

NORMALIZATION

Subscription_Types(subscription_type_name,validity,price)

Functional Dependencies:

1.) {subscription_type_name} → {validity,price}

1NF: Here in this table all the columns have atomic values and we do not have any multivalued attributes, Hence we are considering this table to be in the 1NF.

2NF: Each non-prime attribute depends on the primary key, Hence we are considering this table to be in the 2NF.

3NF: Every non-prime attribute is dependent non-transitively on the primary key, Therefore, We are considering this table to be in the 3NF.

BCNF: Since in this table the column “subscription_type_name” is the primary key ,We can say that the table is in the Boyce-Codd normal form.

User(user_id,user_lastname,user_firstname,subscription_type_name,date_of_birth,password,nationality,gender,street,city,state,zipcode)

Functional Dependencies:

1.) {user_id} → {user_lastname,user_firstname,subscription_type_name,date_of_birth,password, nationality, gender, street, city, state, zip code}

2.) {zipcode} → {city,state }

1NF: Here in this table all the columns have atomic values and we do not have any multivalued attributes, Hence we are considering this table to be in the 1NF.

2NF: Each non-prime attribute depends on the primary key, Hence we are considering this table to be in the 2NF.

3NF: Here from the second functional dependency since the zip code can determine the state and the city. Hence we are splitting the table.

BCNF: Since we have split the tables into two, we have user_id as a primary key in one table and we have zipcode and the primary key in another table, Hence we can say that the following tables are in BCNF.

Decomposed Tables:

- a) User(user_id,user_lastname,user_firstname,subscription_type_name,date_of_birth,password,nationality, gender,street ,zipcode)
- b) UserZipCodes(zipcode,city,state)

Payment(payment_id,user_id,payment_date,payment_type,payment_status,subscription_type_name,street,city,state,zipcode)

Functional Dependencies:

- 1.) {payment_id} → {user_id,payment_date,payment_type,payment_status,subscription_type_name,street,city,state,zipcode}
- 2.) {zipcode} → {city,state }

1NF: Here in this table all the columns have atomic values and we do not have any multivalued attributes, Hence we are considering this table to be in the 1NF.

2NF: Each non-prime attribute depends on the primary key, Hence we are considering this table to be in the 2NF.

3NF: Here from the second functional dependency since the zip code can determine the state and the city. Hence we are splitting the table.

BCNF: Since we have split the tables into two, we have payment_id as a primary key in one table and we have zipcode and the primary key in another table, Hence we can say that the following tables are in BCNF.

Decomposed tables:

- a. Payment(payment_id,user_id,payment_date,payment_type,payment_status,subscription_type_name,street,zipcode)

b. UserZipCodes(zipcode,city,state)

Content(content_id,content_type_name,duration,pg_rating_name,date_of_release,genre_name,subscription_type_name,production_house_id)

Functional Dependencies:

1.)

{content_id} → {content_type_name,duration,pg_rating_name,date_of_release,genre_name,subscription_type_name,production_house_id }

1NF: Here in this table all the columns have atomic values and we do not have any multivalued attributes, Hence we are considering this table to be in the 1NF.

2NF: Each non-prime attribute depends on the primary key, Hence we are considering this table to be in the 2NF.

3NF: Every non-prime attribute is dependent non-transitively on the primary key, Therefore, We are considering this table to be in the 3NF.

BCNF: Since in this table the column “content_id” is the primary key ,We can say that the table is in the Boyce-Codd normal form.

Awards(award_name,description):

Functional Dependencies:

1.) {award_name} → {description}

1NF: Here in this table all the columns have atomic values and we do not have any multivalued attributes, Hence we are considering this table to be in the 1NF.

2NF: Each non-prime attribute depends on the primary key, Hence we are considering this table to be in the 2NF.

3NF: Every non-prime attribute is dependent non-transitively on the primary key, Therefore, We are considering this table to be in the 3NF.

