BCNF Form & Relational Schema

1st Form: We have ensured the data within our tables are atomic by adding a primary key to every table, which self increments and checks for uniqueness. In addition, all the column data only contain one value (no multiple values).

2st Form: The requirement of full functional dependency is satisfied in our data schema. There is no partial dependency we don't rely on composite keys for any of our tables, as shown below:

artistID -> artist_name, birthYear, deathYear, FK(nationalityID), description
nationalityID -> nationality_name, region(e.g. continent)
artworkID -> artwork_name, year, FK(artistID, movementID, galleryID, statusID)
movementID -> movement_name
statusID -> statusType
galleryID -> name, address, phoneNumber, businessEmail
employeeID -> lastName, firstName, FK(galleryID), startDate, endDate, email

3rd Form: We have ensured that there is no transitive dependency existing in our current data tables. Normally there may be transitive depency when an address zip code can determine the address and city of an address (zip -> city, state, country), but in our case with Gallery, we decided to save the address as a combined text, as we don't foresee ever querying it/needing it for analytic purposes. As such, we decided not to break the address to individual fields.

BCNF Form: Our data tables conform to the BCNF form because for every functional dependency X -> A, X is a superkey, aka the primary key within each table.
artistID -> artist_name, birthYear, deathYear, FK(nationalityID), description
nationalityID -> nationality_name, region(e.g. continent)
artworkID -> artwork_name, year, FK(artistID, movementID, galleryID, statusID)
movementID -> movement_name
statusID -> statusType
galleryID -> name, address, phoneNumber, businessEmail
employeeID -> lastName, firstName, FK(galleryID), startDate, endDate, email

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Therefore our relational schema is as follows:
Artist {artistID, name, birthYear, deathYear, nationalityID, description}
Nationality {nationalityID, name, region}
Artwork {artworkID, name, year, artistID, movementID, galleryID, statusID}
Art_Movement {movementID, movement_name}
Status {statusID, statusType}
Gallery {galleryID, name, address, phoneNumber, businessEmail}
Administrator {employeeID, lastName, firstName, galleryID, startDate, endDate, email}