Inventory Management

System

Normalization

Dbms.mini.project

1. **EMPLOYEE TABLE:**

CREATE TABLE employee (

eid CHAR(5) PRIMARY KEY, ename CHAR(30) NOT NULL, dob DATE NOT NULL,

designation CHAR(20) NOT NULL, home\_no CHAR(5),

locality CHAR(25), city CHAR(20),

pincode INT CHECK (LENGTH(pincode) = 6),

phone\_no CHAR(10) CHECK (LENGTH(phone\_no) = 10) NOT NULL, doj DATE NOT NULL,

dol DATE DEFAULT NULL,

age INT,

salary numeric(7,0) not null

);

1. First Normal Form (1NF) : all attributes are atomic
2. . Second Normal Form (2NF) : not in 2NF as age is dependent on dob

# CUSTOMER TABLE :

create table customer( cid char(5) primary key, cname char(30) not null,

email\_id char(100) check(email\_id like'%\_@ %. %'),

phone\_no CHAR(10) CHECK (LENGTH(phone\_no) = 10) not null

);

* 1. First Normal Form (1NF): The table meets the basic requirements of 1NF, as each column contains atomic values, there is a primary key (`cid`).
  2. Second Normal Form (2NF): the primary key (`cid`) uniquely determines all other attributes in the table, it also meets the requirements of 2NF. There are no partial dependencies, meaning that each non-key attribute is fully functionally dependent on the entire primary key.
  3. Third Normal Form (3NF): there are no transitive dependencies, where non-key attributes depend on other non-key attributes, it also meets the requirements of 3NF.
  4. Boyce-Codd Normal Form (BCNF): for every non-trivial functional dependency, the left-hand side of the dependency is a superkey, then the table is in BCNF. since the primary key (`cid`) is a superkey, and it determines all other attributes, it is in BCNF as well.

# SUPLLIER TABLE:

create table supplier( sid char(5) primary key,

sname char(30) NOT NULL, home\_no CHAR(5),

locality CHAR(25), city CHAR(20),

pincode INT CHECK (LENGTH(pincode) = 6) NOT NULL,

phone\_no CHAR(10) CHECK (LENGTH(phone\_no) = 10) NOT NULL

);

1. First Normal Form (1NF): The table meets the basic requirements of 1NF, as each column contains atomic values, there is a primary key (`sid`).
2. Second Normal Form (2NF): the primary key (`sid`) uniquely determines all other attributes in the table, it also meets the requirements of 2NF. There are no partial dependencies, meaning that each non-key attribute is fully functionally dependent on the entire primary key.
3. Third Normal Form (3NF): there are no transitive dependencies, where non-key attributes depend on other non-key attributes, it also meets the requirements of 3NF.
4. Boyce-Codd Normal Form (BCNF): for every non-trivial functional dependency, the left-hand side of the dependency is a superkey, then the table is in BCNF. since the primary key (`sid`) is a superkey and it determines all other attributes, it is in BCNF as well.

# STOCK TABLE:

create table stock(

pid char(6) primary key, pname char(30) not null, supplier\_cost int not null, selling\_cost int not null, quantity\_on\_hand int, min\_quantity int,

reorder int DEFAULT 0 CHECK (reorder >= 0 AND reorder <= 1)

);

Based on the description of your "stock" table, it is in the following normal forms:

1. First Normal Form (1NF): The table meets the basic requirements of 1NF, as each column contains atomic values, there is a primary key (`pid`), and there are no repeating groups or complex data types.
2. Second Normal Form (2NF): the primary key (`pid`) uniquely determines all other attributes in the table, it also meets the requirements of 2NF. There are no partial dependencies, meaning that each non-key attribute is fully functionally dependent on the entire primary key.
3. Third Normal Form (3NF): there are no transitive dependencies, where non-key attributes depend on other non-key attributes, it also meets the requirements of 3NF.
4. Boyce-Codd Normal Form (BCNF): for every non-trivial functional dependency, the left-hand side of the dependency is a superkey, then the table is in BCNF. In your case, since the primary key (`pid`) is a superkey and it determines all other attributes, it is in BCNF as well.