BCNF: Since in this table the column “award_name” is the primary key ,We can say that the table is in the Boyce-Codd normal form.

Worker(**worker_id**,worker_firstname,worker_lastname,nationality,gender,date_of_birth)

Functional Dependencies:

1.) {worker_id} \twoheadrightarrow { worker_firstname,worker_lastname,nationality,gender,date_of_birth }

1NF: Here in this table all the columns have atomic values and we do not have any multivalued attributes, Hence we are considering this table to be in the 1NF.

2NF: Each non-prime attribute depends on the primary key, Hence we are considering this table to be in the 2NF.

3NF: Every non-prime attribute is dependent non-transitively on the primary key, Therefore, We are considering this table to be in the 3NF.

BCNF: Since in this table the column “worker_id” is the primary key ,We can say that the table is in the Boyce-Codd normal form.

Content_Type(**content_type_name**,description)

Functional Dependencies:

1.) {content_type_name} \twoheadrightarrow {description}

1NF: Here in this table all the columns have atomic values and we do not have any multivalued attributes, Hence we are considering this table to be in the 1NF.

2NF: Each non-prime attribute depends on the primary key, Hence we are considering this table to be in the 2NF.

3NF: Every non-prime attribute is dependent non-transitively on the primary key, Therefore, We are considering this table to be in the 3NF.

BCNF: Since in this table the column “content_type_name” is the primary key ,We can say that the table is in the Boyce-Codd normal form.

PG_rating(pg_rating_name,description)

Functional Dependencies:

1.) {pg_rating_name} \twoheadrightarrow {description}

1NF: Here in this table all the columns have atomic values and we do not have any multivalued attributes, Hence we are considering this table to be in the 1NF.

2NF: Each non-prime attribute depends on the primary key, Hence we are considering this table to be in the 2NF.

3NF: Every non-prime attribute is dependent non-transitively on the primary key, Therefore, We are considering this table to be in the 3NF.

BCNF: Since in this table the column “pg_rating_name” is the primary key , We can say that the table is in the Boyce-Codd normal form.

Genre(genre_name,description)

Functional Dependencies:

1.) { genre_name } \twoheadrightarrow {description}

1NF: Here in this table all the columns have atomic values and we do not have any multivalued attributes, Hence we are considering this table to be in the 1NF.

2NF: Each non-prime attribute depends on the primary key, Hence we are considering this table to be in the 2NF.

3NF: Every non-prime attribute is dependent non-transitively on the primary key, Therefore, We are considering this table to be in the 3NF.

BCNF: Since in this table the column “pg_rating_name” is the primary key , We can say that the table is in the Boyce-Codd normal form.

Production_House(production_house_id,production_house_name,established_on)

Functional Dependencies:

1.) {production_house_id} \twoheadrightarrow { production_house_name,established_on}

1NF: Here in this table all the columns have atomic values and we do not have any multivalued attributes, Hence we are considering this table to be in the 1NF.

2NF: Each non-prime attribute depends on the primary key, Hence we are considering this table to be in the 2NF.

3NF: Every non-prime attribute is dependent non-transitively on the primary key, Therefore, We are considering this table to be in the 3NF.

BCNF: Since in this table the column “production_house_id” is the primary key , We can say that the table is in the Boyce-Codd normal form.

is_bestowed(award_name,content_id,awarded_date)

Functional Dependencies:

1.) {award_name,content_id} \twoheadrightarrow { awarded_date}

1NF: Here in this table all the columns have atomic values and we do not have any multivalued attributes, Hence we are considering this table to be in the 1NF.

2NF: Each non-prime attribute depends on the primary key, Hence we are considering this table to be in the 2NF.

3NF: Every non-prime attribute is dependent non-transitively on the primary key, Therefore, We are considering this table to be in the 3NF.

BCNF: Since in this table we can see the only non-prime attribute “awarded_date” is not a subset of the prime attributes “award_name” and “content_id”. Hence by this we can consider that this table is the BCNF.