBER(10, 2)

        CONSTRAINT nnc\_jc\_orders\_order\_amount NOT NULL,

    tips                     NUMBER(10, 2)

        CONSTRAINT nnc\_jc\_orders\_tips NOT NULL,

    payment\_method           VARCHAR2(20)

        CONSTRAINT nnc\_jc\_orders\_payment\_method NOT NULL,

    card\_number              VARCHAR2(16)

        CONSTRAINT nnc\_jc\_orders\_card\_number NOT NULL,

    name\_on\_card             VARCHAR2(50)

        CONSTRAINT nnc\_jc\_orders\_name\_on\_card NOT NULL,

    expiration\_date          DATE

        CONSTRAINT nnc\_jc\_orders\_expiration\_date NOT NULL,

    cvv\_number               VARCHAR2(4)

        CONSTRAINT nnc\_jc\_orders\_cvv\_number NOT NULL,

    jc\_customer\_phone\_number VARCHAR2(20),

    jc\_courier\_phone\_number  VARCHAR2(20),

    jc\_restaurant\_name       VARCHAR2(100)

);

COMMENT ON TABLE jc\_orders IS

    'Orders';

ALTER TABLE jc\_orders ADD CONSTRAINT jc\_orders\_pk PRIMARY KEY ( jc\_orders\_id );

CREATE TABLE jc\_restaurant (

    jc\_restaurant\_id VARCHAR2(100)

        CONSTRAINT nnc\_jc\_restaurant\_name NOT NULL,

    address          VARCHAR2(100)

        CONSTRAINT nnc\_jc\_restaurant\_address NOT NULL,

    phone\_number     VARCHAR2(20)

        CONSTRAINT nnc\_jc\_restaurant\_phone\_number NOT NULL,

    website\_url      VARCHAR2(100),

    specialty        VARCHAR2(100)

        CONSTRAINT nnc\_jc\_restaurant\_specialty NOT NULL

);

COMMENT ON TABLE jc\_restaurant IS

    'Restaurant';

ALTER TABLE jc\_restaurant ADD CONSTRAINT jc\_restaurant\_pk PRIMARY KEY ( jc\_restaurant\_id );

ALTER TABLE jc\_orders

    ADD CONSTRAINT jc\_orders\_jc\_courier\_fk FOREIGN KEY ( jc\_courier\_phone\_number )

        REFERENCES jc\_courier ( jc\_courier\_id );

ALTER TABLE jc\_orders

    ADD CONSTRAINT jc\_orders\_jc\_customer\_fk FOREIGN KEY ( jc\_customer\_phone\_number )

        REFERENCES jc\_customer ( jc\_customer\_id );

ALTER TABLE jc\_orders

    ADD CONSTRAINT jc\_orders\_jc\_restaurant\_fk FOREIGN KEY ( jc\_restaurant\_name )

        REFERENCES jc\_restaurant ( jc\_restaurant\_id );

-- Oracle SQL Developer Data Modeler Summary Report:

--

-- CREATE TABLE                             4

-- CREATE INDEX                             0

-- ALTER TABLE                              7

-- CREATE VIEW                              0

-- ALTER VIEW                               0

-- CREATE PACKAGE                           0

-- CREATE PACKAGE BODY                      0

-- CREATE PROCEDURE                         0

-- CREATE FUNCTION                          0

-- CREATE TRIGGER                           0

-- ALTER TRIGGER                            0

-- CREATE COLLECTION TYPE                   0

-- CREATE STRUCTURED TYPE                   0

-- CREATE STRUCTURED TYPE BODY              0

-- CREATE CLUSTER                           0

-- CREATE CONTEXT                           0

-- CREATE DATABASE                          0

-- CREATE DIMENSION                         0

-- CREATE DIRECTORY                         0

-- CREATE DISK GROUP                        0

-- CREATE ROLE                              0

-- CREATE ROLLBACK SEGMENT                  0

-- CREATE SEQUENCE                          0

-- CREATE MATERIALIZED VIEW                 0

-- CREATE MATERIALIZED VIEW LOG             0

-- CREATE SYNONYM                           0

-- CREATE TABLESPACE                        0

-- CREATE USER                              0

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-- DROP TABLESPACE                          0

-- DROP DATABASE                            0

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-- REDACTION POLICY                         0

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-- ORDS DROP SCHEMA                         0

-- ORDS ENABLE SCHEMA                       0

-- ORDS ENABLE OBJECT                       0

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-- ERRORS                                   0

-- WARNINGS                                 0