# BILL\_ITEMS TABLE :

CREATE TABLE Bill\_Items ( bid CHAR(10) ,

pid CHAR(6) ,

pname CHAR(30) NOT NULL,

pcost INT NOT NULL, quantity INT DEFAULT 1,

FOREIGN KEY (pid) REFERENCES stock (pid), PRIMARY KEY (bid,pid))

);

1. First Normal Form (1NF): The table meets the basic requirements of 1NF. Each column contains atomic values, there is a primary key (`bid` and `pid`),
2. Second Normal Form (2NF): the primary key (`bid` and `pid`) uniquely determines all other attributes in the table, it also meets the requirements of 2NF. There are no partial dependencies, meaning that each non-key attribute is fully functionally dependent on the entire primary key.
3. Third Normal Form (3NF): there are no transitive dependencies, where non-key attributes depend on other non-key attributes, it also meets the requirements of 3NF.
4. Boyce-Codd Normal Form (BCNF): for every non-trivial functional dependency, the left-hand side of the dependency is a superkey, then the table is in BCNF. since the primary key (`bid` and `pid`) is a superkey and it determines all other attributes, it is in BCNF as well.

# BILL TABLE:

create table bill(

bid char(10) primary key, cid char(5),

billing\_date date not NULL, total\_amount int NOT NULL,

FOREIGN KEY (cid) REFERENCES customer(cid)

);

1. First Normal Form (1NF): The table meets the basic requirements of 1NF. Each column contains atomic values, there is a primary key (`bid`),
2. Second Normal Form (2NF): the primary key (`bid` ) uniquely determines all other attributes in the table, it also meets the requirements of 2NF. There are no partial dependencies, meaning that each non-key attribute is fully functionally dependent on the entire primary key.
3. Third Normal Form (3NF): there are no transitive dependencies, where non-key attributes depend on other non-key attributes, it also meets the requirements of 3NF.
4. Boyce-Codd Normal Form (BCNF): for every non-trivial functional dependency, the left-hand side of the dependency is a superkey, then the table is in BCNF. since the primary key (`bid`) is a superkey and it determines all other attributes, it is in BCNF as well.

# SUPPLIED TABLE:

create table supplied ( supplier\_id char(5), pid char(6), order\_date date,

receiving\_date date default NULL, squantity int default 1,

samount NUMBER(7,0) NOT NULL,

FOREIGN KEY (supplier\_id) REFERENCES supplier(sid), FOREIGN KEY (pid) REFERENCES stock(pid), PRIMARY KEY (supplier\_id, pid, order\_date)

);

1. First Normal Form (1NF): The table meets the basic requirements of 1NF. Each column contains atomic values, and there is a primary key (`supplier\_id`, `pid`, and `order\_date`).
2. Second Normal Form (2NF): The primary key (`supplier\_id`, `pid`, and `order\_date`) uniquely determines all other attributes in the table. There are no partial dependencies, meaning that each non-key attribute is fully functionally dependent on the entire primary key.
3. Third Normal Form (3NF): There are no transitive dependencies, where non-key attributes depend on other non-key attributes. It also meets the requirements of 3NF.
4. Boyce-Codd Normal Form (BCNF): For every non-trivial functional dependency, the left-hand side of the dependency is a superkey. the primary key (`supplier\_id`, `pid`, and `order\_date`) is a superkey, and it determines all other attributes. Therefore, it is in BCNF as well.

# EMP\_SALARY TABLE:

create table emp\_salary( eid char(5),

salary\_date date, salary numeric(7,0),

FOREIGN KEY (eid) REFERENCES employee(eid), PRIMARY KEY (eid, salary\_date)

);

The `emp\_salary` table appears to be correctly normalized:

1. First Normal Form (1NF): Each column contains atomic values, and there is a primary key (`eid` and `salary\_date`).
2. Second Normal Form (2NF): The primary key (`eid` and `salary\_date`) uniquely determines all other attributes in the table. There are no partial dependencies, and each non-key attribute is fully functionally dependent on the entire primary key.
3. Third Normal Form (3NF): There are no transitive dependencies, where non-key attributes depend on other non-key attributes. The table meets the requirements of 3NF.
4. Boyce-Codd Normal Form (BCNF): For every non-trivial functional dependency, the left-hand side of the dependency is a superkey. Since the primary key (`eid` and `salary\_date`) is a superkey, the table is in BCNF as well.